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THE CONDITION OF CATTLE IN INDIA.

BEING AN ENQUIRY INTO THE CAUSES OF THE PRESENT DETERIORATION OF CATTLE WITH SUGGESTIONS FOR THEIR REMEDY

BY

NILANANDA CHATTERJEE, M. A., B. L.

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WITH AN INTRODUCTION

BY

SIR JOHN G. WOODROFFE. KT. M. A., B. C. L.

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—*Ruskin.*

ALL INDIA COW CONFERENCE ASSOCIATION,

10, Old Post Office Street.

CALCUTTA.

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PREFACE

The object of the present compilation is to collect within a short compass all available information relating to cattle of all countries and especially of India in order that the same may form data for the successful solution of the present cattle problem of India. The book though not aspiring to be a full or comprehensive treatise on the subject, claims to be a somewhat thorough and unprecedented contribution. The ambition of the writer is to alleviate the distress and improve the condition of the Indian cattle in general and the cow in particular and he will think his labours amply repaid if the work has its desired effect.

I am deeply grateful to Sir John Woodroffe, Sir Ewart Greaves and Hon. Justice Manmatha Nath Mukherjee for their keen interest in the cause and for valuable suggestions and advice with regard to this publication.

I take this opportunity of expressing my obligation to my friends Sj. Bires Ch. Das, B.L., Vidyabinode and Pandits Bhola Nath Sharma and Gadadhar Prasad Misra for encouragement and assistance in various ways.

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The 30th September 1926.

N. CHATTERJEE.

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INTRODUCTION.

Cattle play an important part in all agricultural countries. It is therefore natural that they should be regarded as an object of veneration in such countries. Cow-worship in India dates from time immemorial and is prevalent even today amongst the orthodox Hindus though it is to be noted with regret that some Hindus are cruel to the cow.

The cow is perhaps the most neglected and sometimes the most ill-treated domestic creature in the country. All, whether they are worshippers of the cow or not, can help to secure for cattle humane treatment and improve the stock. The apathy, negligence and inability of the people however together with other causes have brought about a comparative scarcity and deterioration of cattle, which in their turn have helped to raise the price of milk and milch-cattle, as also the rate of infant mortality. Some thinking and responsible people having noticed this change thought of devising means for checking deterioration and conserving the cattle-resources of the country.

In 1917 a body of such persons with Mr B. Chakrabarty M. A. Bar-at-law at their head approached me with a view to found an association with the object of protecting and improving cattle on a purely economic basis and I readily consented to be its President. Thus the All-India Cow Conference Association was started in Calcutta. I have always insisted on the possession of knowledge before doing anything and following this rule the Association issued a circular letter to all District Boards, Municipalities, Agricultural Associations, Gowshalas and other interested bodies, containing a set of questions enquiring about the condition of local cattle and milk-supply, and inviting suggestions for their improvement.

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At first the response was very meagre, and we had to wait for two long years and then re-issue our letters before we got a sufficient number of replies, which though not complete, was fairly indicative of the true state of the cattle of the country.

A Committee with Col. A. Smith, as Chairman, considered these replies and came to the conclusion that the present unsatisfactory condition of cattle was mainly due to 3 causes, viz—(a) want of grazing lands, (b) excessive slaughter, and (c) want of good breeding bulls. It was then thought advisable to present the public with a summary of the replies received, which contained many important disclosures and useful suggestions and Sj. Nilananda Chatterjee was entrusted with the work. He supplemented this information by extracts from District Gazetteers, Reports of Proceedings of the Board of Agriculture in India, from books of foreign travellers such as Bernier and Marco Pollo, and from such standard works as the Ain-i-Akbari and the like, and also from other publications on cattle, both ancient and modern, official and non-official. Sj. Chatterjee has thus been in a position to compare the present condition of cattle in India with that of the past. He has further collected information and statistics with regard to the cattle of other countries of the world from authoritative publications and has been able to present the reader with the striking contrast between the condition of cattle in cow-worshipping India and that of the same in many beef-eating countries. He has not been content with merely pointing out the pitiable condition of India cattle but has assiduously sought for and found out the remedies as well. His connection with the Bengal Humanitarian Association for several years has helped him to carry out successfully researches in cattle-breeding and cattle-feeding, and he has thus gained valuable practical experience which he has not grudged to place at the service of the reader.

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The task undertaken by Sj. Chatterjee has thus been not an easy one and I wish to put here on record the debt which the Association owes him for his attachment to it, and for his careful and untiring work on its behalf.

This book which he has compiled, is divided into 11 parts, of which the first contains a brief survey of the cattle of the whole of India, while the last deals somewhat minutely with the main causes of cattle deterioration and suggests remedies for their improvement. The remaining parts present a summary of the reports on the condition of cattle in various provinces district by district, and even sub-division by sub-division where available. The various Provincial Governments, especially the Governments of Bengal, Punjab and Assam, have kindly furnished us with half-tone blocks of pictures of different kinds of cattle of this country. It is hoped that this compilation will prove of use both in supplying those who are convinced supporters of the Association with a summary of the facts and in gaining the support of others to a movement which is of primary importance in the economic maintenance and development of the country.

J. G. WOODROFFE.

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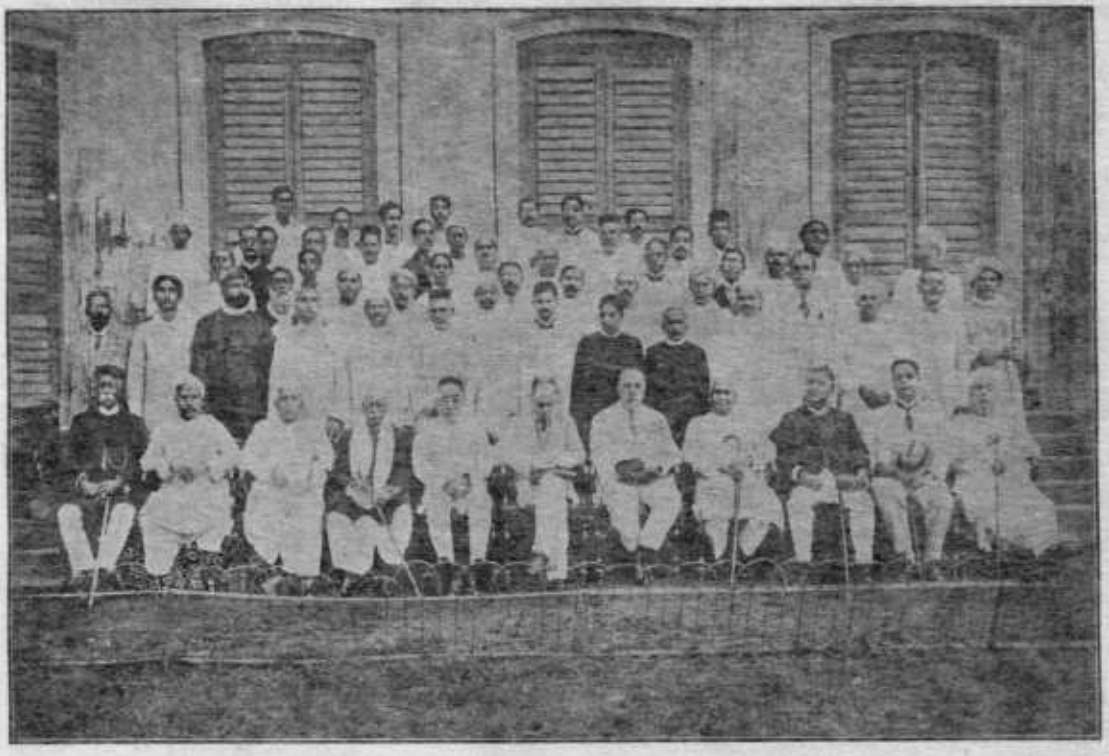

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CONDITION OF CATTLE IN INDIA.

PART I—INDIA.

India—Area and Population.

India extends over an area of a little over one and three quarters of a million square miles with a population of about 315 millions (*a*). For administrative purposes it is divided into 14 Provinces which form the British territory proper, and 16 principal Indian States. The Provinces again are subdivided into more than 250 Districts with an average area of 4,430 square miles and an average population of 931,000. (*b*)

The distribution of area, population and districts will be seen at a glance from the following tables.

Table 1.—British India—Area and Population. (*b*)

Names of Provinces.	No. of Districts...	Area in sq. miles.	Population (1911).
1. Ajmer-Merwara	2	2,711	501,395
2. Andamans & Nicobar ...	...	3,143	26,459
3. Assam	12	52,959	6,713,635
4. Baluchistan	6	45,804	414,412
5. Bengal	28	78,412	45,483,077
6. Bihar and Orissa	21	83,205	34,490,084
7. Bombay Presidency (including Sindh and Aden) ...	32	123,064	19,672,642
8. Burma	41	236,738	12,115,217
9. Central Province and Berar ...	22	100,345	13,916,308
10. Coorg	1	1,582	174,976
11. Madras	24	141,726	41,405,404
12. N. W. F. Province ...	5	16,466	2,196,933
13 Punjab	13	97,209	19,974,956
14. United Provinces ...	48	107,164	47,182,044
Total ...	267	1,090,527	244,267,542

(*a*) Census Report 1911. (*b*) "Indian Year Book" 1918, by Sir Stanley Reed L. L. D.

Table 2.—Indian States and Agencies.

Names of States and Agencies.	Area in sq. miles.	Population (1911).
1. Baluchistan States	86,511	396,432
2. Baroda State	8,099	2,032,798
3. Bengal States	32,773	4,538,161
4. Bombay States	67,761	7,411,567
5. Central India Agency	78,772	9,356,980
6. Central Provinces States	31,188	2,117,002
7. Eastern Bengal and Assam States ...	...	575,835
8. Hyderabad State	82,698	13,374,676
9. Kashmir State	80,900	3,158,126
10. Madras States	9,969	4,811,841
11. Mysore State	29,444	5,806,193
12. N.-W. F. Province Agencies ...	...	1,622,094
13. Punjab States	36,532	4,212,794
14. Rajputana Agency	127,541	10,530,432
15. Sikkim	...	87,920
16. United Provinces States	5,079	832,036
Total ...	675,267	70,864,995
British India	1,090,527	244,267,542
Indian States and Agencies	675,267	70,864,995
Total ...	1,765,794	315,132,537

The principal cattle of India are the cow and the buffaloe. They are used mainly for two purposes viz (1) for producing milk and (2) for drawing the plough or the cart. They are put to various minor uses, such as, pressing oil-mills and sugar-cane mills, drawing water from wells, carrying burdens and so forth, but the number used for such purposes is very limited and hence not worth much consideration.

It is difficult to obtain reliable figures as to the total number of cattle in India during previous years, as no regular cattle census used to be taken, and although now some attempt is being made to get fairly accurate statistics it is not likely to be attended with much success as no arrangements appear to have been made for the taking of the census in all provinces at or about the same time, and the agency employed for taking the census is too inadequate and unsuited for the purpose. Thus while in Burma, Central Provinces, Berar and portion of Central India the census is taken annually, in the United Provinces, Assam, Ajmere-Merwara, the Punjab, N. W. F. Province, the Bombay and Madras Presidencies it is taken every 5 years. In Bengal as well as in Behar and Orissa a cattle census was taken for the first time in 1913–14. In fact the first reliable figures relating to cattle are available throughout India for the year 1913–14. The previous as well as subsequent figures are based more or less upon guess and approximation. They are given below for what they are worth.

The Number of cattle: whether on the increase or decrease.

At the suggestion of the All-India Cow Conference Association, the Government of India have introduced the taking of a general census of cattle throughout India quinquennially from the year 1919–20, (*a*) and this, it is hoped, will lead to better and more reliable results.

Table 3.—Live-Stock in British India (*b*).

Year.	Bulls and Bullocks.	Cows.	He-buffaloes.	She-buffaloes.	Young stock (*c*)	Total
1912–13	47,002,902	35,721,694	5,235,503	12,471,983	38,639,837	139,061,919
1913–14	47,527,324	36,555,287	5,256,077	12,979,142	40,958,726	143,276,556
1914–15	48,644,720	37,481,273	5,560,352	13,464,727	42,184,790	147,335,852
1919–20	49,116,474	37,153,468	5,463,690	13,388,468	40,849,550	145,921,650

(*a*) *Annual Report* of the All India Cow Conference Assn. 1919, p. 12.

(*b*) *Agricultural Statistics of India* 1914—15, Vol. I. p. 6 & 265; *Live-Stock Statistic* Published by the Government of India 1919—20.

(*c*) *Young Stock* represent cow-calves and buffalo calves which are not old enough to work or to produce young.

It will be apparent from the above that the numerical strength of cattle has practically remained the same during the seven years 1912–13 to 1919–20, there having been a nominal increase of about 5 per cent between the years 1912–13 and 1914–15 and a similar decline between 1914–15 and 1919–20. The correctness of this increase is however open to some doubt, as there has been no actual taking of cattle-census throughout India during the years 1912–13 and 1914–15, and the figures of these years are based on official estimates. It is however very difficult to find out with any degree of accuracy whether there has been, on the whole, a general tendency of increase or decrease in the number of cattle in India in the course of the last one or two centuries, and if so, to what extent; but some amount of definite and important information relating to a few decades is certainly available from living persons who can speak from their own personal experience, and other sources as well; and it has been found necessary to fall back upon this source of information in the subsequent chapters where we have dealt with the condition of cattle province by province. Latest information published by the Government confirm our belief that the numerical strength of bovine cattle in India is actually on the decline as the Table below would show.

Cattle-Statistics of British India.

Table 4.—Total Number of Bovine Cattle in British India.

Year.	Number.	Source of Information.
1917–18 ...	149,112,000	
1918–19 ...	148,901,000	*Agricultural Statistics of India*, Vol. 1, for the corresponding years.
1919–20 ...	146,166,000	
1920–21 ...	145,103,000	

A comparison of the totals for 1919–20 in Tables 3 and 4 will show a discrepancy. The former is taken from *Live Stock Statistics* and the latter from *Agricultural Statistics*, both

compiled and published by the Government of India. The figures are given as they have been found, and the reader will draw his own conclusions as regards the care and accuracy with which such statistics were and are usually collected.

The cattle statistics relating to Indian States are still more meagre and insufficient. No agricultural statistics is available for Hyderabad, Baroda, Baluchistan and Sikkim, and of the remaining States which prepare statistics, returns are received from the Madras States, Punjab States, Rajputana States, Central India States, Mysore and Kashmir only. The total area of all the above reporting States amounts to 188,861,000 acres with a population of nearly 31 millions. These only represent 38 per cent of the total area and 43 per cent of the total population of all the Indian States taken together.

Cattle—Statistics of Indian States.

Table 5.—Live-Stock in the Reporting Indian States (a).

Year.	Bulls and Bullocks.	Cows.	He-buffaloes.	She-buffaloes.	Young stock.	Total.
1912–13	3,924,387	4,247,839	268,901	1,465,897	3,852,236	13,759,240
1913–14	3,948,912	4,401,217	245,696	1,519,487	3,896,289	14,011,601
1914–15	4,001,813	4,309,208	247,513	1,528,513	3,787,742	13,874,789

Distribution of Cattle in the Provinces.

The following table compiled from statistics for 1912–13 shows the distribution of cattle in the different provinces of British India.

Table 6.—Number of cattle (Figures are given in thousands). (b)

Province.	Bulls and Bullocks.	Cows.	He-buffaloes.	She buffaloes.	Young stock (Calves and buffalo calves).	Total.
Ajmer—Merwara ...	104	135	9	41	62	351
Assam ...	1,167	975	160	187	1,086	3,576
Bengal ...	8,902	7,096	669	274	8,283	25,324
Bihar and Orissa ...	6,527	5,823	783	1,500	5,486	20,119
Bombay and Sindh ...	3,325	2,307	237	1,164	2,644	9,677
Burma ...	2,067	1,540	382	408	1,485	5,882
Central Province and Berar ...	4,077	3,274	525	856	3,125	11,857
Coorg ...	45	36	13	7	33	134
Madras ...	6,749	5,881	1,371	2,381	5,879	21,761
N. W. F. Province ...	437	358	14	161	301	1,271
Punjab ...	4,527	3,702	563	2,648	4,096	15,489
United Provinces ...	10,614	6,854	824	3,836	9,803	31,741
Manpur (C. I.) ...	2	2	1	1	1	6
TOTAL ...	48,645	37,481	5,560	13,465	42,185	147,336

(a) Agricultural Statistics of India 1914—15, Vol. II. P. 87.
(b) Agricultural Statistics of India 1914—15, Vol. I. P. 6.

Table 7.—Number of Cattle in British India. (a)

Province.	1914-1915.	1919-20.
Ajmer-Merwara	351,000	293,000
Assam	3,576,000	5,472,000
Bengal	25,324,000	24,724,000
Bihar and Orissa	20,119,000	20,180,000
Bombay and Sindh	9,677,000	10,002,000
Burma	5,882,000	5,983,00
C. P. and Berar	11,857,000	11,626,000
Coorg	134,000	145,000
Madras	21,761,000	22,294,000
N. W. F. Province	1,271,000	1,132,000
Punjab	15,489,000	14,409,000
United Provinces	31,741,000	29,764,000
Manpur Perganna	6,000	6,000
TOTAL ...	147,336,000	146,166,000

Table 8.—No. of Cattle per 100 acres and 100 population. (a)

Province.	No. of cattle per 100 acres.	No. of cattle per 100 population.
Bengal	101	55
Madras	67	54
Bombay	50	54
Sindh	45	52
U. P.	84	63
Bihar and Orissa	79	59
Punjab	56	74
Burma	39	57
C. P. and Berar	49	83
Assam	97	82
N. W. F. Province	49	50
Ajmer-Merwara	86	58
Delhi	64	33
Coorg	101	83
Manpur	86	86

(a) *Agricultural Statistics of India*, 1919—20. Vol. I. Published by order of the Governor General of India in Council

Thus of the total number of cattle (vide Table 6), the United Provinces account for 22 per cent, Bengal 17 per cent, Madras Presidency 15 per cent, Bihar and Orissa 14 per cent, the Punjab 11 per cent, the Central Provinces and Berar 8 per cent, the Bombay Presidency including Sindh 7 per cent, and other provinces the remaining 6 per cent. Table 7 further shows that there has been during the last 5 years an appreciable reduction in the number of cattle in all Provinces except Assam, Bombay and Madras.

Different varieties of cattle.

India has been famous from time immemorial for good breeds of cattle. Mention is made of the value and usefulness of cattle in the *Vedas* and the *Upanishads*, in the *Smritis* and the *Purans*, and in the *Ramayana* and the *Mahabharata*. Special stress is laid on the cattle wealth of the country in the accounts of Megasthenes, Hiyen-th-sang, Bernier, Marco Polo and other travellers, while much valuable information on the condition of cattle in India is available, from the historical treatises such as *Rajtarangini*, *Shah-nama* and *Ayin-i-Akbari*. Bernier speaks of cattle which during the Mogul period fought with elephants and tigers. Marco Polo who visited India in the 13th Century A. D. says that Indian oxen looked like elephants. The *Ayin-i-Akbari* describes bullocks which could run faster than horses and milch-cows which gave 20 quarts of milk a day.

Even now there are several varieties of fairly good milch-cattle to be found in the Punjab and in the Bombay and Madras Presidencies while good bullocks, buffaloes and draught-cattle abound in the United Provinces and in Central India. A few varieties of cross-bred cattle are also to be found in some localities, chiefly in Patna (Bihar and Orissa) and Ongole (Madras Presidency), while here and there some rich families have begun to keep English and Australian cattle. There are two conspicuous varieties of cattle inhabiting the mountainous regions which serve both as good milkers and beasts of burden.

A brief account of the principal varieties of cattle to be found in India is given below.

Assam, Bengal, Bihar and Orissa.

In Bengal proper there is no particular breed of cattle worth mentioning. The indigenous cows of Birbhum and Midnapur (*do-anshla*)—the result of cross-breeding with up-country bulls — used to give a fair yield of milk up to 12 pints per day, but they have now considerably deteriorated in common with the cattle of other parts of India, and their average daily yield does not now exceed 2 pints per head per day. Bhagulpuri cows were once famous as good milkers, but their race is now practically extinct. The Taylor-breed cattle of Patna — the product of cross-breeding of country and English cows introduced by Mr. Taylor, at one time Commissioner of the Patna Division — represents a fairly useful class of milch-animals. Siri, Mithun and Gayal, three varieties of hill-cows found in Darjeeling, the borders of Nepal and the hills in Assam, are good milkers and the bulls and bullocks are hardy and can carry heavy burdens, but when taken to the plains they soon deteriorate and become entirely worthless. There is a peculiar class of cows in Contai sub-division, district Midnapore, known as *gaini*, which are of the size of goats and look somewhat beautiful. They have been in existence from the time of Akbar, and we find their mention in the *Ain-i-Akbari*. (*a*)

The principal seats of buffalo-breeding are the *dearahs* (sandy chur lands) of the large rivers, the Ganges and the Gogra, the Gondak and the Kosi, as well as the low-lying grazing tracts in Monghyr, Muzaffarpur and Durbhanga districts. (*b*)

The U. P., C. P. and Central India.

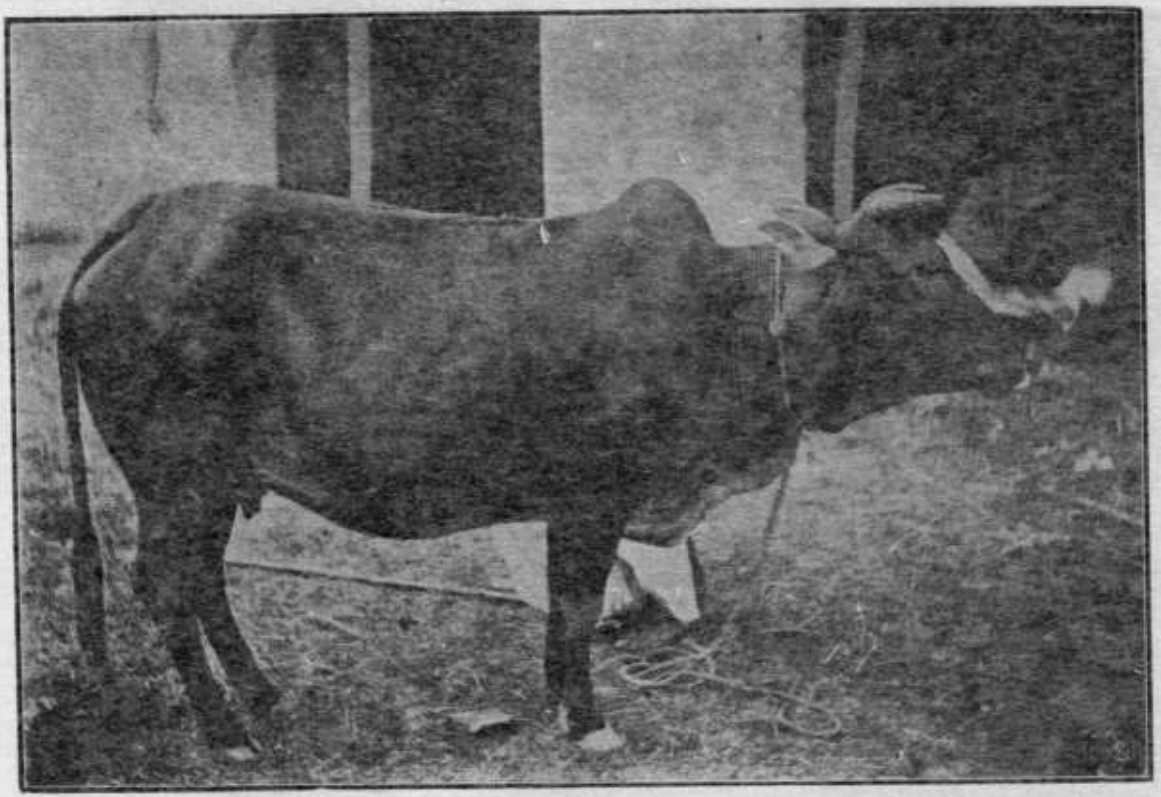
The cattle of the United Provinces, the Central Provinces and Central India are more noted for their capacity as draught-animals rather than as copious milkers. The *Nagora* variety found chiefly in Nagpur form by far the best species. They are very fast and painstaking Nagra bullocks are sold at from Rs. 200 to Rs. 300 per head. Nagra cows have been seen to yield 20 to 30 pints of milk per day, but the number of such animals is very limited and the quality of milk is rather poor.

(*a*) "There is also a species of small oxen called Gaynee, which are well-limbed and very beautiful." Ayin-i-Akbari Vol. I, Pt. I, P. 127.

(*b*) Note on Cattle in Bihar and Orissa, 1914 by G. Milne, Esq., I. C. S.

Typical Assam Bull. (By the courtesy of the Govt. of Assam.

Bhowde's Publishing House



Midnapur Cow. [By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House, Calcutta.

The Hansi, the Hissar, the Multani and Montgomery are considered as the best breeds of cattle in India. The bulls and bullocks are very patient and docile, and are able to carry exceptionally heavy loads. They were therefore much requisitioned by the Military Department for carrying guns and accessories. The cows are particularly noted for their milk producing capacity—milk which is excellent alike for its quality as well as quantity. The Montgomery or Saniwhal cows are the best milkers and they are locally sold at Rs. 50 to Rs. 100 per head. The bullocks also fetch from Rs 100 to Rs. 300.

Punjab.

The Bombay Presidency like Bengal has not much to boast of its cattle. With the exception of the Guzrati, Sindhi, and the Kankreji types, it possesses no other variety of any appreciable fame or value. The bullocks walk fast and make good plough-cattle and cart bullocks (*a*)

Bombay Presidency and Guzrat.

The Gujerati or Gir cattle have been widely known for many centuries and the following account appears in the Ayin-i-Akbari "Throughout Hindusthan the ox is estimated lucky and held in great veneration. Every part of the empire produces good oxen but those of Gujerat are esteemed the best. These will travel 36 miles in the course of a day and they are swifter than the generality of horses. Sometimes a pair of them are sold for 100 Mohurs but they are very common of 10 and 20 Mohurs."(*b*)

It is worth noting that in the Punjab, United Provinces and the Bombay Presidency, the cow is valued more as the potential mother of bullocks rather than as good milkers (*c*)

Some people of the hills do not milch their cattle at all, as they think that the practice is cruel inasmuch as it deprives the calf of its legitimate share of milk.

Besides cows, there are some distinctive breeds of buffaloes in this Presidency of which the Juffarabadi and the Surati form the best milkers Male buffaloes are not very suitable beasts o urden, as they soon get tired and are not always quite docile.

(a) Note on the Cattle of the Bombay Presidency (1917) by G. F. Keatinge, C.I.E., I.C.S.

(b) Ayin-i-Akbari, Vol. I Pt. I pp. 127.

(c) The Cattle Census of the U. P. (p. 2); The Cattle Census of the Punjab (p. 2).

The *Mahisuri* (Mysore) *Ongole* and *Nellore* breeds are the most renowned types of milch cattle in Southern India. The Mysore cattle are noted for their size and strength. The Mahisuri bullocks are as elegant as they are hardy and they are sold at Rs. 150 to Rs. 200 per head. The Nellore breeds are good milkers as well as fair draught animals. The milk produced by these cattle are of the very best quality. The milch cows sell for Rs. 100 to Rs. 300 and the bullocks from Rs. 100 to Rs. 150, but the *Ongole* breed forms the best of all. It is the result of the introduction of foreign blood. Experiments at the Ongole cattle farm and other places have shown that bulls imported from Great Britain and Australia over 50 years ago have given rise to a good breed of milch cows. It has been found that Jersey and Ayrshire bulls are best suited for cross breeding. The cross-bred cows are much better than the native breeds. Not only do they give more milk per day but also their lactation period is longer; they also calve at an earlier age and breed more regularly (*a*). The Ongole cattle show has led to some extent to an improvement of the breed of cattle of the place, but it has one drawback also. Dutch merchants from Java, Batavia and Brazil annually visit the show and take away the best cattle by offering for them prohibitive prices with which the local buyers cannot compete.

The Deccan and Madras Presidency.

There are good milch buffalloes available in the Madras Presidency which yield fairly large quantities of milk and are useful for dairy purposes.

The indigenous breeds of cattle in Burma are regarded as fairly satisfactory. There the draught cattle are considered to be of primary importance and the milch-cattle of secondary importance. The authorities are not at all anxious to introduce foreign blood in the local pure breed and they look upon any such attempt with a good deal of caution (*b*).

Burma.

(*a*) A Survey of the Madras Dairy Trade by A. Carruth. p. 33

(*b*) Report of the Stock-Breeding Committee Burma 1917.

As has been already pointed out, it is not quite possible to prove by facts and figures that the number of cattle on the whole, is rapidly decreasing. In some Provinces such as Bengal, the U. P., Punjab or C. P., the Census Reports indicate a steady reduction in the number of cattle, but in other Provinces the cattle are reported to be increasing in large numbers, and this increase in some counterbalances the reduction in others. But there can be no doubt that their number is not, on the whole, increasing in such a way as one would naturally expect, nor do they exist in the same proportion as in other agricultural countries of the world.

Obstacles in the way of progress.

Recent enquiries however prove that besides deterioration in stock the number of cattle is also on the decrease.

Table 9.—Total No. of Bovine Cattle in India (a)

Year ...	1917-18.	1918-19.	1919-20.	1920-21.
Number ...	149,112,000	148,901,000	146,166,000	145,103,000

Table 10.—Number of Cattle in various Countries. (b)
(Latest available figures)

Name of Country.	No. of cattle.	Population.	No. of cattle per 100 inhabitants.
India	145,103,000	244,267,542	58
Denmark	1,840,500	2,500,000	74
United States	72,534,000	92,000,000	79
Canada	5,576,500	7,250,000	80
*Australia	11,956,024	5,500,000	259
Cape Colony	1,270,000	1,100,000	120
*Argentine	25,844,800	8,000,000	323
*Uruguay	6,830,000	1,400,000	500
New Zealand	1,816,300	1,200,000	150

(a) Agricultural Statistics of India, Vol. I, 1917-18 to 1920-21.

(b) Agricultural Statistics of India 1914-15, Vol. I, Part VIII; Dictionary of Statistics by Mulhall; New Dictionary of Statistics by Webb; New Hazel Annual and Almanac 1920; Whittaker's Almanac 1920.

* These Countries are reported to export meat and Cattle, and hence their abundance in Cattle. But it is to be pointed out that these very countries import cattle from India.

Table 11.—Proportion of Cattle in various Provinces of India. (a)

Name of Province.	No. of cattle per 100 population.	Name of Province.	No. of cattle per 100 population.
Bengal	57	Central Province and Berar	85
Madras	53	Assam	53
Bombay and Sindh ...	52	N. W. F Province ...	56
United Provinces ...	67	Ajmer Merwara ...	70
Bihar and Orissa ...	58	Delhi	36
Punjab	79	Coorg	77
Burma	65	Manpur C. I.	95

Besides their quality is fast deteriorating—deteriorating in strength as well as in their milk-producing capacity. During Akbar's time "many cows at Delhi gave daily twenty quarts of milk each and were seldom sold for more than ten rupees."

They could walk faster than horses and could fight with tigers and elephants (*b*) Only 25 years ago Bengal cattle used to yield from 3 to 5 seers of milk per head on an average, but now the yield has dwindled down to 1 seer only per head per day (*c*). And this figure applies generally to all milch-cattle in India (*d*)

A thorough investigation on the subject, consultation of all the District Gazetters of India—old as well as new—the description contained in all publications, state or private, concerning cattle and all available foreign treatises containing information about cattle, all these together with the first-hand report on the condition of cattle obtained through the All India Cow-Conference Association from prominent and influential gentlemen (official and non-official) scattered all over the country lead one to conclude that the following are the principal causes which hamper the full

(*a*) *Agricultural Statistics of India* 1914–15, Vol. I. Part VIII. N. B.—Compare this with Table 8, Col. 3 which gives the latest figures.

(*b*) Berniers' Voyage to the East Indies.

(*c*) A Survey and Census of Cattle of Bengal by J. R. Blackwood I.C.S., *Englishman*, May 22, 1920.

(*d*) Annual Report of the All-India Cow Conference Association 1918 p. 3 by Sir John Woodroffe Kt. M.A., B.C.L.

development of the cattle resources of the country. They are, in their order of importance:

(1) Want of facilities for cattle-breeding, resulting in bad and indifferent types of cattle.

(2) Want of adequate pasture lands resulting in weak cattle and heavy calf mortality due to want of food and exercise.

(3) Slaughter of useful animals—(*a*) for food (*b*) dry meat trade and (*c*) hides—resulting in the extinction of the best breeds of cattle and heavy economic loss to the country.

(4) Want of facilities for prompt and effective treatment of cattle diseases resulting in heavy cattle mortality from Rinderpest and other diseases.

(5) Export of the finest breeds of cattle—(*a*) outside India resulting in economic cattle strain on the country; (*b*) from one Province to another where they soon deteriorate and die of neglect or are killed in the slaughter house.*

It is proposed to deal very briefly with these subjects here but they will be more fully considered in detail in the concluding chapters.

But to revert to the present number of cattle. Are they adequate for ploughing the area of land cultivated and supplying the population with a reasonable quantity of milk? A cursory glance at the figures collected below from the published Statistical Reports of the Government of India will go to show that the preceding question can only be answered with an emphatic "No."

* With this may be compared the Memorial to Lord Chelmsford, the then Viceroy of India, dated the 25th February 1921, by Sir J. G. Woodroffe, President of the All India Cow Conference Association. *Vide* para 12 of the Memorial; (*a*) A lack of pasture and of fodder; the pasture-lands are already inadequate, and they are being yearly encroached upon; and the growing of fodder-crops is also inadequate. (*b*) A lack of good bulls for breeding purposes in the country; the diversion of Brahmini bulls to other purposes encouraged by judicial decisions of some of the Indian High Courts; and the general indifference of the well-to-do classes towards cattle-keeping and breeding. (*c*) The indiscriminate slaughter of milch-cows and other cattle for the purposes of food, the meat-trade and the trade in hides, and the uncontrolled export of the best breeds of cattle out of India as also from one Province to another. (*d*) The want of proper treatment of cattle in disease or in health and the heavy mortality from outbreaks of infectious diseases, chiefly rinderpest, and the gross neglect of cattle-owners and such cruel practices as *phaka* etc resulting especially in the high death-rate among calves and the sterility of prime cows.

Table 12—SUMMARY TABLES—of the Agricultural Statistics of India for 1914-15. (a)

1	2	3	4	5	6	7	8	9
Place and year.	Cultivated area in 1,000 acres.	Plough-cattle in thousands.	Quantity (in acres) of cultivated area per animal.	Population in thousands.	Number of milch-cattle in thousands.	Average yield of milk per day in thousands of pints at 2 pints per cattle for 7 months.	No. of persons for each milch-cattle.	Quantity of milk in pints available per head per day.
British India 1914-15 ...	227,611	48,645	5	244,267	50,946	88,437	5	·35
Indian States (1914-15 as far as obtainable)...	31,935	4,002	8	70,862	5,838	6,811	12	·1
TOTAL (or Average)	259,546	52,647	5	315,129	56,784	95,248	6	·2

	2	3	4	5	6	7	8	9
Place and year.	Bulls and bullocks in thousands.	Buffalo bulls.	Deducted for breeding purposes.	TOTAL.	No. of ploughs in thousands.	No. of carts in thousands.	Total of cols. 6 & 7.	No. of cattle per cart & plough.
British India 1914-15 ...	48,645	3,569	2,000	52,205	19,218	4,813	24,031	2·2
Indian States 1914-15 as far as obtainable ...	4,002	247	249	4,000	1,898	546	2,444	1·7
TOTAL (or average)	52,647	3,807	2,249	56,205	21,116	5,359	26,475	2·1

Inadequacy of plough-cattle in India. Rate of outturn of food crops lowest in consequence.

Now the maximum area which a pair of cattle can properly plough during a season is 3 to 5 acres. But the above Table Col. 4 (and we have not excluded the number of unfit and decrepit bulls and bullocks which form a considerable percentage) will show that we have in India only *one* head of cattle for an area of 5 acres, whereas we require at least *two* to cultivate the same. So it is clear that we want at least *double* the number of our present plough-cattle to effectively till the lands that are capable of cultivation. But if we make an allowance of 25 per cent. of the total number of bulls and bullocks for carts and conveyances, and 25 per cent. as sick and old, we get *one* bull

(a) gricultural Statistics of India Vol. I & II, 1914-15.

for *10 acres*, *i.e.* hardly *one-fourth* the number required for properly cultivating the area.

As the direct out-come of this inadequacy in plough-cattle the rate of out-turn of food-crops in India is the lowest of all countries in the world (*vide* Table below). It is only one-third that of Japan, Denmark, Great Britain and Egypt.

Table 13—World's Crops in 1917.

[*From "the New Hazel Annual and Almanac 1920" and Agricultural Statistics of India Vol I, p 11 (1916-17)*].

Wheat produce.

Name of country.	Area in acres under wheat cultivation.	Produce in bushels of Wheat.	Rate of out-turn in bushels per acre.
Denmark	131,000	4,287,466	33
Spain	10,336,000	142,376,740	14
France	10,393,000	134,293,756	13·5
Great Britain	2,103,000	59,622,650	29 8
Italy	10,433,000	137 324,000	13·7
Norway	19,000	429,484,	23
Netherlands (Holland)	122,000	3,699,718	30
Sweden	329,000	6,849,663	23
Switzerland	139,000	4,546,666	32·5
Canada	14,795,000	233,256,994	17
United States	45,922,000	635,314,091	14
British India	33,067,000	381,268,250	11·5
Japan	1,457,000	32,658,622	32
Egypt	1,116,000	29,772,185	29

Rice produce.

Name of Country.	Area in Acres under Rice cultivation.	Yield in Cwt.	Rate of yield in Cwt per acre.
British India ...	78,730,642	544,840,000	7
Japan ...	9,168,000 (=3,056,000 *cho*)	111,828,000 (=55,914,000 **Koku**)	12·4

A cant expression—"economic causes"—is very often used in interested circles to justify the absorption of grazing grounds within cultivated areas, but when there are not cattle enough adequately to bring the already existing area under cultivation, there does not appear to be any reason or sense in trying to bring larger areas under the plough by depriving the dumb cattle of their just and legitimate claims Excessive greed and extreme narrowness of vision seem to have taken hold of humanity just at present and retard genuine progress in any and every direction.

No excuse for encroaching upon pasture-lands.

India is a pre-eminently agricultural country, about three-fourths of its inhabitants live on agriculture. (a) This inadequacy of agricultural cattle is therefore of very serious consequence and requires prompt and definite action to be taken in the matter.

The average milk-yield of cattle found in the aforesaid table discloses a dismal tale. In a practically vegetarian country like India, where milk and milk-products form the only nutritive food of the people, each individual can hardly get ·05 gallon *i.e* a few liquid ounces of milk a day. Mr. Blackwood has worked up the figures and he finds that each person gets three seers per month on an average (b) No wonder therefore that the vitality of Indians is very low, their death-rate is very high—the death-rate of women and children being the highest on record in any country in the world.

Inadequacy of milch-cattle followed by alarming infant mortality.

Table 14.—Deaths according to age [From Statistics of British India (Public Health, Vol. III.)] Rates per 1000 population.

Year.	Under 1		1—5 years.		5—10 years.		10—15 years.	
	Male.	Female.	Male.	Female.	Male.	Female	Male.	Female.
1909	260·72	226·57	45·28	43·00	14·29	12·93	9·53	93·9
1913	192·50	196·87	50·43	44·41	12·40	11·44	9·02	9·19
1917	211·51	198·41	58·81	52·98	15·51	14·75	10·87	11·59

(a) Census of India 1911, Vol. I. Pt. I. P. 422.

(b) A Survey and Census of Cattle of Bengal by J. R. Blackwood L.L.B. etc. p.p. 38.

Table 15.—Average Annual Death-rate per 1,000 population.

Country and Year.	Under 1 year	1—5 years.	Females.	All Per cns.	Sources of information.
India (1918-9) ...	260·7	67·3	37·6	38·2	Statistics of British India—Public Health Vol III.
United Provinces [Average for 1902-11] ...	352	...	...	...	The Indian Humanitarian May 1920 (p5.)
Bombay Presidency [do] ...	329	...	...	...	
Burma [do] ..	332	...	...	...	
Bihar and Orissa [do] ...	404	...	...	...	
Punjab [do] ...	306	...	...	...	
Bengal [do] ...	270	...	...	...	
Madras [do] ...	199	...	...	...	
Japan [1908] ...	...	31·99	20·3	20·9	Japan Year Book (1914-16.)
England and Wales [Average for 1896-1905]	172	22	16	17	New Dictionary of Statistics by Webb 1911.
Scotland [do] ...	145	22	17	17	
Ireland [do] ...	123	17	18	18	
Denmark [do] ...	136	11	15	15·5	
Norway [do] ...	102	12	15	15	
Sweden [do] ...	102	15	15	16	
Finland [do] ...	152	28	18	19	
Switzerland [do] ...	187·5	13	17	18	
Holland (do) ...	50	50	1	17	
Belgium (do) ...	173	18	17	18	
France (do) ...	172	17	19	20	
Italy (do) ...	173	39	22	22	
Servia (do) ...	122	41	24	24	
U. S. A. (1898) ...	58·8	58·8	...	...	Mulhall's Dictionary of Statistics 1899.
New Zealand (1919) ...	32	...	...	9·5	Lord Ronaldshay's Speech reported in the "Englishman", 29th March 1920, Whittakers' Almanac 1920.

Shallow and superficial observers may say that heavy, infantile mortality is due to the ignorance of mothers, but a crushing reply to this argument has been given by Col. McTaggart,

Sanitary Commissioner of the United Provinces, a summary of which is given below :—

"Indian mothers almost invariably nurse their children, but in thousands of cases when the mother's milk-supply is for various reasons insufficient, children die of mal-nutrition, because the parents are unable to buy milk for them at the prevailing rates," and Col. Mc. Taggart does not hesitate to say that "if the cost of milk is reduced in our Municipalities to a figure which would bring the milk within the reach of the poorer classes more would be effected towards reducing infantile mortality than the presence of any number of trained *dhais* would accomplish." (a)

Prevalence of wasting diseases.

The want of pure and abundant supply of milk has made the people poor in physique and prone to catching diseases. It has also raised the general mortality of the people and has made wasting diseases such as tuberculosis and the like, more and more prevalent. Thus in the course of the last 15 years it would appear that the number of such cases has increased threefold.

Table 16.—Number of Tubercular diseases of human beings treated in British India in 1902—06. (b)

Year.	No. treated in State—public local fund and private aided hospitals and dispensaries.	No. treated in State-special and Railway Hospitals and Dispensaries.	No. treated in private and non-aided Hospitals and Dispensaries.	Total.
1902	29,318	2,495	6,622	38,435
1907	47,315	2,280	9,707	59,302
1912	72,174	3,565	17,465	93,204
1917	78,669	3,030	18,493	100,192

Death-rate of women of the child-bearing age.

The death rate of the Indian population as a whole is high enough—it is in fact higher than that of any civilized country in the world, but the death rate of females during their period of child-bearing *i.e* between the ages of 15 and 30 is still more high—appreciably higher than the death rate of men in the corresponding ages, and there can be no doubt, it is mainly due to

(a) Annual Report of the All India Cow Conference Association, 1918 (P. 8).
(b) Statistics of British India (Public Health) Vol. III.

want of nourishing and healthy food, such as milk and ghee, which they specially require at this period.

Table 17.—Deaths according to age—Rates per 1,000 population. (a)

Year.		1908	1909	1910	1911	1912	1913	1914	1915	1916	1917
15—20 years.	Male ...	15·84	12·72	14·46	14·74	11·98	11·01	11·81	12·45	10·98	12·79
	Female ...	17·75	14·66	16·53	17·03	14·05	12·86	13·67	14·97	12·99	14·64
20—30 years.	Male ...	18·52	15·91	17·30	15·70	13·34	12·51	12·60	13·72	12·53	14·30
	Female ...	19·66	16·96	18·44	18·56	16·00	14·93	15·34	16·41	14·85	15·76

Table 18.—Average Number of Deaths of females per 1,000 male deaths—1905-09. (b)

Age.	Bengal.	Bihar and Orissa.	Bombay.	Burma.	C. P. and Berar.	Madras.	Punjab.	U. P.	Remarks.
15—20	1,215	889	1,025	859	1,053	1,234	966	1,056	
20—30	1,171	1,013	1,061	865	1,147	1,231	1,055	, 05	

It is a matter of deep regret that there is no regular system of cattle-breeding to any appreciable extent in any part of India.

Cattle breeding.

The last Census Report shows that only 2 out of 1000 population are employed in cattle-breeding(c). Although stray efforts have been made here and there by public as well as private bodies, the effect has been insignificant. It is within living memory that cattle used to be kept in every house and there were plenty of Brahmini bulls, dedicated for public use, which served to produce strong and healthy calves and to maintain the high quality of the breed. Unfortunately now-a-days the better class of people do not seem to trouble themselves with anything about cattle. The practice of maintaining good breeds of cattle amongst the upper and the middle classes either in the towns or in the moffusil has practically vanished. The important process of cattle-breeding is now left in the hand of the poor and illiterate peasants or the aboriginal nomadic tribes living in the hills and jungles.

(a) Statistics of British India (Public Health), Vol. III.
(b) Census Report of India, 1911, P. 224.
(c) Census Report of India 1911, Vol. 1, Pt. 1, P. 414.

With this apathy and neglect of the people of a country where the cow was adored with veneration and regarded as particularly sacred, may be compared the attitude of the people of European and American countries where they do not cherish any humbug sentiment about this animal, but take more care and trouble about their cattle than any of us can imagine here in India. In almost all European countries, including England, the upper classes, the Lords and Princes and even the King, keep and take delight in tending the finest herds of cattle and it not unoften happens that the King's cattle carry away the highest prizes and awards in many a cattle-show and exhibition. The breeds of cattle in these countries, as might be well expected, are much superior to any of our Indian breeds. The average milk-yield per cattle is 20 lbs. per day in England and Denmark (a), in the United States it is 10·2 lbs. per head per day (b), while the corresponding yield in India proper and Burma are 2 lbs and 4 lbs. respectively (c).

Another factor which prevents the improvement of the breed of country cattle is the hopeless want of good breeding bulls. In Bengal for example where there are about 7 millions of milch-cows there are only 71 pedigree stud-bulls of which 36 belong to Government and 35 to private individuals. In India where there are about 147 millions of cattle we have only 73 Government bulls and 973 District Board bulls (d). The number of Brahmini bulls which formerly used to serve the purpose of fine stud-bulls, is also quite inadequate; *e.g.* in Howrah district in Bengal the proportion of Brahmani bulls to cows is 1 to 1,535 (e) and their number is steadily on the decrease owing to want of pasturage and the tactless judgments of the Indian High-Courts (f) which

(a) *Farm Live-Stock of Great Britain* by Robert Wallace; *Agricultural Co-operation in Denmark* by Rai Saheb Chandrika Prasad.

(b) *Statistical Abstract of the U.S.A.*, 1915, published by the Bureau of Foreign and Domestic Commerce U.S.A.

(c) *Report of the Stock-Breeding Committee Burma*, 1917 p. 52.

(d) East India—Pr gress and Condition Parliamentary Report, 1914—15.

(e) A Survey and Census of the Cattle of Bengal—Appendix IV, by J. R. Blackwood.

(f) Indian Law Reports, Calcutta series, Vol. 17, p. 852, Allahabad series Vol. 8 p. 51, Vol. 9. p. 348, Madras series Vol. 11, p. 145. Sir John Woodroffe in this Presidential Address, Calcutta, 30th December 1917, says: "These High Court decisions are an apt illustration of the harm which follows the rigid application of foreign legal ideas to this country. The piety which dedicates a bull to public uses is not known to English law, but that is no reason why its beneficial results should be frustrated. I understand that the Hon'ble K. K. Chanda has brought forward a Bill to remedy the evil produced by these decisions, which though good law are not good sense, and which proposes to vest these bulls in some authority who shall maintain them for breeding purposes."

declare them *res nullius* so that they are being slaughtered and diverted for other purposes with impunity.

370 out of 414 of our correspondents and 233 out of the 250 District Gazetteers of India and almost all the Cattle Census Reports of the Provincial Governments complain of the inadequacy of good breeding bulls.

Cattle breeding is carried on mainly in the non-cultivated tracts in Central and Southern India, Punjab and Rajputana. Owing however to the encroachment of cultivation on the grazing areas well-bred cattle are becoming scarce and some of the breeds are threatened with extinction. Efforts to improve the quality of the cattle in the non-breeding districts have hitherto been unsuccessful. (a)

The inadequacy of pasture-lands is another ground for the deterioration of cattle. It is almost a universal complaint.

Pasture Lands.

The largest number of our correspondents, nearly all the District Gazetteers and Provincial Census Reports harp on this subject. In a poverty-ridden country like India, where the practice of growing fodder is not in vogue, the old system of keeping apart a tenth of the lands of each village for pasturage, was very appropriate indeed (b). Foreign critics are apt to suggest that stall feeding should be introduced here in order that the breed may improve, but it would be idle to expect the introduction of stall-feeding of cattle when their owners themselves do not get sufficient food for their subsistence. Moreover stall-feeding has its defects and our cattle flourished in the past without recourse to it.

The value of land in India is cheaper than that of land in any European country and even in Japan, and it would be natural to expect that the greatest proportion of land would be set apart here for grazing, but unfortunately the case is just the reverse. "In Bengal at the present time, waste land is being encroached upon because it is more profitable to cultivate it than to retain it in waste. In Great Britain the opposite tendency is manifested." (c) "The tendency there is to gradually throw

(a) Indian Year Book 1918 p. 308 by Sir Stanley Reed, K.C.I.E.
(b) Institutes of Manu ch 8; Yajnabalkya ch 2; Ushana Samhita ch 5.
(c) *Survey and Census of Cattle of Bengal* (1915) by J. R. Blackwood, K.C.I.E., I.C.S., p. 18.

more and more cultivated land into pasture."(a) The following table will show that the proportion of grazing grounds to total area is 1:16 in the United States of America, 1:6 in Germany 1:3 in England itself and 1:6 in Japan, but it is only 1:27 in India

Table 19.—Pasture-Lands all over the World (b)
(The figures are given in millions of acres.)

Name of Country.	Total Area.	Area of grazing ground.	Proportion of total area to grazing ground.
Great Britain & Ireland	77·5	23	3 : 1
England ...	32·5	10	3 : 1
Germany ...	133	21·4	6 : 1
New Zealand ...	6·7	2·7	3 : 1
U. S. A. ...	1903	117	16 : 1
Japan ...	105·6	17·6	6 : 1
India ...	960	35	27 : 1
Bengal ...	50·5	3	17 : 1

Inadequate as the pasture-grounds now are, they are being daily encroached upon through the greed of the zamindars and the tenants. It has been noticed before that we have hardly enough cattle to cultivate the lands already brought under cultivation. Then what is the good of converting pasture-lands into agricultural holdings? It may bring some temporary nominal income to the landlord and the ryot, but it undermines our agricultural system by laying the axe at the root of all progress in the condition of cattle of the country. In advancing a theory based upon false economics we forget one stubborn fact that cattle form the life and soul of our agriculture. Their misery and ruin mean the deterioration and ruin of our agriculture and hence of ourselves. In other countries the demand for more food-crops to

Encroachment upon pasture-grounds.

(a) Survey and Census of Cattle of Bengal by J. R. Blackwood, p. 18

(b) Indian Review—May 1919 (P. 21b), Cow-keeping by N. Chatterjee M.A., B.L., and K. C. Moitra, G. B. V. C., p. 14, (2nd Ed.); Cattle, Sheep and Deer by Macdonald; Standard Cyclopædia of Modern Agriculture; Blackwood's "Census & Survey of Cattle of Bengal." App. VIII.; Statistical Abstract of the U. S. A. 1915.

supply the growing population have been met *not* by absorbing pasture-grounds but by introducing improved methods of cultivation and raising more crops from the same areas. But what are we doing here? We do not make any attempt to improve our agriculture, we do not try to raise more crops from our lands, but we haphazardly cultivate more and more land although the out-turn is getting poorer and poorer. This will be evident from the following tables.

Table 20—Table showing decrease of out-turn with increase of cultivated area. (a)

BOMBAY PRESIDENCY.

Year.	1910—11.	1913—14.
Cropped area in acres ...	30,742,000	30,845,000
Out-turn of crops in lbs per acre	540	501

N. W. F. PROVINCE.

Year	1903—04.	1907—08.
Cropped area in acres ...	2,466,220	2,657,906
Out-turn of crops in lbs per acre	658	566

BENGAL.

Year.	1902—03	1904—05.
Cropped area in acres ...	59,314,000	61,034,000
Out-turn of crops in tons ...	26,377,197	24,676,439

In this connection the following extract from the Report of Sir John Woodroffe would be found useful

"Considerable difficulty again has been experienced in obtaining reliable figures of pasturage in India Statistics for Bengal and 2 districts of the Bombay Presidency are only available In Bengal the pasturage is given as slightly under 3 million acres

(a) Season and Crop Reports of the Bombay Presidency, N. W. F. Province, and Bengal.

out of a total area of 50½ million acres and the number of cattle (excluding calves) is stated to be about 17 millions. This gives about 5 8 grown-up cattle to an acre of pasturage The figures of the two districts Ahmedabad and Kaira of the Bombay Presidency are better. They show 406 thousand acres of pasturage and 316 thousand cattle (exclusive of calves) giving an average of 1·3 acre per head of cattle

Shortage of Pasturage and Fodder.

Comparing these figures with those of the United States of America which are the best available, we find that the proportion of pasturage to total area is about the same as that in Bengal but that in the United States the average in about 13 acres per head of cattle as against 1·3 acres in the two Bombay districts and .17 acres in Bengal

"The position as regards fodder crops in India appears to be worse than that as regards pasturage, though here too the statistics are not very reliable. The total area of British India is 617 million acres, the total cropped crea is 261 million acres and the area under fodder crops occupy very little over 1 p c. of the country and support 22 head of cattle to the acre. In the United States fodder crops are grown on 3.5 p. c. of the total area and give an average of 1.16 acres per head of cattle. These figures indicate a shortage of both pasturage and fodder crops in India". (a)

Slaughter of cattle was practically unknown in India prior to the advent of the British in this country. It is true that during the Mahomedan period some of the Mahomedans might have been in the habit of taking beef, but their number was very few and the number of cattle slaughtered wholly insignificant. Even today good and high-class Mahomedans consider it degrading and disgraceful to touch beef—the ram and the goat have been their chief source of meat-supply. The climate of India does not encourage beef-eating, and this is one of the main reasons which prompted the Mahomedans to refrain from it. Another, and in no way a less important, consideration was the respect for the religious feelings of the Hindus. An echo of this sentiment we find even in the 20th century

Cattle-slaughter.

(a) Annual Report of the All India Cow Conference Association, 1918, p. 7.

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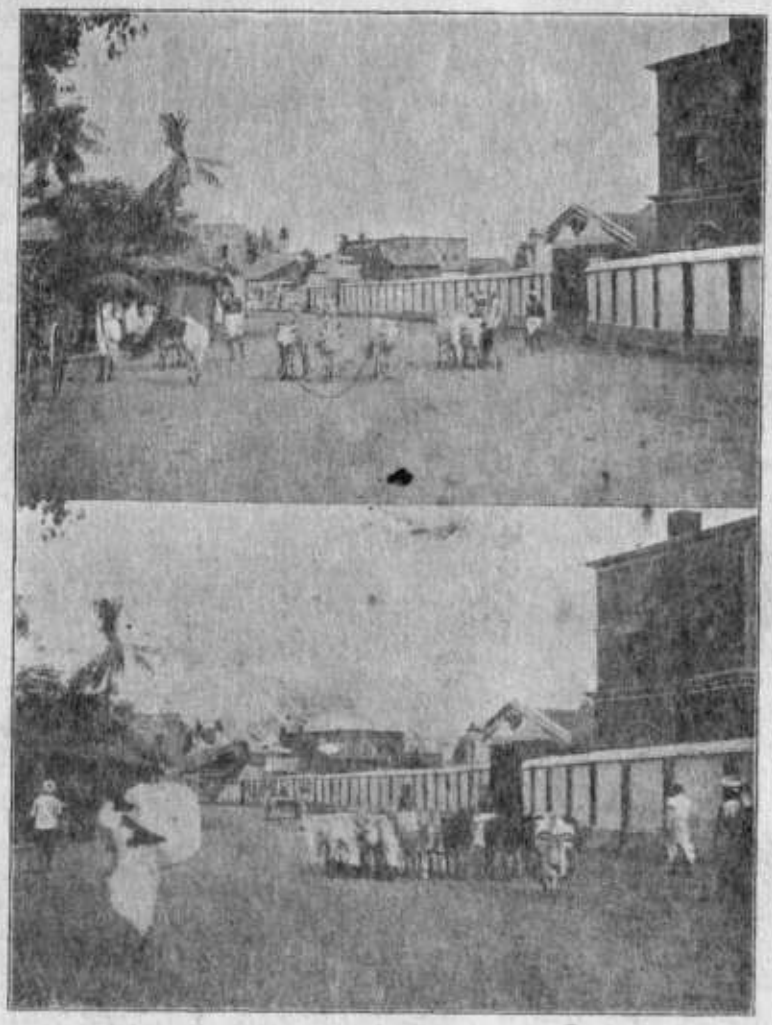

Passed for Slaughter.

[About 500 healthy and useful cattle in batches of 15 or 20 are passed every afternoon for slaughter in the Tangra Slaughter House, Calcutta. The above shows two of such batches.]

Bhoodeb Publishing House, Calcutta.

when H. M. Habibullah the *late* Amir of Afghanistan visited India and spoke on the subject at Delhi on the Id-day Said His Majesty: —— "A hundred cows ye should slay in my honour! Ye shall not slay one cow Not this nor any other act of religious devotion that can cause pain or grief to the Hindu subjects of King Edward's empire shall ye do in my name at Delhi or elsewhere in India. What? Are there not goats enough? Are there not camels enough to sacrifice at the Juma Musjid at Delhi? I go to celebrate with you the glorious Id. Slay there goats if you will, till the rivers run blood the Hindus mind not that. But, if so much as one cow be given unto slaughter, I shall turn my face from you and Delhi for ever. If I can command, obey me. If not, at least hearken to my entreaty."

A considerable amount of beef latterly began to be consumed by the British soldiers and the comparatively low classes of Europeana nd Eurasian population. The slaughter of cattle had gone on increasing until the out-break of the great war, when a large number of soldiers was withdrawn from India and there was a slight diminution in cattle-slaughter in consequence. But this was only temporary, for the figures are again on the rise. The income of the Municipalities from slaughter-houses is another index to show increased slaughter of cattle. The All-India Cow Conference Association has collected figures of calves-slaughter from the Calcutta Municipality and of cattle-slaughter from only a small number of cantonments and Municipal slaughter-houses. They are given below.

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Table 21.—Number of calves slaughtered in the Municipal (Tangra) Slaughter-house, Calcutta (a).

Year	1913	1914	1915	1916	1917
Number	10,202	9,690	9,363	9,315	6,468.

Table 22—Slaughter of Animals in the Presidency Towns (a).

Year.	Calcutta.	Bombay.	Madras.	Rangoon.	Agra.
Average number of cattle slaughtered during 1910-11 to 1915-16	1,17,856	64,315	16,361	25,576	46,170

(a) Annual Report of the All-India Cow Conference Association 1918 by Sir John Woodroffe Kt M.A., B.C.L.

Table 23—Income of Municipalities in British India from Octroi on animals for Slaughter etc. (a).

Year.	Income from Octroi for Slaughter of animals in Br. Indian Municipalities.	Fees etc. from Slaughter-houses.	Total.
	Rs	Rs	Rs.
1902—03 ...	4,85,202	28,15,894	33,01,096
1905—06 ...	5,91,901	35,64,152	41,56,053
1907—08 ...	6,11,547	35,18,038	41,29,585
1909—10 ...	6,23,083	36,48,632	42,71,715
1911—12 ...	6,66,357	40,66,871	47,33,228
1913—14 ...	6,44,776	45,35,624	51,80,400

It will thus appear that the income of Municipalities of British India from Octroi on animals brought for slaughter, as well as fees and revenues from slaughter-houses, is increasing by leaps and bounds. In the course of the last ten years it has increased by about 70 per cent.

Extirpation of the best breeds.

The figures of slaughter that have been collected by the Association from only a limited number of cantonments and public slaughter-houses come to about 10 lacs. (b) It would not be altogether unreasonable to estimate the total number of cattle slaughtered both privately and publicly to be something like 50 lacs (c). This is a pretty high figure, but when one remembers that this represents mostly the best breeds of cattle in the prime of their lives, it becomes evident that the economic loss to the country which is involved in the system, is simply irreparable.

The Hon'ble Mr. C. F. Payne I. C. S., formerly Chairman of the Calcutta Corporation, in a paper on the "Calcutta Milk-Supply" read before the first All India Cow Conference, Calcutta, in December 1917, says that "the evidence given before the Milk-Supply Committe of the Calcutta Corporation shows conclusively that good milking-cows are harder to procure every year, and the price is steadily going up. The goala usually buys his cows at the beginning of their second lactation period.

(a) *Statistical Abstract for British India* (Department of Statistics) Vol. IV. 1913-14; *Statistics of British India*. Part VIII. 1906—07, 1908—09.

(b) Circular issued by Sir John Woodroffe, President, All-India Cow Conference Association.

(c) Further enquiries, have disclosed that the total number of cattle slaughtered in India comes to a figure approaching 10 millions, *i.e.*, 100 lacs. *Vide* Circular letter dated the 15th March 1922 issued by Sir John Woodroffe, Kt., M.A., B.C.L.

He then practises the abominable process of *phooka* on them and obtains milk from them for 6 to 8 months at the most. By the end of that time the cow is, if not permanently sterile, at least useless for breeding for milking purposes for 2 or 3 years, and is sold to the butcher. The result is that instead of having a useful life of 8 or 10 years, she is milked for less than 2 years and only bears 2 calves, one of which is probably sold to the butcher. And this is a process which is constantly going on with the *best* cows in the country. The cruelty of it will probably appeal strongly to my hearers, but what appeals to me even more strongly is the *abominable wastefulness* of the system."

The Superintendent of the Tangra Slaughter-house owned by the Calcutta Corporation, where more than a lac of cows are slaughtered every year, reports that of the cows disposed of there more than 90 per cent come from the goalas and they represent cattle of the finest breeds and in the prime of their lives.

In countries where people are accustomed to flesh-eating, they raise a particular type of cattle for meat purposes which are plump and fatty, but are useless as milkers or as draught-cattle. They never brook the idea of slaughtering their milch-cattle or prime-cattle, and any person doing the same is either punished by law or is austracised in society. But here we have no such provision, and the "best milkers are being sent to the towns, and when their milk declines, are being slaughtered in large numbers. The result of course is that the number of best cows are being diminished." (a)

In view of the great economic loss and other evil effects of cattle-slaughter the following States (b) have entirely prohibited

(a) Presidential Address in the First All India Cow onference 1917 by Sir J. G. Woodroffe, p. 28.

(b) Afghanistan, Baroda, Kashmir and Jammu Goudal, Barwani, Dharampur, Banada, Cooch Behar, Sirmur, Cambay, Khilchapur, Jamkhundi, Akalkote, Chuda, Sarila, Sayla, Amrathi Raj—*Indian Humanitarian* November 1919, p. 8.

Names of Municipalities that resolved to stop Slaughter of Cows, Calves or both.

Almora, Anantapur, Arvi, Balaghat, Bali, Baidyabati, Barsi, Bareilly, Bassein, Belgaun, Berhampur, Betul, Bhagalpur, Brindaban, Budge-Budge, Calcutta, Cawnpore, Chanda, Chatrah, Cocanada, Colgong, Cuddalore, Cuddapah, Daltongunj, Dehra Dun, Dhulian, Damo, Dharwar, Dindigal, Gaya, Gauhati, Gadag, Ghatkoper, Gudiayathan, Guntur, Hazaribagh, Hinganghat, Hissar, Hoshiarpur, Howrah, Hyderabad, (Sindh), Jacobabad, Jalpaiguri, Karwar, Katwa, Kurnool, Lahore, Madaripur, Madura, Mahableshwar, Maldah, Maalipatam, Matibari, Mirpurkhas, Monghyr, Moradabad, Moulmein, Muttrah, Nabadwip, Nagpur, Negapatam, Nellore, Ootacamand, Panchagani, Parlakimedi, Partabgarh, Pulgaon, Promo, Puri, Ranchi, Rishra-Konnagar, Salem, Sambalpur, Sargodha, Samastipur, Saugar, Savda, Shwebi, Serampur, Seoni, Simla, Sonamukhi, Tekari, Tellichari, Tharrawaddy, Thonse, Thana, Thatcha, Tamsar, Virudupatti, Vizagapatam, and Wardha.

the export and slaughter of useful animals and it appears to be high time now that this should be followed in British India also. So far back as in December 1913, the Government Board of Agriculture in India in their Annual Meeting at Coimbatore, realised the importance of preserving and multiplying the better breeds of Indian cattle and in a resolution suggested the introduction of legislation for "stopping the drain of good milch-cows and buffaloes to the towns where they are not utilised for breeding purposes" (a), but are prematurely slaughtered, as so ably pointed out above by Mr. C. F. Payne. It now remains for the Government to *act according to the suggestions of their own experts and introduce* suitable measures for stopping the serious drain on the cattle resources of the country.

Burma Dried Meat Trade.

There has lately grown another abhorrent trade in India for export of dried meat or *biltong* to Burma and other countries. Large numbers of all sorts of cattle are slaughtered more or less secretly in many parts of the United Provinces, Central Provinces, Behar and the Bombay Presidency and the meat after being dried, and sometimes salted, is consigned in bundles to Burma. The trade commenced about 30 years ago, and the places where it is carried on show a marked decrease in the numerical strength of cattle

Table 24—Number Showing Decrease of Cattle.

Province	Year.	No. of Cattle.	Source of Information.
Bombay Presidency	1891	83,19,000	Note on Cattle in the Bombay Presidency by G. F. Keatinge, C.I.E., I.C.S.
	1910	75,30,000	
United Provinces	1904	3,13,52,000	Cattle Census Report of U. P. 1916 by H. R. C. Hailey, I.C.S.
	1909	2,93,68,000	
Cutch	1893-94	1,31,000	Cutch Gazetter by G. Hardy, I.C.S.
	1910-11	91,600	

(a) Proceedings of the Board of Agriculture in India held at Coimbatore in December 1913, Resolution XVI.

The Burma meat trade has already attained some degree of notriety and a Provincial Director of Agriculture suggests that "this is an industry which would seem to require licensing and strict supervision if the scandals of Chicago are not repeated here." (a)

The trade is chiefly in the hands of low-class Mahomedans and *Ghashi* aboriginal tribes, who carry on their business in a filthy and insanitary way, using all sorts and kinds of animals; even dead cattle are converted into dry meat or *biltong* as it is locally known, and exported chiefly to Rangoon via Howrah-Calcutta. It is a source of great nuisance and it would seem that in view of the extremely unhealthy nature of the commodity exported and the appreciable economic loss which it involves, the sooner the trade were stopped the better for all concerned (b)

The Hon'ble Lala Sukhbir Sinha has lately collected careful and accurate statistics relating to the number of animals slaughtered in the United Provinces for the export of dry meat to Burma His figures are based mainly upon information supplied by Government The All-India Cow Conference Association Calcutta collected further stalistics of the export of dried meat via Howrah from the Agent, East Indian Railway. All these go to show that no less than 4 lacs of cattle are slaughtered every year in a few places of India alone for this abominable dried meat trade.

(a) *Punjab Cattle Census Report* of 1904 by W. S. Hamilten I. C. S., Director of Agriculture and Industries, Punjab. p. 4

(b) In this connection it should be noted that the Government in 1920 proposed to subsidise by grant of money and acquiring land through the help of the Land Acquisition Act (1 of 1894), a European firm, Messrs Davenport & Bros, in opening at Katona C.P. a slaughter-house of immense magnitude for humanely killing at least 2 millions of cattle a year. There was a strong popular opposition to the scheme throughout the length and breadth of India, and fortunately it was decided to be abandoned. With this anxiety of the Government to help the indiscriminate slaughter of cattle in a country which is already suffering for want of good cattle may be compared their apathy and negligence in the matter of helping the protection and improvement of cattle. In 1916, the present writer had occasion to apply to Government for acquisition of land with the help of the Land Acquisition Act at the expense of his friends for pasturage of the cattle of the Sodepur Pinjrapole, but in reply he was informed by Mr. L. Birley, I.C.S. Secretary to Government that they did not consider it a fit case for the operation of the Land Acquisition Act.

TABLE 25.—Cattle-Slaughter for Burma Meat Trade in U. P. for 1912-13.

[From the Hon'ble Lala Sukhbir Sinha's Address at the Second All-India Cow Conference, Delhi, 1918]

Division.	District.	Place.	No. of cattle slaughtered.
Meerut ...	Bulandshahr ...	Mouza Galilpur, Tehsil Anupshahr	2,000
Agra ...	Aligarh ...	Aligarh ...	39,510
		Sikandra Rao ...	7,089
	Muttra ...	Sadabad ...	1,680
		Muttra ...	1,750
	Agra ...	Jharna Nala	26,640
		Ferozabad ...	600
		Itmadpur ...	140
		Khanduli ...	45
		Pahti Dharti ...	4,015
	Etah ...	Shajawlpur, Tehsil Aligunj ...	500
Rohilkhand	Bareilly ...	Bareily ...	13,172
		Faridpur ...	500
	Shajahanpur ...	Shabaznagar Mauza ...	5,800
		Jahangunj Rasulpur near Lodhipur.	2,500
		Satti Chauri ...	2,300
	Moradabad ...	Sambhal ...	758
		Bhojpur ...	2,000
		Amroha ...	1,680
Allahabad ...	Fetehpur ...	Fatehpur ...	300
		Kasba Kamalpur ...	250
		Jahanabad Town ...	60
		Aiyaran ...	500
Jhansi ...	Jhansi ...	Kochha Bhanwar ...	10,192
		Lalitpur ...	7,663
	Jalaun ...	Kunch ...	4,353
	Hamirpur ...	Panwari ...	800
		Rath ...	899
		Mandaha ...	2,032
		Mahoba ...	4,077
	Banda	Husenpur ...	493
Gorakhpur ...	Azamgarh ...	Azamgarh ...	60
		TOTAL ...	1,43,358

Table 26.—Statement showing the Quantity of Dry Meat received at Howrah during the period from 1st January 1917 to 30th June 1920.

[As supplied by the Agent, E. I. Railway.]

Station from which exported.		1917.	1918.	1919.	1920 January to June.
		Mds.	Mds	Mds.	Mds
Jubbulpore	...	1,161	701	1,711	686
Fatehpur	...	348	67	234	265
Khaga	...	56	14	...	...
Cawnpore	...	...	117	...	161
Jhinjhak	—	147	...	...	...
Agra City	...	1,908	...	...	..
Jumna Bridge	...	45,948	39,346	34,866	16,759
Phaphund	—	940	133	809	779
Kura	...	132	50	...	...
Aligarh	...	32,396	21,035	21,478	6,978
Delhi	...	...	60	..	...
Achalda	...	...	292	...	...
Tundla	...	...	1,028	...	...
Kuburpur	...	...	294	...	...
Etawah	...	...	243	143	...
Shikohabad	...	...	...	8	61
Hapur	...	232	164	323	98
Amgaon	...	101	...	...	...
Bhatapora	...	...	...	...	90
Khalilabad	...	...	...	4	2
Bholagunge	...	3,708	1,365	1,479	...
Bareilly	...	11,167	6,766	9,192	2,192
Carried over	...	98,244	71,675	70,247	28,071

Table 26.—Statement showing the Quantity of Dry Meat received at Howrah during the period from 1st January 1917 to 30th June 1920—*contd.*

[*As supplied by the Agent, E. I. Railway*]

Station from which exported.		1917.	1918.	1919.	1920 January to June.
		Mds.	Mds.	Mds.	Mds
Brought forward	...	98,244	71,675	70,247	28,071
Bahadurgunge	...	257	677	275	...
Shahjahanpur	...	3,920	3,726	10,250	4,789
Chandausi	...	540	85	...	...
Sambel Hatim Sarai	...	932	...	...	...
Anjhi	...	1,507	321	...	...
Pitamberpur	...	557	530	152	...
Hardwagunge	...	...	355	...	...
Moradabad	...	733	695	...	...
Amrohha	...	622	636	452	...
Kasgunge	...	182	...	...	...
Pipalsana	...	723	256	455	...
Shahbaznagore	...	...	608	375	277
Carewganj	...	...	146	130	...
Shahmatgunge	...	...	...	460	3,411
Puranpur	...	...	...	...	225
Patna	...	...	...	...	474
Kunch	...	848	4,557	6,625	687
Gadarwara	...	220	292	413	301
Hamlpur	...	...	...	...	81
Gotigaon	...	84	111	...	...
Madanmohal	...	...	...	123	260
Carried over	...	109,269	84,670	89,957	40,576

Table 26.—Statement showing the Quantity of Dry Meat received at Howrah during the period from 1st January 1917 to 30th June 1920—*concld.*

[*As supplied by the Agent, E. I. Railway*]

Station from which exported.	1917.	1918.	1919	1920 January to June.
	Mds.	Mds.	Mds	Mds.
Brought forward ...	100,269	84,670	89,957	40,576
Narsingpur ...	...	223	...	...
Kharaya ...	16,335	8,547	24,898	6,671
Lalitpur ...	391	1,514	1,461	2,530
Saugor ...	20,714	29,157	30,984	20,391
Ghatera ...	...	...	2,820	11,134
Garhman ...	...	...	...	215
Domah ...	5,069	9,427	...	9
Jhansi ...	1,245	2,491	5,243	3,466
Mohaba ...	4,640	4,939	5,219	6,621
Orai ...	...	...	...	234
Agra Fort ...	501	...	...	...
Gunjdanwara ...	1,193	499	452	593
Gurshaingunge ...	506	...	...	...
Kasgunge ...	225	...	325	376
Sikandara Rao ...	2,373	3,721	2,519	281
Bichpuré ...	...	290	...	...
Jullunder Cantonment ...	3,068	11,082	5,950	2,900
Batala ...	1,220	970	2,490	368
Tahana ...	...	673	2,542	982
Total ...	1,66,849	1,58,204	1,74,160	95,347

The brisk export trade in hides and skins has led to the regular killing of animals by poisoning. The *Chamars* and other low-class Hindus and Mahomedans carry on this nefarious business in villages and outskirts of towns where cattle are likely to graze or pass by, by leaving fodder mixed with Arsenic or some other poison, which the unsuspecting cattle takes, and dies very soon after from the effects of poisoning. Cases of such poisoning are occasionally brought before the criminal courts and the culprits are heavily punished. But the high profit which they gain from the hide of a dead cattle tempts this class of people to stick to this lucrative trade inspite of chances of punishment.

Poisoning for Hides.

Government statistics would show that in the course of the last 65 years the value of the exports of hides out of India has risen about 40 times. This abnormal increase is no doubt partly due to the increase in the price of hides, but there are other important causes at work. The increased slaughter of cattle and their abnormal deaths from diseases and fodder famines, and last though by no means the least, the growing practice of poisoning of animals with arsenic etc., have all contributed to it.

The following table clearly shows the steady increase of the hide trade.

Table 27.—Export of Hides and Skin (a)

Year.	Value.	Number.	Weight.
	Rs.		cwt.
1854-55 ...	68,09,954	...	...
1898-99 ...	7,45,06,323	41,086,844	1,110,113
1904-05 ..	9, 0,59,720	48.931,496	1,339,156
1909-10 ...	13,61,99.072	57,088,725	1,763,104
1913-14 ...	15,94,80,000	...	...
1919 20 ..	23,41,00,000	...	..

(a) *Statistics of British India.* Part II. (Commercial). Pages 16-17.

The death-rate of Indian cattle from diseases, chiefly rinderpest, is very high. Vital statistics of cattle of other countries are not available for the purpose of comparison. In many countries such as South America and Australia there are practically no cattle-diseases. India is regarded by some as the home of cattle-diseases, and rinder-pest outbreaks produce the greatest havoc amongst cattle, and it pains one to find that the death-rate is gradually on the increase.

Cattle-Diseases.

Table 28.—Number of Deaths of Cattle. (a)

Year.	From Rinder Pest	Other Diseases	Total.
1904-05	92,123	118,996	211,119
1909-10 ...	158,425	144,333	302,758
1914-15 ...	111,629	124,731	236,360

As India is considered the home of cattle-diseases, it is the home of veterinary science of treatment as well. But it is a thousand pities that this science which had been so successfully developed by *Maharajas Rituparna* and *Nala*, by *Maharshi Palakapya*, by *Nakul* and *Sahadeb* of *Mahabharata* fame, and latterly by persons like Emperor Asoka and Chakrapani-Datta, have been grossly neglected and allowed to be lost to mankind (b). Even the *go-baids* who used to roam about in towns and villages and effectively cured many cattle from many virulent diseases, have become scarce and unavailable for want of patronage and encouragement. Their place has been sought to be taken by the veterinary assistants turned out by the Government veterinary colleges. Their number however is so limited and their mode of treatment so costly and unsuited to the constitution and conditions of Indian cattle that hardly any appreciable help is derivable from that quarter. It would appear, as Sir John Woodroffe has suggested, that the best course under the present circumstances would be to revive the old and indigenous system.

(a). *East India* (Progress and Condition) Parliamentary Reports.
(b). *Milk-Problem in India* (Indian Review—May 1919, P. 314).

The export of cattle although going on in a small scale for the last 100 or 150 years has recently assumed serious proportions. There has been something like cattle-famine all over the world after the last European war, and India being the spoliation-ground of all nations, is being tapped with impunity from all directions by all classes of customers for supply of cattle. Emissaries from various countries of Europe and America are busy all throughout India in purchasing the best breeds of bulls and milch-cattle and exporting them in large numbers to their respective countries. Thus one gentleman from Brazil is said to have exported 1500 cattle from the Bombay Presidency and Guzrat in the course of a few months in the year 1921. It is reported there are 10 such agents from Brazil. Two other commissioned officers of the Dutch Colonial Veterinary service are also reported to be exporting the best cattle from the Punjab districts to Sumatra and Java in batches of 300 to 400. The fine breeds of Nellore and Ongole cattle of the Madras presidency, and the superior cattle of the Punjab districts attract every year rich European merchants from Java and Batavia, each of whom purchases and exports cattle to the extent of about 1000 per annum. The cattle of the Bombay Presidency of the *Kankreji* and *Karachi* breeds are exported to Brazil. The Ongole and Karachi breeds, says the Board of Agriculture in India "have suffered most from export, which has considerably depleted the former breed." * * * "The Java government contemplate a continuance and increase of this export. The animals exported are young bulls and female stock. The breed is exported to Java for breeding for meat."(a)

Export of cattle outside India.

The following tables indicate the present situation with respect to the export of cattle from India:

Table 29.—Number of all Living animals Exported outside India (b)

Year.	1901.	1906.	1911.	1912	1916.
Number ...	3,20,835	3,16,996	5,27,706	5,44,588	3,34,310
Value in £ ...	1,42,634	1,50,878	1,82,787	2,22,900	1,59,287

(a) *Proceedings of the Board of Agriculture of India* held at Pusa February 1916.
(b) *Indian Humanitarian*, February 1920.

Table 30 — Number and value of cattle Exported outside India (a)

Place to which Exported.	Number in 1912.	Number in 1917.	Value in £ 1912.	Value in £ 1917.
Ceylon ...	23,145	5,302	66,666	18,109
Straits Settlements ...	5,795	2,520	20,997	15,001
Federated Malay States ...	1,183	1,174	7,521	817
Other British Possessions ...	59	...	173	320
Sumatra ...	...	491	...	2,928
Java ...	...	431	...	2,648
Brazil ...	...	90	...	1,200
Other Foreign countries ..	6	2	67	17
TOTAL ...	30,188	9,977	104,744	48,147

Table 31.—Export of cattle from different Provinces (a)

Name of Province.	1912 Number.	1917 Number.	1912 Value in £	1917 Value in £
Bengal ...	316	375	1,832	3,211
Bombay ...	51	...	160	...
Sindh ...	1,032	50	3,017	174
Madras ...	27,661	9,391	97,349	44,327
Burma ...	1,028	161	4,386	415
TOTAL ...	30,188	9,977	104,744	48,147

The above figures though not correctly representing the actual number of cattle exported, indicate however to some extent the way in which their number is increasing, as also the proportion in which they are being exported from the different provinces of India.

(a) *Indian Humanitarian*, February 1920 p. 9.

It is argued in certain quarters that the foreign exporters give high prices for good cattle, and as this gives an incentive to cattle-breeding, the export trade should not be stopped or restricted. The argument appears to be plausible indeed, but when one remembers that there is no regular system of cattle breeding in India, and the existing number of cattle — especially of the good breeds — is hopelessly inadequate either for the purposes of cultivation or milk-supply, the hollowness of the argument will be quite apparent. Besides, the class of people who sell their cattle consists mainly of the poor and ignorant agriculturists and not the regular cattle-breeders and they have often to part with their best milk-cattle or agricultural cattle against their earnest and inmost desires and to the detriment of their best interests only to raise some cash money which they are always in need of. Again taking advantage of the poverty and ignorance of the native cattle-owner the exporters usually purchase the best cattle "at a price which represents hardly *half* their proper value"(a). It is positively against the economic and real interests of the country to allow export of its best breeding bulls and the best breeds of milch cattle, knowing full well that they cannot be replaced. There is already legislative authority fot restricting and stopping indiscriminate export, and there seems to be no reason why this power should not be exercised, especially when there is the "grave risk of the extinction of the best breeds of the Indian cattle" (a), and Indian States have already taken the initiative in this direction (b).

Arguments in favour of Export refuted.

The export of cattle from one province of India to another without taking proper care and precaution for their acclimatisation is a source of considerable mischief. The climate and surroundings exert a considerable influence upon the physique and milk-producing capacity of cattle and it has been generally found that fine Punjab cows yielding locally an average daily supply of 30 to 40 pints of milk, give in Bengal a much less amount, it is difficult to get

Export of cattle from one Province to another.

(a) *Proceedings of the Board of Agriculture in India* 1916. Pp. 9, 18.

(b) *Indian Humanitarian* November 1919 p. 8.

them calve again, and when they do calve the average yield of milk invariably comes down to 10 or 15 pints a day. This led Col Morgan, formerly Inspector General of the Veterinary Department, to express the opinion that "the cattle of one part of India will not thrive if moved to another," and he was strongly opposed to removal of any breed from its own natural environment to any part of India, as that not only causes an economic loss to the country, but indirectly helps the *goala* to sell these cattle to the butcher.

Thus for example take the case of a Montgomery cow which yields 30 pints of milk per day on an average. She is taken down to Calcutta during her second lactation period. Immediately she arrives in Calcutta her milk-yield inspite of every care and comfort, is reduced to 20 pints per day. She gives milk from 7 to 10 months, is covered by a good bull, and calves after 10 months more have elapsed. Her milk-yield is now reduced to 10 to 12 pints per day. If she is in the hands of a *goala*, he will practise *phooka*, and get a few more pints per day, and at the end of 10 months more, when he will find her yield of milk too small to cover the cost of her maintenance, and that the cruel *phooka* practice has made her practically sterile, he will sell her at once to a butcher. If she is in the hands of a *grihasta* or *bhadralog*, she will be usually exchanged at the end of this period for a fresh cow and some more money but the result will be the same, as the dealer who takes her in exchange, will sell her in turn to the butcher and her existence will shortly come to an end at the nearest slaughter house. The calves have already been sold to the butcher or have died of neglect and starvation long before. If however, on the other hand, she had been allowed to remain in her native village or province, she would have yielded milk to the extent of 30 to 40 pints per day on an average for at least 10 lactation periods, and at least 75 per cent of her calves would have been alive and would have grown to healthy cows or bulls. It is true that in such a case Calcutta would not have got the supply of milk for one or two lactation periods during which she would have been allowed to live, but it would have got *ghee* and butter for 10 lactation periods instead of milk for one or two periods

only. In this way the advantages would have far out weighed the disadvantages, stopped an abominable economic drain, besides saving the lives of the cow and her calves.

General condition of cattle in towns.

The condition of cattle in towns is extremely pitiable. They are not allowed sufficient space to move and even lie down freely; they are kept confined within the same enclosure night and day in the same posture in filthy localities, without a sufficient supply of sun or air. Their calves are usually disposed of in the course of a week or so after they are born and when the cow hesitates to give milk she is treated with considerable cruelty and frequently the *phooka* (a) practice is resorted to, causing infinite pain to the animal. Their general condition in towns is very aptly described by Dr. Sir Kailas Chandra Basu, Kt., C.I.E., O.B.E., President of the Bengal Humanitarian Association :—

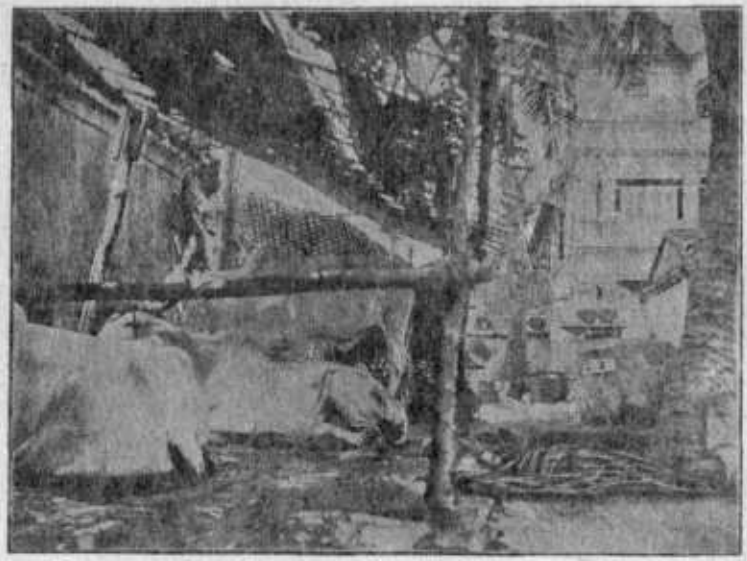
"The flooring of the sheds in most cases was covered with a thick layer of the excreta of the animals, which were mercilessly huddled together with scarcely an intervening space between them. Their udders and teats were thickly coated with dung and mud. There were only 2 or 3 calves in a shed kept for show the rest having been disposed of within a fortnight after their birth. The *goalas* kept the secretion milk in tact by adopting an unnatural process which soon renders the animals unfit for further service as a milch cow. The milkers generally belong to a low class of Ooriyas, who defy all rules of sanitation, whose hands are covered with muck and whose dirty clothes contain microbes of diverse species."

This is a description of Calcutta cattle sheds, but the state of things is equally deplorable in Madras, Bombay and almost all the bigger towns and cities. This led Mr. Carruth, Deputy

(a) *Phooka*—It is an inhuman and unnatural process of making a cow or she-buffaloe give milk. There are 3 kinds of *phooka*. One consists in blowing wind through a bamboo tube into the vagina of the animal while she is milked. Another consists in injecting salt water through a bamboo tube inside the vagina at the time of milking, while the third one consists of forcibly introducing the tail of the animal or a bundle of straw into the vagina and therebe making her give milk. All the three processes give intense pain to the animal and cause an irritating sensation, a long continuance of which makes the animal permanently or temporarily barren.

The effect of *phooka* has thus been described by a Deputy Superintendent of the Calcutta Society for the Prevention of Cruelty to Animals. "The eyes bulge out, the back becomes arched and animals groan as in great pain."

Typical Cattle-Shed in Calcutta.



Typical Cattle-Shed in Madras.

(1) Heap of manure in fore ground ; (2) Well ; (3) Tubs used for Conjee water ; (4) Latrine-Cow-dung cakes being dried on the wall. (By the courtesy of the Govt. of Madras.

Bhoodeb Publishing House, Calcutta.

Director of Agriculture, Madras express his wonder "that animals can live under such conditions." (a) A few typical photographs are given here to illustrate the situation.

Condition of cattle in Rural Areas.

The condition of cattle in rural areas is by no means more satisfactory than in towns. It is true that they get more space, light and air, but they practically get no food in health, or medical aid in disease. Want of pasture-lands, the general poverty of the people, and the insignificant quantity of fodder crops raised all these have produced a disastrous effect upon the condition of Indian cattle, which it will take generations to counteract. The animals all over India have considerably deteriorated. Open the pages of any District Gazetteer, official or non-official report on cattle and you will find that the common complant is that cattle have grown stunted in size, poorer in milk producing capacity and weaker for agricultural or draught purposes. Besides *phooka* already referred to, another cruel process is carried on in villages, chiefly in Bihar and U. P. for the manufacture of a yellow colouring matter called *puri* (b). The cattle are subjected to excruciating torture to which they at last succumb.

In a country where people mostly depend upon agriculture and are practically vegetarians, this growing deterioration in the quality of cattle would be viewed with alarm by all careful observers, and it would seem that there are sufficient and reasonable grounds for a thorough investigation of the whole subject and for the immediate introduction of well-thought-out and substantial measures for improving the present deplorable condition of cattle and along with it of milk supply and agriculture.

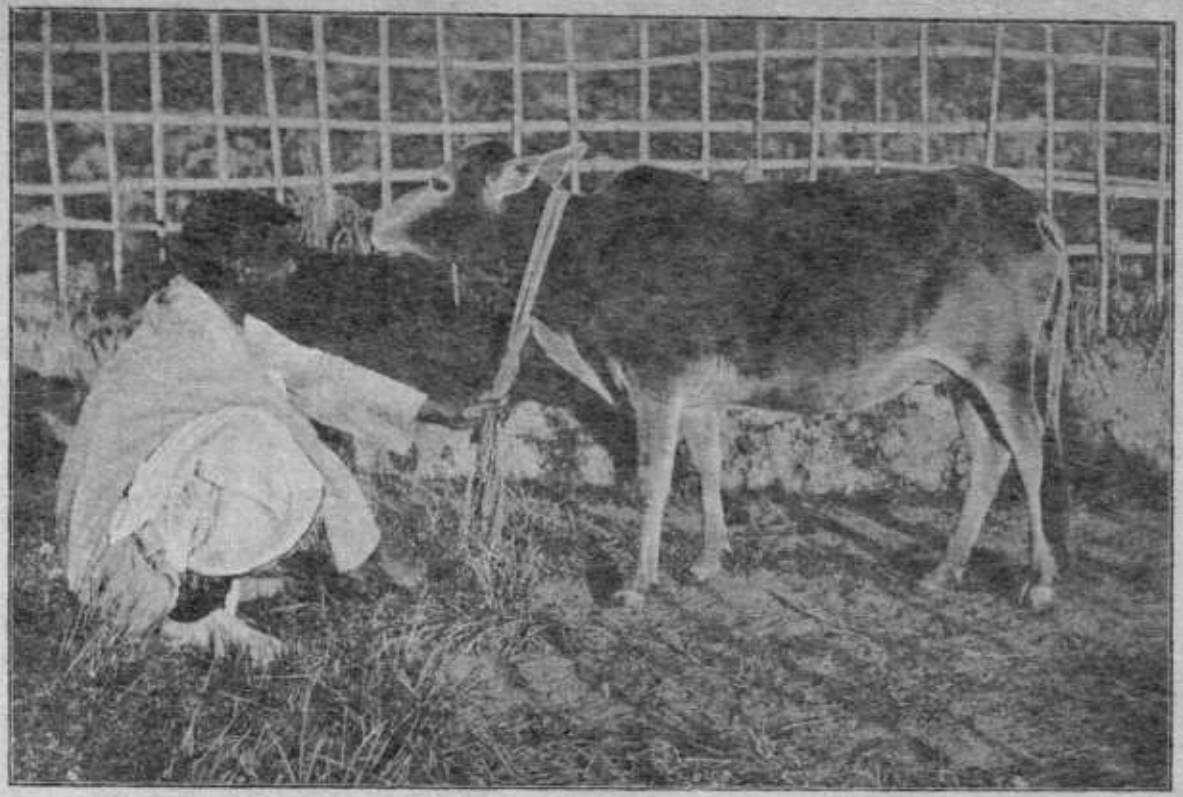
(a) *Survey of the Madras Dairy Trade* by A. Carruth, Dy. Director of Agriculture, (Livestock) Madras, p. 2.

(b) *Puri* manufacture.—The best yellow colouring matter available in the market and which is usually used as a paint is called *puri*. It is derived from the urine of cattle in this way: Healthy cattle are selected for the purpose and they are made to live entirely upon mangoe leaves, and nothing else. At first no injurious effects are observed, but after the lapse of a week or more the evil effect becomes more marked. The animals grow sick of taking mangoe leaves, their livers are affected. The urine becomes concentrated, extremely yellow and difficult to pass, and the animals get thinner and thinner. In the course of about 3 months the animals so used generally die and the manufacturer begins with a fresh set of animals. All the urine is collected in pots, dried and converted into fine powder, which is sold at a high price as *puri* or *peori* of the market. The report of a *Puri* case occurs in Calcutta Weekly Notes, Vol. XVII., p. 832.

"Agricultural Live Stock (in India) consists mostly of buffaloes in the rice tracts with heavy rainfall (those of Lower Burma being the finest breed), and of oxen and goats in all drier parts, horses, camels (in Punjab and Sind chiefly) and sheep being less important. The finest breeds for draught purposes are the big, heavy Hansi (Punjab) and the white cattle of Guzerat; the Nellore (Madras), for slow and heavy work; the Amritmehal (Mysore) for rapid road work with light loads, and the white-and-grey Malvi (Central India and the Deccan); while the best cows for milking are the Montgomery (Punjab), the Gir breed (Kathiawar) and those of Sind. Since 1880 considerable improvements have been made in dairying; but owing to frequent scarcity of fodder and promiscuous breeding through non-castration of inferior bulls, there is as yet but little improvement in stock-breeding. In each province, however, there is now a veterinary department, and dispensaries with travelling inspectors to inoculate against cattle-diseases and segregate infected animals and to work the bull-breeding farms with which Government is trying to effect improvement. As hay is not made, cattle often suffer severely during time of scarcity and famine." — STANDARD CYCLOPÆDIA OF MODERN AGRICULTURE. Vol. VII, Page 120.

Assam Bull. (By the courtesy of the Govt. of Assam.

Bhoodeb Publishing House.



Assam Cow. (By the courtesy of the Govt. of Assam.

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PART II.—ASSAM.

CHAPTER I.—GENERAL.

The Province of Assam with an area 61,682 square miles and a population of 7,598,861 (a) includes (1) the Assam Valley Division, (2) Surma Valley and Hills Division, and (3) the State of Manipur. Owing to the great areas of waste and rivers the density of the Province is only 115, which compared with that of most other parts of India is low, but is more than double that of Burma. It has exceptional agricultural advantages, hardly to be met in any other part of India, climate, soil, rainfall and river systems all being alike favourable to cultivation. Rice, jute and tea are the most important crops grown, wheat, tobacco and sugar being grown less extensively. A large part Goalpara and the densely populated portion of Sylhet were included in the Permanent Settlement of Bengal, the rest of the land of the Province is generally held by the actual cultivators of the soil directly under the State. The last Census show that more than two-thirds of the population are supported by agriculture. Although more and more land is being brought under cultivation, the rate of out-turn of crops is not satisfactory, being only 8 cwt. per acre in the case of rice as against 12·4 cwt. in Japan, about 10 cwt. in Madras and Sindh, and about 11 cwt. in Coorg (b)

Area, Population and Agriculture.

Of the two Divisions of Assam, the SURMA VALLEY AND HILLS DIVISION contains the following Districts and Sub-divisions *viz* (I) *Cachar* district—*Sub-divisions*: (i) Sadar or Silchar, (ii) Hailakandi and (iii) North Cachar; (II) *Sylhet* district —— *Sub-divisions*: (i) Sadar, (ii) South Sylhet, (iii) Habigunj (iv) Sunamganj and (v) Karimganj; (III) *Lushai Hills* district —— *Sub-divisions* (i) Sadar or Aijal, (ii) Lungleh; (IV) *Manipur and Naga Hills*; (V) *Khasi and Jaintia Hills* containing Shillong. The ASSAM VALLEY Division comprises (I) *Goalpara* district —— *Sub-divisions*: (i) Sadar-Dhubri, and (ii) Goalpara (II) *Kamrup* district —— *Sub-divisions*: (i) Sadar and (ii)

Districts and Sub-divisions.

(a) Census Report 1921; Indian Year Book 1922, p. 108.
(b) Agricultural Statistics of India, 1919-20. Vol. I, p. 342. Japan Year Book 1

Barpeta; (III) *Darrang* district —— *Sub-divisions:* (i) Sadar and (ii) Mangaldai; (IV) *Nowgong* —— *no sub-division;* (V) *Sibsagar* district —— *Sub-divisions;* (i) Sadar, (ii) Jorhat and (iii) Golaghat; (VI) *Lakhimpur* district —— *Sub-divisions:* (i) Sadar and (ii) North Lakhimpur; and (VII) *Garo Hills* district with *no Subdivision*. In the succeeding chapters it is proposed to deal with the condition of cattle district by district.

The breeds of cattle in Assam are conveniently divided by enquirers on the subject into 3 classes, *viz* : (1) Wild cattle, (2) Hill cattle and (3) Cattle of the Plains. Of the *wild cattle*, (i) the *gaur* or bison (Gonæus Gaurus), (ii) the *gayal* or mithun (Gonæus Frontalis) and (iii) two species of wild buffalo, one with straight horns (makocerus) and the other with semi-circular horns (spirocerus) are the most noted. The largest and handsomest of all wild cattle, the *gaur* has other typical features which readily distinguish it from all others. They are: "Highly arched ridge between the horns, concave profile of the forehead from which its greyish hair stands out in marked contrast to the rest of the coat of the head and body, bold and abruptly ending fleshy ridge on the withers, relatively short tails and white stockings to the legs." (a) The dense jungles of Assam form its habitat. The *gayal* is found in large numbers in the Naga Hills and in the Abor country. Though usually smaller than the *gaur* it resembles the latter in having white stockings and no hump. Of the *hill cattle*, those of (i) *Manipur* form a quite superior and distinctive breed. The cattle of (ii) the Naga Hills, (iii) Khashi and Jaintia Hills, (iv) Lushai Hills, (v) Garo Hills and (vi) of Bhutan are next in order of importance. The hillmen do not usually drink milk and the milking-capacities of the hill cattle are naturally of an inferior order. They are mainly used for draught purposes and for sacrifices and presents. Only 2 types of the *cattle of the plains* require special mention. They are (i) the cattle of the *Kopili Valley* and (ii) the *Maurangia* cattle.* Mr. Blackwood in 1916,

Different kinds of Assam Cattle.

(a) "The Ox and its Kindred" by Lydekker. P. 190.

* *Maurangia* is a district of Nepal north of Purnea and Bhagulpore districts. The dealers of Purnea and Bhagulpur purchase them and sell these at the Khagra, Dharamgunj Chandradebi fairs and Singeswar *mela*. The cows are not good milkers (2 to 1 sr. per day), but the bulls and bullocks are very hardy and are much liked by the people.

Maurangia Bull. (By the courtesy of the Govt. of Assam.

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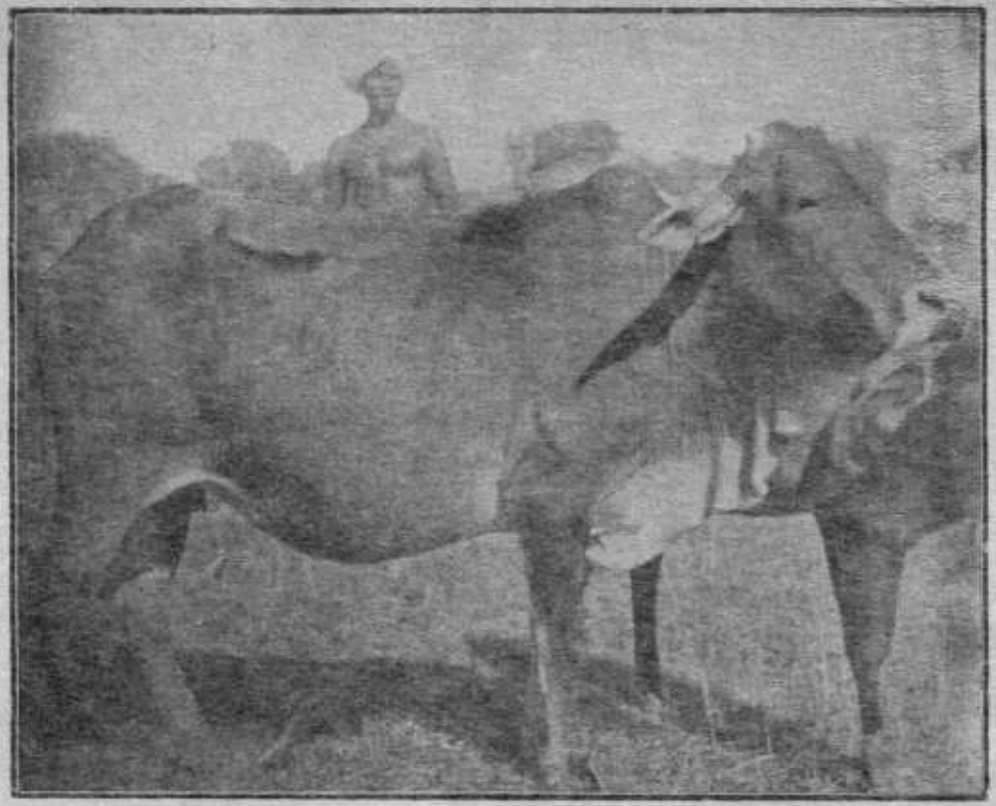

Maurangia Cow. (By the courtesy of the Govt. of Assam.

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and Mr. B. C. Basu in 1904 found the cattle of the *Kopili Valley* to be of a larger and better type and it is stated that the "superior condition of these cattle is to be attributed to luxuriant grass and the flowing water of the Kopili, rather than to crossing with Manipuri cattle." (a) Fuller description of these cattle will be found when we come to deal with the localities which they inhabit.

Table I.—Number of cattle in Assam.

Year.	Bulls and Bullocks.	Cows.	Buffaloes.		Young stock (Cows, Calves and Buffalo Calves.)	Total.	Ploughs.	Carts.
			Bull.	Cow.				
1911-12 (a)	1,709,989	1,326,289	142,771	189,130	1,472,169	4,840,348	...	...
1914-15 (b)	1,167,136	975,840	160,298	187,022	1,086,380	3,576,176	693,825	39,383
1919-20 (b)	1,829,666	1,575,953	192,588	246,867	1,627,278	5,472,342	942,129	47,817

The number of cattle in the province of Assam, as will appear from the above Table is practically the same *viz.*, about 5 millions, of which about $4\frac{1}{2}$ millions are cows and bulls and young stock and less than half a million constitute buffaloes, male and female. There was a decrease in number between 1911-12 and 1914-15, probably owing to fodder-famine, but this diminution appears to have been more than counter-balanced by the year 1919-20. But still the strength is neither adequate for agriculture nor for milk-supply, especially when their quality is taken into consideration. (*vide* Tables 2 & 3).

The number of cattle.

Table 2.—Proportion of Plough-Cattle to Cultivated Area.

Year.	Total Area (in Acres) under Crop.	Total No. of Bulls and Bullocks.	Deduct No. unfit and used for other purposes.	No. available for Cultivation.	Area in Acres per pair of plough-cattle.
1911-12 (a)	4,726,518	1,709,989	226,442	1,483,547	7
1914-15 (b)	4,865,507	1,167,136	253,000	914,136	10
1919-20 (b)	4,614,752	1,829,666	300,144	1,529,522	7

(a) A Survey and Census of the Cattle of Assam by J. R. Blackwood P. 10 and App. I.
(b) Agricultural Statistics Vol. I, 1914-15; 1919-20.

Table 3.—Milk Available per Head of Population.

Year.	Population.	No. of milch-cattle.	Average yield of milk per day in pints at 2 pints per head for 7 months.	No. of persons for each milch-cattle.	Quantity of of milk in pints available per head per day.
1911-12	7,598,861	1,516,119	1,744,575	5	¼
1914-15	7,598,861	1,162,362	1,337,512	7	⅛
1919-20	7,598,861	1,822,720	2,097,376	4·5	¼

All later enquirers have found the quality of the Assam cattle to be exceedingly poor, although the buffaloes are not so. In 1885 Mr H. Z. Darrah, Director of Land Records and Agriculture, Assam noticed this difference and noted it in his monograph on the "Cattle and Buffaloes of Assam.' Col. Raymond, Principal Bengal Veterinary College and Mr. W. Harris, Superintendent, Civil Veterinary Department Assam writing in 1910 state that "the cattle of Assam have degenerated from various causes and are now very bad, so much so, that they are only fit for plough work in rice fields, carting being done by imported cattle from upcountry. The local cattle are also bad milkers"(a). Mr. Darrah made an elaborate enquiry into the causes of degeneracy but was unable to come to any satisfactory conclusion Later enquiries however go to show that there are 3 main causes at work, *viz.* (i) the climate; (ii) want of proper breeding and (iii) want of adequate food. The excessive rainfall and the swampy soil are deleterious to the development of a good breed of cattle. The system of covering cows by immature bulls and also not giving cows and calves adequate quantity of food are strong contributory causes. Want of sufficient grazing lands, most of which are ennundated annually during the rainy season, and the absence of the practice of growing fodder-crops for cattle are also no less important factors. And what is worse, existing grazing grounds and common-pastures are reported to be annually encroached upon in almost every district.

Deterioration of Stock.

(a) A Survey and Census of Cattle of Assam by J. R. Blackwood, I.C.S., p. XXXV.

It must be said to the credit of Assam that attempts had been made from time to time to improve the breed of local cattle and the Assam Government took a good deal of interest in the matter. In 1885, at the suggestion of Mr. H. Z. Darrah they imported 3 Kenwari bulls and in 1885, 8 more such bulls were obtained, but the result, as usually happens in the case of public institutions, was not found to be hopeful. In 1896, 5 bulls were purchased from the North-Western (now United Provinces and distributed at Silchar, Haflong, Sylhet, Naharjan Tea Estate (Sibsagar) and Shillong, but again the effect was not encouraging. In 1902 Col. Morgan put forward a scheme of Government bull rearing depots in every Province including Assam and a note was drawn up by Rai B. C. Basu Bahadur at the instance of the Assam Government. He estimated that on an initial expenditure of Rs. 9,700 and a recurring annual expenditure of Rs. 2,300 a combined Bull-breeding and rearing depot could be started and maintained which would turn out 12 bulls per year on an average. The Chief Commissioner of Assam would not however venture to start the depot for want of funds and expert advice. Stray experiments were made here and there by the crossing of Khasi and Bhutia cows with a bull of the Taylor (Patna) breed, and also to collect a herd of pure bred Patna animals, and the result was reported to be satisfactory. The cross-bred animals were said to give more milk than the pure Bhutia or Khashi animals. In 1910 Col. Raymond and Mr. Harris prepared a joint note for the improvement of draught cattle and Mr. B. C. Allen, who was then Revenue Secretary, proposed the establishment of a herd of 30 head of cattle in each district for improving the breed. Unfortunately due to want of money and what is worse, due to want of adequate interest in the subject, these useful proposals were ultimately shelved after some amount of discussion and correspondence, and the matter remains today exactly where it was 40 years back.

Attempts at Improvement.

It was just about this period that Mr. J. R. Blackwood, I.C.S., LL.B., was appointed by the Government of India as Special

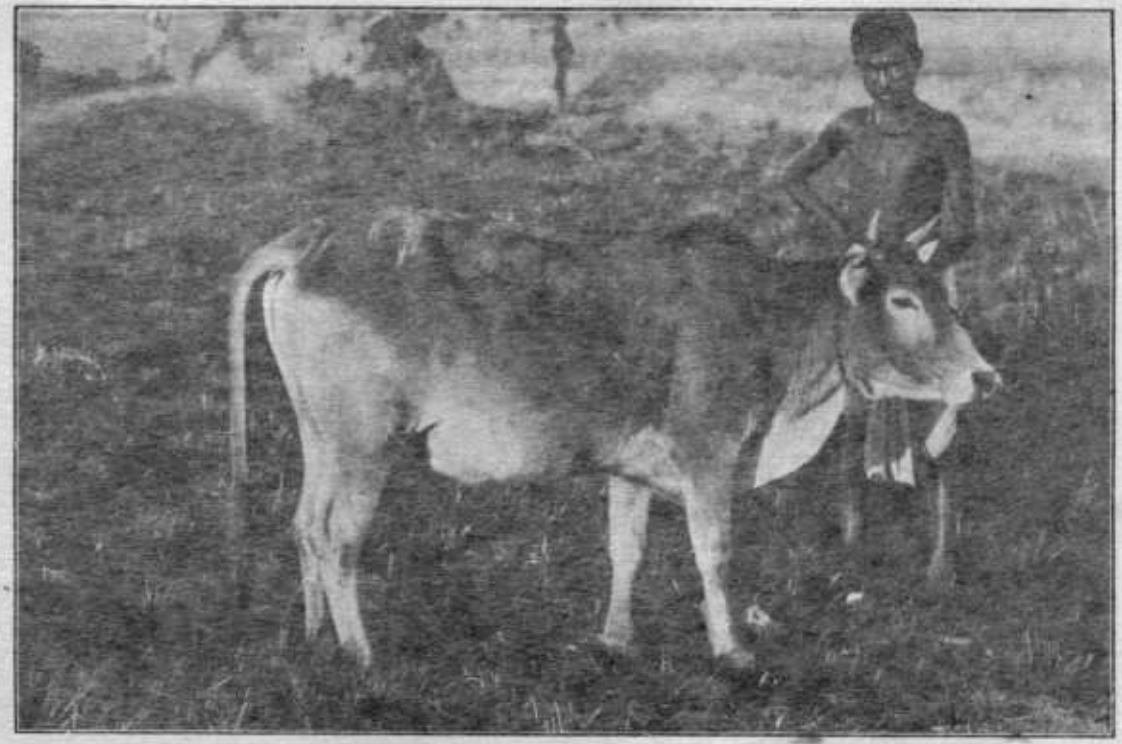
Officer for Bengal and Eastern Bengal and Assam to make an economic survey of the cattle of these Provinces with a view to enquire if improvement was necessary and devising means for effecting such improvement. He took charge in 1911, travelled throughout both the Provinces made a detailed investigation and submitted two elaborate reports one for Bengal and the other for Assam which were published in 1915 and 1916. (a) Mr. Blackwood suggested the raising of dual purpose animals, the males of which will be fit for ploughing and drawing carts and the females will be good milkers, and Mr. S. Milligan, Imperial Agriculturist, Pusa, Col. Raymond, Principal, Bengal Veterinary College, Mr. W. Harris, Superintendent, Civil Veterinary Department, Assam, and Mr. A G. Birt, Deputy Director of Agriculture, Assam unanimously supported him. The next point for consideration is how to raise such dual purpose animals. Col. Morgan, lately an Inspector-General of the Veterinary Department advocated strongly the system of breeding from the best local cattle and Mr. Birt was also of the same view but Mr. Milligan did not favour the idea, and suggested on the contrary that "experimental crossings with a view to fixing new types should form part of any comprehensive scheme of cattle-breeding." The idea of Col. Raymond and Mr. Harris seems to be the most sensible of all *viz.*, the improvement of a breed "by introducing a strain of very similar type but of better quality from elsewhere," as that would save very much time and money.

Mr. Blackwood's enquiry.

Experts of the Veterinary Department and elsewhere make the following recommendations for the improvement of Assam and Bengal cattle, *viz*—(1) establishment of cattle farms directly by Government or Local Bodies under Government control or private individuals with the advice and under the supervision of Government experts, for the development of superior milk-yielding cows, draught bullocks and serving bulls; (2) provision of superior serving bulls under proper management for village cows and (3) castra-

How to improve the breed.

(a) A Survey and Census of the Cattle of Assam by J. R. Blackwood, LL.B., I.C.S., (1916.) A Survey and Census of the the Cattle of Bengal by J. R. Blackwood, LL.B., I.C.S., Director of Agriculture, Bengal, (1915.)



Assam Bullock. (By the courtesy of the Govt. of Assam.

Bhoodeb Publishing House, Calcutt .

tion of weedy bulls. It appears that the Government of Assam considered these proposals and in their Resolution No. 3846 R. dated the 1st October 1918 came to the conclusion "that a small and rather impecunious province like Assam, would not be justified in embarking on the expensive experiment of a cattle farm." They proposed in the alternative "the importation of selected sires, which will be entrusted either to local bodies or to planters and other individuals interested in cattle-breeding and the gradual education of the people by example and precept to understand the benefits of selective breeding and of proper feeding and keeping of cattle."

As regards serving bulls, Manipuri and Burma bulls are often recommended. Mr. Blackwood suggests also the use of the best bulls bred in the Garo Hills for purposes of gift and food. Bulls from neighbouring districts of Bengal and Bihar might be usefully employed. The Khachar, Bangar and Doanshla buffaloe bulls may also be used for the purpose. Experiments carried on directly by Government usually turn out to be unsuccessful, so it is preferable to have herds in the charge of selected village headmen or approved members of a Co-operative Breeding Society under the supervision of Government experts. (a)

Breeding Bulls.

The grazing question in Assam is rather a complicated one rendered more so by the incursion of Nepali graziers. The most difficult season for the cattle in Assam is the rainy season; and unless steps are taken to store food for them in advance to tide them through this season the fact that they have plenty to eat during the rest of the year will not prevent them from becoming "skin and bone". In some places, especially in the Hills, there appear to be sufficient grazing grounds but in the more thickly

(a) In this connection it is interesting to note the suggestion of Col. Cole: "I have always been of opinion that there is a great field of cattle-breeding in these hill districts. Nearly all the Chaukidars at the various rest-houses keep cows, and it is quite easy as a rule to ensure their herds being isolated from village cattle. Each rest-house could be made a breeding centre, being supplied with whatever stock that might be selected and the cost would be infinitesimal. There would be no feeding charges and there is ample grazing in the surrounding jungles, and the supervision charges would be a few rupees a month only in either allowances or bonuses to the Chaukidars concerned. I am no believer in costly experiments with European-in-charge stall-fed cattle and the like, because the demonstration from such establishments can have no practical value to the ordinary ryot. At the same time I am convinced that it is possible to effect considerable improvements on the lines indicated above."

populated parts of Assam, as in other Provinces, the question of providing adequate grazing for cattle has already become a pressing one and will continue to be more so in the future. Mr. Blackwood recommends "that in a country like Assam it would be possible in a large area at any rate, to reserve land for grazing at the time of re-settlement, and to prevent further encroachment." "In the more densely-populated portions of the province", says a Government Resolution, "the provision of grazing for all these cattle already presents a serious problem and the difficulty is growing year by year. Accordingly steps have been taken to set apart lands for grazing and protect them from encroachment. These grazing reserves are of 4 main classes :—(1) Village grazing grounds in which agriculturists' cattle graze free of charge ; (2) grazing grounds in more remote localities where professional graziers may keep large herds, paying the prescribed fees ; (3) grazing grounds in the vicinity of small towns, where cattle kept for the supply of milk to the towns pay a reduced scale of fees and (4) village forests in which grazing may be allowed in accordance with the rules for the management of the forest."

Pasture grounds and fodder crops.

In this province the practice of growing fodder crops for cattle is practically non-existent. "The great majority of cattle," as stated by Mr. A. G Birt, "have to depend entirely on what they can pick up for themselves." It is reported however that although in the greater part of Assam grazing conditions are more favourable than in other parts of India, yet the cattle here are some of the worst to be found in the country. This is in all probability due to the enundation of the grazing areas in the rainy seasons, resulting in starvation and consequent deterioration of cattle. The cultivation and storage of fodder crops for the rainy season is therefore all the more incumbent upon the people of this province. It is said that experiments of cultivating jowar are making favourable progress in Kamrup and Goalpara, and it is hoped that the other parts may follow the example.

It is interesting to find that the Chief Commissioner of Assam decided so far back as in October 1918, "(1) the reserva-

tion of adequate grazing grounds and (2) the introduction of suitable fodder crops and the devising of means for preserving grass and other fodder in the conditions in which the people live." (a). The All India Cow-Conference Association inquired of them in 1923 what steps have been taken in the matter and was informed in reply "that the subject is already engaging the best attention of this Government." (b)

The Government of Assam introduced after 1912 increased taxation upon cattle grazing upon Government lands with the ostensible object of protecting the cultivator from the damage and interference to their crops caused by the cattle of the professional graziers who chiefly came from the Nepal border and other places outside Assam, but as a matter of fact it told heavily upon the indigenous cultivator and other inhabitants of Assam as well. This fact was sought to be brought home to the Assam Government by Rai Ghanashyam Barua Bahadur by two resolutions brought before the local Council but the Government did not see eye to eye with him, especially as it affected their revenue, and the resolutions were lost—a fate which in the present political constitution of the country happens to almost all resolutions opposed by Government.

Grazing Taxes.

The following debate in the Assam Legislative Council on the Resolutions dated the 5th October 1918, show the respective attitudes of the people and the Government on the subject.

The Hon'ble Rai Ghonosyam Borua Bahadur moved the following resolution :—

"This Council recommends to the Chief Commissioner that the tax on professional graziers in the Assam Valley division be entirely abolished or at least reduced to the rates that prevailed before 1912."

"The question was so recently enquired into by the late W. J. Arbuthnot and decided by the Chief Commissioner on his report that it may be considered audacious on my part to bring this resolution up for discussion in Council at all. My excuse in doing so however is the keen resentment with which this tax has been looked upon by the people. No body has yet been able to take the

(a) Government of Assam—Revenue Department—Resolution No. 3846 R. dated the 1st October 1918.

(b) Letter No. Agri : 102—1530 G. J.—General and Judicial Dept.—Agriculture Branch—Government of Assam dated the 19th April 1923.

tax in good part. Everyone high and low denounce it as an oppressive, hateful and abominable tax. The rich and the poor, the educated and the uneducated, the villager and the townsman are all of the same voice in the matter. In spite of all heard and said of this tax they have not been convinced of the justice of this tax and no amount of argument or persuasion has been able to reconcile them to it.

Increase of Grazing Tax.

"In a country where the bulk of the people depend on agriculture (and Assam is pre-eminently such a country), cattle are essential for their very existence. Plough-cattle are indispensable for agriculture and milk-cattle for food to the better class of the people—milk, ghee and butter are indispensable articles of daily food. With the poor also milk and curd form the principal delicacy in festivals. In marriage, *Sradh*, etc., milk is absolutely essential. Taxation on such a commodity naturally affects all classes and it is no wonder that it would be cried down by one and all.

"The tax is supposed to be imposed for the benefit of the cultivating classes and on people who make a large trade in cattle and dairy products without making any return to the country which feeds their cattle and gives them their trade. It is also intended to operate as a check on the unrestricted influx of cattle and professional graziers from outside the province. One would like that such people would contribute something to the revenue of the province if the contribution really touched those who are meant to be affected. They are however not affected in the least. The tax rebounds on the people who resort to the market for cattle and milk and milk products. To the professional graziers the tax becomes a plea for realsizing it many-fold from its customers—the people of the country. It is the people (for whose benefit the tax is supposed to be imposed) who are indirectly taxed and suffer, and not the professional graziers. As a result milk and its products have not only risen in price during the last 2 or 3 years but they have even become scarce. Adulteration has increased so largely and rapidly that pure milk has become a thing of the past. Price of cattle has increased by 20—40 p. c. Well sir, if these are the consequences, does the tax help really the economic condition of the country in the least? We lose perhaps ten times more than what we gain. But this is not the only way in which the tax has affected the people. A large number of industrious cultivators have been brought under the category of professional graziers and is made liable for the same heavy tax that is made ostensibly for the foreigners trading here. These poor cultivators have not been trained in the different methods of making money from milk as those traders are and the result is they find the tax a burden more than they can bear.

Mr. Barua's Proposal for Abolition or Reduction.

"Complaints against the tax have been persistent and have gone far and wide. Not only have the members of this Council been approached on the subject from different sources but even our representative in the Imperial Council has not been spared. Some time back I received a communication from him to the effect that some village Panchayats implored him to move the Imperial Council and

save them of this hateful tax. My honourable friend requested me to move this Council as this was not a subject for the Imperial one. Opinion all over the country affected by the tax is, I am confident, one and uniform that the tax ought not to exist and that the people have not been able to reconcile themselves to it. All taxation, Sir, is for the benefit of the State and of the people affected by it. The people are loud with their cry against it and they do not want it: they are willing to forego the benefit conferred by it. I therefore submit that the matter deserves serious consideration and all that is possible to allay the feeling of the people ought to be done. I would move the Council to see their way to the complete abolition of the tax. If so much is not conceded I suggest that the tax be reduced to what it was before 1912 *i.e.* Re 1 per buffallo and annas 4 per other horned cattle.—With these remarks I put the resolution for the consideration of the Council."

The Hon'ble Mr. A. W. Botham :—"I am afraid, Sir, the Government is unable to accept the Hon'ble member's resolution. The cause which led to the increase of tax on professional graziers in 1912 was the receipt of reports as to enormous increase of buffaloes brought to the country by Nepalese and other outsiders and as to the damage and interference with cultivation which these herds were alleged to make. The number of buffaloes which grazed on payment in 1903-4 was 24,000. By 1912-13 when the question was taken up the number had risen to 44,900 and last year the number was 1,30,000. The question therefore really is a serious one and it does not appear that the steps which have been taken to increase the taxation have so far led to the extermination of tame buffallo in Assam. The Honourable member, Sir, argues that the tax is improper in Assam for her being an agricultural country. I should say that the tax on professional graziers is particularly suited for such a country since an agricultural population can supply themselves with milk. As a matter of fact, as the Council knows, enormous number of cattle belonging to the cultivators are grazed in the Government unclassed State forests without payment of any tax. Another argument is that the tax is improper in a vegetarian country where dairy produce is a necessity. The same argument would apply to the assessment of paddy-land to land revenue. Why should we take land revenue from land which produces a necessity of life like rice. The fact of the matter is that the professional graziers make enormous profit and there is no earthly reason why we should not take a moderate tax from them.

Government Opposition.

The late Mr. Arbuthnot was sent on special duty in 1915 to go into the whole question and to make proposal and the present rate is based partly on his report and partly on the report submitted by Rai Bahadur Upendra Nath Kanjilal in 1912. The reports of these 2 Officers were very much in harmony. Mr. Kanjilal proposed Rs. 3 and Mr. Arbuthnot Rs. 4 per each buffalo. Eventually the former was accepted. I should think that a tax of Rs. 3 per buffalo on the number given in the report of Mr. Arbuthnot would work out at an incidence of As. 2 per seer on ghee and 1/5th of an anna per seer on milk. I do not think this would

affect at all the price of milk and ghee. And as a matter of fact it has not affected the price in the slightest. First we raised the tax in 1914 from Re. 1 to Rs. 2. In 1913 I find from the published "Prices Current" of that year that the price of ghee at Gauhati was Rs. 50/8. In 1914 when the tax was raised from Re 1 to Rs. 2 the price fell to Rs 49/4, when the increased tax was in full force the price further dropped to Rs. 45/15. In 1916 it went up to Rs 52-7, in 1917 to Rs 56-6 and up to date in the present year the average is Rs. 55-10. There has been a serious increase in the last 2 or 3 years, but it is not confined to Assam or to the taxation in Assam. The price in Calcutta in 1913 was Rs 51-6, in 1914—Rs. 54, in 1915 it was Rs. 46-4. I have not got the figures for 1916-17, but the price of medium ghee now I think is from Rs. 75, 76, so that the price at Gauhati is Rs. 20 less per maund than in Calcutta. The increase in the price in Assam is due to the cause which led to the increase elsewhere, and our small taxation which gives an increase of as. 2 per seer of ghee has practically no effect on it. I should explain that the price in Calcutta can hardly be affected by the tax in Assam since the export of ghee from Assam to Calcutta is very small indeed. One Hon'ble member has suggested that the matter is of no financial importance whatever for the income that we got from the tax is something under a lakh. I think the gentleman must be referring to the tax of a previous year. The tax in Assam Valley alone in 1917-18 was Rs. 3,42,000 and therefore if we abolish the tax we should abolish a substantial source of revenue."

The Hon'ble Rai G. Barua, Bahadur: "Sir, I have only a few remarks to make in reply. The Hon'ble Mr. Botham says that it is in the interests of the agriculturists that professional graziers have been taxed; and there was a large influx of professional graziers whose cattle damaged crops etc. and it was in order to put a check on these that the tax was first imposed"

The Hon'ble Mr. Botham —— "That is how the question came up in 1912."

The Hon'ble Rai Bahadur G. Barua:—"Very well leaving that aside, the next question is about the application of this tax to land revenue as essential to growing our eatables. I admit. But it is because land is assessed to revenue and cattle are so essential to cultivation that I claim that cattle should be let alone. Agriculture is the pursuit of the people and the main source of our revenue. To sustain that agriculture, to improve and expand it cattle is essential and that is why cattle should not be taxed. It has also been said that it has not materially increased the price of milk and ghee. The price of ghee is said to increase by about As. 2 a seer and of milk by 1/5th of one anna per seer."

The Hon'ble Mr. Botham:—"I said that the increased incidence of taxation on the price of ghee is As. 2 per seer and that on milk 1/5th of one anna per seer."

The Hon'ble Rai G. Borua, Bahadur:—"That may be so. I beg your pardon. But it is to be remembered that the actual rise in price does not bear relation to the incidence of taxation. I need hardly point out to the Council that a small increase in the tax gives a clue to heavy increase in price. We all remember

that when the salt tax was raised from Re. 1 to Re. 1-4 the retail price rose from 1 anna to six or eight pice per seer. The increase in the tax showed an increase only of 2/5th of a pice or so. In this case the price of milk has sometimes remained stationary and sometimes it has increased a little. But this is not the real test of increase. The question of adulteration should also be taken into account. I have said that pure milk has become scarce, that is why the price is not affected. Adulteration is more dangerous than high price. As to ghee I do not know wherefrom my Hon'ble friend has got the figures of prices. I think that is the average of all sorts of ghee, adulterated and pure, good and bad. However as I am aware (and corroborated by Hon'ble Maulavi Saadulla and Hon'ble Rai P. D. Chaliha Bahadur) that the price does not come below Re. 70 for the last 2 or 3 years. It is true that a large increase in price does not follow the increase in tax but that is explained by the well-known ghee adulteration in Bengal soon after the rule came in force. No sooner adulteration was checked the price rose very high. I therefore say that the evil effects I mention are real and not imaginary."

Resolution lost.

The resolution was then put to vote and was lost.

The next resolution moved by Hon'ble Rai Bahadur G. Barua was as follows :—

Next Resolution for concession to Bonafide cultivators.

"The Council recommends to the Chief Commissioner that the *bonafide* cultivators who are assessed the grazing dues be taxed only over the excess of 10 heads of assessable cattle besides those actually used in the plough."

"The resolution is simple enough and I think long discussion will not be necessary. In the resolution of the Chief Commissioner on the question of grazing by the cattle of the professional graziers on the strength of which the present enhanced tax is imposed there is a para in favour of *bonafide* cultivators viz Para. 8. which runs thus :—

"Though it is proposed to raise the tax on professional graziers still the claim of the cultivators to graze in the unclassed State forests should be maintained. Under this head the approval of the Deputy Commissioner is required before a domiciled bonafide cultivator can be assessed to grazing dues and no reference may be made to him unless the cultivator possesses more than 10 cattle not used in the plough."

"The purport of this para has unfortunately found no place in the rule framed in pursuance of the resolution for the regulation of the professional graziers. The rules contemplate the distinction between professional and other graziers, but take no account of those who really are cultivators but become liable to the tax under the protective clause of the Chief Commissioner's resolution quoted above. The following is the definition of professional graziers.

"In these rules professional grazier means a cattle owner who derives the main part of his income by the sale of such cattle or their product and whose profits from cultivation (if he cultivates at all) are merely subsidiary to the income he derives from cattle-keeping, and includes a person who herd cattle on behalf of others solely for trade purposes"

"The rules in substance do not make cultivation the criterion of one's being liable to be taxed but it is the proportion of his income from cultivation to that from cattle. So if a man has a substantial amount of cultivation and also a herd not below 10 heads and not used in plough he is liable to be taxed for the whole lot of cattle he possesses. The para. indicates that the number of cattle is not the basis of taxation necessarily. The spirit of the sentence shows that the cultivators as a rule are exempt unless one posseses more than 10 heads of cattle not used in the plough and that too not without the sanction of the Deputy Commissioner. The rule practically lays down the principle that if one's income from cattle exceeds 50 p. c. of the total income his cattle should be taxed."

"In practice again, no body cares to enquire into the proportion of income before a cultivator is saddled with the tax. If a man happens to possess the prescribed ten heads, he is at once assessed; in some cases even this principle is ignored and taxation is based merely on the fact of milk having been sold by him. How far the Deputy Commissioner is reported to or his previous sanction obtained I am not in a position to say; as far as I am aware, the taxation is complete before he knows anything of it and his sanction is sought only for criminal prosecution of the cultivators who in the opinion of the forest subordinate or some other similar officer are liable to the tax and have failed to take out the grazing permit. However that may be, the point I desire to put before the Council is that the allowance of ten heads of cattle in addition to plough-cattle should be made to all *bonafide* cultivators irrespective of the proportion of income from cultivation to that from cattle; that no man should be taxed on this minimum provided the man is a bonafide cultivator and has the average quota of cultivation. I dare say that cultivation is the mainstay of all Assamese villagers, and if any of them happens to have more than the prescribed mininum number of cattle it is only an accident which may disappear any day, his cattle breeding being not in lieu of but in addition to his ordinary and usual vocation of an agriculturist I submit therefore that in the case of native and properly domiciled agriculturists the allowance of the prescribed minimum of cattle should be general and common to all, and that the excess over the number allowed free to cultivators should only be assessed to grazing tax in the case of all cultivators whatever their income from cattle may be. Under the present system of working great injustice is done to those thrifty and industrious cultivators who attend to cattle-breeding also in addition to their agricultural pursuits, as people less deserving get the privilege but they do not. A man cultivating, for instance, two pooras of land and owning eleven heads of cattle of which two are used in the plough will now go without taxation, while his neighbour who cultivates five pooras but owns

fourteen head of cattle of which four are used in the plough will be taxed for the whole lot. The thrift and husbandry of the latter become to him a sin for which he has to pay a penalty from which his less deserving neighbour is free. This is a great injustice and operates very detrimentally to the more industrious class of cultivators in the pursuit of an important profession which we should by all means encourage.

"The consequence in many cases have already been, and if the present system is persisted in, will in future more be that the cultivating classes will avoid keeping more than the prescribed minimum of cattle, leaving the profession of cattle-breeding to the foreigners and encouraging the influx of cattle and cattle-traders from outside the province to check which the resolution of the Chief Commissioner and the rules thereunder for regulating the grazing by professional graziers, are ostensibly intended. The allowance made to the cultivators is no doubt made in consideration of and as an appendage to cultivation which is the normal pursuit and this allowance must therefore be made to all who do not lack in their share of the agriculturists' work. I submit therefore that the allowance of ten heads of cattle in addition to plough cattle must be made to all cultivators in the pursuit of so important a calling as cattle-breeding. I now put the resolution for the consideration of the Council and I greatly hope that it will accept it without hesitation."

The Hon'ble Mr. A. W. Botham:—"It seems, Sir, what the hon'ble gentlemen really suggest is that the operation of the rule in one particular district is unsatisfactory rather than that the rule itself is inequitable. The theory on which the rule is based is that a man is either a professional grazier, or cattle-owner or he is not. If he is a professional grazier, there seems to be no reason whatsoever why he should not pay the tax on the full amount of his cattle. If on the other hand he is not a professional grazier we do not tax him at all. The limit of 10 cattle is, as the Hon'ble Mover says, used as a criterion, but it is not an absolute criterion. It does not follow that, because a man owns 12 head of cattle, he is classed as a professional grazier; at any rate that is not the intention of the rule. The rule in the Forest Manual provides that no domiciled cultivator shall be classed as professional grazier except under the orders of the Deputy Commissioner; and by way of a concession to the smaller man it is laid down that if a domiciled cultivator does not possess more than 10 head of cattle, over and above his plough-cattle, the question concerning him should not be raised at all. It is true that the definition of 'Professional grazier' in the new grazing rules is incomplete, since, as the Hon'ble mover has pointed out the important proviso relating to domiciled cultivators, which appears in the forest Manual, has been omitted. Steps have already been taken to remedy this and the definition which we now propose is as follows:—

Also opposed by Government.

'The term professional grazier means a cattle-owner whose income from his cultivation are merely subsidiary to the income he makes from the cattle and their produce.

Provided that no *bonafide* domiciled cultivator shall be deemed to be a professional grazier without the order of the Deputy Commissioner and unless he and the other members of the family possess more than 10 heads of cattle unused in plough.' I beg, Sir, to oppose the resolution."

The Hon'ble G. Barua :—Sir, I thank Hon'ble Mr. Botham for the improved definition he gave of "professional grazier" which he proposes to make, though I am not sure if that will go far enough. My point only was that the rule makes a difference between "professional graziers" and "non-professional graziers" but ignores one class who are both cultivators and professional graziers combined, the class which form the bulk of cultivators, converted into professional graziers by the rule. If my hon'ble friend wishes to be more particular about my statement I may only request you to call for a statement showing the quantity of land held and cultivated by bonafide cultivators who have been classed as professional graziers in the different districts of the Valley. I thank Hon'ble Mr. P. D. Chaliha for pointing out that the Deputy Commissioner of Sibsagor remitted the tax on many cultivators which were wrongly assessed. We are grateful to Mr. Allen for the trouble he took in this. But that only shows how the tax is wrongly assessed. A kind-hearted Deputy Commissioner may thus enquire and save the poor ryots but is there any guarantee that all Deputy Commissioners would do so? I am sorry the Government is unable to accept the resolution now, but still hope that the Government would call for the statistics to see if my suggestion really deserves consideration. My suggestion claimed minimum privilege for all cultivators alike. To be fair it ought to go further and the allowance to cultivators of cattle should be in proportion to the land they cultivate starting at 10 cattle as the minimum for the average minimum holding.

Futile Discussion.

The Hon'ble the President ;—"If it is a question of properly administering the rules the Hon'ble Col. Gordon is quite prepared to see that they are properly administered in future. If the rules are all right I do not think we should waste the time of the legislative body."

The Hon'ble G. Barua Bahadur :—"Sir, I submit that my complaint is not merely about rules not being properly administered nor do I admit that the rules are all right. What I aim at is that a cultivator if he is really a cultivator should have the free allowance of 10 cattle now supposed to be made to him, whether he makes a profit from cattle breeding or not and I confine this to the case of native or properly domiciled cultivators only. I would suggest that if necessary a rule may be added defining such a cultivator and the minimum number of land to be held by him to be entitled to the allowance and anybody falling under that definition and possessing more than the prescribed number of cattle should be treated as a "cultivator professional grazier" who should be entitled to the usual cultivation allowance of 10 heads of cattle free of charge and taxed only on the excess over them. That is my contention before the house."

Resolution lost.

The resolution was then put to the vote and was lost.

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CHAPTER II.—ASSAM VALLEY DISTRICTS.

1. Goalpara District.

Goalpara is a comparatively small district with only two sub-divisions, viz. (1) Sadar, and (2) Goalpara. The principal town is Dhubri, which has got a Municipality.

Goalpara District

In almost every village there is a common grazing ground, *which is being encroached on every year (a).* In the Eastern Dooars there is Government grazing land covering about 18,000 acres, which is said to be protected from encroachment.

Upcountry traders come with herds of Bangar buffaloes (b) from Purnea and Durbhanga and encamp on the banks of the Aye river at Kursikata, Bansbari, Bhanra and other villages. Numerous villages have sprung up in consequence on the northern bank of the Brahmaputra such as Bengtol, Ayepoali, Doorgaon, Patgaon, Deosirira bangiri, Lalai, Takali, Ladrak, Ayebharar, Dotma, Lonkosh and Jamdoar. For cart work the district supply of cattle is said to amount to 20 per cent only, while for plough work the district supply is as much as 80 per cent.

There is a large number of bathans (dairy farms) owned chiefly by Nepalis, which supply milk and *ghee* and small quantities of butter. The *ghee* is exported by Marwari traders to Bengal. Milk sells from 3 to 4 annas a seer (1 seer=2 lbs.)

The information relating to the cattle of this district is to be found in the District Gazetter of Goalpara (1905) by Mr. B. C. Allen, I. C. S (Vol. III. p. 77).

"As in the rest of Assam the buffaloes are fine upstanding animals, but the cattle as a rule are miserable little creatures. The only two varieties

(a) Survey and Census of Cattle in Assam by J. R. Blackwood, p. 15.

(b) *Bangar* buffaloes are extensively used by the Nepali bathanwallahs for dairy purposes.

of buffaloes which seem to be recognised in the district are the Kachhar and Bangar. The former gives a larger yield of milk and consequently commands a higher price. The price of a bull buffalo ranges from Rs. 10 to Rs. 50, and of a cow from Rs. 15 to Rs. 70. The average price seems to be about Rs. 30 for the one and Rs. 40 for the other. Bullocks cost from Rs 30 to Rs. 40 the pair, and cows from Rs. 10 to Rs. 15 each; though the price of a cow is said to be sometimes as low as Rs. 8, sometimes as high as Rs. 25. In the Eastern Duars Nepalese cattle are occasionally to be found. They are said to be fine animals, almost as large as buffaloes. Cattle are grazed in swamps and marshes in the dry season and on hills and high land lying waste in the rains. Generally speaking there does not seem to be any dearth of suitable pasture land, and it is only in the southwestern portion of the district that the cattle have to be fed on paddy straw in the rains.

From Goalpara District Gazetteer.

Extract from "Supplement" to Goalpara District Gazetteer (1914) by R. Friel, p. 4 :—

There has been an enormous increase in the number of Nepalese cattle in the Eastern Duars. An important cattle market is held at Gauripur at which large numbers of imported upcountry bullocks are disposed of. Of recent years there has been a general rise of about 50 per cent, in the price of cattle.

The occupation of fallow lands by immigrants has made pasture land scarce in some parts of the district. Within the last few years grazing grounds have been reserved for the use of village cattle in 69 villages in the Duars."

Babu Upendra Nath Bose, B. L. Chairman *Dhubri* Municipality (1919) writes :—

1. That the state of cattle and of milk supply in the locality is not at all satisfactory.

(a) The number of cattle is smaller in comparison with the population of the place and no attempt is being made to increase the number for want of fodder and grazing grounds and without these two it is impossible for one to keep a large number of cattle. Also the number is rapidly falling owing to slaughter and diseases which sometimes sweep away nearly all the cattle of villages.

Dhubri Municipality.

(b) Also the quality of cattle is quite unsatisfactory due to various reasons. First they cannot get proper food and nourishment and hence cannot thrive well. Secondly there are no good stud bulls for breeding. Thirdly—the high price of the milk tempts the milkman to milk the cow several times a day and leave nothing for the calf to thrive and the cultivators very often employ the cow to plough their lands as their humble means cannot afford them to buy bulls for the purpose.

(c) There are also great defects about pasture and fodder. The ignorant masses do not know what is the best fodder and there is practically no ground reserved for pasturage either by the local Zamindars or by the Government. Also this part of the country is very low and in the rainy season all the lands

become covered with water and when the water subsides the cattle are fed in those fields and then they are taken up with diseases.

(d) Also the cows do not yield large quantity of milk. In the average they do not give more than one seer of milk.

(e) Butter, ghee and milk are always adulterated for a good bargain.

2. To these evils I may suggest the following remedies.

(1) That stud bulls should be maintained for good breeding.

(2) That grazing fields should be set a part for cattle and people should be taught what are the best fodders.

(3) That injunctions should be issued not to milk the cows more than once and only in exceptional cases twice a day and not to plough lands with them but to provide means to the poor cultivators for purchasing bullocks from any Co-operative Credit Society.

(4) That veterinary dispensaries should be opened throughout the district or a department of the charitable dispensaries wherever it exist-for people may be set a part for animals also.

(5) An inspecting body should be formed for the prevention and punishment of adulteration of milk and other milk productions.

(6) That standard or model dairy farms should be started in all large villages and head-quarters for instructing the cultivators how to maintain cattle and what are the best fodders.

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2. Kamrup District.

Kamrup is another small district in the Assam Valley. Like Goalpara it has also only two Sub-divisions, *viz*—(1) Sadar and (2) Barpeta. Kamrup is a place of ancient pilgrimage amongst the Hindus and the charms of the local women are said to have converted human beings into sheep in by-gone ages.

Kamrup District.

Gauhati is the principal town. Gouhati and Barpeta have both got Municipalities, both of which bitterly complain of the degeneracy of local cattle, and inadequacy of milk supply.

This district relies almost solely on imported cattle for cart work. It is reported that there is an annual import of about 1,500 Bihari and 3,000 Maurangia bullocks for this purpose. The bullocks are used to a large extent for ploughing also. The imported cattle cannot however work in muddy land as well as the local cattle. A certain number of cattle are exported to the neighbouring district of Nowgong and the Khashi and Jaintia Hills.

In most parts of the district there is a sufficiency of waste land which is used for grazing. In some villages grazing lands are reserved and ryots are prohibited from cultivating them (*a*).

The principal dairy products of the district are milk, *dahi* and *ghee*. Ghee is produced on a large scale in the Barpeta and Ranghia thanas chiefly from buffaloe milk and exported.

The following extract from the Kamrup District Gazetteer by Mr. B. C. Allen, B.A., I.C.S., Vol IV., 1905, pp. 139-43, gives valuable particulars relating to local cattle :

From Kamrup District Gazetteer.

" The buffaloes of the district belong to two distinct breeds, the Assamese, and the Bengali. The Assamese are the larger of the two, and are fine upstanding animals with widely spreading horns. During the cold weather they are generally grazed in jungly tracts and a wild bull often attaches himself to the herd and becomes the sire of many of the calves. This continual infusion of a good strain of blood does much to maintain the excellence of the breed. The Bengali buffalo is a smaller and less imposing animal and does not command so high a price, a bull costing from Rs 12 to Rs 25 and a cow from Rs 20 to Rs. 60. The Assamese or Kacor animals are more expensive. The *dounsla* or crossbreeds from the two main stocks occupy an intermediate position both as regards value and price.

Buffaloes rarely get anything but grass and a little salt to eat. In the cultivated portions of the district they are usually placed in charge of a small half naked boy, whose legs can hardly stretch across the massive back of the animal he bestrides and who guides it with a nose-rope. In the *chaporis* the herd is driven out to graze in the jungle and follows the lead of the older cows, whose whereabouts is indicated by the metal or wooden bells that are dangling from their necks. They are often trusted to return in the evening of their own accord

(a) Survey and Census of Cattle in Assam by J. R. Blackwood, p. 15.

and a long line of animals is sometimes to be seen swimming across a channel of the Brahmaputra which separates them from the huts in which the graziers live. Often too, as the sun is setting, a herdsman is to be seen climbing a simul tree, which raises its head above the surrounding wastes of grass to call his buffaloes home. At night each animal is fastened by a nose-rope to a post, and sleeps on the bare ground. The professional graziers are generally Nepalese, and they keep their buffaloes in the *bils* and marshy tracts that fringe the Brahmaputra, or on the high grassy plains at the foot of the Himalayas. A cow is said to remain in milk for about ten months and yields at the beginning from two to four seers every day. The amount gradually decreases till a month or so before the next calf comes, when it ceases altogether. The milk is very white and rich in fatty materials and consequently yields a large proportion of ghi. The cows are said to begin breeding when three years old and to continue doing so for fifteen years during which time they give birth on the average to about ten calves The normal life of a buffalo is from 25 to 30 years. Age is judged by the incisor teeth.

Buffaloes.

Half starved, undersized, ill-bred and not unfrequently diseased, the Assamese cattle are but sorry creatures. The bullocks find it a difficult task to drag even the light native plough and the cows yield but a minimum of milk. The causes of this degeneracy are not entirely clear, but are probably to be found in a total indifference to laws of breeding, in absolute neglect, and partly perhaps in the want of suitable fodder in the rains. No bulls are set aside to be the sires of the herd, and the cows are generally covered by a young and immature animal, who secures the object of his desires by his superior lightness and agility. The sire is often closely related to the dam, and she in her turn has had her strength exhausted by being covered when herself little more than a calf and by subsequent breeding without the smallest intermission. The cattle are never groomed and when an epidemic breaks out no attempt is made to isolate the other cattle from the sick. "Everything", as Mr Darrah says "is left to nature, from the moment when the most active, and

Other Cattle.

therefore probably the youngest, bull of the herd has succeeded in covering a cow, until the progeny, after years of work and semi-starvation dies neglected in some unfrequented jungle."* If nasty they have at any rate the merit of being cheap, and cows generally cost from Rs. 8 to 15, bullocks which are usually castrated when three years old, from Rs. 10 to Rs. 25. The cattle brought down by the Bhutias in the cold weather, are however, a very different class of animal, and are almost as large as the well known Alderney breed. Unfortunately their numbers are not sufficient to produce any perceptible effect on the cattle of the district as a whole and the bullocks do not stand the heat very well.

Cattle disease.

The most common forms of cattle disease prevalent in the district are foot and mouth disease, rinderpest (guti) a disease called Kachua, the principal symptoms of which are flatulence and diarrhœa, marki, cholera, matikhoa, the first symptom of which is, as the name implies, the eating of earth followed by dysentery and *sukuna*, when the animal refuses to eat and dies after ten days or a fortnight.

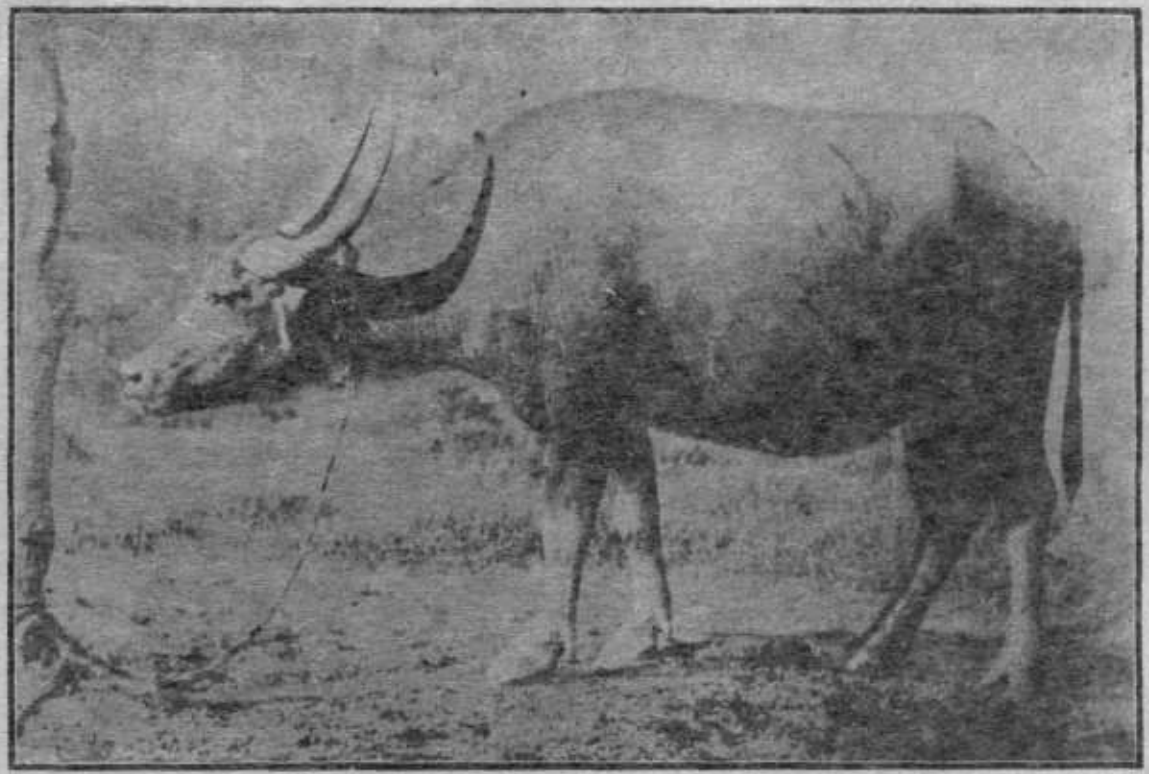
Grazing.

During the winter cattle are grazed on the stubble left in the fields, on high land that is lying waste, and in swamps and marshes. In the rains they have to be pastured on high land between the rice fields, and in the more densely settled portions of the district there is a dearth of grazing ground. The villagers here either feed their animals on ricestraw or on grass brought from a distance and the poor feeding in the rains has possibly something to do with the miserable condition of the cattle.

From Supplement to Kamrup Gazetteer.

As regards the cattle of the district generally there is little to be added to what is said in the first part of the gazetteer. Village grazing reserves have been formed and rules prescribed both for them and for reserves for professional graziers, but there has been and is not likely to be any improvement in the breed of cattle. There are few more melancholy sights than to see the herds of melancholy

*The information given here is taken from a note compiled by Mr. Darrah, Director of Land Records and Agriculture, in 1887, and from reports received from the Tahsildar and Mauzadars in Kamrup.



Assam Cow Buffalo. [By the courtesy of the Govt. of Assam.

creatures which are driven out daily from Gauhati town and graze and make an equally melancholy return every evening. The observer is inevitably reminded of "the stiff blind horse, his every bone astare" passed by Childe Roland on his way to the Dark Tower and can, like him, only conclude that they must be wicked to deserve such pain.*

The following figures show the number of animals in the district as ascertained at a Census taken in 1899:—

CATTLE CENSUS.

Cattle Census Kamrup.

Bulls and bullocks	196,000
Cows	148,000
Bull buffaloes	3,000
Cow buffaloes	8,000
Young stock	182,000
TOTAL ...	537,000

The Cattle-Census taken by Mr. Blackwood in 1914-15 indicate the total number of bovine cattle of Kamrup district, including young stock to be 682,310.

The Vice-Chairman, Gauhati Municipality writes in 1919 that—

(1) the state of cattle and of milk supply in this town (Gauhati) is anything but satisfactory.

(2) The cow milk is generally obtained from the Goalas who keep cows for the purpose in the town. As this supply is very small the shortness is largely supplemented with buffalo milk brought in by the Nepalis every morning from distant places where they keep their buffaloes. Both the cow milk and the buffalo milk are adulterated with water to increase their quantity to meet the large demand. It is necessary that there should be a large number of cows in the town, if possible of better breed, with a few breeding bulls. In the neighbourhood of the town an area of 943 bighas or about 314 acres has been reserved as grazing ground for the cattle of the town and of its adjoining villages.

Gauhati Municipality.

(3) The price of milk has risen of late, and is not likely to fall down unless the grazing fees now levied by the Goverment be

* Extract from 'Supplement' to Kamrup District Gazetteer Vol. IV. 1914 p. 8 by R. Friel.

reduced. It is very desirable that there should be some dairies in or near the town to ensure supply of pure milk and its products in sufficient quantity to meet the demand of the town people, and they may be started by some business men or by some co-operative society.

Srijut Kamala Kanto Das, B.L., Chairman, Barpeta Municipality (1919) states that supply of milk throughout the year in the locality is not satisfactory nor does the state of cattle seem to be good. This is probably due not to insufficient number of cattle but to the quality of cattle, bad breeding, insufficient pasture and fodder. There are no suitable pasture grounds owing to increase of cultivation. The area of the grazing ground has considerably diminished. Though the Government has reserved some land for grazing purposes they are not sufficient. In my opinion the area of the grazing ground should be increased Good bulls from other parts of the country should be supplied by the Government to different localities and it should see to their proper feeding.

Barpeta Municipality.

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3. Darrang District.

Darrang has two Sub-Divisions, (1) Darrang Sadar and (2) Mangaldai. It is a rather backward district and no later local information is available. Darrang has been found in 1914-15 to contain about 479,000 head of cattle.

There is considerable import of buffaloes and bullocks from Muzaffarpur, Bhagulpur, Guzrat, Chapra, Purulea, Arrah, and Palamau.

It is officially reported that there are common grazing grounds in most villages belonging to Government and steps have been taken to ensure prevention of encroachment.

Darrang District.

It was once proposed to start a Government Dairy Farm in this district at the town of Tezpur, near the Dhenikhona and Ouguri hills and the local officer was sanguine of its success, but nothing tangible seems to have been done as yet.

Darrang District Gazetteer by Mr. B. C. Allen, I.C.S., (1905 Vol. V, pp. 131-4) has the following :—

The buffaloes of the district belong to three distinct breeds, the Assamese are the largest of the three and are fine upstanding animals with widely spreading horns. During the cold weather they are generally grazed in jungly tracts, and a wild bull often attaches himself to the herd and becomes the sire of many of the calves. This continual infusion of a good strain of blood does much to maintain the excellence of the breed. The Bengali buffaloe is a smaller and less imposing animal and does not command so high a price. Nepalese buffaloes are also common. They are large animals but have smaller horns and longer tails than the Assamese variety. Assamese bulls cost from Rs. 30 to Rs. 40 and cows from Rs. 40 to Rs. 60, but a Bengali buffalo can be purchased rather less.

From Darrang District Gazetteer.

Buffaloes rarely get anything but grass and little salt to eat. In the cultivated portion of the district they are usually placed in charge of a small half naked boy, whose legs can hardly stretch across the massive back of the animal he bestrides and who guides it with a nose rope. In the chaporis the herd is driven out to graze in the jungle, and follows the lead of the other cows whose whereabouts is indicated by the metal or wooden bells that are dangling from their necks. They are often trusted to return in the evening of their own accord, and a long line of animals is sometimes to be seen swimming across a channel of the Brahmaputra which separates them from the huts in which the graziers live. Often too, as the sun is setting, a herdsman is to be seen climbing a simul tree, which raises its head above the surrounding wastes of grass, to call his buffaloes home. At night each animal is fastened by a nose rope to a post and sleeps on the bare ground. There are a large number of mokhutis, as these, grazing camps are called, in the flooded tracts along the Brahmaputra and on high land near the hills. A cow is said to remain in milk for about ten months and yields at the beginning from two to four seers every day. The amount gradually decreases till a month or so before the next calf comes, when it ceases altogether.

Buffaloes.

The milk is very white and rich in fatty materials and consequently yields a large proportion of ghi. The cows are said to begin breeding when three years old, and to continue doing so for fifteen years during which time they give birth on the average to about ten calves The normal life of a buffalo is from 25 to 30 years Age is judged by the incisor teeth.

Half starved, undersized, ill-bred and not unfrequently diseased, the Assamese cattle are but sorry creatures. The bullocks find it a difficult task to drag even the light native plough and the cows yield but a minmum of milk The causes of this degeneracy are not entirely clear, but are probably to be found in a total indifference to laws of breeding, in absolute neglect and partly perhaps in the want of suitable fodder in the rains. No bulls are set aside to be sires of the herd and the cows are generally covered by a young and immature animal, who secures the object of his desires by his superior lightness and agility. The sire is often closely related to the dam and she in her turn has had her strength exhausted by being covered when herself little more than a calf, and by subsequent breeding without the smallest intermission. The cattle are never groomed and when an epidemic breaks out, no attempt is made to isolate the sick. Everything, as Mr. Darrah says, is left to nature, from the the moment when the most active, and therefore probably the youngest, bull of the herd has succeeded in covering a cow, until the progeny, after years of work and semi-starvation, dies neglected in some unfrequented jungle. Cows generally cost from Rs 10 to Rs. 15 and bullocks from Rs. 15 to 30. The Bhutias bring down very fine animals in the cold weather but they are seldom purchased by the villagers in the neighbourhood and it is said they do not stand the heat well.

Cattle.

Livestock are generally grazed on the rice pathars after the crop has been carried, on high land, and in swamps and marshes till the water rises. During the rains the villagers are said to experience some difficulty in obtaining fodder for their cattle in parts of the Mangaldai, Patharughat, and Tezpur tahsils, and rice straw is sometimes collected for the purpose.

Grazing grounds.

A census of live stock was taken in 1904, and disclosed the following results. Bulls and Bullocks, 90,000; cows 82,000; bull buffaloes 19,000; cow buffaloes, 13,000; young stock 93,000.

Census.

The most common forms of cattle-disease are foot and mouth disease (chapka), rinderpest (guti), a disease called Kachua, the principal symptons of which are flatulence and and diarrhoea, Cholera (marki) Matikhoa, the first sympton of which is, as the name implies, the eating of earth followed by dysentry, and *sukuna*, when the animal refuses to eat and dies after ten days or a fortnight.

Cattle disease.

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4. Nowgong District.

There are over 50 Nepali Bathans in this district from which considerable quantities of *ghee* are exported regularly at rates varying from Rs. 1-4 to Rs. 1-8 per seer.

It is officially reported that grazing is sufficient in the hills and in Chapari villages. During the re-settlement proceedings special lands are said to have been reserved for grazing to serve a group of villages.

Manipuri, Maurangia and Behari bullocks are imported to a large extent to do cart work. A certain amount of export is also made to the neighbouring districts of Golaghat, Jorhat, Dibrugarh and Sylhet.

Nowgong District.

The buffaloes of the district belong to two distinct breeds, the Assamese and the Bengali.* The Assamese are the larger of the two and are fine upstanding animals with widely spreading horns. During the cold weather, they are generally grazed in jungly tracts and a wild bull often attaches himself to the herd and becomes the sire of many of the calves. This continual infusion of a good strain of blood does much to maintain the excellence of the breed. The Bengali buffaloe is a smaller and less imposing animal, and does not command so high a price, a bul costing

From Nowgong District Gazetteer.

* Information given by Mr. Darrah.

from Rs 25 to Rs 30 and a cow from Rs 30 to Rs. 40. The price of the Assamese buffaloe varies considerably in different portions of the district. Near the Brahmaputra where large herds of these animals are kept by professional graziers, the bull fetches from Rs. 30 to Rs. 40, the cow from Rs. 40 to Rs 60, but in the Kapili Valley the price rises from Rs. 40 to Rs. 60 for a bull and from Rs. 60 to Rs. 85 for a cow. Buffaloes rarely get anything but grass and a little salt to eat. In the cultivated portions of the district they are usually placed in charge of a small half-naked boy whose legs can hardly stretch across the massive back of the animal he bestrides and who guides it with a nose-rope. In the chaparis the herd is driven out to graze in the jungle, and follows the lead of the older cows, whose where-abouts is indicated by the metal or wooden bells that are dangling from their necks. They are often trusted to return in the evening of their own accord, and a long line of animals is sometimes to be seen swimming across a channel of the Brahmaputra, which separates them from the huts in which the graziers live. Often too, as the sun is setting, a herdsman is to be seen climbing a *Simul* tree which raises its head above the surrounding wastes of grass, to call his buffaloes home. At night each animal is fastened by a nose-rope to a post, and sleeps on the bare ground. A cow generally remains in milk for about ten months, and yields at the beginning from two to four seers every day. The amount gradually decreases till a month or so before the next calf comes when it ceases altogether. The milk is very white and rich in fatty materials and consequently yields a large proportion of *ghee*, the cows are said to begin breeding when three years old and to continue doing so for fifteen years; during which time they give birth, on the average, to about ten calves. The normal life of a buffalo is from 25 to 30 years. *

Buffaloes.

Half starved, undersized, ill-bred and not unfrequently diseased, the Assamese cattle are but sorry creatures. The bullocks find it a difficult task to drag even the light native

* Extracts from Gazetteer of Nowgong, by Mr. B. C. Allen, I.C.S., (1905 Vol. VI pp., 126-30).

plough and the cows yield but a minimum of milk. The causes of this degeneracy are not entirely clear, but are probably to be found in a total indifference to laws of breeding, in absolute neglect, and partly perhaps in the want of suitable fodder in the rains. No bulls are set aside to be the sires of the herd, and the cows are generally covered by a young and immature animal, who secures the object of his desires by his superior lightness and agility. The sire is often closely related to the dam and she, in her turn, has had her strength exhausted by being covered, when herself little more than a calf and by subsequent breeding without the smallest intermission. The cattle are never groomed and when an epidemic breaks out no attempt is made to isolate the sick. "Everything," as Mr. Darrah says, "is left to nature from the moment when the most active and therefore probably the youngest bull of the herd has succeeded in covering a cow, until the progeny, after years of work and semi-starvation dies neglected in some unfrequented jungle." If nasty, they have at any rate the merit of being cheap and cows cost from Rs. 7 to Rs. 12 and bullocks, which are usually castrated when three years old, from Rs. 15 to Rs. 30.

Cattle.

In the cold weather there is generally plenty of grazing ground, and the animals are turned loose in the rice-fields, or are driven away to swamps which are often covered with the most luxuriant grass. In the rains, when most of the country goes under water, fodder is not so easily obtained, and the cattle have to pick up a living as best as they can on the high ground between the rice-fields and are stall-fed on grass, and, in more densely populated portions of the district, on straw. The difficulty becomes particularly acute in the Chapari Mahals, and in Garua Mauza they are said to be kept on artificial mounds of earth, which are thrown up near the homestead. On the other hand during the cold weather there is abundance of excellent grazing on the Chapari, and in the six mauzas that fringe the Brahmaputra from ubtPharia, to Mayang. There were in 1903 no less than 42 separate mokhutis, or herds of buffaloes kept by professional graziers, the great majority of whom

Grazing ground.

are Nepalese. Graziers are also fairly numerous in the tahsils and there were 14 mokhutis both in the Raha and the Sadar tahsil and 9 in Samaguri. On the other hand in the Kapili Valley, above its junction with the Jamuna, the professional grazier is unknown. This no doubt is due to the fact that the population is so sparse that there could be but little sale for milk. As in this portion of the district there is an abundance of good grazing ground, the cattle of the Kapili Valley are said to be some of the finest in Assam.

Cattle disease.

The most common forms of cattle disease prevalent in Nowgong are foot and mouth disease, rinderpest (guti), a disease called Kachua, the principal symptoms of which are flatulence and diarrhœa (marki), cholera, matikhoa, the first symptom of which is, as the name implies, the eating of earth followed by dysentery, and Sukuna when the animal refuses to eat and dies after ten days or a fortnight.

Grazing grounds.

Formerly there were no lands reserved for grazing the cattle of villagers. The want of such reserves has long been felt by the people specially in the rains, when most of the fields remained under water. It has now been proposed to reserve the areas shown in the margin for this purpose. Government has also decided to set aside certain reserves for professional graziers, such as the Nepalese. This measure was very necessary in order to prevent the graziers from moving their bathans indiscriminately throughout the district and thus giving rise to constant friction with the villagers.*

LATER INFORMATION.

			Bighas.
Silghat Circle	...	...	15,036
Dhing ,,	...	...	3,013
Raha ,,	...	...	5,406

Cattle Census.

A cattle census was taken in 1912-13; according to that census there were 91358 bullocks, 76581 cows, 12532 bulls, 15100 male buffaloes 15270 cow buffaloes and 92,159 young stock in the district. These figures can of course only be regarded as approximately correct.

* Extracts from "Supplement" to Nowgong Gazetteer by R. Friel, (1915 Vol. VI pp. 1-2).

In 1913-14, 4107 cattle are reported to have died in the district from various diseases. Foot and mouth disease was the cause of 1096 deaths, cattle cholera of 1175, anthrax of 315, hæmorrhagic septicæmia of 980 and rinderpest of 541 deaths.

Cattle disease.

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5. Sibsagar District.

The local cattle are of stunted size and are usually not fit for cart work, for which purpose a certain number of bullocks are imported from Manipur, Maurangia, Behar, Nowgong and Dibrugarh.

Reserved Government grazing grounds have been preserved in some places. Unsettled Government land is allowed for grazing and it is reported that there is provision for preventing encroachment upon pasture lands.

Sibsagar District.

A good business in selling milk and milk-products is carried on in Jorhat bazar. Nepali bathans supply dairy products.

Cattle are generally grazed on the high land between the rice-fields, in swamps and marshes where excellent pasture is to be obtained during the cold season, and on the stubble that remains after the crop is cut. In the district as a whole there is no doubt abundant grazing of a kind but it is not always well distributed and in places the villagers during the rains are hard pressed for fodder. The finest grazing is to be found on the Majuli and in the marshes which fringe the Brahmaputra, and it is here that the professional herdsmen keep their buffaloes. Certain areas have been reserved as grazing grounds by executive order, but rules for their reservation have not yet been framed though in the more densely settled portion of the district it would seem that they would not be entirely out of place. In these tracts, during the rains, cattle have sometimes to be sent to other villages to graze, or are stall-fed on rice straw which has been previously collected for the purpose.

Grazing.

The buffaloes of Sibsagar belong to three main breeds, the Assamese, the Nepalese and the Bengali. The Assamese

is the finest and largest of the three, and in the largest jungly parts of the district, the excellence of the breed is to some extent maintained by an infusion of wild blood, wild bulls associating with the herd and becoming the sire of many of the calves. The Nepalese buffaloes have shorter horns than the Assamese and the Bengali is altogether a smaller and less imposing animal. An Assamese bull buffalo usually costs from Rs 40 to Rs 60 while a cow is from 10 to 15 rupees more. Bengali buffaloes of either sex are considerably cheaper than the Assamese. Pure bred Assamese buffaloes are unfortunately becoming scarce, and crosses between these breeds are extremely common.*

Buffaloes.

Buffaloes rarely get anything but grass and a little salt to eat. The cow-buffaloes are said to begin breeding when three yeas old, and to continue doing so for fifteen years, during which time they give birth on the average to about ten calves. The normal life of a buffalo is from 25 to 30 years. Age is judged by the incisor teeth.

Half starved, undersized, ill-bred, and not unfrequently diseased, the Assamese cattle are but sorry creatures. The bullocks find it a difficult task to drag even the light native plough and the cow yield but a minimum of milk. The causes of this degeneracy are not entirely clear but are probably to be found in a total indifference to laws of breeding, in absolute neglect and partly perhaps in the want of suitable fodder in the rains. Grazing is not very plentiful in Sibsagar, the demand for cattle is considerable, and the price is higher than in Lower Assam. Cows generally cost from Rs. 10 to Rs. 18 or even more, and bullocks fetch as a rule between Rs. 20 and Rs. 30.

Cattle.

A census of live stock was taken in 1904 and disclosed the following results. Bulls and bullocks 132,000, cows 101,009, bull-buffaloes 25,000, cow-buffaloes 23,000, young stock 164,000.

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* Extract from the District Gazetteer of Sibsagar by Mr. B. C. Allen I.C.S. pp. 134—37 1908.

The most common forms of cattle disease are foot and mouth disease (chapka), rinderpest (guti), a disease called Kachua, the principal symptoms of which are flatulence and diarrhoea (marki) cholera, matikhoa, the first symptom of which is, as the name implies, the eating of earth followed by dysentery, and sukuna when the animal refuses to eat and dies after ten days or a fortnight.

Cattle disease.

Veterinary Surgeons whose headquarters are at Mariani, have been entertained by the district Local Boards since the year 1908. There are now five assistants in the district. The jurisdictions of each of the two assistants in Sibsagar and Jorhat are coterminous with the boundaries of the Sub-Deputy Collector's circles, while in Golaghat there is one assistant for the whole sub-division.*

The Hon'ble Rai Phanidhar Chaliha Bahadur writes from Sibsagor (1919) :—

"The state of cattle and of milk supply in the Sibsagar district is decidedly very poor. The mortality of the cattle is very great. The number of veterinary Assistants is inadequate and the people have not been able to appreciate their services yet. The quality of cattle is the most inferior, I am afraid, in the whole of India. The cows are covered by young bulls 3 or 4 years old. Pasture is quite insufficient. A cow gives on the average ½ a seer of milk and a buffaloe cow 2½ to 3 seers.

The remedies I suggest are :—

(a) the employment of a much larger number of efficient and energetic veterinary surgeons.

(b) the adoption of the recommendations of Mr. J. R. Blackwood, I.C.S.

Rai Bahadur Phanidhar Chaliha.

(c) The total abolition of the grazing taxes which have caused great hardship to the people *vide* (Proceedings of the Assam Legislative Council 5 to 13 October 1918 Pp. 51-58 *ante*).

(d) The grant of more grazing ground. A large area in which the cattle grazed, adjoining villages have been taken up for cultivation mostly by Europeans and foreigners."

* Extracts from the Supplement to Sibsagor Gazetteer 1915, by B. Friel, p. 7.

CSL

The following *questions* were asked by the Hon'ble Rai Phanidhar Chaliha Bahadur at the Assam Council meeting held on the 5th April 1919 and got the following replies from Government :—

(a) Will the Government be pleased to state whether any action has been taken on the recommendation of Mr J. R Blackwood, I C S, regarding the cattle of Assam?

(b) Is it in contemplation to establish some cattle farms in selected places under Government control for development of superior milk yielding cows, draught bullocks and serving bulls?

(c) If such farms can not be started as purely Government concerns, will the Government be prepared to assist financially or otherwise, such farms if started, on the co-operative or joint stock system?

(d) Has the question of providing superior serving bulls under proper management for village cows as recommended by Mr. Blackwood and actually tried in Bengal, engaged the attention of the local Administration?

If so, what decision has been arrived at?

(e) Will the Government state the number of stud bulls if any, distributed free to private persons or local bodies for improvement of the breed of village cattle?

Answers.

"(a) The Hon'ble Member is referred to paragraph 7 of the Revenue Department Resolution No. 3846-R. dated the 1st October 1918* which states the measures on which the Chief Commissioner proposes to rely in order to give effect to the recommendations of Mr. J. R. Blackwood, I C S, with a view to improving the existing breeds of cattle in Assam.

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*Improvement in the existing breeds of cattle in Assam. Extract from the Proceedings of the Chief Commissioner of Assam in the Revenue Department, No. 3846R. dated the 1st October 1918. Read—The Report on the Survey and Census of the Cattle of Assam by Mr. J. R. Blackwood, I.C.S.

RESOLUTION.

On the suggestion made by the Government of India Mr. Blackwood was appointed by the late Eastern Bengal and Assam Government in November 1911 to make an economic survey of the cattle of that province with the object of discovering whether any improvement in the existing breeds of cattle was required, and of devising means for effecting such improvements as were found to be necessary. When the province of Eastern Bengal and Assam was dissolved, Mr. Blackwood, with the permission of the Government of Bengal, continued to have charge of the census of cattle in Assam, and his report on the subject

(b) The Hon'ble Member is referred to paragraph 3 of the Resolution in question which explains the reasons why the Chief Commissioner is not prepared for the present to establish cattle farms in Assam.

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was received towards the close of the year 1916. In the meantime an examination of the conditions under which professional graziers kept their cattle in Assam had been made by the late Mr. Arbuthnot, I.C.S., and steps were being taken to bring professional grazing under control. Mr. Blackwood's report has been carefully examined in the light of the information collected in this province and in that of the recommendations of the Board of Agriculture.

2. Mr. Blackwood finds the poor quality of the Assam cattle in marked contrast to the fine quality of the Assam buffalo. His main recommendations for the improvement of the breed are the same for Assam as for Bengal, *viz.*, (1) the establishment of cattle farms, either under Government control or private management, for the development of superior milk-yielding cows, draught bullocks, and serving bulls; (2) the provision of superior serving bulls under propermanagement for village cows in definite areas; and (3) the castration of weedy bulls in those areas.

3. It seems to the Chief Commissioner that a small and rather impecunious province like Assam would not be justified in embarking on the expensive experiment of a cattle farm without either some practical demonstration of the possibility of running such a farm on economic lines or more definite assurance of the benefit to be expected from it. The Government of Bengal have already established a cattle farm at Rangpur. This district is on the borders of Assam, and Mr. Beatson Bell considers that before attempting to establish a separate farm of its own Assam may well wait and see the issue of the experiment in Rangpur.

4. The suggestion that to improve the breed of the cattle, superior serving bulls should be provided under proper management for village cattle in definite areas and that within those areas young bulls unfit to become sires should be castrated or kept away from the cows, meets with general approval. The practical difficulties, however, in the way of carrying out this programme are by no means inconsiderable. The first problem is to find the class of animals to be employed as a sire. Mr. Blackwood has recommended *Manipur and Burma bulls* and the best bulls that are bred in the *Garo Hills*. From enquiries made in Manipur by Mr. McSwiney, Director of Agriculture, and Mr. Harris, Superintendent of the Veterinary Department, *it appears very doubtful whether there is really a distinct breed of Manipuri cattle*. There are, no doubt, in Manipur large numbers of cattle generally superior to the ordinary village cattle of the plains, but they suffer from the disability common to all hill cattle of extreme susceptibility to rinderpest and other epidemic diseases which are almost endemic in the province, and this susceptibility would, it is said, be transmitted to the offspring. As to *Burma bulls, it is reported that all the best young bulls are required in Burma*, and that it would be difficult to secure any considerable number. Enquiries made in *the Garo Hills and elsewere have failed to disclose the existence of any separate breed of cattle in that district*, and it seems probable Mr. Blackwood must have been *misled by finding in the Garo Hills fine young animals being fattened up for beef*. It is the custom for Garos to buy young bulls in the plains, keep them for a while, fatten them, and either kill or sell them. With good feeding in the hills these animals improve and put on weight, but they would be of no particular use as sires. Failing the 3 sources of supply suggested by Mr. Blackwood, the Chief Commissioner has approached the Government of Bengal, who have kindly agreed to let this Administration have a few *suitable young bulls from the Rangpur Farm*. The herds are being bred with a special view to the requirements of Bengal, which are practically identical with those of Assam, and the animals thus produced should be of the right stamp for employment as sires in this province.

5. Mr. Blackwood rightly has insisted on the necessity for castrating weedy bulls in the areas in which selected serving bulls are provided. It is the practical experience of tea planters and others who have endeavoured to breed superior cattle that the heavier bulls employed by them have no chance in competition with the lighter and more active animals that are allowed to run about with the cows. In spite of the object lesson afforded by the improvement in their employers' cattle which result from allowing cows to be served only by selected bulls, tea-garden coolies seldom agree to have their own young animals gelded or to keep them away from the cows. Most of the tea planters who have been consulted are unwilling to offend their labour force by insisting on the castration of inferior young bulls, and it is greatly to be feared that it will be long before the necessity for this measure is accepted by the ordinary peasants of the province. In this connection attention has been drawn to the barbarous method of castration in general use, and if castration is to be more general, it is highly desirable that skilled men should be employed, who will perform the operation in a more humane manner. The Superintendent of the Veterinary Department will be asked to consider, in consultation with the committees referred to in paragraph 7 below, what measures should be adopted.

(c) No promise can be given, but the Chief Commissioner will be glad to consider the case of a cattle breeding farm started on lines approved by his expert advisor and with reasonable guarantees for its proper working.

(d) The answer is in the affirmative. The Hon'ble Member is referred to paragraph 4 of the Revenue Department Resolution above mentioned. The Chief Commissioner has approached the Government of Bengal who have kindly agreed to let this Administration have a few suitable bulls from the Rangpur Farm.

(e) The free distribution of stud bulls to local bodies has been abandoned because cows were not brought to these bulls. Fifty-three bulls were sold to private persons or local bodies during the years 1912-18 but the results were disappointing mainly

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6. Obviously it is not enough merely to introduce new blood or to select only the better animals as sires. Unless the present conditions of feeding and housing are improved, any breed of cattle will be bound to deteriorate rapidly. According to the census the number of cattle in Assam is 4,840,000—roughly 7 to every 10 human inhabitants; a considerably higher proportion of cattle to men than in Bengal and far in advance of that in the British Isles. Within the province itself the ratio of cattle to men differs greatly. In the Surma Valley, which is comparatively thickly populated, and where a great part of the land is submerged deeply for several months in the year so that cattle have to be stall fed, 1,808,000 cattle were enumerated—roughly 1 to every 2 human beings. In the Assam Valley, where there are vast unoccupied areas and unlimited grazing, over 3 millions of cattle of all sorts were found—a number not far short of the whole human population.

In the more densely-populated portions of the province the provision of grazing for all these cattle already presents a serious problem, and the difficulty is growing year by year. Accordingly steps have taken to set apart lands for grazing and protect them from encroachment. These grazing reserves are of four main classes:—

(1) Village grazing grounds in which agriculturists' cattle graze free of charge;
(2) grazing grounds in more remote localities where professional graziers may keep large herds, paying the prescribed fees;
(3) grazing grounds in the vicinity of small towns, where cattle kept for the supply of milk to the towns pay a reduced scale of fees; and
(4) village forests in which grazing may be allowed in accordance with the rules for the management of the forest.

Mr. Blackwood, indeed, has found that the quality of the cattle does not depend on the abundance or otherwise of grazing, and it is clear that ultimately the raiyat will have to take to growing fodder crops; but most parts of Assam are too wet for jowar, and until a suitable substitute is found or means devised of storing grass in the form of hay or ensilage, the cattle will have to depend very largely on pasture. Sufficient areas, therefore, must, wherever possible, be kept as grazing grounds. Up to now over 130,000 acres have been reserved for village grazing grounds in the Assam Valley, and over 20,000 acres in the Surma Valley. This will not go far towards the support of some 4 million head of cattle, out in the more populated parts where such grounds are needed, it is already difficult to get suitable land.

7. The Chief Commissioner proposes to rely on the following measures:—

(1) The importation of selected sires, which will be entrusted either to local bodies or to tea planters and other individuals interested in cattle breeding and the improvement of the milk supply.
(2) The gradual education of the people by example and precept to understand the benefits of selective breeding and of proper feeding and keeping of cattle.
(3) The reservation of adequate grazing grounds.
(4) The introduction of suitable fodder crops and the devising of means for preserving grass and other fodder in the conditions in which the people live.

To supervise the working of the experiments and to help in educating the people it is intended to constitute local committees of persons interested in cattle breeding.

By order of the Chief Commissioner of Assam, J. E. Webster, *Chief Secretary.*

because, as in the case of the bulls which were distributed free of cost, cows were not brought to these animals."

Mr. Chaliha adds that people would have been very glad to bring cows if they had proper notice. And this appears to represent the correct state of things

The Vice-Chairman, Local Board, *Golaghat* says :—

The state of cattle and of milk supply is not satisfactory.

So far as the indigenous breeds are concerned they are unsatisfactory in all respects. The number of cattle, both cows and buffaloes, is insufficient. Cattle used in the plough and carts have to be brought every year in very large numbers from foreign traders, Manipuri and upcountry people generally making the supply. The native breed of bullocks is indeed too small for carts and cart traffic has invariably to depend on foreign supply; agriculture will also suffer if outside supply is wanting in any year.

In milk the average yield of local cows may be taken at quarter to half a seer per day, very few cows yielding even a seer of milk per day. The pure native variety of buffaloes has almost become extinct; we have therefore to depend for milk almost entirely on foreign traders known as professional graziers who keep large herds of buffaloes and some cows also in every Sub-division. The supply of carting buffaloes also generally comes from these professional graziers. The milk they supply is always more or less adulterated and the butter as a rule is taken out before milk comes for sale. Pure milk has therefore become a rare commodity. Breeding is defective. Special breeding bulls or their use is a thing unkown in the villages. In recent years Government has been taking liberal steps in reserving village grazing grounds though some of them are heavy jungles infested with tigers which cause much havoc. But fodder supply as a trade is unknown and generally the cattle depend entirely on the grazing grounds for managing to live on. This is a knotty question; Government enquiries have so far failed in arriving at a satisfactory solution. Liberal supply of breeding bulls in villages is suggested by some as a means, funds for which it is ifficult to find. Real improvement can not be expected until the

Golaghat Local Board.

consciousness of the people themselves is aroused about the defects and the need for remedying them. How this can be created it is very difficult to suggest. Old India tried to grapple it by enjoining sanctity of the cow and encouragemet of dedication of bulls in funeral ceremonies. It is for associations like the one enquiring to investigate the matter In modern times it is a matter for consideration whether the Cattle Trespass and the Cruelty to Animals Acts may be made more stringent.

Rai K. K. Barooah Bahadur, Chairman of the Jorhat Municipality writes under date the 10th June 1919. In my opinion the state of cattle and milk supply in the locality is far from being satisfactory, with regard to (a) quality of cattle (b) breeding and (c) pasture. The evils complained of can be remedied to some to extent by granting more grazing grounds and by supplying bulls for breeding purposes.

Jorhat Municipality.

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6. Lakhimpur District.

There are many Nepali bathans in the district but the quantity of *ghee* produced is not sufficient for local consumption Milk sells from 3 to 4 annas a seer and *ghee* from Rs. 1-4 to Rs. 1-8 per seer.

It is reported both in official and non-official circles that the grazing land is *meagre* and *insufficient*, especially near the towns and this causes not a little inconvenience to the cattle-owners. The Government, however, is trying to reserve land for such purposes, and it is hoped that in the course of time provision for adequate grazing lands will be made.

Lakhimpur District.

Considerable number of cattle are imported, specially for cart-work, and a small export also takes place to the neighbouring district of Sibsagar.

The buffaloes of the district belong to two distinct breeds, the Assamese and the Bengali. The Assamese are the larger of the two and are fine upstanding animals with widely spreading horns.

During the cold weather, they are generally grazed in jungly tracts, and a wild bull often attaches himself to the herd, and becomes the sire of many of the calves. This continual infusion of a good strain of blood does much to maintain the excellence of the breed. The Bengali buffalo is a smaller and less imposing animal, and does not command so high a price, a bull costing from Rs 20 to Rs. 30; but in Lakhimpore the Bengali buffalo is comparatively scarce, and the fine indigenous breed still holds its own. Nepalese buffaloes are also common. They are large animals but have smaller horns and longer tails than the Assamese variety. Assamese bulls cost from Rs 25 to Rs. 60, and cows from Rs. 50 to Rs. 60, but a Bengali cow buffalo can be purchased for Rs. 30 or Rs. 35. The price, as is only natural, is lower in North Lakhimpur and in the more outlying parts of the district, such as Jaipur and Sadiya, than in the neighbourhood of Dibrugarh. Buffaloes rarely get anything but grass and a little salt to eat. The grazing industry is not, however, of as much importance in Lakhimpur as it is in some of the lower districts of the Assam valley. Most of the mokhutis, as these grazing camps are called, are situated in the Dibrugarh tahsil, where in the cold weather there are said to be some hundred or more of them; there are a dozen near Sadiya, some ten at Sisi, and one or two in nearly every mauza in the North Lakhimpur sub-division. A cow is said to remain in milk for about ten months, and yields in the beginning from two to four seers every day. The amount gradually decreases till a month or so before the next calf comes, when it ceases altogether. The milk is very white and rich in fatty materials and consequently yields a large proportion of *ghee*. The cows are said to begin breeding when three years old, and to continue doing so for fifteen years, during which time they give birth on the average to about ten calves. The normal life of a buffalo is from 25 to 30 years. Age is judged by the incisor teeth.*

Buffaloes.

Half-starved, undersized, ill-bred and not unfrequently diseased, the Assamese cattle are but sorry creatures. The bullocks find it a difficult task to drag even the light native plough,

* Lakhimpur District Gazetteer by Mr. B. C. Allen, I.C.S., (Vol. VII, 1905 pp. 162-7.)

and the cows yield but a minimum of milk. The causes of this degeneracy are not entirely clear, but are probably to be found in a total indifference to laws of breeding, in absolute neglect and partly perhaps in the want of suitable fodder in the rains. No bulls are set aside to be the sires of the herd, and the cows are generally covered by young and immature animals. Cows cost from Rs. 10 to 15, though double that sum is occasionally paid; bullocks cost from Rs 15 to Rs. 30. Cattle like buffaloes are cheaper on the north bank than they are in the more densely settled tracts south of the Brahmaputra.

Cattle.

Livestock are generally grazed on the rice pathars after the crop has been carried, and in swamps and marshes till the water rises. During the rains the villagers are said to experience some difficulty in obtaining fodder for their cattle in the neighbourhood of Dibrugarh, and in the country which is to some extent exposed to flood such as Khowang and Jaipur and the mauzas past which the Subansiri flows. Over the greater part of the district population is however still too sparse for the question yet to have assumed an acute form; and rice-straw is not as a rule collected and stored against the rainy season.

Grazing ground.

The most common forms of cattle disease are foot and mouth disease (chapka), rinderpest (guti), a disease called Kachua, the principal symptoms of which are flatulence and diarrhoea, cholera (marki), matikhoa, the first symptom of which is, as the name implies, the eating of earth followed by dysentery and sukuna when the animal refuses to eat and dies after ten days or a fortnight. A Veterinary establishment for the district was sanctioned in January 1907 and the staff now consists of three veterinary asssistants. Two are attached to the sadar sub-division and have their head quarters at Dibrugarh and Tinsukia, respectively; they work under the control of the Chairman of the Dibrugarh Local Board. The third is posted to North Lakhimpur, and is under the control of the North Lakhimpur Local Board.*

Cattle disease.

* Extract from the Supplement to Lakhimpur Gazetteer by R. Friel (1916 p. 7.)

CHAPTER III.—SURMA VALLEY DISTRICTS.

1. Cachar District.

Cachar is an important district in the province of Assam, once famous for its breed of cows and buffaloes. A comparison of the reports in the district Gazetteer of 1905 with those of the Sub-Divisional officers and others in 1919, shows that matters are drifting from bad to worse. Manipuri and Bangar buffaloes are still imported and there is a certain amount of export of cattle to Sylhet. The number of imported cows is about 1 per cent. and of imported buffaloes 5 per cent.

Cachar is divided into 4 Sub-divisions, *viz.*—(1) Sadar or Silchar, (2) Hailakandi, (3) Haflong or North Cachar and (4) Reserved Forest. No detailed account is available separately for Haflong or the Reserved Forest, but a general description is given in the reports for the whole district. Silchar has got a fairly large Municipality. It is reported that there is practically no common grazing ground in this district and 'the Khas land used for grazing is being rapidly encroached upon.'. (a)

Cachar District.

Mr B. C. Allen I.C S. gave the following account of the cattle of the district in 1905 (b)

"The cattle are miserable little creatures, and are some of the sorriest specimens of their kind. No attention is paid to breeding, during a portion of the year they generally go short of food and the policy of total indifference and neglect is attended by the usual results. The Manipuri cattle though small, are a fine and sturdy little breed and are much appreciated by the cultivators of the Surma valley.

From Cachar District Gazetteer.

"Buffaloes are often used to drag the plough in Cachar, and are of two distinct breeds. The Manipuri buffalo is a fine upstanding animal, with wide-spreading horns and is larger and stronger than the *Bangar* whose horns curve downwards and inwards. A Manipuri bull costs from Rs. 30 to Rs. 80 whereas the price of the Bangar ranges from Rs. 20 to Rs 50. The price of a Manipuri cow-buffalo ranges from Rs. 40 to Rs. 125 and one of the other breed from Rs. 25 to Rs. 70.

Cattle.

(a) Survey and Census of the Cattle of Assam by J. R. Blackwood p. 14.
(b) District Gazetteer of Cachar by B. C. Allen, I.C.S. (1905) Vol. I p 76-78.

"During the rains, when the rice crop is on the ground, and the *haors* or swamps are under water, there is often difficulty in obtaining grazing for the cattle. They are turned out on the high lands between the fields, and on the jungle-covered hills to pick up what they can, and rice-straw is sometimes given to them; but in every part of the plains there is a dearth of suitable fodder at this season of the year, and the condition of the cattle falls off very much. After the crop is cut they are allowed into the fields to browse upon the stubble or are driven to the swamps when the water falls. In the Katigara tahsil there is a considerable area of low land that makes an excellent grazing ground in winter, the best known *haors* being the Thulang, the Talkar, the Rowar, the Dubria, and the Duba. In the hills there is never any scarcity of grazing for the buffaloes and mithun (bos frontalis) which are the only cattle kept by the hill men. In this portion of the district there is a considerable number of professional graziers, Nepalese by race, who were attracted there at the time when the railway was being made. In the plains the buffalo-keeper who lives by selling milk and ghi is only found in the Chatla *haor* and the Katigara tahsil, and even there he is by no means a common figure.

Grazing.

The most common forms of cattle disease prevalent in the district are foot and mouth disease, rinderpest (guti), a disease called Kachua, the principal symptoms of which are flatulence and diarrhœa (marki), cholera, matikhoa the first symptom of which is, as the name implies, the eating of earth followed by dysentery and Sukuna, when the animal refuses to eat and dies after ten days or a fortnight."

Cattle-disease.

Babu Rukmini Kumar Das, Vice-Chairman of the Silchar Municipality (Dt. Cachar) says in June 1919:—

1. The state of cattle and milk supply is not satisfactory in this locality.
2. In my opinion the state is unsatisfactory because of the quality of cattle, breeding, want of pasture land, fodder and milk production.
3. As remedy to these evils I would suggest the following:—
   (a) Provision of sufficient grazing ground.
   (b) Supply of good quality of cattle and breeding bull.
   (c) Improvement of the condition of the cultivators generally and to give them proper education so that they may fully realize the worth of good stuff of cattle.

Silchar Municipality.

E. B. Shaw, Esq., I C S., Subdivisional Officer, Hailakandi, in reply to the inquiries made by the All-India-Cow-Conference Association as regards the state of cattle and of milk supply of the Sub-division, forwards in original two notes on the subject (1919). He is of opinion that the milk supply in this Sub-divison is very poor and the condition of cattle most deplorable, especially in the plains portion.

Hailakandi Sub-Division.

Note of Babu Girish Chandra Chakravarty, Secretary Hailakandi bar.

"This Sub-Division is divided into two parts *viz.* (a) the hilly portion including the Tea Gardens and their neighbourhoods (b) and the plains portion. In respect of the locality under the hilly portion including the Tea Gardens and their neighbourhood the state of cattle and of milk supply is satisfactory, but my reply with regard to the state of cattle and of milk-supply in the plains portion is in the negative.

I do not complain of the number of cattle. The inferior quality of cattle, the want of proper breeding and the insufficiency of the necessary pasture gardens are at the root of such unsatisfactory condition and as a matter of fact there is no plenty of milk production. In my opinion the average milk product of a cow will not exceed half a seer per diem.

Note of Babu Girish Chandra Chakravarty.

The remedies I suggest are :—

(a) To arrange for proper breeding, hence healthy cattle of superior quality should be procured from outside the Sub-Division.

(b) To extend pasture-grounds.

(c) A regulation should be passed under the authority of Government for prohibiting the practice of ploughing lands by cows."

Mr. B. M. Shome a responsible public officer submitted this Note to the S. D. O. Hailakandi.

"The milk supply in this Sub-Division is very poor and the condition of the cattle most deplorable especially in the plains portion.

The shortage in the supply of milk can not alone be attributed to the small yield per cow but also to the number. In this sub-division most cultivators plough the soil more with buffaloes than with bullocks or cows. The number of cows possessed here by cultivators is in my opinion, comparatively less than those possessed by cultivators in Bengal. There are various contributory causes to this state of affairs in this sub-division. The first and foremost is deficiency of pasturage and exercising grounds. There is no grazing ground in this Sub-division, nearly every bit of ground being cultivated during cultivation season and cattle are left to graze on road-side lands or on the narrow banks of rivers or *Khals*. For want of proper grazing they get much emaciated and weak. To remedy this evil the necessity of keeping grazing grounds cannot be too highly emphasized. If suitable places are reserved for pasturage it will perhaps improve the condition of the cattle.

Note of Mr. B. M. Shome.

No fodder crop is grown here exclusively for cattle. For want of nutritious fodder cattle deteriorate here to a large extent. The people should be instructed to grow fodder crops like *Jowar* and if this is done and pasture-lands are set apart, the condition of cattle will greatly improve and the yield per cow will be considerably greater and richer in quality.

Unfavourable climatic conditions, shortage of suitable breeding bulls and the practice of castrating bulls at a late age are some of the contributory causes. There should be more importation of superior cattle from other places and selection and crossing with superior but nearly allied species.

There is another evil prevalent here. A very small proportion of cows' yield is left generally to feed its calf. This should be discouraged. A cow should have enough to feed its calf. Dissemination of knowledge and practical demonstration can cure these evils. For this purpose there should be model farms at suitable places. The people are so ignorant, backward and full of prejudices that unless things are demonstrated before their eyes they are very slow to learn many things and appreciate the benefits of many improved systems. This work should be taken up as early as possible by the association."

2. Sylhet District.

Sylhet is by far the greatest cattle-owning district in Assam. Mr. J. R. Blackwood, L.L.B., I.C.S., while compiling his Cattle-Census Report in 1914-15 estimated the number of cattle in this district to be 1,542,503.

Sylhet is divided into 5 sub-divisions, *viz.*:—

(1) North Sylhet or Sadar, (2) South Sylhet or Maulv Bazar, (3) Habigunj, (4) Sunamgunj, and (5) Karimgunj.

Sylhet District.

Cattle are imported from Cachar and Mymensingh and buffaloes from Manipur and Behar. There are grazing grounds for villages or parts of villages in almost every part of the district. Good grazing is available in cold weather in the large *haors*, e.g. Hakaluki, Kawadighi, Hailhaor. Cattle from Kowadeg and Milha-Bhurang are also grazed in the dried-up beds of *beels*, *jheels* and low-lying tracts generally. In perganahs Dhaka Dakshin, Dakshinkach and Uttarkach there are jungle tolahs where cattle are grazed. "Wasteland and haors belonging to Government are being rapidly encroached on. The Showla or Helimnagar Haor is reserved for Government elephants."(a)

The Sylhet Gazetteer by Mr. B. C. Allen, I.C.S. (1905, Vol. II, pp. 130-134), furnishes many useful information relating to the cattle of the district. Extracts ate given below.

(a) Survey and Census of Cattle of Assam by J. R. Blackwood, p 14.

From Sylhet District Gazetteer.

There are three varieties of buffaloes in Sylhet, the Manipuri which comes from the State of that name, the Bangar which is imported from other parts of India, and a hybrid formed by crossing the other two. The Bangar though a much more satisfactory animal than the cow or bullock of Sylhet, is inferior both in size, and appearance to the hybrid, which again is not as fine an animal as a pure-bred Manipuri. Professional graziers are not so numerous as in the Assam Valley, the scarcity of pasture in the rains being no doubt a serious difficulty. There are same ten herds of buffaloes in the Dharmapasha thana on the extreme west of the Sunamganj Subdivision, four in Fencherganj, Maulavi Bazar, and Rajnagar, one or two in Matiganj and Karimganj, and fifteen or sixteen in the Hakaluki haor. Elsewhere the number of professional graziers is very small. A cow is said to remain in milk for about ten months and yields at the beginning from two to four seers every day. The amount gradually decreases till a month or so before the next calf comes, when it ceases altogether. The milk is very white and rich in fatty matters, and consequently yields a large proportion of *ghi*. The cows are said to begin breeding when three years old, and to continue doing so for fifteen years, during which time they give birth, on the average, to about ten calves. The normal life of a buffalo is from 25 to 30 years. Age is judged by the incisor teeth and a buffalo is not aged till it is twelve years old. Male buffaloes vary in price from Rs. 20 to Rs 100, and cows from Rs. 30 to Rs. 120. The Bangar buffaloes are cheaper than the hybrids, and much less costly than the fine animals of Manipuri breed. The prices paid in the Jaintia pergunnas are considerably higher than those prevailing in the west and south of this district.

Buffaloes.

The cattle of Sylhet are some of the sorriest of their kind, and are undersized, half-starved, and not unfrequently diseased. Everything is left to that stern stepmother, Nature, from the time when the most active, and probably therefore the youngest bull in the herd has succeeded in covering a cow, to the time when the progeny worn out by semi-starvation and over-work lies down to die. No attention is paid to breeding, cows and bulls alike exercise their reproductive powers at the earliest possible moment and continue to do so without intermission. The parents of the calf are often close relations, and no attempt is ever made to effect any improvements in the stock. In cases of sickness remedies are seldom thought of, and the infected animal is allowed to mingle with the herd. The natural result is the production of a breed of undersized, weak, and miserable animals which are hardly strong enough to drag even the small native plough. Bullocks and cows alike are said to cost from Rs. 20 to 50, but it is very seldom that the higher price is paid. Rs. 15 to Rs. 20 is the more usual figure and the animals are generally dear at that.

Cattle.

In the Sunamganj sub-division there is excellent grazing to be obtained in the cold weather when the floods drain off from the marshes, but during the rains the condition of the live-stock is far from satisfactory. Nearly the whole of the country goes under water, and the cattle

Grazing.

have to be kept in the immediate neighbourhood of the homestead and are fed on reeds and coarse grass, brought in boats from the higher ground at the foot of the hills, or on aquatic plants and grass pulled from the bottom of the jhils. Rice straw, it is said, is not very generally used, partly because the floods come on very soon after the reaping of the *boro* crop, partly because the straw decomposes very rapidly. In the Habiganj sub-division, the people graze their cattle on the Raghunandon and Salgaon hills, but the area available has been considerably decreased of recent years by the opening of tea gardens. In the north and west, there are marshes which afford excellent fodder in the dry season, but this part of the district is very densely peopled and the villagers are said to experience difficulty in obtaining food for their cattle in the rains. Grass and rice straw are stored against this time of scarcity, but the supply not unfrequently runs short and thefts of fodder are said to be fairly common. The conditions in North Sylhet are very similar. In Karimganj there is a considerable area of high land on which the cattle can be grazed during the rains, and in the dry season, the most excellent pasture can be obtained in the Hakalkui haor, and in other places, such as the Anair and Haura Kuri haors and the Chapra and Medal bils. Rice straw, as in other parts of the district, is stored for use in the rainy season, but at its best it is unsatisfactory fodder, and it is perhaps, partly responsible for the poor condition of the Sylhetti cattle

Cattle disease.

The most common forms of cattle-disease prevalent in the district are foot and mouth disease, rinderpest (guti), a disease called Kachua, the principal symptoms of which are flatulence and diarrhoea, diarrhoea (marki), cholera and matikhoa.

The Hon'ble Khan Bahadur Moulvi Syed Abdul Mujid, B.L., Member Legislative Council, Assam, Sylhet writes (June 1919):—

Khan Bahadur Moulvi Syed Abdul Mujid's Enquiry.

"The state of cattle and of milk supply in my locality is highly unsatisfactory. Not only is the supply inadequate to the demand but it is mostly adulterated and even this adulterated milk finds buyers at 3 to 4 annas a seer and in some places in the interior, milk is not available at all for purchase. Almost the whole of curd and butter consumed in the town of Sylhet are from the milk of buffaloes kept by Nepalis 15 to 20 miles off at the foot of Khasi and Jaintia Hills where there is sufficient jungle for grazing. And but for this nomadic tribe who rear buffaloes there would have been milk famine in the town of Sylhet.

The above condition is due mainly to the insufficiency of the number of cattle and their bad quality. Both these are due to the insufficiency of pasture, fodder and for want of good breeding and also to the heavy mortality due to various diseases and to the indiscriminate slaughter that daily occurs.

To suggest remedies would necessarily involve detailing of the evils which are the root cause for this state of things.

(a) *Pasture.*—In my part of district, specially in the Sylhet town and its suburbs, there is practically no pasture and the cattle graze on in the compounds corn-

fields and road-sides and except the low-lying tracts of the district where there is plenty of grass, during the dry season the want of grazing ground is most keenly felt. The heavy cattle mortality is due mainly to the underfeeding of the cattle as ill-fed cattle are more liable to disease and less fitted to stand the effect. It therefore follows that to effect any improvement both in quantity and in quality of the cattle the provision for grazing ground must precede any remedies and such provision can only be made with State—aid and by acquisition of land through Government in every part of the district where needed and in proportion to the requirements of the localities. As this remedy would involve heavy expenditure it may only be possible if there are regular organisations all over the district with a main body in the head-quarter stations and backed by funds collected from the inhabitants themselves who would be entitled to graze their cattle in proportion to contribution. The State should also be asked to help with funds as it will indirectly benefit it as well.

Fodder.

In my part of the district, little or nothing is being done now for the production of fodder except preservation of the straw of paddy in places where people have been driven to by shere necessity.

The reduction of mortality from disease presupposes the existence of sufficient Veterinary arrangements all over the country. The number of Veterinary Surgeons entertained by Government and the local bodies is microscopically small to be of any appreciable value. Here again nothing could be done unless large number of people take to Veterinary education. Steps should therefore be taken by creating scholarships and starting more Veterinary institutions and when this is done the villages should be so grouped as to be able to maintain at their own cost a Veterinary Surgeon and medicine to serve their cattle. Unless people help themselves no material progress is expected in this matter and I think villagers will ungrudgingly make their contributions if they are only satisfied as to the utility of this department.

Protection should also be extended by the reduction of indiscriminate slaughter of cattle specially by preventing slaughter of cows. The meat-eaters must have their meats and no serious attempt is possible by direct method in this respect, I mean by an attempt to directly and forcibly trying to stop it. This is only possible by persuation, by mutual good-will and by breeding sheep and goat thus increasing the meat supply. It may be noted that sheep multiply very rapidly as they invariably breed twice in about 13 or 14 months. If systematic effort is made, the milk supply may very largely be increased and consequently there will likely be a corresponding decrease in the demand for beef, as mutton is far superior to it.

Cattle slaughter.

The economic condition of India is becoming serious with the disappearance of indigenous industries and the people generally, especially the agricultural classes and those dependent on them have no diversity of avocations with the result that famines are of frequent occurence now than before and the staying power has been reduced to a minimum. The only means left to over 90 per cent. of the population of India dependent on agriculture is the improvement in this

direction and any agricultural improvement pre-supposes improvement and increase in the quantity and quality of cattle. The great majority of people are beginning to realise this fact and the soil can very well be said to have been prepared for systematic efforts which may reduce the indiscriminate slaughter, but I should sound a note of warning that an attempt to check forcibly the slaughter of cattle, besides doing harm in many other ways will rather increase the slaughter and it should therefore be avoided.

The problem of milk supply in the district and Sub-divisional head-quarters may be solved by establishment of dairies under co-operative system with a capital of say about Rs. 5,000 or more according to the size of the town. For this purpose also I may say the difficulty of getting pure milk has already prepared the field."

North Sylhet Local Board.

The Hon'ble Moulvi Reaz Baksh, Vice-Chairman, North Sylhet Local Board says under date 28th June 1919:—

(1) "The state of cattle and milk supply in this locality is not satisfactory.

(2) I consider the unsatisfactory conditions are in respect of number, quality, breeding, pasture and fodder.

(3) In my opinion the remedies will be to maintain breeding bulls at every village and a plot of land should be reserved for grazing of cattle.

There is no regular pasture for cattle. They generally graze in Haors during the dry season but during rains the Haors remain under water and the up-lying lands are all being cultivated, there remains no pasture for grazing."

Karimganj Municipality.

Babu Raj Chandra Das, Pleader, Chairman, Karimganj Municipality. (24th June 1919) writes:—

That the state of bullocks and cows in the District of Sylhet is unsatisfactory. This is due chiefly to the absence of sufficient pasture lands. In the rainy season fields are occupied with paddy, leaving very little room for the cattle to graze in. In this season of the year they become so weak and incapacitated that the fodder available in the winter cannot in all cases restore them to their former condition. This is why a cow giving 3 to 5 seers of milk elsewhere gives only ½ to 1 seer of milk here, and the milkmen supplement the quantity by adding water to the available milk. This can however be avoided by acquisition by Government of sufficient lands in each locality for being used as grazing lands.

Breeding, in my opinion should be restricted to local breeds.

The greatest evil is the frequent recurrence of epidemics. This shows that the cattle are too frequently mixed, some restrictions on the movement and herding of cattle might vanish the evil.

3.—The Hill Districts.

The Hill Districts include the following groups of Hills and Hill-stations, of which Shillong and Manipur are widely known :—

(1) Naga Hills.
(2) Manipur.
(3) Khashi and Jaintia Hills containing Shillong,
(4) Garo Hills and
(5) Lushai Hills.

In Khasi and Jaintia Hills there is a certain amount of import of cattle from Kamrup. For the cart traffic between Gouhati and Shillong, Bihari and Maurungia bullocks are frequently used.

The Hill Districts.

The Gurkha goalas, who have their *bathans* mainly between Burpani and Nangpah, buy their cows usually from or near Gouhati and sometimes use Maurangia bulls. A considerable number of young bulls are taken to Sylhet from the Jowai Sub-division. There is very little import of cattle into or export out of the Naga Hills. Manipuri bullocks are used for the cart traffic from Kohima to Manipur and to Dinajpur. Sometimes cross-bred Mithun cattle are sent to the plains for sale.

In the Lushai Hills the Nepalis are usually the only people who keep cattle. They sometimes import cattle from and export cattle to the Cachar district. The hill-men do not drink milk. The Garos tend cattle for food and the Khashis for manure. Nepalis keep dairy cattle and sell milk and export ghee.

It is said that in the Khashi and Jaintia Hills, the Naga Hills and the Lushai Hills, there is no difficulty about grazing.(a)

Garo Hills—Behari and Maurangia bullocks are used largely for cartwork on the road to Tura. The Garos buy bull calves from neighbouring Nepali *bathans* and after rearing them sell them at the cattle fairs, the chief of which is Garobadha. The Garos do not drink milk, but there is a consumption of milk in the plains portion of the district. It is reported that about 1,200 maunds of *ghee* are exported annually.

(a) Survey and Census of Cattle in Assam by J. R. Blackwood, p. 14.

Manipur District Gazetteer by B. C. Allen, I.C.S. (1905) (p. 81.) has the following :—

Manipur.

The cattle are strong hardy little animals much superior to the cattle of the Surma Valley or Assam. They are probably akin to the Burmese breed, as the best animals are said to come from Kakchingkunao at the southern end of the valley. A bull costs from Rs 15 to Rs. 30, a bullock from Rs. 25 to 35 and a cow from Rs. 15 to Rs 25. Some of the best cows are said to yield as much as three or four seers of milk. The buffaloes are also very fine animals and are used to drag the plough as well as for dairy purposes. Considerable herds of them are kept by Nepalese settled at the northern end of the valley and a special reserve has recently been set apart for these herdsmen in the Khoga Valley south of Moirang, to avoid the endless disputes which have been caused by the animals damaging the crops when graziers were allowed to settle in the neighbourhood of villages. Grazing fees are levied on foreign herdsmen at the rate of annas 8 for each buffaloe and annas 4 for each smaller head of horned cattle. Cow buffaloes can be purchased near Kanglatombi for from Rs. 35 to Rs. 50, while a bull costs rather less. In the centre of the valley the prices are a little higher. Both cattle and buffaloes find a ready sale in Cachar, when exported to that district, and the sturdy little breed of bullocks has done much to develop the export trade along the cart road to Assam. The cattle are grazed in swamps and on the hills, and sometimes on rice-straw, and there is not, as a rule, any dearth of suitable pasture. The Lamphel and Taiel *bils* near Imphal have been specially reserved as grazing grounds.

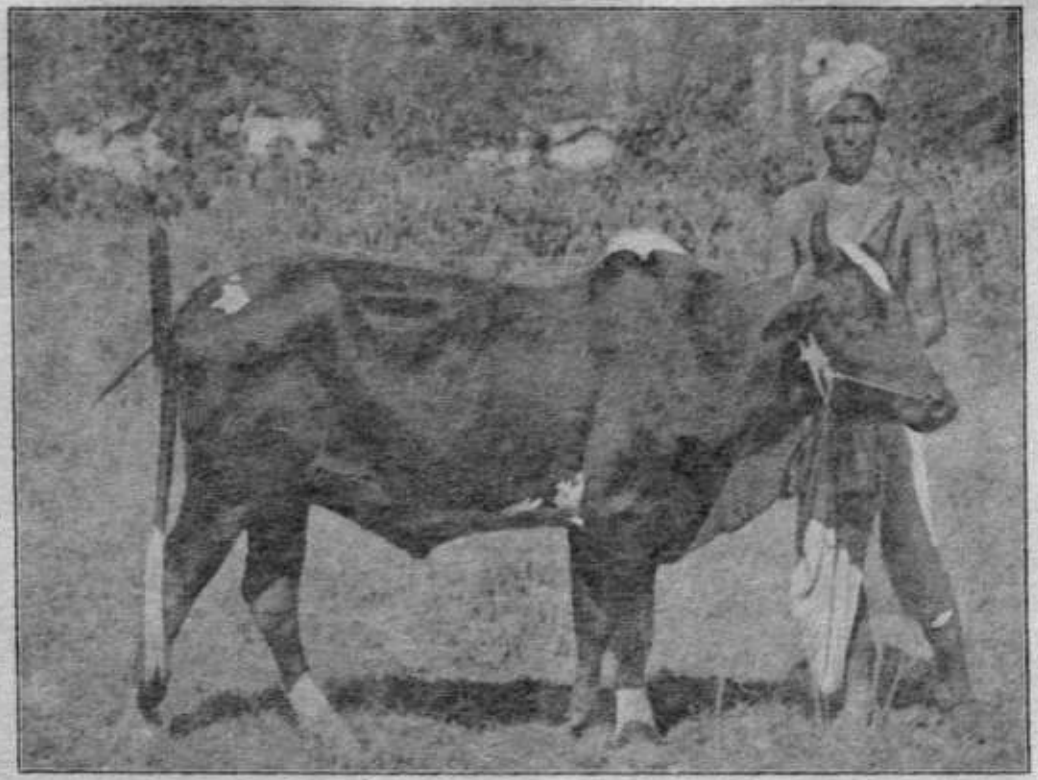
There is a Veterinary Dispensary at Imphal under the charge of a Veterinary Assistant who treats free of cost animals brought to the dispensary or shown him during his tours."

Naga Hills.

The cattle are a sturdy little breed. There is no dearth of grazing ground, they are never worked, and as they are not milked, the calf does not suffer from want of proper nourishment. The pure bred Naga bull is black, and if it has no white about it will fetch from Rs. 40 to Rs. 50, a cow costing from Rs. 20 to Rs. 25. There are no bullocks in the Naga villages and these animals are simply kept for food and for the manure they yield, great heaps of which are generally to be seen in the courtyard of a Naga house. Mithun are kept by the Kacha Nagas, the Semas and the Kukis and cost from Rs. 30 to Rs. 60.

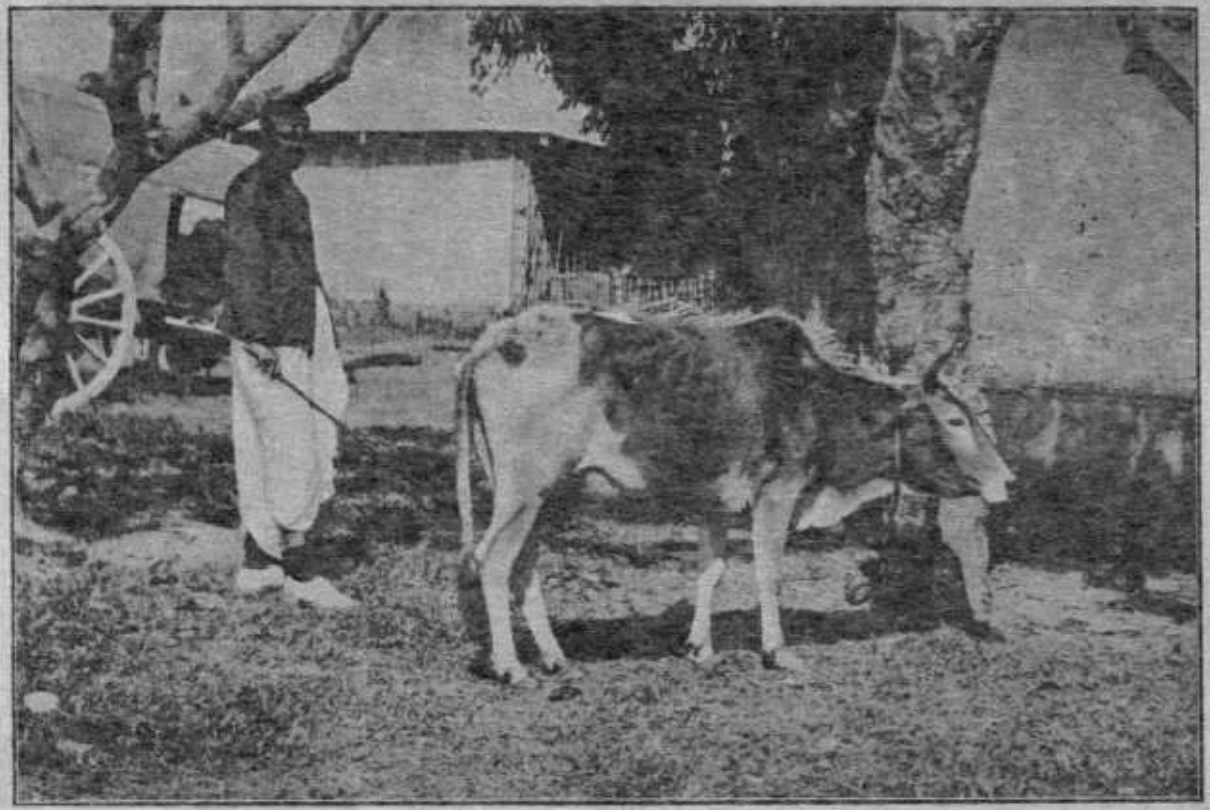
Foot and mouth disease breaks out occasionally in the hills, but the cattle are on the whole, fairly free from sickness. (a)

(a) Naga Hills District Gazetteer by B. C. Allen, I.C.S., Vol. IX., pp. 46-47 (1906.)



Manipur Bullock. (By the courtsey of the Govt of Assam.

Bhoodeb Publishing House, Calcutta.



Cross Bred Manipur Bullock. (Patna Bull-Manipur Cow) (By the courtesy of the Govt. of Assam.

Bhoodeb Publishing House.

Mr. R. Friel writing in the supplementary Volume of Naga Hills District Gazetteer in 1914 remarks :—

"In 1908 bullocks were tried at Mokokchung for ploughing, but the Nagas have not adopted the use of ploughs. In 1912 there was an out-break of rinderpest along the cart road. So many bullocks died that traffic was almost suspended and the disease spread to the neighbouring Naga villages and carried off a large number of cattle."

Mr. B. C. Allen, I.C.S., writing in 1906 in the Khasi and Jaintia Hills District Gazetteer says.—(Vol. X, p. 81.)

Khasi and Jaintia Hills.

"The cattle are a sturdy little breed, and are only kept for food and for their manure, the indigenous Khasi leaving all the milk to the calf. Buffaloes are kept in the neighbourhood of Shillong by Nepalese herdsmen. They are not used as draught animals and the bullocks used on the Shillong-Gauhati road are all of the white Hissar breed. The sturdy Manipuri ox which is not unlike the Khasi animal has proved most successful as a draught-animal on the Imphal-Dinajpur road a fact which suggests that a trial might be given to the animal of Khasi Hills."

"In connection with the cattle-stock improvements it may be mentioned that of the stock imported in 1902 and 1903, those which came from Patna have proved the better breeds. Pure-bred Patna bulls are being sold at the nominal rate of Rs. 50 each to Khasis for breeding purposes."

The Garo Hills District Gazetteer (1906) p. 35 by the same author contains the following :—

Garo Hills.

Buffaloes are generally kept by Nepalese, and cost about Rs. 15 a bull calf and Rs. 45 for a cow. The cattle are neither worked nor milked, and are in consequence sturdy little animals. In the front room of many Garo houses will be seen a fat well-favoured beast, which is being kept to serve as the *piece de resistance* at the next funeral feast. Bullocks and cows usually cost about Rs. 20 each.

"The number of Nepali graziers, as shown by the Census figures, had increased from 753 in 1901 to 1875 in 1911. In 1913 the number of buffaloes which were grazed by them was over 10,000.

The injury they cause to crops, plantain trees, etc. is a fruitful source of complaint. They are disliked by the Garos who resent their presence on land which they consider their own."

The Live Stock in the Lushai Hills District include tame *mithun* or bison (bos frontalis), pigs, goats and dogs.

CSL

SHILLONG.

Shillong.

Mr. S. E. Rita, Vice-Chairman, Shillong Municipality, informs (June 1919) that the state of cattle and of milk supply in Shillong is satisfactory.

Shillong as has been already stated stands on a beautiful valley between the Khasi and Jaintia Hills. There are two dairies in Shillong where butter is manufactured. The Khasis usually keep their cattle for manure. There are however a number of Nepali *bathans* between Barpani and Nongpah, which supply milk *ghee*.

GSL

CHAPTER IV.—CATTLE FAIRS ETC

Cattle Fairs, Exhibitions and Pasturage.

Mr. J. R. Blackwood collected at considerable pains full particulars regarding Cattle-fairs and Exhibitions in Assam. The information is likely to be of great practical interest to readers who care to go minutely into the subject. The figures relating to pasturage have been lately supplied by the Assam Government to the Cow Preservation League, Calcutta, and we are indebted to that body for kindly placing the information at our disposal.

Statement of Cattle fairs, hats and markets in Assam District by District (a).

SYLHET.

Subdivision.	Thana.	Name of fair, hât or market.	Date on which held (b)	Average number of cattle sold.
North Sylhet	Sylhet (Sadar) Police Station.	Kazirbazar hât ...	Every Mon. and Fri.	25
		Rakhalgunj " ...	" Tues. and Sat.	15
		Jalalpur " ...	" Wednesday ...	5
		Lalabazar " ...	" Tues. and Sat.	3
	Biswanath police station.	Biswanath " ...	" Sun. and Wed.	15
		Rajaganj " ...	Every Sun. & Thurs. (cattle are sold during the winter season only.)	2
	Golabganj out-post.	Golabganj " ...	Every Tues. and Sat.	10
		Purkaithor " ...	" Sun. and Wed.	15
		Rakuar " ...	" Sun & Thurs.	20
	Balaganj police Station.	Gowalabazar hât ...	Sat. and Tues. ...	7
	Kanarghat police station.	Kanarghat bazar ...	Every Tues. and Sat.	15
		Gasbari hât ...	" Sun. & Thurs.	33
	Gowainghat out-post.	Haripur ...	" Sat. ...	10
		Manikganj ...	" Fri. ...	4
		Nawabazar hât ...	" Fri. ..	15
		Jaflong " ...	On every 4th day ...	8
		Jogabar hât ...	Every Mon. and Fri.	20
		Salutikar " ..	" Tues. and Sat.	20
		Nijpat " ...	On every 8th day ...	6

(a) Cattle Census Report of Assam by J. R. Blackwood, I.C.S., App. VIII.
(b) The markets are usually held in the afternoon from noon till evening.

SYLHET.—*contd.*

Subdivison.	Thana.	Name of fair, hat or market.	Date on which held.	Average number of cattle sold.
Karimganj...	Karimganj ...	Karimganj bazar ...	Sun. and Thurs. ...	20 in rainy season 100 in dry „
		Kaliganj (Ichhamati.)	Tues and Sat. ..	25 in rainy season 120 in dry „
		Saglibazar ...	Sun. and Thurs. ...	5
	Badarpur ...	Bhangabazar ...	Wed. and Sat. ...	25
	Jaldhup ...	Charia ...	Mon. and Fri. ...	25
		Mohammad Taki ...	Do. ...	2
		Ramdhabazar ...	Sun. and Wed. ...	15
		Azimganj ...	Tues. and Sat. ...	5
	Fatharkandi ...	Kanaibazar ...	Do. ...	20
	Batabari ...	Kazirbazar ...	Mon. and Fri ...	20
		Anipur ...	Sun. and Thurs. ...	50
		Kalibaribazar ...	Mon. and Thurs. ...	15
Maulvibazar	Maulvibazar ...	Maulvibazar ...	Do. ...	10
		Digirpurbazar ...	Tues. and Sat. ...	5
		Serparbazar ...	Sun. and Wed. ...	4
	Rajnagar ...	Parbatpur garden market.	Every Sun. ...	On average one animal is sold on the bazar day.
	Kulaura ...	Bamnerbazar ...	„ Mon. ...	About 150 cattle sold.
		Fultola ...	„ Satur ...	„ 50 „
	Kamalganj ...	Munsibazar ...	Tues. and Sat. ...	30
		Shamshernagar Tea Estate bazar.	Sun. and Tues ...	20 goats are sold
		Alinagar Tea Estate bazar.	Do. ...	10 cattle sold.
		Kamalganjbazar ...	Thurs. and Sun. ...	Occasionally goats and cows are offered for sale in a few number.
	Srimangal ...	Sindurkhanabazar	Every Sunday ...	50
Habiganj ...	Habiganj ...	Mirpur hât ...	Sun. and Wed. ...	40
	Nabiganj ...	Jantari „ ...	Tues. and Fri. ...	50
	Ajmiriganj ...	Ajmiriganj „ ...	Sun. and Thurs. ...	200
		Jalauka „ ...	Do. ...	800
	Muchikandi ...	Sakir Mahmad hât	Mon. and Fri. ...	20
		Habibulla ...	Mon. and Thurs. ...	5
		Assampara hât ...	Friday ...	8
		Chandpur bagan ...	Sunday ...	10
	Madhabpur ...	Madhabpurbazar ...	Satur. and Tues. ...	40
		Dharmaghar hât ...	Tuesday ...	20
		Harinkhola „ ...	Do. ...	5
		Munshi „ ...	Monday ...	5

SYLHET—*contd*

Subdivision.	Thana.	Name of fair hât or Market.	Date on which held.	Average number of cattle sold.
Sunamganj	Sunamganj ...	Kukruposi ...	Every Tuesday ...	100
		Patharia ...	Every Tuesday and Saturday.	70
		Charerbazar ...	Every Tuesday ...	30
	Chhatak ...	Imamganj ...	Every Sun. & Tues.	50
		Jawa bazar ...	Every Tues. & Satur.	100
	Jagannathpur ...	Rasulganjbazar ...	Every Mon. & Fri. ...	100
		Shibganjbazar ...	Every Satur & Tues.	25
	Dharmapasa ...	Madhyanagar ...	Every Tues. ...	50
		Sanbaribazar ...	Every Thurs. ...	15

KHASI AND JAINTIA HILLS

Sadar ...	Shillong ...	Barui hât ...	Every Satur. ...	20
		Iewduh hât ...	" 8th day ...	15
		Iew Langstieh hât	Ditto ...	10
	Nongpoh ...	Iew Umsaw hât ...	Ditto ...	20
Jowai ...	Jowai ...	Musiang hât ...	Ditto ...	8
		Mushai hât ...	Ditto ...	20
		Mulong hât ...	Ditto ...	24

GOALPARA.

Goalpara ...	Goalpara ...	Chawkbazar (Goalpara)	Every day ...	1
		Balijana ...	Tues.	50
	Lakhipur ...	Lakhipur ...	Mon.	21
		Nidanpur ...	Fri.	5
		Abhirampara	Tues. and Weds. ...	32
	Dudnai ...	Krishna ...	Weds.	7
		Damra ...	Thurs. ...	2
		Rangjuli ...	Mon. ...	3
		Dhupdhara ..	Mon. and Tues. ...	2
	North Salmara	Kabaitari ...	Tues and Satur. and Generally twice in a week	2
		Abhayapuri ...	Mon. and Thurs. ...	2
	Dhubri ...	Gouripur ...	Daily	16
Dhubri ...	Golokganj ...	Pratapganj ...	Do.	1
		Pundibari ...	Twice in a week ...	1
		Sonarhat ...	Do. ...	1
	South Salmara	Fakirganj ...	Do. ...	1
		Hajirhat ...	Do. ...	2
		South Salmara ...	Do. ...	2
	Mancachar ...	Pepulbari ...	Every Thurs. of the month.	2
	Bilasipara ...	Bilasipara ...	Every Tues. & Satur.	1

LAKHIMPUR.

Subdivision.	Thana.	Name of fair hât or market.	Date on which held.	Average number of cattle sold.
Dibrugarh	Dibrugarh ...	Margherita ...	Every March ...	50
		Nagajhuli ...	" Sunday ...	15
		Tengakhat ...	Ditto ...	15
		Ghoramara ...	Ditto ...	6
	Doom Dooma ...	Saikhowa ...	Saturday ...	3
		Doom Dooffia ...	Sunday ...	10
		Barhapjan ...	Do. ...	5
	Tinsukia ...	Tinsukia ...	Do. ...	4
		Chabua ...	Do. ...	6
		Dinjan ...	Do. ...	3
	Moran ...	Moran ...	Do. ...	15
	Sadiya ...	Sadiya Bazar ...	Every day ...	20
North-Lakhimpur.	North Lakhimpur.	North Lakhimpur	Sunday and Wednes.	27

SIBSAGAR.

Jorhat ...	Jorhat ...	Titabor hât ...	Every Sunday ...	200 to 300 in a year. (Cattle sold occasionally.)
Sibsagar ...	Sibsagar ...	Jhanzi Garamoor hât.	" Tuesday ...	1.
	Amguri ..	Chawguri ...	" Sunday ...	124.

DARRANG

Tezpur ...	Tezpur ...	Bindukuri ...	Every Sunday ...	10 to 25.
Mangaldai ...	Kalaigaon ...	Kalaigaon hât ...	Ditto ...	No. of cattle sold not available.
		Patharighat hât ...	Every Thursday ...	
		Kahimalatal ...	" Friday ...	
	Paneri ...	Nalbari hât ...	Do. ...	
		Khairabari hât I ...	Every Saturday ...	
		Singribari ...	" Sunday ...	
		Borongajuli hât ...	" Saturday ...	
		Hapsorahât ...	Do. ...	
		Paneri hât ...	Every Sunday ...	
		Khairabari hât II	Do. ...	
		Ghagraparahât ...	Every Monday ...	
	Udalguri ...	Udalguri hât ...	Monday & Friday ...	
		Ranta hât ...	Tuesday ...	
		Orang " ...	Monday ...	
		Namati " ...	Tuesday ...	
		Kowpati " ...	Sunday ...	

GARO HILLS.

Mauza No. I	Garo Laskar's jurisdiction.	Bagmara hât ...	Tuesday ...	17
		Ghoshgaon " ...	Saturday ...	7
		Rangra " ...	Tuesday ...	1
		Dumnikwia " ...	Thursday ...	1
		Gachuapara " ...	Wednesday ...	3
Do. II	Mahendraganj	Kodaldaha " ...	Monday ...	Nil.

GARO HILLS.—*contd.*

Subdivision.	Thana.	Name of fair, hât or market.	Date on which held.	Average number of cattle sold.
Mauza No. II	Dalu ...	Dalu hât ...	Monday ...	225
Do. III	Garo Laskar's jurisdiction.	Bajengdhuba hât ..	Thursday ...	Nil.
Do. IV	Do. ...	Samanda hât ..	Three days in a week. No fixed day.	34
		Rangrongiri ...	Tuesday ...	Nil.
No IV ...	Gara Laskar's jurisdiction.	Oakachang hât ...	Friday ...	
		Dhepa " ...	Wednesday ...	Nil.
		Kharkuta " ...	Saturday ...	
No. VI ...	Phulbari ...	Hallidayganj hât ...	Friday ..	
		Rajahala " ...	Sunday ...	50
		Bangkhoda " ...	Wednesday ...	60
		Machapani " ...	Tuesday ...	
		Bhaibhari " ...	Monday ...	Nil.
		Bholarbhita " ...	Sunday ...	
No. VII ...	Tura ...	Rangapani " ...	Thursday ...	
		Garobada " ...	Tuesday ...	357
No. VIII ...	Mahendraganj	Kalairchar " ...	Friday ...	40
		Bahadurkuta " ...	Saturday ...	12
		Purakasna " ...	Tuesday ...	25
		Mahendraganj " ...	Do. ...	Nil.
No. V ...	Garo Laskar's jurisdiction.	Belguri " ...	Thursday ...	8
Tura Town ...	Tura ...	Tura " ...	Saturday ...	50

KAMRUP.

Kamrup ...	Rangia ...	Subankhata fair ...	From 1st January to 1st April.	500
		Darranga fair ...	Do. ...	1,500
	Boko ...	Singrahât ...	From middle of Decr. till the middle of May every year.	About 80 or 90 cattle per week.
		Hahimerhât ...	From middle of Nov. till Jany.	4 or 5 cattle every week.

CACHAR.

Silchar ...	Silchar ...	Fatak bazar in Silchar town	Every Thursday ...	119
		Nutanbazar in Clever House.	" Wednesday ...	36
	Katigora ...	Pecha chhara bazar	" Sunday ...	20
		Sialtek bazar ...	" Tuesday ...	
Hailakandi ...	Katlichera ...	Katlichera bazar ...	" Wednesday ...	11
	Hailakandi ...	Lala bazar ...	Every Saturday and Tuesday.	14
		Hailakandi bazar...	Every Wednesday & Saturday.	8

STATEMENT OF CATTLE EXHIBITIONS.

Subdivision.	Thana.	Name of the place where the Exhibition is held.	Date on which held.		Whether cattle are sold in the Exhibition or not.	Approximate number of cattle brought to the exhibition.
			From—	To—		
SYLHET.						
North Sylhet	Sylhet ...	Sylhet ...	23rd Jan. 1913.	25th Jany. 1913.	Not sold.	1600
KHASI AND JAINTIA HILLS.						
Sadar ...	Shillong ...	Shillong ...	24th May 1912 (one day only.)		No ...	44

STATEMENT OF GRAZING GROUNDS. (a)

ASSAM VALLEY DIVISION.

District.	Subdivision	Grazing ground.
Goalpara	Dhubri (Sadar)	15,386 Acres.
Kamrup	Gauhati (Sadar)	23,697 "
	Barpeta	7,568 "
Darrang	Tezpur (Sadar)	21,187 "
	Mangaldai	5,250 "
Nowgong	Nowgong	26,600 "
Sibsagar	Sibsagar	15,080 "
	Jorhat	11,944 "
	Golaghat	13,307 "
Lakhimpur	Dibrugarh (Sadar)	15,732 "
	North Lakhimpur	5,815 "
Garo Hills	Garo Hills	4,349 "

SURMA VALLEY AND HILLS DIVISION.

The area of grazing ground reserved in this Division cannot be stated by Sub-Divisions. Over 1,93,000 acres of land have been reserved for grazing-grounds up to the close of the year 1921-22. The area reserved in the districts of Sylhet and Cachar up to the 30th June 1922 is 63,474 and 14,909 bighas respectively.

(a) Supplied by the Government of Assam to the Cow Preservation League, Calcutta of which Sir Ashutosh Mukerjee is the President.

PART III.—BENGAL.

CHAPTER I.—GENERAL.

The Presidency of Bengal with an area of 84,093 sq. miles and a population of 46,653,177 (a), includes 5 Divisions, *viz.*, Presidency, Burdwan, Rajshahi, Dacca and Chittagong, and 2 Indian States, *viz* Cooch Behar and Hill Tippera, both under the general supervision of the Government of Bengal. In the north are the Himalayan Mountains and submontane tracts of Darjeeling and Jalpaiguri, and on the south-east the hills of Hill Tippera and Chittagong, while on the west the Chota Nagpur plateau is continued by an undulating tract running through the western portions of Midnapur, Bankura, Burdwan and Birbhum districts. The general range of the country is however very low and a great fertile alluvial plain extends southwards from Jalpaiguri to the Sunderbuns. Of the inhabitants 52·4 per cent are Mahomedans and nearly 35½ millions or three-fourths of the entire population derive their support from pasture and agriculture. The principal crops cultivated are rice (85 per cent. of the total cultivated area), jute, barley, wheat, pulses and oil seeds. Sugarcane, tobacco, hemp and tea are also grown, and cotton-cultivation has been lately introduced. The main industries besides agriculture are the jute mill industry, the tea industry and coal mining. The chief exports from Bengal are in order of importance: jute (raw and manufactured), tea, hides and skins (raw), grain, pulse and flour, seeds and opium; and leading imports are cotton goods, metals, sugar machinery and mill-work, salt and oils.

Area Population and Agriculture.

Bengal consists as has been already stated, of 5 Divisions, each under a Commissioner, 27 Districts each under a Collector and 83 Sub-divisions each under a Sub-Divisional officer. A classified list of the different districts and sub-divisions is given below.

Districts and Sub-Divisions.

PRESIDENCY DIVISION :—

(I) *24-Pergunnahs* District —— Sub-Divisions :
(1) Sadar, (2) Diamond Harbour, (3) Barrackpur, (4) Baraset and (5) Basirhat.

(II) *Nadia* District—Sub-Divisions :
(1) Sadar, (2) Kustea (3) Meherpur, (4) Chuadanga and (5) Ranaghat.

(III) *Khulna* District—Sub-Divisions :
(1) Sadar, (2) Satkhira and (3) Bagerhat.

(IV) *Murshidabad* District—Sub-Divisions :
(1) Sadar, (2) Lalbag, (3) Jangipur and (4) Kandi.

(V) *Jessore* District—Sub-Divisions :
(1) Sadar, (2) Magura, (3) Narail, (4) Bongaon and (5) Jhenida

BURDWAN DIVISION :—

(I) *Howrah* District—Sub-Divisions :
(1) Sadar and (2) Uluberia.

(II) *Hooghly* District—Sub-Divisions :
(1) Sadar, (2) Serampur and (3) Arambag.

(III) *Burdwan* District—Sub-Divisions :
(1) Sadar, (2) Katwa, (3) Kalna and (4) Asansole.

(IV) *Birbhum* District—Sub-Divisions :
(1) Sadar and (2) Rampurhat.

(V) *Bankura* District—Sub-Divisions :
(1) Sadar and (2) Vishnupur.

(VI) *Midnapur* District—Sub-Divisions :
(1) Sadar, (2) Ghatal, (3) Tamluk and (4) Contai.

RAJSHAHI DIVISION—

(I) *Rajshahi* District—Sub-Divisions :
(1) Sadar, (2) Naogaon and (3) Natore.

(II) *Pabna* District—Sub-Divisions :
(1) Sadar, (2) Sirajgunj.

(III) *Bogra* District—Sub-Division : (1) Bogra.

(IV) *Malda* District—Sub-Division : (1) Malda.

(a) Census Report, 1921.

RAJSHAHI DIVISION—*contd.*

(V) *Rangpur* District—Sub-Divisions :

(1) Sadar, (2) Nilphamari, (3) Kurigaon and (4) Gaibanda.

(VI) *Dinajpur* District—Sub-Divisions :

(1) Sadar, (2) Balurghat and (3) Thakurgaon.

(VII) *Jalpaiguri* District—Sub-Division :

(1) Sadar, (2) Alipur.

(VIII) *Darjeeling* District—Sub-Divisions :

(1) Sadar, (2) Kurseong and (3) Siliguri.

DACCA DIVISION—

(I) *Dacca* District—Sub-Divisions :

(1) Sadar, (2) Narayangunj, (3) Manikgunj and (4) Munshigunj.

(II) *Bakargunj* District—Sub-Divisions :

(1) Sadar, (2) Patuakhali, (3) Pirojpur and (4) Dakhin Sabajpur.

(III) *Faridpur* District—Sub-Divisions :

(1) Sadar, (2) Gopalgunj, (3) Madanpur and (4) Goalundo.

(IV) *Mymensingh* District—Sub-Divisions :

(1) Sadar, (2) Jamalpur, (3) Tangail, (4) Netrokona and (5) Kishoregunj.

CHITTAGONG DIVISION—

(I) *Chittagong* District—Sub-Divisions :

(1) Sadar and (2) Cox's Bazar.

(II) *Noakhali* District—Sub-Divisions :

(1) Sadar; and (2) Feni.

(III) *Tipperah* District—Sub-Divisions :

(1) Sadar, (2) Brahmanberia and (3) Chandpur.

(IV) *Chittagong Hill Tracts* District—Sub-Division :

(1) Chittagong Hill Tracts.

The cattle of Bengal like that of Assam may be divided into 3 distinctive groups, *viz.* (1) the wild and hill cattle, (2) indi-

genous cattle of the plains and (3) imported cattle. It may be stated at the outset that there is no peculiar or important breed of cattle to be found in Bengal. The cattle of the western portions have strong resemblance to those of Behar and those of the eastern portion are akin to the cattle of Assam. In the frontiers of Nepal and Bhutan alone the wild and hill cattle are found. Mr. Blackwood has dealt separately with wild cattle and hill cattle, but considering their number, variety and habitat we have found it convenient to deal them under one head.

Different kinds of Bengal Cattle.

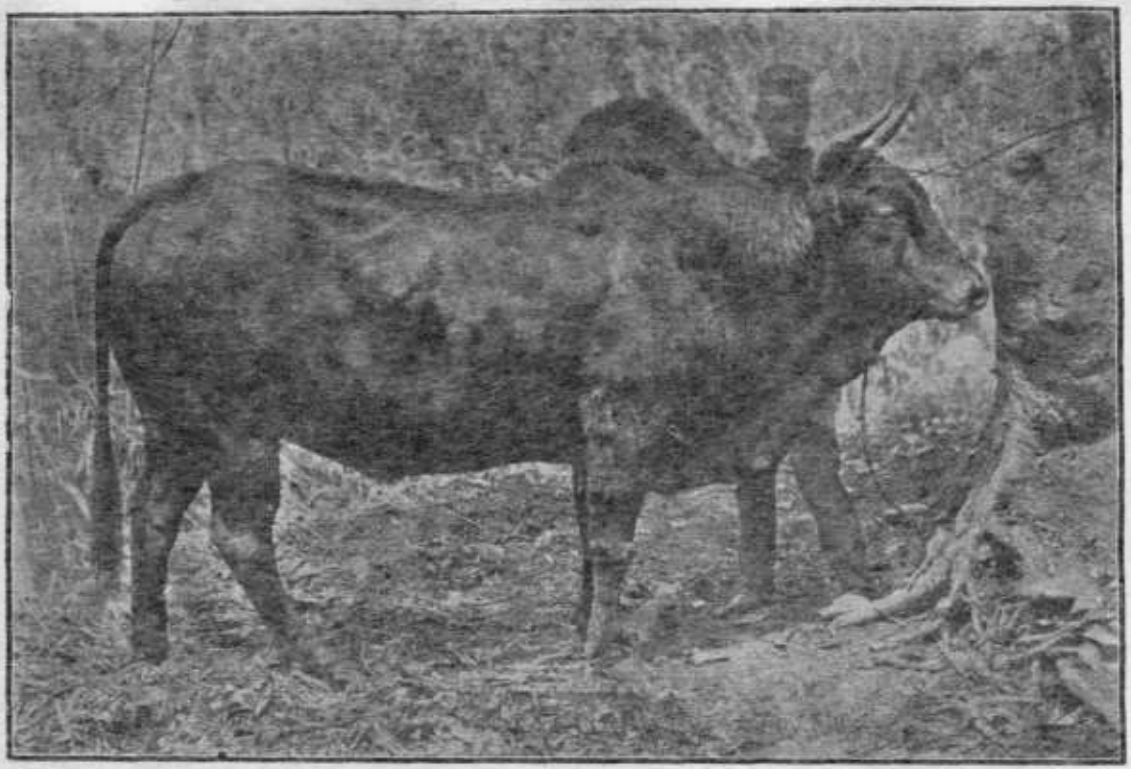
Of the wild cattle, the *gaur* or bison (*Gonæus Gourus*) found in the Himalayan terai, the *gayal* or mithun (*Gonæus Frontalis*) usually found on the Himalayas north of the Province and to the east of the Brahmaputra and two distinct types of the wild buffalo, one characterised by sub-circular sweep of the horns (*spiro-cerus*) and the other by horizontally outward extension of these appendages (*macro-cerus*) found in the swampy terai at the foot of the Himalayas and in the Sunderbans are by far the most important. The *Siri* and *Nepali* breeds are the main varieties of domesticated hill cattle found in Darjeeling, Sikkim and Bhutan. A sprinkling of *Yaks* is also to be found in the district of Darjeeling. A brief description of the gaur and gayal has already been given while dealing with Assam cattle (a) The Siri and Nepali breeds have thus been described by Mr. Quinlan.

Wild and Hill Cattle.

"The Siri breed belong to the humped variety of Indian cattle (*Bos. Indicus*) The colour most frequently seen is black, black and white or red with white patches. The hair, as a rule, is thick all the year round, but more so in the cold season. The general form of the Siri is massive. The head is small lean, square-cut and well set on, the forehead wide and flat and when viewed from the side, presents no convexity. The horns are sharp, black, polished and directed forward and slightly upwards, while the ears are relatively not so large as those of the cattle of the plains. The neck is usually well-developed, and the shoulders are muscular and thick. The forearms are massive, while the legs have usually very good bone. The back is sometimes low behind the hump, but as a rule it is level from the shoulder to the tail The width of the pelvis is a very strong point with their breed, as they are much wide and more roomy than the lowland cattle. Bullocks of the pure Siri breed are eagerly sought after for cart purposes owing to their size and great strength, as they pull loads of

Siri Cattle.

(a) See p. 44 ante.

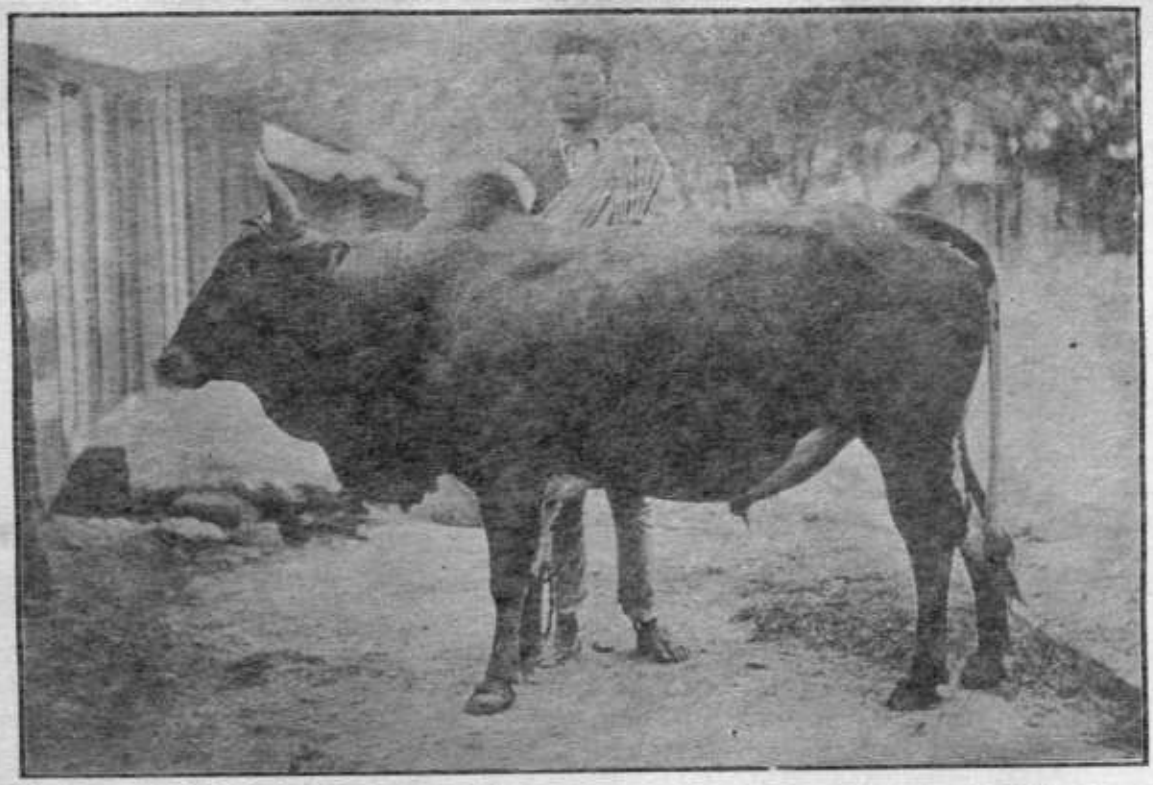


Pure Siri Bull. (By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House, Calcutta.

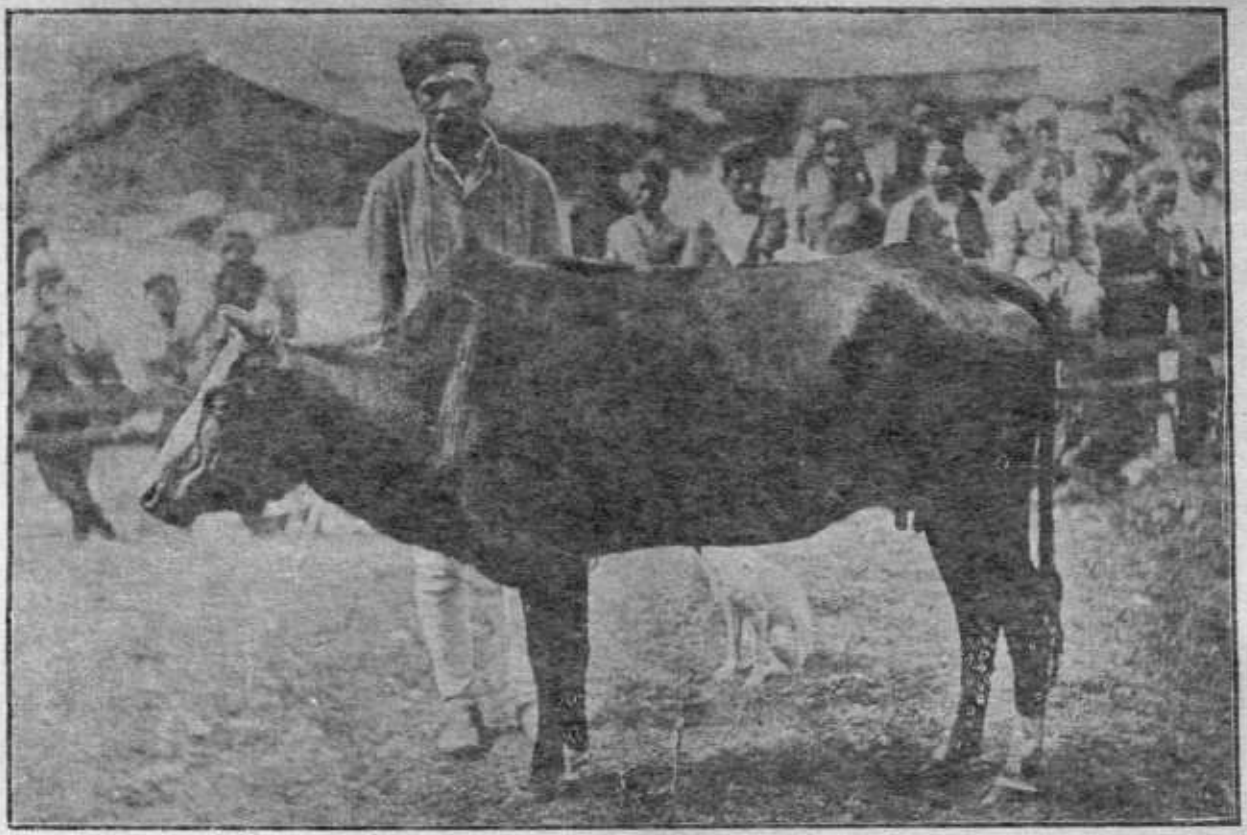
Pure Siri Cow. (By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House, Calcutta.



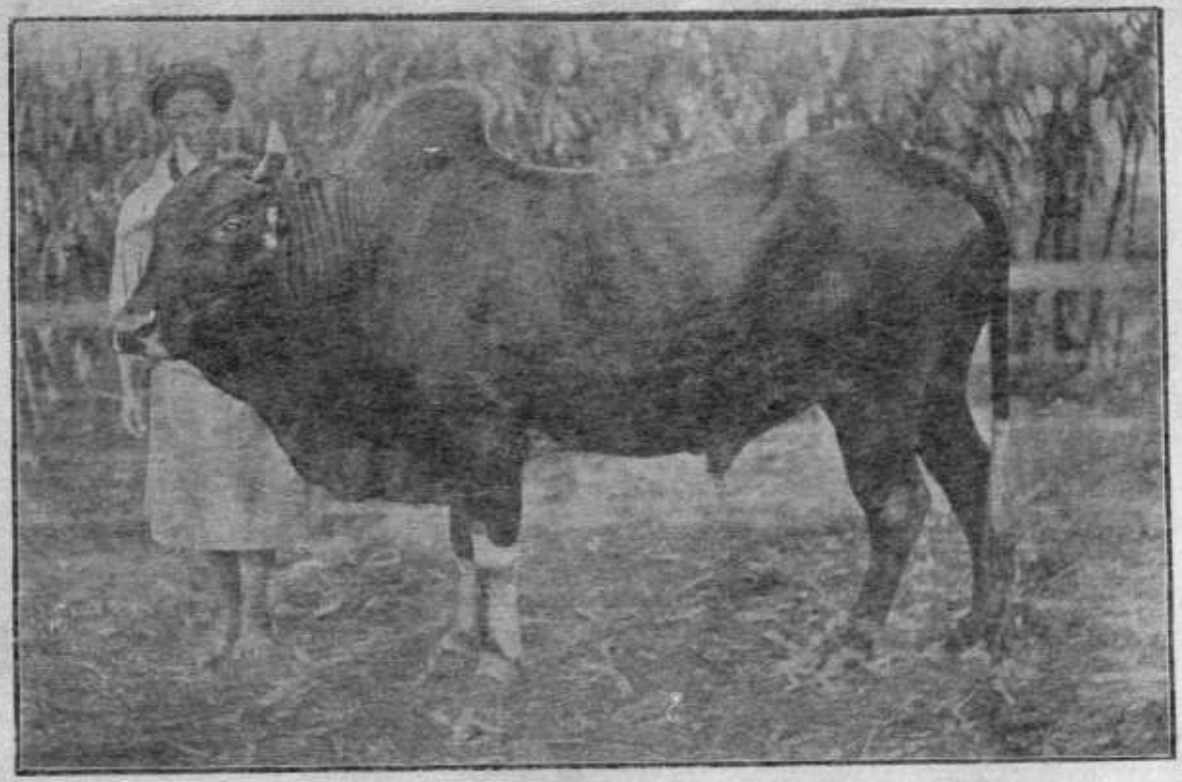
Pure Nepali Bull. [By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing Home, Calcutta.



Pure Nepali Cow. [By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House.



Cross Bred Siri-Napali Bull. (By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House, Calcutta.

Cross-Bred Siri Nepali Cow. (By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House.

10 to 12 maunds over bad and mountainous roads with great ease. Pure Siri bullocks are rather difficult to obtain."

"The Nepali breed may be found at elevations from 3,000 feet to the snow-line. They resemble the Siri in colour but the hair is not nearly so thick and they may be said to be a smooth-skinned breed. The hump is small, the head is clean, the muffle broad and the dewlap fairly well-developed. They are much lighter in build than the Siri cattle and do not attain to nearly the latter size. They have as a rule good legs. The cows are very diminutive and are not much used by the goalas for milking purposes owing to the small amount of milk they give. Their udders and teats are not well-developed, but they narrow across the quarters and are altogether much inferior to the Siris. The Nepali is a distinctly hardy breed and very sure footed, and with the Siris they are just the animal suited to the country, as they stand the climate with its variations of temperature and the dampness which kills out any foreign breeds which are introduced either for the purpose of improving the breed which is a doubtful proceeding, of the milk-supply.(a)

Nepali breed.

It is stated that the Nepali cattle are nearly 7 times as numerous as the Siri breed and that the Nepali breed is gradually ousting the Siri breed. The number of Yaks or *chamaris* is very limited.

There is no distinctive breed of cattle peculiar to any particular part of Bengal. In addition to their diminutive size, Bengal cattle are distinguished from upcountry breeds by the smallness of the dewlap and the sheath. Mr Shearer thinks that Bengal cattle are probably of the same stock originally as those of Bihar, but have become diminutive for want of proper feeding. "In this country the common experience is that the quality of the cattle varies inversely with the intensiveness of cultivation and hence it is hardly surprising that Bengal cattle are the worst in India." It is almost entirely a question of food supply. For many generations the cattle have been consistently starved and the result is seen in the degenerate specimens existing today " (b) It is amusing to compare this with the statement recently issued by Mr. William Smith, Imperial Dairy Expert; "We hear many people say that the solution of the cattle-breeding problem is to grow

Indigenous Cattle of the Plains.

(a) "Monograph on the Breeds of Cattle of the Darjeeling District" by D. Quinlan M. R. C. V. S.

(b) "Improvement of Cattle in Bengal" by E. Shearer M.A., B.Sc.

more fodder but that is putting the cart before the horse" (a). Whatever that may be, the cattle of Rangpur, Midnapore and Chittagong are at present considered to be of a somewhat better type, but still they fall far short of what an ideal cattle ought to be. A good milch cow of any breed is of a wedge-like shape, with quarters behind sufficiently broad to allow room for full development of udder and milk-veins. The skin is loose, fine and glossy, the tail is usually long and bushy, the neck thick-set and the back straight.

There are 3 types of buffaloes usually found in Bengal, *viz.* the Bangar variety which one meets in Bengal proper, the Khachar which abounds in the Assam frontier and the Dowanshla or Dowjeta, which is a result of crossing between the Bangar and the Khachar. The main distinction between the Bangar and Khachar is in the general build but a distinct difference can be recognised in the horns. The horns are more apart in the Bangar type than in the Khachar one, and they are also less massive and elegant. The cultivators however prefer the Bangar variety as it is very much more manageable than the Khachar buffaloe.

The following Table gives an idea of the number of local and imported cattle.

Table I.—Number of Local and Imported cattle.

	Bulls and Bullocks.	Cows.	Male Buffaloes.	Female Buffaloes.	Young Stock.
Local ...	7,825,143	6,842,815	365,029	220,526	8,391,514
Imported ...	1,083,914	267,819	304,545	54,533	
TOTAL ...	8,909,057	7,110,634	669,574	275,059	8,391,514

The number of imported cattle especially milch-cattle in the towns no doubt form a good number, but in the villages their proportion is insignificant. On the other hand the number of bullocks in the Province taken as a whole, although small, is persistent. Table I above shows that the percentage of imported bulls and

(a) "Cattle Breeding" by William Smith in Agricultural Journal of India Vol. XVIII, part VI Page 604.

bullocks as also of male buffaloes is about 10 per cent. of the total cattle population, while in the case of milch cattle the number imported falls short of even 12 per cent. of the total stock. The districts of Dinajpur, Rangpur, Mymensingh and Bogra import the largest number of cattle especially draught and plough bullocks from Bihar and United Provinces. It is said that the big cattle fairs in these districts help the import of cattle. The sturdy dark-coloured Manipur bullocks and the white and black and white bullocks from Garo Hills, Maurangia (*) cattle from the borders of Nepal are imported in large numbers into the districts of Tipperah, Mymensingh, Dacca and Faridpur, while some cattle come from Orissa to districts like Midnapur and Burdwan.

Imported cattle.

The Bangar variety of buffaloes are extensively imported from Bihar to Murshidabad, Nadia, Bankura, Rajshahi, Bogra, Dinajpur, Maldah and Jalpaiguri where they are used for traction. There are very few Khachar buffaloes in the Province as the Bengali prefers the Bangar buffaloe for its docility and good temper.

TABLE II.—Number of Cattle in Bengal.

Year.	Bulls.	Bullocks.	Cows.	Young Stock.	Male Buffaloes.	Female Buffaloes.	Young Stock.	Total of Cols. 2 to 8.
1	2	3	4	5	6	7	8	9
1914-15 (a)	821,185	8,087,872	7,110,634	8,236,298	669,574	275,069	161,216	25,355,898
1919-20 (b)	1,125,738	8,229,750	8,118,235	6,325,844	639,143	260,084	126,574	24,725,368
1920-21 (c)	1,124,604	8,229,750	8,118,235	6,325,836	639,143	260,084	126,574	24,724,225

The numerical strength of cattle in Bengal, as will be evident from Table II above, has suffered to some extent between the year 1914-15 and 1920-21, the decadence having occured mainly in the

* Maurang is a district of Nepal bounded on the south by the district of Purnea and the Supaul subdivision of the district of Bhagalpur, on the east by the river Meechi, on the west by the river Maha Kali and on the north by the hills of Nepal.

(a) Survey and Census of Cattle of Bengal by J. R. Blackwood I.C.S. App. I(a)

(b) Live-Stock Statistics by G. Findlay Shirras 1919-20.

(c) Agricultural Statistics of British India 1920-21.

young stock of cows as well as buffaloes. The first real cattle-census in Bengal was taken in 1914-15, and so earlier figures are not available. It is true that earlier figures are given in some reports, but they are based, as official admission shows, more or less upon imagination and hence unreliable. The depletion in young stock being above 25 per cent in the course of the last 5 years, is really alarming and ought to attract the serious attention of all concerned. The heavy mortality of calves is due mainly to starvation and slaughter. Similar causes are also at work in the case of cows as well, but the diminution in their number in Bengal is soon more than counter-balanced by fresh indents from upcountry, and hence the depletion in their case is not so marked. Sir John Woodroffe, as President of the All-India Cow Conference Association, Calcutta, succeeded in persuading the Corporation of Calcutta and many other Municipalities to stop the slaughter of calves (a), but thanks to the combined efforts of Mahomedans and Europeans this wholesome restriction upon cattle slaughter was very successfully withdrawn when the new Calcutta Municipal Act (1923) passed through the Bengal Legislative Council (b). We shall revert to this subject when dealing with cattle slaughter.

The number of Cattle.

TABLE III.—Proportion of Plough-cattle to Cultivated Area.

Year.	Total Cultivated Area (in Acres.)	Total Number of Bulls and Bullocks.	Number available for cultivation after deducting 12 per cent. unfit & employed otherwise.	Area in Acres per pair of plough-cattle.
1912 (a) ...	22,511,665	8,909,057	7,800,000	6
1914-15 (b) ...	29,779,473	8,902,404	7,800,000	7·7
1919-20 (b) ...	28,970,724	9,355,488	8,296,420	7

(a) *Vide* Resolution passed by the Corporation of Calcutta on the 7th April 1920 and also Page 27 foot note *ante*.

(b) *Vide* Proceedings of the Bengal Legislative Council dated the 5th March 1923 reprinted at the end of this chapter.

TABLE IV.—Milk Available per Head of Population.

Year.	Population.	Number of milch cattle.	Average yield of milk per day in pints at 2 pts. per head for 7 months.	Number of Persons for each milch cattle.	Quantity of milk in pints available per head per day.
1912 (a) ...	44,586,925	7,385,693	8,616,643	6	½
1914-15 (b) ...	44,588,115	7,369,696	8,597,974	6	¼
1919-20 (b) ...	44,588,115	8,378,319	9,774,702	5·5	¼

TABLE V.—Population, Number of Cattle and Grazing Area (a).

Name of Division.	Population.	No. of Cattle.	Area in Acres available for Grazing	No. of Cattle per 100 Population.	No. of Cattle per Acre of Grazing Area
1	2	3	4	5	6
Presidency excluding Calcutta.	5,642,384	4,815,597	178,832	87	27
Burdwan ...	5,467,294	5,223,247	1,669,307	95	3
Rajshahi ...	10,136,242	7,703,745	633,165	77	12
Dacca ...	12,037,649	5,316,707	357,853	44	15
Chittagong ...	5,304,455	2,253,228	70,627	42	32
Total or Average ...	44,586,925	25,323,924	2,909,887	5	9

No pains have been spared to collect accurate and up-to-date statistics as far as available and Tables 3, 4 and 5 give the reader a fair idea of the present situation. Table II goes to show that the number of acres of actually cultivated area which falls upon the share of a pair of agricultural cattle to till is something like 6 acres *i.e.* 18 Bighas in 1912 and 7 acres *i.e.* 21 Bighas in 1920. Enquiries go to prove that a pair of plough cattle can hardly till 5 acres during a season but we find that they have got to till from 6 to 7 acres. The

Milch and Agricultural Cattle.

(a) Survey and Census of Cattle of Bengal by J. R. Blackwood I.C.S. p. 35. [1918.]
(b) Agricultural Statistics, Vol. I. 1914-15, 1919-20.

inevitable result is that the lands are not properly tilled and the out-turn of food-crops is in consequence not up to the mark. The number of milch-cattle and the output of milk, as will be evident from Table IV are still more deplorable. Each individual gets on an average only $\frac{1}{4}$ pint *i.e.* to say about $1\frac{1}{2}$ chitaks of milk every day, whereas he requires something like 1 to $1\frac{1}{2}$ seers *i.e.* 2 to 3 pints per day. The insufficiency of milch-cattle is thus more serious and marked. As a result the infantile mortality of Bengal is very heavy—heavier than that of most other Provinces of India and certaintly much in excess of the rate prevailing in other civilised parts of the globe.

Deterioration of Stock.

Bengal has shared with the rest of the country a general deterioration in the quality of her stock of cattle, but there are certain other factors prevalent in this province alone, which have helped the deterioration. Thus for example, the climate of Bengal, as has been officially stated, "is unfavourable to the development of strong and vigorous cattle." There are several other circumstances apart from climate which have reduced Bengal cattle to their present condition. They are in order of importance: (1) the deficiency of pasture (2) the deficiency of suitable breeding-bulls, and the gradual diminution in the number of Brahmini bulls and (3) the very small proportion of the cow's yield which is generaly allowed for feeding its calf thereby diminishing the vitality of cattle (a) To this may be added another important circumstance *viz.* (4) indiscriminate slaughter of the superior class of cattle, leaving only the inferior and worthless stock.

Formerly zeminders and goalas carried on breeding experiments and raised the quality of cattle to a high pitch of efficiency both as regards milk production as well as draught purposes. With the influx of modern civilisation and the havoc caused by ravages of malaria coupled with other political and economical changes, the prosperity of Bengal came to an end and we find as a result a general apathy of the people towards everything including care and interest for their livestock. Long after the establishment of the

(a) A Survey and Census of Cattle in Bengal by J. H. Blackwood p 16.

British Government we find attempts being made by the civil Veterinary Department for the improvement of stock by the introduction of superior class bulls from upcountry as well as from other countries. These bulls were supplied mostly to jails, District Boards, Wards Estates, and the Municipalities, and as Reports of the Veterinary Department from its establishment up to date go to show, the experiments have invariably proved to be failures They have been in many cases too large for local cows, while in others they quickly degenerated and became totally worthless owing to want of exercise and supervision and also due to the influence of the Bengal climate. But by far the most important defect lay in the public bodies to which the bulls were supplied and who did not take any the least care for their proper upkeep and maintenance A feeble official attempt has been made that the public did not properly utilise these bulls. In one or two cases it may be due to want of information amongst the people that such a bull had been brought and was open for service. But in most cases, as the reports of the Veterinary Department themselves disclose, sufficient public interest had been aroused and the Department could not supply most of the requisition for bulls made to it.

Attempts at Improvement.

There are very few Dairy farms and cattle-breeding stations worth mentioning in Bengal. The Calcutta Pinjrapole Society started about 50 years ago with the avowed object of improving the breed of cattle, with an average population of 3,000 cattle and an average annual expense of 2 lacs of rupees, has practically proved a failure. So has the Sri Krishna Goushala Sabha started some years later, although they have made provision for extensive pasture lands at Lillooah (about 200 acres) and Kanchrapara (about 600 acres). Pandit Matadin Sukul's breeding farms at Rajshahi and Murshidabad, though flourshing for a time, were abolished soon after he left those places The Government Co-Operative Dairy farm at Dacca had to be discontinued on account of heavy losses within a couple of years from its start. It is true there are a few successful Dairy farms and cattle breeding stations, official as well as

Dairy farms and Cattle Rearing Stations.

non-official, throughout India and among these can be named Keventer's Government Subsidised Dairy farm at Aligarh, the Telinkhari Government farm in the Central Provinces near Nagpore, the Government cattle breeding stations at Pusa, Hissar and latterly at Mukteswar. In Bengal, however, only two such farms can be mentioned *viz.* the Government Dairy farm at Rangpur (started in 1923) and the Bengal Humanitarian Association Dairy farm at Lillooah (started in 1917). Both proceed to improve the local type of cattle and produce dual purpose animals i.e. to say the cow-calves are to be good milkers and the bull-calves to be good plough-cattle. The Rangpur farm is conveniently situated near the Rangpur Railway Station and has about 1,000 Bighas of fertile land at its disposal the effect of feeding cattle upon fodder crops and the results of mixed farming are being investigated. Milk is supplied to local public in sealed cans at customers' houses. The B. H. A. Co-operative Dairy Farm is also carrying on similar experiments at Lillooah. One Australian bull and an English bull were tried without appreciable success. The offspring were much prone to epidemic diseases and the rise in milk-yield was not satisfactory. The best results were obtained from country Brahmini bulls and Hissar bulls. Experiments with Sindhi bulls were also made with some degree of success. The Association succeeded in producing dual purpose animals (a), which they aimed at. They are supplying pure cows' milk at moderate price to members in sealed cans at their houses. Experiments on growing fodder crops are also being tried. All this is being done practically without any extraneous help and although it is only a question of time, the very important economic problem of maintaining dry cows of towns on minimum cost, so as to make it unprofitable for the cattle-owner to sell his cattle when temporarily dry, is nearing solution.

There is at least one matter relating to cattle in which there is complete unanimity of opinion between the official and the non-official. It is this, that the number of good cattle in this country is extremely few and even that is growing scarce every year.

(a) *Dual purpose* animals are those whose males are good draught cattle and females good milkers.

The conservation of the best cattle and every means to increase their number are therefore absolutely necessary. It is only with regard to the means that there is some difference of opinion. Mr. Blackwood, special officer employed by the Government in this behalf, would rest contented with 2 recommendations *viz* (1) establishment of model cattle farms for development of dual purpose animals and (2) provision of superior serving bulls. Of the first of these proposals, the Government of Bengal already made a start in the matter by opening the Dacca Dairy farm in 1912 and the Rangpur Dairy farm in 1913. The Dacca farm had to be closed with a heavy loss early in 1914 and the Rangpur Farm still continues, although it has to be worked at considerable deficit. The Government apparently have no money to start any other experiment but will think their duties to be at an end by expressing a pious hope that public bodies (such as District Boards, Union Committees and Municipalities) and private individuals would take up the work. But how can this be reasonably expected ?

How to improve the Breed.

The local bodies are more helpless and bankrupt than Government and even if one or two of them be inclined to expend money on such matters at the cost of other work, the law is not wide enough to enable them to do so. When you ask for greater powers for local bodies the Government will oppose such proposal and no amendment of the existing law on the subject can be effected. The position therefore resolves to this : Neither the Government can do anything in the matter, nor will they allow the local bodies do anything.

Difficulties of Local Bodies.

Next about private enterprise. If the Government could point out any of their cattle-farms as being run on an economically successful basis people would naturally and invariably take an interest in such farm and start others on that model. The Government can afford to spend a large sum on capital expenditure and considerable amount on recurring expense for the establishment and maintenance of a cattle farm under expensive but inexperienced experts with little success and at an appreciable loss but very few private individuals can incur such a risk, and they can

Why Private Enterprise is shy.

by no means be blamed for it. Less than half-a-century ago almost all the zeminders and middle class men had their establishments in villages where they used to maintain fine herds of cattle and there was some amount of healthy rivalry among them in producing fine breeds of animals. The Brahmani bull, healthy, stalwart and roaming freely all around, was usually employed for breeding purposes, and the average milk-yield of the Bengal country cow was at least 4 times what it is now. Malaria and other scourges have decimated the Bengal village, the grossly selfish and short-sighted policy of the landowner as well as of the tenant and the negligence and aloofness of the sovereign power have caused almost a wholesale destruction of the village common along with a steady deterioration in the breed of our cattle. The milk-yield of the cow has come down to "not more than one seer per diem on an average for something like seven months of the year" (a) (420 lbs or about 50 gallons per annum), while the cost of maintenance has risen out of all proportions. As a result, the probelem of maintaining a cattle-dairy on an economically sound basis has become extremely complicated, if not altogether incapable of solution. Although in tracing the cause of this state of things we generally find that one department of Government is blaming another (b) or the Government is throwing the responsibility upon the people and the people upon the Government in their turn, no useful purpose is served by such a procedure. As one coming from a family which has for generations taken an active interest in cattle-breeding and who has himself been intimately connected with breeding experiments of an Association which has been recognised "as the only place in the province (of Bengal) where researches in improving the breed of cattle are being carried on an extensive scale and on scientific lines," I may

Dry cow—the real obstacle.

(a) A Survey and Census of Cattle in Bengal by J. R. Blackwood I. C. S. p. 26.

(b) The root reason (for such a decline in the quality of milch cattle in India at a time when every other country in the world has been able to improve the quality of its cattle) undoubtedly is * * * the deliberate and erroneous teaching by the departments responsible for cattle breeding that the development of dairying or milk-production would injure the draught quality of working bullocks. I look upon it that the wilful elimination of milking qualities in the stud bulls issued by Government for breeding purposes and the persistent teaching of all concerned in cattle breeding for many years in India that dairying or heavy milking qualities of dams are injurious to the qualities of plough cattle, have probably done more harm to cattle breeding in India than anything, because this elimination of milk-giving qualities strikes at the root of the whole industry."—"Cattle Breeding" by William Smith, Imperial Dairy Expert in the *Agricultural Journal of India* Vol. *XVIII*. p. 64.

point out that besides arranging the supply of good bulls, the male issues of which would serve as good draught-cattle and the female issues as milkers, there should be adequate provision for supplying the cattle with sufficient nutritive food either by grazing, stall feeding or both. Considerable restrictions should also be put upon cattle-slaughter, so that the very few good cattle remaining in the land may not be prematurely put to death in the slaughter-houses to satisfy the hankering for beef of a comparatively small section of the people to the infinite trouble and inconvenience of the whole nation. And last, though by no means the least, adequate arrangement should be made by the Agricultural (Veterinary) Department of Government direct and also through Local Bodies for the supply of good bulls on nominal cost or lending the services of such bulls on nominal fees. The protection of Brahmini bulls should also be included in this programme and no pains should be spared to impress upon the people the importance of using the very best bulls for breeding.

The Three Fundamental Necessities.

It has lately become the fashion in some circles to advocate the introduction of English or Australian bulls for the improvement of local cattle. Of whatever use this advice may be in the case of the Punjab cattle, it is obvious, considering the size and capacity of Bengal cattle, that they are of little use in this Province. Thorough official enquiries have shown that the effect of introducing superior breeds of cattle from other Provinces of India into Bengal and of crossing them with the local breed has neither been encouraging nor permanent. Attempts at introducing larger milch animals from other parts of India and acclimatizing them in Bengal have also met with meagre success. Veterinary Assistants of various places have reported that the "milk-yield of imported cows becomes smaller in quantity after each calving. It is generally observed that cows which gave ten seers of milk at the time of being imported, give six seers at most after the second calving. At the third calving the yield is reduced to three or four seers." The yield has at this stage come down to that of the local animal. The imported bullocks also meet with a similar fate. "It is a general

Breeding.

experience also," says Mr. Blackwood, "that imported bullocks not only need more attention, but that they cannot stand the same wear and tear as the indigenous animals."(a)

Col. Morgan lately Inspector-General of the Veterinary Department is of opinion "that cattle of one part of India will not thrive if moved to another and the sending of bulls of one breed with the view to improve another is fatal and that any attempt at working on these lines is to be condemned. Our main object should be to improve each indigenous breed without attempting any violent outcross or the introduction of blood which would be unsuitable for the district and in which no possible chance of permanency could be hoped for" This view is now generally considered to be too extreme and it has been recently held by Government Veterinary experts that cross-breeding can be carried out with advantage, provided that the species are approximately similar, not too distinct in species nor too big in size. Col. Raymond (formerly Principal of the Bengal Veterinary College) and Mr. Harris (formerly Superintendent, Civil Veterinary Department of East Bengal and Assam) have come to the conclusion that "a breed may be improved and very much time and money saved by introducing a strain of a very similar type but of better quality from elsewhere." Good results have been derived by acting upon this suggestion at Rangpur, Pusa and Lillooah

The institution of the Brahmini bull is largely peculiar to Bengal. Mr. Blackwood, who made a special study of the subject at the instance of the Government of India, reports that "there is not a single district in the province which has an adequate supply of good breeding bulls." He very rightly thinks that "the old Hindu system of breeding by means of sacred Brahmini bulls was a good one from the point of view of the cattle themselves, because it ensured that the calves dedicated were picked animals and the practice of allowing them to roam at will ensured that they were well fed and had plenty of exercise." But their quality has deteriorated to some extent and their number has largely decreased not only in Bengal

The Brahmini bull.

(a) A Survey and Census of Cattle of Bengal by J. R. Blackwood, p 121

but in other parts of India as well. The following Table VI shows the proportion of Brahmini bulls to cows in the several Divisions of Bengal. Whatever may be the cause of this, either the *res nullius* judgments of the High Courts, the encroachment upon pasture-grounds, or both, the time appears to have come when necessary action need be taken by the Government, as well as by the people in this direction. It has been suggested by competent authorities that "the evil effects of the *res nullius* judgments should be remedied by direct legislation, vesting the Brahmini bulls in Municipalities, District Boards and Local Bodies, which bodies again are to be made to maintain themselves or cause to be maintained by making suitable grants, by any public or private body a minimum number of good breeding bulls commensurate with their income and proportionate to the cattle within their jurisdiction."

Table VI.—Proportion of Brahmini Bulls to Cows.(a)

Name of Division.	No. of Brahmini Bulls.	No. of Local Cows.	Proportion of Brahmini bulls to Cows.
Presidency Division	6 178	1,148,940	1 to 191
Burdwan "	4,083	1,388,982	1 to 347
Rajshahi "	9,107	2,038,841	1 to 226
Dacca "	5,681	1,622,031	1 to 340
Chittagong "	994	633,250	1 to 635

Pasture-lands and fodder crops.

The cry for more pasture-land is not peculiar to Bengal alone, but in this province it has assumed a peculiar aspect owing to the Permanent settlement. The ruling British power had settled almost all the land in the Province with the zeminders on a fixed revenue on condition that they will take advantage of this wholesome provision and maintain the existing pastures, help to improve the fertility of the land and do further acts conducive to the welfare of the ryot. Unfortunately the expectations were not realised, and a steady effort has since then been made to encroach upon the existing pastures.

(a) A Survey and Census of Cattle of Bengal by J. R. Blackwood, App. IV, p. 8.

A glance at Table V, Col. 6 (p. 109) will show the proportion of cattle to grazing lands. The number of cattle per acre of grazing area varies from 3 in the Burdwan division to 32 in the Chittagong division But these figures do not form a correct guide, for Burdwan division though apparently well off as regards pasture is not really so. Hills and sandy churs where no plant can grow are included under the head of grazing area and this augments the quantity of grazing area available per head of cattle. The whole of Bengal and in fact almost all the villages in the Burdwan division are in want of adequate grazing lands. Mr. Mohanlal Mallik, M. Sc., General Secretary of the Cow Preservation League has prepared a Bill for protection, maintenance and extension of pasture lands. The Hon'ble Sir W. E. Greaves, as President of the All-India Cow Conference Association with a Committee consisting of Dr. H. W. B Moreno, M.A., M.L.C. and the writer have considered this Pasture Bill, and it is hoped when this Bill is passed into law, it will give some wholesome powers to District Officers and Local Bodies in the matter. Mr. J. R. Blackwood, Ll. B., I.C.S., Special Officer selected by the Government of India held an extensive enquiry and he met with the same cry almost everywhere —— the want of grazing facilities. The remedy suggested by some is the acquisition of grazing lands by the State and Local Authorities while others suggest that zeminders should come forward for the purpose, and a third course is not infrequently urged *viz*., more extensive cultivation of fodder crops. Critics inhabiting cold countries, where no grass grows due to the snowfall, strongly advocate stall-feeding, but experience shows that in a country like India grazing has an advantage peculiar to its own. It would seem that the best course would be to prevent by legislation further encroachment upon grazing lands and the maintenance and gradual extension of existing pasture lands, and to supplement grazing by fodder. Towards this latter end the Agricultural Department of Government may do a great deal. They may make known which kind of fodder is most suitable for each and every part of the Province and also supply good seeds on cost price or even at a sacrifice to *bona-fide* cattle-owners.

But the most important question, the question of questions, is unrestricted cattle-slaughter, which is possible only in India and which will not be countenanced even for a day in any civilised country in the world. Can you imagine a good, healthy, young cow, giving towards the end of its lactation period 4 pints of milk per day slaughtered with impunity? And this is what the writer has actually seen in a Municipal slaughter-house in Calcutta. This is by no means a solitary instance More than 500 such cows are daily slaughtered in one Municipal slaughter-house in Calcutta. Imagine there are several slaugher-houses in Calcntta and there are several towns and cities in India where such slaughter goes on from year's end to year's end! Our official European critics, presumably for the sake of the flesh they want to eat, seek to make us believe that slaughter-houses are a blessing, in-as-much as they eliminate our useless super-abundant cattle-stock which were eating away the food upon which the better class would thrive. This sounds plausible, but do they slaughter worthless cattle only in the slaughter-houses. Enquiries show that the case is just the reverse ·70 to 90 per cent. of cattle that are slaughtered are in the prime of their lives and "instead of leading a useful life for 10 or 12 years more they are killed at the end of their first or second lactation period," and in this way the very few surviving better class cattle are prematurely put to death to satisfy human greed for flesh. Some of our critics may hesitate to admit that good cattle are killed in the Municipal slaughter-houses, but when one remembers that the Superintendents of more than one Municipal slaughter-houses have admitted this fact, when more than one high-placed European gentlemen have found it to be correct upon open and independent enquiry, and further when one remembers the great hue and cry that was raised when the slaughter-duty on prime cows was raised a few years back in Calcutta, one would be left no other course but to admit that prime and useful cows are slaughtered in large numbers in the Municipal slaughter-houses. Under such circumstances how is it possible to increase the number of good cows? If you send all the better class animals to the towns which go to the slaughter-houses as soon as they

Cattle-slaughter.

become temporarily dry, leaving only the inferior and worthless class, how can you expect any appreciable improvement inspite of your best efforts ?

How to Remedy the Evil.

However one may improve the breed of cattle, however much one may feed them and tend them, if they find their way to the towns and are indiscriminately slaughtered at the end of their first or second lactation period, it is idle to hope for any tangible good. Can you expect to fill up a cistern when water comes through one single narrow inlet and goes away through several wide outlets ? The only conceivable remedy lies in stopping indiscriminate slaughter at once. European birds-of-passage may oppose the idea, narrow-viewed Mahomedan opinion may disfavour the scheme, but no sane or sober man will be disposed to take any other view. At the instance of Sir John Woodroffe, President of the All-India Cow Conference Assocation, Calcutta many Municipalities resolved to restrict the slaughter of useful cattle, but the Government vetoed such resolutions on the ground that the existing law did not justify the carrying into effect of such resolutions.

Calcutta Municipal Bill.

When however the Calcutta Municipal Bill came to the Legislative Council, the present writer tried to remedy this legal defect by intoducing a clause to section 388 authorising the Corporation to restrict the slaughter of useful cattle when necessary. Suggestions were made through the All-India Cow Conference Association and the Cow Protection Society that the following words be added as sec. 388 (2) *viz.* "388 (2). The Corporation may, at any time prevent, restrict or regulate the slaughter of any kind or class of cattle in a Municipal or private slaughter-house in Calcutta as may seem to them proper". In the Select Committee the clause was softened down at the instance of Mr Surendra Nath Mallik to the following effect, *viz.*—"The orporation may, at any time for the purposes of improving and conserving the milk-supply, by a resolution in favour of which not less than two-thirds of the members present and voting have voted, prevent, restrict or regulate the slaughter in any Municipal or private

slaughter-house of such kind or class of cows and calves as may to them seem proper."

Inspite of all these safe-guards the clause did not meet with the approval of the Europeans and Mahomedans, and this imperative and wholesome provision was thrown away in the Bengal Legislative Council by an unholy combination of the above two communities Babu Amulya Dhone Addy gave a tough fight but he ultimately failed. A report of the discussion that followed is given below:

Mr. Syed Nasim Ali moved that clause 388 (2) be omitted. That clause runs as follows:—

"The Corporation may, at any time, for the purposes of improving and conserving the milk supply, by a resolution in favour of which not less than two-thirds of the members present and voting have voted, prevent, restrict or regulate the slaughter in a municipal or private slaughter-house of such kind or class of cows and calves as may to them seem proper."

Restriction against cattle slaughter.

He said that his amendment simply wanted that the present state of things should continue until and unless some real provision was made to improve the milk supply of Calcutta The argument that the slaughter of cows was gradually decreasing the number of cattle in this province was fallacious. Statistics went to show that so far as this province was concerned the number of cattle was increasing.* If the slaughter of cows was not permitted then Hindu-Moslem unity was in danger. If really it was the fact that there was that Hindu-Moslem unity and that Mahomedans out of respect to the feelings of Hindus were going to give up the slaughter of cows, why was this legislation necessary? He quite agreed with his Hindu friends that out of deference to their feelings Mahomedans would not slaughter cows but the moment they tried to legislate he stood on his rights and there was nobody who could take away his rights. He might not exercise his rights for a year or two out of deference to his Hindu brethren in order to advance the cause of Hindu-Moslem unity but the moment they wanted to take away the rights he possessed he opposed them and even the Khilafat-Mahomedans would also oppose them It was one thing to have a compromise, another thing to have legislation. Those who were trying to bring up this question were really against Hindu-Moslem unity. It was those people who were trying to rake up old sores and instead of helping Hindu-Moslem unity they would wreck it. It had been argued that the Mahomedan community could afford to give up eating beef. As a matter of fact the Mahomedans especially poor Mahomedans could not afford to purchase

* This is clearly wrong. See Table II Col. 9, p. 107, *ante*.

fish or mutton. Would any civilised Government take a step which would in any way restrict the cheap food of the poor section of the community.

Mr. Abdur Raheem in supporting the amendment remarked that on the one side there was a strong religious sentiment which they were bound to respect. On the other side there was the question of the food supply of a large section of poor Mahomedans which could not be ignored. A good deal of circumspection and tact were required to find a solution. Unfortunately Babu Amulyadhone Addy and his friends looking at the matter from an exclusive point of view, had brought it to the forefront at a time when opinion was very strongly divided. To prohibit the slaughter of cows would affect the food supply of poor Anglo-Indians and Mahomedans.

Rai Mohendra Chandra Mitra Bahadur moved three amendments, (1) that for clause 388 (2) the following be substituted. "The Corporation may at any time, prevent, restrict or regulate the slaughter of any kind or class of cattle in a municipal or private slaughter-house in Calcutta as may seem to them proper," (2) that in clause 388 (2) for the words "in a municipal or private slaughter-house of such kind or class of cows and calves as may to them seem proper" the following be substituted "of any kind or class of cattle in the municipal slaughter-houses"; (3) that for clause 3 (63) the following be substituted "(63) 'slaughter-house' means any place used for the slaughter of such cattle, sheep, goats, kids or pigs as the Corporation may allow."

Mr. Amulyadhone Addy moved four amendments the first being the same as that of the first one of Rai Mohendra Chandra Mitra Bahadur. The other three were (1) that in clause 388 (2) the words "by a resolution in favour of which not less than two-thirds of the members present and voting have voted" be omitted; (2) that to clause 389 (1) the following proviso be added after the existing proviso "Provided also that the Corporation shall not grant license for sale of meat of such kinds or classes of animals as the Corporation have prohibited from slaughter," and (3) that in clause 3 (63) after the word "pigs" the words "as the Corporation may allow" be inserted. He said that this was not a religious question but a purely economic question. In Calcutta 90,000 cattle and 10,000 calves were slaughtered yearly. Out of that 90,000 cattle no less than 60,000 were bullocks. He did not object to the slaughter of bullocks. Shortage in the milk supply was one of the principal causes of the high rate of mortality in Calcutta. The prohibition of the slaughter of cows would increase the milk supply and develop agriculture. If it was a fact that cows were slaughtered only for food for poor Anglo-Indians and Mahomedans he would not have minded it so much but cows were slaughtered for the export of dried meat to Burma and for the export of hides to foreign countries.

Mr. S. Mahboob Aley supported Mr. Nasim Ali's amendment.

Mr. Kishori Mohan Choudhuri moved three amendments, the first of which corresponded to Babu Amulyadhone Addy's second amendment. The other two were (1) that in clause 388 (2) for the word "cows" the word "cattle" be substituted and (2) that after clause 388 (2) the following proviso be inserted

"provided that no slaughter of male cattle under three years of age and female cattle under four years of age and of pregnant cattle shall be permitted."

Maulvi Hamiduddin Khan, Khan Bahadur Maulvi Wasimuddin Ahmed and Shah Syed Emdadul Haq strongly supported Mr. Nasim Ali's amendment.

Mr. Jones opposed the introduction by the Select Committee of clause 388 (2) in the Bill on the ground that it was a deplorable and dangerous departure from Municipal law. Further it was entirely outside the scope of a Municipality which should confine itself to sanitation. Bringing this restriction introduced a religious element, a religious strife into Municipal life which should find no place there and which would militate against harmonious working.

Mr. Herbert Stark remarked that the moment they came to the amendment they began to see the cloven hoof. They were told that this was a concession but it was concession which should be avoided. The zeal of the proposers of the amendments had outstripped their discretion and instead of doing a service they had done a great dis-service. If the slaughter of cows was prohibited, the prices of other meats would go up. This was a form of tyranny which the ratepayers of Calcutta would not be prepared to submit to.

The Hon. Sir Surendra Nath Banerjea thought this matter ought to have been settled by Hindus and Mahomedans in a Conference in a friendly manner He was not without hope that the question might yet admit of a solution of that kind. When this clause was inserted by the Select Committee at Darjeeling he was ill and could not attend the meetings of the Committee. When his attention was drawn to this clause afterwards he had misgivings about it and he discussed the matter with the late Rai Radha Churn Pal Bahadur who had the same feeling about it. But he did not like to intervene in a matter which had been decided by the Select Committee and he allowed the thing to remain where it was. He was here now as the spokesman of the Government and in the opinion of the Government sub-section 2 of clause 388 should be deleted.

Mr. Syed Nasim Ali's amendment that clause 388 (2) be omitted was carried by 53 votes to 31 votes.

FOR THE AMENDMENT.

Nawabzada K. M. Afzal, Khan Bahadur Maulvi Wassimuddin Ahmad, Maulvi Rafiuddin Ahmed Maulvi Yakuimuddin Ahmed Mr. M. Ahmed, Munshi Jafar Ahmed, Mr. Erfan Ali, Syed Nasim Ali, Munshi Yyub Ali, Munshi Amir Ali, Khan Bahadur Khwaja Mohamed Azam, Sir S. N. Banerjea, Mr. H. Barton, Dr. C. F. Bentley, Mr. L. Birley, Khan Bahadur Maulvi Jafizar Rahaman Chaudhuri Maulvi Shah Muhammad Chaudhuri, Hon. Nawab Nawab Ali Chaudhuri, Mr. T. C. Crawford, Mr. K. C. De, Major General Deare, Mr. J. A. De Lisle Hon. Mr. J. Donald, Mr. J. T. Donovan, Mr. Dey, Mr. T. Emerson Mr. K. G. W. Faroqui, Mr. J. Cambell Forrester, Mr. S. W. Goode, Shah Syed Emdadul Haq Mr. W. W. Hornell, Mr. G. T. Huntingford Maulvi Ekramul Huq. Maulvi Fazlul Karim, Maulvi Hamid-ud-din Khan, Maulvi Md. Rafique

Uddin Khan, the Hon. Maharajadhiraj Bahadur of Burdwan, Munshi Makramal Mr. A. Marr, Mr. M. C. McAlpin, Hon Mr. P. C. Mitter, Mr. S. C Mukerjee Mr. Abdur Rahim, Hon Sir Abdur Rahim, Maulvi Shah Abdur Rauf, Mr. F. W. Robertson, Mr. G. N. Roy, Mr. J. N. Roy, Khan Bahadur A. Salam, Mr. H. E Skinner, Mr. H. A. Stark, Hon. Mr. Stephenson and Mr. S. C. Stuart Williams.

AGAINST THE AMENDMENT.

Babu Amulyadhon Addy, Dr. Pramathanath Banerjee, Babu Jatindra Nath Basu, Babu Hem Chandra Bhattacharya, Babu Kishori Mohan Chaudhuri, Rai Harendranath Chaudhuri, Sir A. Chaudhuri, Rai Bahadur Nibaran Chandra Das-Gupta, Rai Bahadur Fanindralal De, Rai Bahadur Pyari Lal Das Dr Haridhan Dutta Rai Bahadur Jogendra Chandra Ghose, Babu Debi Prosad Khaitan, Babu Surendra Nath Mallik, Rai Bahadur Mohendra Chandra Mittra, Dr. Jatindra Nath Maitra, Babu Satis Chandra Mukerjee, Babus Nityadhan Mukerjee S. C. Mukerjee, Babu Sarat Chandra Mukerjee, Babu Hem Chandra Nasker Kumar Shib Shekhareswar Roy, Raja Manmatha Nath Ray Chaudhuri, Babu Rasik Chandra Rishi, Babu Jogendra Krishna Roy, Babu Jogendra Nath Roy Maharaja Kshaunish Chandra Roy, Mr. Bijoyprosad Singh Roy, Rai Bahadur Lalit Mohan Singh Roy, Babu Sailaja Nath Roy Chaudhuri and Babu Manilal Sen.

CHAPTER II.—PRESIDENCY DIVISION.

1.—Calcutta and Suburbs.

Calcutta proper comprises the area administered by the Calcutta Corporation, with the port, fort and canals the population of which according to the latest Census, is 896,067. This area plus the suburban Municipalities of Cossipur-Chitpur, Manicktala, Garden Reach and Howrah, contain an aggregate population of 1,222,313, of whom no less than 61 per cent. are immigrants. 204,000 come from Bihar and Orissa, 90,000 from U. P. Of the Bengal districts, the largest contribution are those from 24-Pergs (88,000), Hooghly (48,000) and Midnapur, (29,000).

Greater Calcutta.

Infantile mortality in Calcutta is extremely heavy, and what is worse, it is steadily on the increase corresponding to the increase in the price of milk in the city. Death-rate of infants of the poorer and middle classes less than one year old is comparatively higher, and as is said by medical experts this is due to mal-nutrition. Want of pure and abundant supply of milk is thus responsible for undermining the vitality of the nation.

Infantile Mortality.

Table 1—Rate of Infant Mortality in the Principal Cities of the world.

City.	Year.	Rate per 1,000.	City.	Year.	Rate per 1,000.
Amsterdam ...	1921	54	New York ..	1921	71
Stockholm ...	1921	61	London ...	1921	80
Copenhagen ...	1921	67	Berlin ...	1921	135
Antwerp ...	1921	98	Calcutta ...	1921	369
Paris ...	1921	95	Bombay ...	1920	556

Table 2—Infantile Death-rate among Hindus and Mahomedans per 1000 births.

Year.		1918.	1919.	1920	1921.	1922.
Calcutta	Hindus ...	281	347	381	325	269
	Mahomedans ...	304	418	449	369	384
Cossipur-Chitpur ...	Hindus ...	...	227	217	221	129
	Mahomedans ...	...	271	246	263	176

Enquiries had been made about cattle and milk-supply in Calcutta from various sources but the replies have been uniformly disappointing. A few important ones are quoted below. This is what the Hon'ble Rai Sita Nath Roy Bahadur, the Merchant Prince of Calcutta has got to say about cattle:

"The state of cattle and of milk supply is far from satisfactory in the mofussil and a scandal in Calcutta which is responsible for the slaughter of some of the best prime cows in the country. Calcutta draws year after year the best milking animals in the country and as soon as they begin to seem dry, they are sold to the butchers for slaughter to avoid the expense of feeding in a place where pasturage is scarce and stall-rent high. "This rapid exhaustion of stock" as Major D. J. Meagher and Major R. E. Vaughan have pointed out in their "Dairy Farming in India" ends in scarcity of supply and consequent rise in prices in the breeding districts. The slaughter of prime cows is a danger to the milk supply of the country and steps should be taken to prevent it. Annually about 3,000 prime cows are slaughtered in Calcutta.

Hon'ble Rai Sita Nath Roy Bahadur.

The special committee of the Calcutta Corporation recommended in 1914:—

(1) That power should be given to the Corporation:—

(a) to acquire land in or outside Calcutta to be leased to Goalas or other persons free of rent or otherwise, for purposes of dairy farms or grazing grounds.

Calcutta Corporation Committee.

(b) to provide stud bulls and

(c) to establish dairy farms in or outside Calcutta for the supply of milk of the city.

(2) In the event of such dairy farms being established, or such land acquired, the Corporation should be empowered to provide for transport of milk to Calcutta.

The way in which unscrupulous dealers escape the law is astounding. On the cans one sees a plate on which is engraved "This can contains adulterated milk," and thus the sellers of adulterated milk escape the punishment provided by law.

It has also to be remembered that the cattle of a province or a part of a province are the ultimate product of the environment and that by a long process of natural selection a type has been evolved most suited to the particular conditions under which they are compelled to live. And it is not difficult to understand why the Bengal cattle which according to Mr. Shearer, are probably of the some stock originally as those of Behar, have deteriorated to such an extent that the average yield per diem of a Bengal cow cannot probably be taken to be more than one seer.

The climate conditions of Bengal may, to some extent, be held responsible for gradual deterioration of the cattle, but the rapid deterioration that we witness in the province is due mainly to three causes :—

(1) The deficiency of pasture.

(2) The deficiency of suitable breeding bulls.

(3) Utter neglect of cattle, especially during the rainy season when in parts of Bengal, especially Eastern Bengal, the fields are under water.

Causes of deterioration.

In some of the villages not an inch of land lies fallow and can be utilised for grazing purposes; when the harvest is gathered and the fields are bare the cattle can get a mouthful of grass here and there, but during the rest of the year they are insufficiently fed and become debilitated. This is injurious for cattle bred for dairying purposes as also to those produced for agricultural purposes. And the effect of this rapid deteri-

oration on the health of the people as also on agriculture in a country where vegetarians are in a great majority and which has aptly been called a peasant empire, can easily be imagined.

The deficiency of bulls in Bengal is deplorable. Captain Raymond has remarked "Out of some 128 sub-divisions 5 are reported to have many bulls, 45 have enough, and 74 have not enough" And as Mr. Blackwood has observed "It is quite clear that the main and most direct method of effecting an improvement of cattle in the province must be by the introduction of stud-bulls"

The reports of the Civil Veterinary Department show how year after year the department receives more applications for bulls than it can supply. The ryots appreciated the bulls supplied wherever they were sent but the department could not meet the demand. In 1898-99 applications for 25 bulls had to be rejected. In 1904-05 the Department was unable to meet constant demand for bulls from District-Boards and Jails. In 1912-13 the condition had not improved. The Department repeatedly referred to an evil which is assuming an alarming aspect, that of Brahmini bulls being taken away by butchers and Mahomedans for meat purposes The Calcutta High Court has held that the Brahmini bulls must be regarded as a *res nullius* and this decision has checked the tendency of the people to dedicate picked animals. The result of this rapid deterioration of the cattle is that the price of milk in Bengal to-day is much higher than in Great-Britain.

I agree with Mr. Blackwood that improvement of cattle in Bengal can be effected (1) by establishing cattle farms (like the one at Rangpore) for development of superior milk-yielding cows, draught-bullocks and serving bulls (2) by providing superior serving bulls under proper management for village cows in definite areas. But I would like to add that some means should be devised to provide pasture for the cattle and people should be taught to take proper care of the cattle and discourage the service of immature, debilitated or deformed bulls.

Remedies.

"The problem of providing pasture is difficult to solve. The much maligned landlord is helpless in the matter having leased out every inch of available arable land and every practical attempt towards the solution of this difficult problem must be taken by the villagers working conjointly through co-operative societies or similar institutions for rural reconstruction in the province. Everywhere cultivation of crops can be combined with the adequate and economic feeding of cattle either by growing fodder crops or by the adoption of mixed farming and in this matter the initiative should be taken by the Agricultural department"

Messrs. Turner Morrison & Co.

Messrs. Turner Morrison & Co, a leading European firm, Calcutta says:—"Neither the state of cattle nor the milk supply is satisfactory. The number of cattle is not sufficient. They are improperly housed, in many instances with tanks full of dirty water, which cows drink, situated close to the dairies. The supply of green food given to cows is insufficient in most instances for a strong milk supply, and cows are allowed to stray all over the streets when giving milk, and to feed on refuse in the vicinity of houses, with the consequent grave risk of picking up infection. This unsatisfactory condition of affairs can easily be remedied, and it seems to the Hon'ble Sir F. W. Carter that the establishment of Municipal Gowkhanas would go a long way towards ameliorating both the state of the cattle and the milk supply."

Mr. Gunn.

Mr. W. E. Gunn, an experienced European gentleman sent the following interesting suggestions:—"The remedy seems to me to lie in the establishment of large dairy farms in suitable localities, and special railway arrangements to bring this milk into Calcutta as rapidly as possible in specially cooled vans. There is almost certainly a good opening for such dairy farms but the difficulties in obtaining sufficient land to make such an enterprise pay and in transport of the milk appear at present to be insuperable. Nothing in this direction can be done without Government aid in the acquisition of land and the improvement in transport facilities."

Mr. W. J. Lubeck, M.R.C.S., L.R.C.P., D.P.H., Offg. Health Officer, Corporation of Calcutta informs that the question of improving the conditions of milk supply etc in Calcutta has been engaging the attention of the Corporation some time but has not been decided yet.

Calcutta Corporation.

The Cattle Preserving Co., Ld., Calcutta notes that the state of cattle and milk supply in Calcutta and its suburbs is not very satisfactory. The milk of Calcutta is watered to such an extent and handled by such insanitary men as to make it practically useless as food. The cattle of Bengal are very poor in milking qualities due to lack of scientific breeding, defective feeding and tending, and neglect of proper nursing of cows, want of stud bulls, pasture and good cheap food. The best milch cattle of Calcutta come from the Punjab and a number of these are exported from Calcutta to Rangoon.

Cattle Preserving Co.

Mr. Madanlal Himat Singhka Atty-at-Law, Calcutta is also of the same opinion. The causes he ascribes are:

(i) Bad food and lack of pasture grounds. On account of higher cost of maintaing cows, the gowalas, who do not look to the welfare of cows being stimulated by butchers and slaughter-houses, never look to their proper food. The food given is bad and insufficient.

(ii) Gowalas try to get as much milk as they can and use the terrible process "phooka" for the purpose. This also has much to do with the deterioration in the quality of milk.

A Calcutta Attorney's Opinion.

(iii) Lack of good bulls and breed cows.

(iv) Last and the most direct cause is the slaughter of pregnant and milch cows. It is because the milk-man knows that he can sell his cows at a fair remuneration to the butchers that he is influenced to neglect the cows He sells his cow, when it has become weak and is not able to give a good amount of milk, to the butchers. He sells the new-born calf too. Thus we lose service of the whole family. The present cows are slaughtered and their issues too — thus the quantity of cows is daily diminishing.

He suggests the following remedies :—

1. The slaughter of calves, milch cows, pregnant cows and prime cows should be restricted.

2. Those lands which were once kept aside as grazing grounds and which are now occupied by the Government and let out to cultivators should be reclaimed as pasture grounds. They should be made tax-free.

3. Forests to be let open for grazing, which are not open.

4. We must have such an agency through which we could give the milk-man the up-to-date scientific method of maintaining cows. This agency will help the cause a great deal. And the best agency in my opinion is opening dairy farms.

Babu P. C. Sircar, B L., Vakil, High Court and Dairy Expert Calcutta gives the following valuable opinion "Number of cattle is small, brought about by indiscriminate slaughter. Milk giving capacity of the dairy cows have greatly deteriorated on account of unscientific breeding, want of separation, methodical systematic selection, want of adequate number of breeding bulls, and pasture lands.

Dairy Expert's Views.

There should be protection of ancient pastures by fresh legislation, the public compounds, maidans and district-board enclosures ought to be free for grazing purposes, breeding bulls should be protected *i.e.* those male calves certified to be well suited for breeding purposes ought to be protected. The people should be made to learn scientific breeding. Cattle slaughter (prime cows and calves) should be stopped or at any rate regulated as they did the other day in Egypt and England, in order to ameliorate the store cattle supply of those countries.

The *res nullius* bulls ought to be protected and exempted from scavengering works ; the meat trade of Burma ought not to depend upon slaughter of Indian cattle and Govt. may be asked to import preserved meat for the army from countries other than India where ranching is followed and double purpose cattle are specially raised for human food ; and above all the transport law of cattle in India by railways and steamers should be amended.

Districts shows and fairs may be encouraged under the

district Agricultural Associations. Steps to eradicate contagious diseases must be taken at once and easy Veterinary aid for the country farmer and middle class men ought to be provided.

Babu Amulya Dhan Addy, B. A., Commissioner Calcutta Corporation makes the following suggestions for the favourable consideration of the All India Cow Conference Association :—

1. That a representation be made to the Government of India to legalise the prohibition of the slaughtering of calves and prime cows and cows fit for breeding purposes as in Mysore, Baroda and Cashmere.

2. That a representation be made to all the authorities of India to levy a prohibitive fee for the slaughtering of bullocks and cows fit for breeding purposes.

Mr. Amulya Dhan Addy.

3. That a representation be made to the Government of India to levy a reasonable duty on the export of hides from India to foreign ports.

4. That representation be made to all the local authorities of India to establish and maintain Veterinary Charitable dispensaries and hospitals.

5. That a representation be made to all the Local Governments of India to provide pasture grounds in every district, and encourage the cultivation of fodder.

6. That a representation be made to all the Municipal authorities of India to provide and maintain bulls for breeding purposes.

7. That a representation be made to the Railway Board and to the Government of India to reduce the rates of freight on fodder, milk and milk products.

8. That a representation be made to the Government of India to reduce the rates of duty on the import of beef and milk products from foreign ports in India and levy duty on the export of milk products from India to foreign ports.

Babu Purna Chandra Mittra, Vice-Chairman: Tallygunj Municipality writes :—

1. There are certain milk traders within this Municipality who keep a large number of buffaloes and supply milk to the

Calcutta market The milk supply within the Municipality nor the state of cattle is satisfactory on the whole

Tollygunge Municipality.

2 The state of the cattle is unsatisfactory in the following points :—

(*a*) The number of cattle is too small.

(*b*) The cattle on the whole are weak, emaciated and lean and this is due to want of proper fodder and pasture ground which there is none at all within this Municipality. The milk production is consequently meagre and not satisfactory.

3 In my opinion the above state of deplorable conditions can be remedied *firstly* by providing sufficiently large pasture grounds so as to afford necessary facilities in giving the cattle healthy open air exercise. *Secondly* by adopting some measure so as to enable the owners of milk to get a sufficient quantity of fodder at cheaper rates. *Thirdly* with the co-operation and active support of Municipalities, District and Local Boards and other local bodies your Association should put up healthy, airy and *pucca* cattle sheds where private owners can keep their cattle at a certain rate per cattle per month, because at present in most cases the cattle sheds are most insanitary places and especially during rainy seasons they stand for days together in perfect quagmires. *Fourthly* Healthy, stout and strong bulls should be kept specially for breeding purposes.

Babu Hem Chandra De, M.A., Chairman, Cossipur Chitpur Municipality. The unsatisfactory state may be set down to the following causes :—

(1) Want of proper breeding bulls.

(2) Want of pasture land.

(3) Ignorance on the part of the people of the art of breeding and rearing cattle.

(4) Decrease in the number of cattle owing to the indiscriminate slaughter of cows, prime cows and calves.

Cossipore Chitpur Municipality.

(5) Injurious Phooka practice.

(6) Insanitary condition of cattle sheds and want of medical aid.

(7) High price of fodder.

Remedies to remove these evils are :—

(1) To provide the owners of cattle with suitable breeding bulls.

(2) To set apart a large area of land as pasture with a wholesome tank for watering the cattle.

(3) Establishment of Model Dairy farms with breeding farms attached to them where instructions should be given to the people of improving the conditions of their cattle.

(4) There should be a cattle show once a year and prizes distributed to the owners of well-grown and healthy cattle for encouraging the breeding and rearing of cattle.

Babu Raj Krishna Dutta, a member of the Cossipur-Chitpur Municipality informs that the Cossipore Municipality has a nice dairy under European supervision and sells milk at 4 seers a rupee.

Cossipur Dairy Farm.

The health of the cows are most carefully looked after by the proprietor. So the milk it supplies is better and healthier. It has good accommodation for the cows, and sufficient space for them to lie down at ease.

There is another dairy under low-class Indian management very close to it, sells pure milk at a dearer price *vis.*, at 3 seers the rupee. This latter has barely standing space for the cows. I happened to be there once by accident and was horrified to find the miserable and wretched condition of the dumb creatures. The owners have no feeling. Where in the European dairy 10 to 12 cows are accommodated, this Indian dairy keeps more than thirty 30 cows.

At Paikpara before the very nose of the Paikpara Raj family, there is a big *hat* (market) for the sale of cows and buffaloes. It supplies a large quantity of milk to the town of Calcutta. Little children are fed with this milk and suffer from indigestion and naturally become unhealthy, for they cannot digest it.

There are many poor householders rather cultivators who keep one or two cows along with their bullocks, They are more humane as a class and do not dispose of their livestock even when barren.

There is no pasture for the cows. The cows are milked and let loose. They are a great source of nuisance to the neighbourhood. They are never taken care of in the day. This is due to the want of proper pasture in the neighbourhood.

The middle-class men (the Bhadra-lok class) who are generally clerks with a few exceptions do not keep cows. These poor cultivators supply them with milk at 4½ to 5 seers the rupee.

A pasture under Municipal management is urgently necessary in the interest of the health of the cows. The European dairy cows enjoy a regular pleasure trip at noon for a few hours under some servants of the dairy everyday. This European diary has also a medical man to look after the cows' health.

Babu U C. Banerjee, Chairman, Maniktala Municipality writes :—

1. Cattle kept by Goalas *i.e* vendors of milk and other individuals for purpose of trade, being under-fed, ill-housed, deprived of calves, confined in sheds and never taken out while in milk and subjected to "phuka process" are generally weak and in a bad condition.

2. Breeding is unsatisfactory in the few cases where milch cattle are kept, due to want of pedigree bulls; most of the milch cattle are sold to butchers for slaughter when dry; the practice affects prejudically the number of cattle.

Maniktola Municipality.

3. There are no pasture lands available for grazing of cattle.

4 Milk production is not satisfactory for the above mentioned causes.

To remedy the evils sufficient areas should be provided as pastures for the grazing of cattle; arrangement should be insisted upon for better housing of cattle, disposal of calves for slaughter while too young should be stopped, "phuka" process for obtaining milk by milkmen will have to be checked. Cross breeding shall have to be resorted to and pedigree bulls should be kept for the purpose.

J. A Murray, Esq., Chairman, Garden Reach Municipality says :—

It is impossible to calculate exactly whether the number of cattle is decreasing gradually but it is certain that the condition

of the cattle is not improving. The breeding system is not sound. Good breeding oxen are very rare and as a result most of the calves die in their infancy. There should be greater number of healthy oxen for breeding purposes The want of pasture land and abnormally high price of foodstuffs also affect the production of sufficient milk. The milkmen sell the calves and blow the cows and buffaloes to exact more milk and as soon as these cease to give milk they sell them to some butcher and get fresh cows. By so doing they save the expense of feeding the cattle during their pregnancy period and make handsome profit. If inspectors are appointed to punish the practices there would be every possibility of an improvement. In conclusion it may be pointed out that if young cows and calves are preserved and older cows are slaughtered then the number of milch cows would increase.

Garden Reach Municipality.

2.—24-Pergunnahs.

Twenty-four Pergunnahs is perhaps the most important and most extensive district in the Province with 5 sub-divisions. The principal town is Alipur, a suburb of Calcutta.

Grazing is scarce in the Sadar, Diamond Harbour and Barrackpore sub-divisions, while it is moderately plentiful in the Barasat and Basirhat sub-divisions. The proportion of bulls to cows is nowhere sufficient or satisfactory. The average milk-yield per cow per day varies from 1 to 1½ seers (=2 lbs. or 2 pints). Very few cattle are imported from outside. The number of cattle per 100 population is 42 only. The proportion of Brahmini bulls to cows is 1 to 156.

The cattle belong to the degenerate breeds common in Lower Bengal. They are said to be deteriorating owing to the cultivation of pasture lands and to the abandonment of the practice of dedicating bulls. Buffaloes are scarce. There is a Veterinary College at Belgachia, and Marwaris maintain a Pinjrapole or an asylum for broken down cattle at Sodepur 16 miles north of Calcutta where they have an annual gathering in November (*Gopasthami day*).

24-Pergs. Dist. Gazetteer.

James Bookless, Esq., Chairman of Bhatpara Municipality writes :—

1. The state of cattle and of milk supply is not satisfactory.

2 Quality of cattle is deteriorating, breeding is a difficult thing for want of oxen and there is no proper pasture.

Bhatpara Municipality.

Babu Ram Comal Mookerjee, Chairman, Halisahar Municipality writes :—

That the state of cattle and of milk supply in the jurisdiction of this Municipality is not satisfactory for reasons given below.

Fit buffaloes are not available for breeding. There is no pasture land. The fodder has become so dear that it is impossible to feed the cattle properly. The produce of milk is consequently decreasing.

Halisahar Municipality.

The evils can be cured if proper bulls can be got for breeding and if the price of fodder is considerably decreased.

Babu Durlabh Krishna Chowdhury, B.L., Chairman, Basirhat Municipality writes that the number of cattle within the Municipality is too small to yield a sufficient quantity of milk for meeting the local demand. The quality of the cattle too is generally of an inferior order, most of them being lean, emaciated and of stunted growth. There are no pasture lands within the Municipality; nor is there, I believe, a single such ground within many miles round beyond its limits. Besides the breeding is defective in-as-much as there is a conspicuous absence of good breeding bulls within the limits of the Municipality. The people seem to be indifferent towards the improvement of the bovine race and the result is that in these parts the race of cattle is fast degenerating and dwindling in number.

Basirhat Municipality.

To remedy the evils complained of above, there should, in my opinion, be pasture lands in every village as they used to be in times not long gone by. Unless and until arrangements are made in each village for pasture grounds it would be idle to expect any improvement in the race of cattle. For some years past there seems to have been so great a demand both for agricultural and horticultural products that with a view to derive the best possible

advantage, the people have converted every inch of ground they could spare into corn-fields and gardens and the result is that the pasture lands are all gone and that there is hardly any land left for cattle to graze on, or where such cattle may be tethered. In most cases, therefore, the cattle have little or no exercise whatever, which is so essential to the health of an animal. No animal however well-fed it may be, can have a healthy growth unless it is occasionally allowed to be at large and to roam at pleasure. Besides by being kept constantly shut up within the sheds they make the places damp, dirty and insanitary. Over and above this there is a want of healthy breeding bulls. Formerly consecrated bulls served the purpose, but unfortunately their number has markedly diminished. Any measure which obviates the defects noticed above will lead to satisfactory results.

Babu Jagat Prasanna Mukherjee, Chairman, Gobardanga Municipality says:

The state of cattle and of milk supply in my locality is very unsatisfactory. The number is reduced by slaughtering. The cattle are of stunted growth due to bad breeding, want of pasture lands and want of fodder. Consequently milk production is growing less and less. Housing sheltering in insanitary sheds and resort to *phuka* practice are not insignificant factors in swelling the mortality among the cows. The Zamindars should help good breeding by maintaining strong healthy Brahmini Bulls. The Municipalities, local boards and big land-owners should provide pasture along either side of District and Local Board and Municipal roads where possible, arrange for fodder at cheaper rates and educate people to take more care of their animals.

Gobardanga Municipality.

3.—Nadia.

Navadvipa or Nadia is an old and cultured district whose chief town Krishnagar was the seat of a famous Maharaja or feudatory chief. Although bereft of most of her former glories, she still holds her own as a seat of Sanskrit culture and as an important source of supply of milk and milk-products viz *dahi*, *kshir*,

ghee and *chhana*. The writer can recall to his memory the condition of villages in this district 30 or 35 years ago. Each had an abundant number of good milch cattle and plough-bullocks, the average milk-yield was 5 seers per diem and in dairy-farms at the place where cows were milched, dry earth was converted into mud with the stray sprays of cows' milk. But alas what is the condition now? Even the Collector of the district complains that the cattle are ill-fed, ill-bred and of poor physique, while other officers and responsible people report that both the number and quality are hopelessly below the mark and want of good breeding bulls, pasture lands and prevalence of indiscriminate slaughter are mainly responsible for the present state of things.

Nadia Past and Present.

A cursory glance at the reports furnished by different sources quoted below will convince one of the pitiable plight of cattle in this district and be it noted that similar, if not worse, is their condition in each and every district in Bengal.

Mr. J. H. E. Garrett, I.C.S. says in the Nadia District Gazetteer (1910) that the local cattle are very inferior, the pasturage available for them is deficient both in quantity and quality, and no care is taken to improve the breeds by selection or otherwise. The prices are low averaging about Rs. 25 for a cow and Rs 30 for a bullock. The practice of employing buffaloes in agricultural operations has become in recent years more common than it used to be, as one pair of them can do the work of 2 pairs of the miserable local bullocks. The price of a buffalo is about Rs. 40. The District Board expends about Rs. 1,000 per annum on its Veterinary establishment.

Nadia District Gazetteer.

The Collector of Nadia says that milk supply is fairly satisfactory in this district but the cattle are underfed and of poor physique. On account of adulteration the milk is often unwholesome.

Collector of Nadia.

There is plenty of pasture land but good bulls are wanted. The land available for pasture is of larger extent than in most districts.

Babu Hari Mohan Mukherjee Vice-Chairman Krishnagar Municipality sends the following exhaustive Note:

"There is nothing to be gainsaid that the condition of cattle and of milk supply of this district and particularly of this town Krishnagar is deplorably bad and meagre. It is to be admitted on all hands that now the number of cattle has appreciably diminished than what we saw quarter of a century ago. This falling off in number I attribute to the negligence and apathy of the people. Hence good breeding which is essential to producing good milch-cows has become quite neglected So cow-keeping does not now appear to be a profitable business. The diminution in the number of cows may also be ascribed to the fact that slaughter for beef is gradually increasing, cows being indiscriminately slaughtered irrespective of their pedigree either as milk-producing or as draught cattle. In short destruction of cattle is more indiscriminate in this country than in those where the religion of the people does not condemn beef-taking.

Krishnagar Municipality.

Now as regards breeding of cattle it is nowhere such neglected as it is in this country. The Brahmini bulls that were at one time useful agents of fertilisation have become fewer in number and weaker in health on account of their being ill-fed, want of pasture lands and also to some extent on account of the *res nullius* judgments of the High Courts. These Brahmini bulls which were held sacred half a century ago are not regarded as such now and in the absence of any legislation these "no men's properties" when full grown are utilised by low class Hindus and non-Hindus in various ways other than what they were meant for. So good breeding which only can ensure the out-put of a milch-cow is totally ignored by the classes of people, or even by gentlemen, who keep cows. Instances are not rare where within a radius of six miles of this town imported bulls have altogether changed the size as well as productivity of cows that are now found in the locality. So to my mind unless some legislation is made to protect the Brahamini bulls there is no hope of good breeding of cows.

Regarding grazing of cows it may be said that here no provision has been made to keep apart lands for pasture. Being asked by you to report about the matter I consulted some of the best books on cattle keeping and feeding and in each of them I

found that even in England where land is so valuable some plots are kept reserved for the cattle to move about freely, whereas in India the contrary of it holds good. All the lands here are arable lands and scarcely any plot is kept apart for pasture. It is a habit of the cows to move about freely in open air. This increases their productive power and goes a great way to make them fully serviceable, on the other hand the contrary of it is brought with evil consequences leading to a perceptible decrease in the productivity of the cows. So lands for pasture are necessary heer, and unless legislation is made we can not expect the landholders to keep adequate quantity of land for pasture.

I may mention here that fodder for cattle is not grown here in sufficient quantity. The cultivators pay very scanty attention to the growing of fodder. The little quantity of fodder we grow here falls far short of the demand and it is in nine cases out of ten that the greater quantity of seeds of fodder is consumed by the growers themselves. To obviate this difficulty it is better to request the Government Agricultural department to teach people the usefulness of growing fodder both by preaching and by demonstrations.

The first thing that I should like to suggest as a remedy is that the authorities of Municipalities, District Boards and village Unions should be requested to keep within their areas healthy bulls in sufficient number specially meant for breeding, and people should be taught to fertilise their cows by those bulls. This is to be enforced by legislation.

It is not unwise to hold special classes in the Agricultural Colleges and in schools where it is possible, to impart such education to acquaint the students with the fundamental principles of cow-keeping, their breeding and with everything concerning cows, not only so but also diplomas should be given to those students proving experts on the subject, and prospects of getting employment under the Municipalities and District Boards should be held out to them. This will much popularise the subject. Over and above all these I would suggest the usefulness of holding cow-shows in every district and subdivision and efforts should be made

to make these fairs successful by holding out valuable prizes. This will give an impetus to the people who keep cows.

Such shows will not only help to increase the out-put of a cow but will also improve the quality of the out-put. Now we are surprised to hear the world's champion cow giving an yield of forty seers of milk a day at a show, but the day may not be far distant when we may find in our country a number of cows like Bonheim V if we pay our sincerest attention to this direction."

Babu Aghore Nath Mukherjee of Nadia, a gentleman who takes a great interest in cattle-keeping informs us that the number of cattle in his locality does not seem to have gone down to a greatly perceptible length, although the milk now produced is only one-third of that produced 30 years ago.

There may be several causes for this decrease of milk but the following reasons appear to be more important and deserve consideration.

(1) Want of strong and healthy bulls.
(2) Scarcity of pasture land.
(3) Ignorance and indifference of the people in taking proper care of the cattle.

Aghore Nath Mukherjee.

In former years, there were many bulls dedicated to religious purposes; with the abundance of pasture they could graze with perfect freedom and ease and were never yoked for agricultural purposes. They were strong and healthy and easily available for breeding purposes. Now a practice is prevalent amongst many Municipalities to carry away these bulls and employ them in their work. The absence of strong and healthy bulls therefore is being very strongly felt by the villagers. The bulls, which are at present available are extremely weak owing to their being employed in agriculture and insufficient nourishment and utterly unfit for breeding. Calves born of these worst grade bulls are naturally weak and the cattle, in general have been gradually deteriorating much in size and quality.

The pastural lands, which were formerly available in abundance, are now being gradually reclaimed or leased out to tenants for agriculture. Now it has come to such a pass that there are

many villages where there is no pasture land and the cattle die of starvation.

To remedy these evils it is suggested that :—

1. The Government should preserve 2 or 3 bulls in every Union to be lent out to villagers for breeding purposes only, and also issue pamphlets to the people in local vernaculars imparting instructions in the matter of preservation of cattle.

2. The Government should make laws restricting the leasing out of pasture lands for agricultural purposes and making it obligatory upon landlords to reserve in every vilalge a certain portion of lands for grazing purposes.

3. The Railway authorities should be moved to facilitate easy transport of fodder, milk and also to reduce the Railway freight in this direction.

The Sub-Divisional Officer, Chuadanga reports that the state of cattle and of milk supply in this locality is very unsatisfactory. The causes and remedies suggested by him are submitted below :—

Sub-Divisional Officer Chuadanga.

Causes (*a*) Due to the inadequate number of cattle, (*b*) bad quality of cattle, (*c*) bad breeding (*d*) want of pasture (*e*) insufficient milk production (*f*) and also due to slaughter.

Remedies (*a*) To prevent indiscriminate slaughter of cattle by proper legislation it is advisable to open limited slaughter centres in different localities and put restrictions on the following points :— That slaughter be controlled by the Government by issuing license for the purpose and that such cattle be slaughtered as are old, disabled, and otherwise unfit for agriculture and breeding—such control being placed under the direct supervision of the Veterinary Assistants and by establishing Veterinary Assistants in each Thana to combat against the outbreak of epidemics and making preventive measures compulsory on such occasions.

(*b*) By supplying the villagers with adequate number of bulls of better strain such as those of Hissar or Shillong breed. Supply will be efficiently effected on this point by compelling the District Boards to provide with such bulls in the local pounds and these may be utilised for the purpose under proper supervision of the Veterinary Assistants under rules that may be hereinafter framed for the purpose.

(*c*) By teaching the villagers with free advice about the good effect of scientific breeding as stated in (*b*) and opening breeding registers for the purpose with such rules as may be deemed necessary.

(*d*) Pasture grounds are rare. Provision of these grounds by due Legislation.

(*e*) This point is bound to be achieved if the aforesaid points are adhered to. An experimental Dairy based on co-operative principles will, however, be welcome to the people here as well as in other localities.

The Chairman, Birnagar Municipality writes that the state of cattle in his locality cannot be said to be satisfactory. The requirement of milk is generallly, though not always, met from the neighbouring villages. This is due to insufficient number of cattle and want of pasture set apart for grazing purposes. The difficulty may be removed if the number of cattle is increased and protected and pastures are set apart for grazing purposes.

Birnagar Municipality.

Babu Tarapada Majumdar, Chairman of the Kushtea Municipality is of opinion that the number of cattle is inadequate to ensure adequate supply of milk according to demand. The quality and breeding of cattle are also unsatisfactory. There is absolute want of pasture lands accounting for, to a great extent, the prevailing unsatisfactory condition of the cattle. Fodder is not also available according to demand. As a consequence the milk supply is not adequate.

Kushtea Municipality.

I suggest that there should be better arrangement for supply of the above wants. The Zamindars as a matter of necessity should allow a certain proportion of land to be kept fallow for pasturage. In every locality there ought to be maintained a good arrangement for breeding. This may be satisfactorily effected with the co-operation of the public in general. There should be local organisations or committees for ameliorating the condition of cattle, its breeding and maintenance. If breeding can be improved and pasture lands adequately provided for I think other consequent evils will spontaneously die out. Provision should also be made for the treatment of cattle diseases which carry off a large number of animals every year.

4.—Khulna.

This district is said to be unsuited for the rearing of cattle, as the water of many of the rivers becomes highly charged with salt during certain seasons of the year, and the cattle have little else to drink but this salt water, while the vegetation produced by it is also injurious. Consequently such cattle are kept as are indispensably necessary for agriculture, and when these die off, they have to be replaced from other districts.

Khulna District Gazetteer.

No care is taken about breeding, pasturage is deficient and the cattle are consequently poor. There is little real pasturage land in the district and fodder is consequently scarce. Formerly considerable areas were left untilled in every village and reserved for the grazing of the village cattle. Now the pressure of the population on the soil has resulted in the pasture-lands being brought wholly or partly under the plough.

The following are reported to be the principal grazing lands left. In the large village of Deara in thana Kalaroa enclosed on three sides by river Kobadak there is a tract of land about 2 square miles in area which is reserved for pasture There is a similar tract of land of about the same area on the east of the

thana Kalaroa which is used by goalas for grazing purposes. Pasturage is also allowed in the open ground in front of the Khulna Collectorate.

A veterinary hospital with a dispensary was opened at Khulna in 1905. Rinderpest occassionally breaks out in a severe epidemic form. (a)

M. Thorp, Esq., I.C.S., Collector of Khulna writes :—

(1) The state of cattle and the supply of milk are not satisfactory.

Collector of Khulna.

(2) Number of cattle is not sufficient. Efficient breeding arrangements are necessary. Good country bulls in sufficient numbers should be procured as up-country bulls are not suited to the cows of this country which are small in size. Quality of cattle is unsatisfactory. The custom of using milch cattle for the purposes of cultivation tends to cause deterioration of quality. In saline districts such as Khulna cattle do not prosper and if imported they lose health in the course of a few years; consequently the supply of milk becomes scanty. The want of pasture ground is keenly felt here. This can be remedied if the landlords let out sufficient portions of their lands unassessed and ask their tenants to leave them uncultivated. The amount of land which would have to be so released is however enormous. To be of use in the rains it would have to be high land. This in this district is not only scarce but is invaluable as it is the only suitable land for bhadoi crops.

5.—Murshidabad.

Early History.

Murshidabad was the last capital of Bengal under the Moghul Emperors. The Nawab Nazim of Bengal had his palace near Berhampur on the Ganges and he himself and his court had a great taste for horticulture. The cattle question did not take any acute turn like the present, and the people had plentiful supply of milk and milk-products at the

(a) From Khulna District Gazetteer (1908) by L. S. S. O'Malley, I.C.S. p. 100.

time. Pure milk used to sell from half a maund to one maund per rupee and ghee could be had for 8 to 12 annas a seer. With the passing of the rule from the hands of the Musulmans everything took a somewhat bad turn. The European factories established here and there were mostly responsible for making topsy-turvy the natural course of life of the people and gradually people, placed in a critical situation as they were, neglected to take proper care of their cattle with the result that they deteriorated and died out. Latterly an enlightened zeminder, the Maharaja of Kasimbazar has been trying his best to improve the cattle of the locality.

Murshidabad District Gazetteer.

In the south-west of the district at the confluence of the Mor and Dwarka rivers there is a tract of low-lying country known as the Hijal, which is used for pasturing cattle. During the rains it is covered with water and produces aus and boro rice; but during the dry season the goalas drive thither numerous herds of cattle. There are other numerous spots of smaller pasturage scattered over the district. Cattle fairs are held at Panchamdi (a) and Talitpur in the Kandi Subdivision and occassionally at Bhabta, Lalgola and Beldanga in the sadar subdivision.

Maharaja of Kashimbazar.

The Chief Secretary to the Hon'ble Maharaja Sir Manindra Chandra Nandy, K.C.I.E. Kashimbazar informs that the milk-supply in the locality is unsatisfactory.

The pure country-bred cows cannot on an average yield more than a seer and a half per day even if properly fed. In our opinion the pure country-bred, as it is, cannot pay by its milk-supply, its maintenance. All experiments about acclimatising the Montgomery or other foreign breed cows in this locality have been unsuccessful.

It would be a good thing if a cross-breed could be found which would yield a profitable milk-supply and would at the same time be easily acclimatised for this locality.

The Sub-Divisional Officer, Kandi, says that the state of cattle and milk-supply in the locality is not considered satisfactory.

(a) Possibly this is a mistake. A cattle fair is held at Panchthupi (vide Chapter V) thana Barwa, Subdivision Kandi. Panchamdi is in Katwa Subdivision, district Burdwan.

conducted with proper scientific knowledge and on thorough business lines is one of the ways in which an attempt could be made in solving the problem of milk production. It may at the same time serve to demonstrate up-to-date and humane methods in cattle treatment and cattle hygiene.

Rai Jadu Nath Mazumder Bahadur M.A., B L Chairman District Board Jessore says that the state of cattle and milk supply in the district is unsatisfactory in all respects *viz.* number quality, breeding pasture, milk production and fodder etc.

Jessore District Board.

The following remedial measures, if adopted may remove the evils complained of.

(*a*) Provision of adequate pasture land in every village or group of villages. The District Boards may be authorised by legislation to acquire lands for the purpose and levy fees from owners of cattle to meet the cost of acquisition and maintenance of pasture lands.

(*b*) Provision of healthy bulls for groups of villages and authority for levying fees for covering to meet the cost of purchase and maintenance of bulls

(*c*) Prohibition of slaughter of prime cows and Brahman; Bulls and arrangement for the protection of these bulls.

(*d*) The Local President Panchayets may be placed in charge of District Board pasture lands and Bulls.

(*e*) Provision for treatment of cattle-diseases.

GSL

CHAPTER III—BURDWAN DIVISION.

1—Howrah.

Howrah though smallest of all districts in the Burdwan Division is not so either in wealth or importance. Its close proximity to Calcutta and being the seat of commerce and industry have acquired for it an importance peculiar to it alone. Its Municipality is the most influential of all riparian ones. The number of cattle is estimated to be about 3 *lakhs* and population 10 *lakhs*.

Howrah District Gazetteer.

The breeds of the cattle are of the usual type and are kept by house-holders and goalas alike. The cows and plough-bullocks are weak and stunted in growth, no sustained efforts having yet been made to improve the breed. Epidemics often break out and from ignorance and want of prompt treatment many die. The Saturday *hat* at Uluberia is the largest cattle market in the district, where bullocks are usually sold and purchased by butchers Cattle suffer much from want of pasturage. Once every village had its grazing ground, but now there are practically none, nearly every acre having been appropriated and rented out to cultivators. The ryot consequently has to feed his bullocks with straw etc., for the greater part of the year; for though the cattle get some grazing in the fields after harvesting they are kept out of them as soon as crops are sown, and have to be tethered on some more or less barren patches, off which the grass is quickly browsed.

Bengal Humanitarian Association.

The only place where researches in improving the breed of country cows on a pretty large scale and on up-to-date scientific lines are carried on, is the cattle-keeping section of the Bengal Humanitarian Association at Lillooah E. I R and KanchraparaE B R. The Association was opened in 1917 and in the course of the last few years it has made considerable progress. About 100 dry cattle are kept on nominal

charges. A co-operative dairy farm was opened from 1919 which supplies fresh cows' milk to about 50 members. Experiments in breeding are being conducted under expert supervision with English, Australian, Hissar, Scindhi and country Brahmani bulls. The results tend to prove that the use of selected country Brahmani bulls is best from all points of view. It has been possible to raise dual purpose animals.

R. N. Chatterjee, Esq., M.A., Secretary, Howrah Municipality writes :—

(1) The state of cattle and of milk supply in this Municipality is not satisfactory.

Howrah Municipality.

(2) The defects are due to the deficiency in the number of cattle as compared with population, in the quality of the same, the absence of adequate breeding facilities and pasture lands, and the high price of fodder now ruling. The production of milk is consequently unsatisfactory.

(3) The remedies that may be suggested are obviously the removal of the shortcomings noted above, *e g*, the importation of bulls of the correct type for breeding purposes, provision for adequate pasturage and greater attention to the sanitation of cattle sheds.

Rai Ashu Tosh Bose, B. L. Bahadur, Chairman, District Board, Howrah reports that the milk supply in this district is far from satisfactory and the state of cattle is bad.

For want of a regular census no opinion can be given on the point of number of cattle but presumably the number is far below what would make the milk supply efficient

Howrah District Board.

The quality of cattle is not good, and weak and degenerated cattle is rather the general order. The cause of this may be attributedto promiscuous coverings in the absence of stud bulls.

There are very few plots of land specially reserved for pasture.

The fields are generally resorted to as places for grazing but they are not available for the purpose throughout the year.

The main fodder for the cattle is paddy straw and the supply is therefore dependent on the state of crops in the season. There is no special fodder crop cultivated in the district. The milk production is generally accepted to be far below the mark in comparison with the number of cattle.

The following are some of the steps that might be suggested to remedy the present state of things :—

(a) Preservation of the cattle from promiscuous slaughtering.

(b) The supply of stud bulls in different centres.

(c) Reservation of pasture lands.

(d) Cultivation of special fodder crops for the cattle.

Babu Nilananda Chatterji, M.A., B.L. Hony. Secretary, Bengal Humanitarian Association says :—

"I am in a position to compare the condition of Bengal with regard to cattle 25 years ago with what it is now, and I can say at once that the cattle have considerably deteriorated in their numerical strength as well as in their capacity for yielding milk or for drawing the plough or the cart.

There are no reliable figures or authoritative statistics from which one can say that there has been a diminution in the number of cattle but I can say from my personal experience of a very large number of villages of various districts that the number of cattle in each has considerably diminished. In each of these villages I have found that the number of cattle have become at least three-fourths and in some cases even less. The average diminution may be reasonably taken at 25 per cent. This diminution is due to (a) poverty of the agricultural classes resulting in their inability to keep cattle and (b) abnormal deaths due to (1) slaughter for food, hides and meat trade and (2) to prevalence of cattle-diseases and want of facilities for proper treatment. The evils can only be remedied by (a) the co-operation of the agriculturists, the Zamindars and the Government and (b) by penal legislation stopping slaughter of useful animals.

Bengal Humanitarian Association.

The milk-producing capacity of country cattle has also deteriorated to a very large degree. I remember very well that about 25 years ago cows used to yield milk from 3 to 5 seers a day, it is now only one seer on an average. The deterioration can be fairly estimated at 75 per cent.

The causes of this deterioration are intricate and manifold. I have been at considerable pains to trace them out and to introduce the necessary reforms in the cattle-keeping section of my Association at Lillooah. I give my suggestions for what they are worth.

The foremost cause seems to be the want of suitable breeding bulls. My own experience as well as the official Cattle Census Report show that this is a crying need. Not only is the number of pedigree bulls incredibly short, but the Brahmini bulls which used to serve the purpose perfectly well, are also getting scarce every day.

Thanks to the *res-nullius* judgments of the several Indian High Courts and to the progress of utilitarian civilisation amongst our own people, the Brahmini bulls are being slaughtered and diverted for other purposes in any numbers, and the institution of dedicating bulls at Sradh ceremonies is also slowly disappearing. Unless something is done very early in this matter, the situation may shortly become irreparable. The remedies appear to be (a) introduction of judicious cross-breeding between country and up-country cows, (b) provision of sufficient number of breeding studs by Government, District Boards and Municipalities, (c) opening of a bureau where breeding bulls and information regarding the same may be available to the public, (d) co-operation between people, Zamindars, Government and public bodies for providing adequate number of good breeding bulls and (e) opening of model breeding studs at different centres by Government, District Boards and Municipalities where research regarding the most suitable ways of cross-breeding and allied subjects may be carried on and the resul published.

The want of pasture land comes next in importance. The comparative tables of the proportion of pasture to the total area of the different countries of the world have been collected by me from various sources and given in my article of the Milk Problem in India published in the May (1919) number of the *Indian Review*. It will show that while in other countries grazing ground allotted for cattle is about 10 p. c. of the total area, in India the proportion is hardly 3 per cent. The raising of fodder crops is also not widely in vogue. The Zaminders have in many cases encroached upon the grazing grounds, and some are utilises for indifferent cultivation. The proper remedies seem to be (a) provision of adequate pasture grounds by the people in co-operation amongst themselves, as well are through the co-operation of the Zaminders and the Government, (b) alterations in the existing law so as to enable District Boards and Municipalities to set apart a portion of their income for the purchase of pasture lands and (c) raising of more fodder-crops.

The next point to be considered in this connection is how to minimise the death of cattle from (a) diseases, chiefly Rinderpest (b) slaughter for food and meat-trade (c) poisoning for hides. The remedies that suggest to me are (a) segregation of cattle during epidemic diseases, (b) encouragement and more extensive use of Indian systems of treatment, (g) legislative provision for stopping slaughter to a reasonable extent and (d) providing facilities like those done by my Association for the maintenance of dry cows on nominal charges so that it will be unprofitable for the owner to sell his cattle for slaughter.

2.—Hooghly.

Hooghly was once a very prosperous and healthy district, but the ravages of malaria and cholera have converted it into perhaps the worst district in Bengal. There used to be held annually an Industrial and Agricultural Exhibition at Chinsurah, the head-quarters of the district, but apparently due to the apathy of the people and want of funds of the Government, it had to be discontinued.

The oxen of the district appear to belong to a breed indigenous to Bengal, though it is impossible to say how long it has been domesticated. The breed appears to be more or less pure; but in the towns some inter-mixture has probably taken place with Bhagulpuri and other upcountry breeds. The latter are not liked by the cultivators as they are less hardy in this damp climate, eat more than double and do only half as much work again with light country ploughs.

A pair of good country bullocks is considered sufficient for 20 to 25 bighas sown with paddy, but of course this is dependent on a variety of other considerations. The cattle in the west are believed to be superior to those in the east, a difference attributed to the difference in the climate. In the west buffaloes are sometimes employed for field-work. They are stronger and work quicker than the oxen but they cannot stand heat and after 9 A.M, they are difficult to manage. The margin of cultivation being so narrow, the cattle graze in the fields after the crops have been removed or pick up what they can in the open. On returning home they get a little green grass, some straw and about half a seer of oil-cake. During the ploughing season some additional straw and a little oil-cake are often given to the working bullocks after mid-day. Grazing grounds are few and far between; in this connection, Mr. Carstairs remarked as far back as 1883 in his report on the conditlon of the ryots in part of Chanditala thana :—

Hooghly District Gazetteer.

"Rich men's cattle can go in gardens, but poor men's cattle, have been deprived of their old common grazing grounds. These have been appropriated and rented out by the zamindars. The ryot turns his cattle into the paddy fields in the cold weather but

they pick a very scanty living up there. I only note here that the shutting up of the grazing grounds increases the expenses of the ryot, because he has to keep more food for the bullocks; because the want of freedom weakens the cattle and makes them less fit for work, and because they are more likely to fall victims to disease, and he will then have to buy new cattle . . . . The ails or boundary ridges of fields used to be wide and suitable for the ryot's walking along to his fields and very useful for grazing cattle on. They are now little mud threads. High rents and measurement have done this. No ryot can afford to leave so much land uncultivated He cuts in on one side, and his neighbour has to resist or cut in on the other. I have seen cases where a man encroached on an ail and the ryot holding the field on the other side objected. But things like this are very difficult to check, for this mischief is done by inches.

"In all these matters it is the interest (possibly not real, but immediate) of the zamindar to let the mischief go on If a man cultivates part of a grazing ground, rent is demanded If he appropriates part of a road this is assessed. If he encroaches on the ail, he cultivates all the more, and it is included in his jote. He will be all the more content to pay high rates The zamindar does not usually live in the village. Want of roads or grazing grounds there does not put him to personal inconvenience He may be as good a man as John Gilpin, but with him too, "loss of pence is the main consideration." *

The Sub-Divisional Officer of Hooghly Sadar Sub-Division writes to say that the state of cattle and milk supply is not satisfactory there considering the number and quaity of cattle as well as the quantity of milk production. The quality of cattle may be improved by having them crossed by up-country healthy bulls and the milk production may be improved by making pasture grounds. The first is not done for good up country bulls not being easily available and the second is not done on account of the greedy zamindars who let out all available lands to tenants.

Sub-Divisional Officer, Hooghly.

* *Hooghly District Gazetteer* by L. S. S. O'Malley, I.C.S. and Manomohan Chakravarti, M.A., B.L. [1912].

The Deputy Magistrate in-charge, Hooghly-Chinsurah Municipality says :—

1. That the state of cattle and milk supply is not satisfactory.

2. That there is want of proper pasture and of good bulls.

Hooghly-Chinsurah Municipality.

3. (*a*) That every zamindar be requested to set apart in each village a certain quantity of land for pasture.

(*b*) That there should in each village be kept some good bulls for breeding purposes only.

The Hon'ble Babu Sivnarayan Mukherjee, Chairman, Uttarpara Municipality notes that there has been a noticeable degeneracy, due mainly to the absence of strong healthy bulls, and also to that of abundant grazing grounds. His Municipality is only three quarters of a square mile in area with a population of about 8,000 souls. No wonder the congestion created by the increase of population has left hardly sufficient breathing spaces convertible into pasture lands The pigmy stunted size of cows and small quantities of milk they give are sure indications of their breed having suffered considerably of late years.

Uttarpara Municipality.

It is popularly believed that the fabulously large number of cows that are butchered, not to "make a Roman holiday" but to supply food year in and year out for beef-eating Christians and Mahomedans in this country has much to do with the deterioration both of the quantity and quality of the milk-supply in the country.

The remedies consist :—

(*a*) In improving the breed of cattle by the importation of healthy bulls from the N. W. and the Punjab.

(*b*) In regulating the price of fodder, chief among which is straw.

(*c*) In providing every village with pasture lands.

(*d*) In the prevention of the nefarious *phooka* system.

(*e*) And in limiting of the percentage of cattle to be sold in each village.

Babu Baroda Prosad Dey, B.L., Chairman Serampore Municipality writes :—

The cattle are generally weakly and are not properly shaped —their number and quality have also deteriorated. The main reasons for this state of things seem to be—

(*a*) Careless and ill matched breeding.

(*b*) Want of proper nourishment even from the womb, then all through life, due to the want of pasture grounds, and the high prices of fodder generally.

(*c*) Absence of healthy housing arrangements.

(*d*) Want of proper treatment in cases of disease, especially during epidemics The milk supply is scarce and highly priced, and even then it is adulterated.

Serampore Municipality.

The following remedies may be suggested :—

(*a*) Establishment of model dairy farms under the supervision of experienced veterinary assistants, subject to the periodical inspection of the Government Agricultural Department.

(*b*) Provision of adequate pasture grounds by local authorities and the maintenance of good breeding bulls as their adjuncts

(*c*) Growing of different kinds of grass palatable to cattle and having larger milk producing properties.

(*b*) Intrduction of a system of silo and ensilage for the preservation of green grass all the year round.

(*e*) Protection of prime cows and Brahmani bulls from slaughter by butchers.

(*f*) Enforcement by legislation of healthy housing arrangement for the cattle by dealers in milk.

(*g*) Encouragement of almost dying-out indigenous treatment of cattle along with the modern system of treatment, and the introduction of enfocred prophylactic treatment in cases of epidemics.

(*h*) Introduction of the subject of cattle hygiene in the curriculum of schools for boys and girls.

In these costermonger days when religious faith of men has been lamentably shaken, they feel little or no scruple in selling their cows to the merciless butchers whose destructive knives have not only brought about scarcity of milk but also difficulties in agriculture in this country. I am an old man of over 50 and have seen abundance of milk in my early days but now-a-days on account of the persistent destruction of cows it has almost become a rare commodity.

What an old man of Pindra. (Hooghly) says.

In order therefore to save the dumb religious animals from the butchers' cruel knives it is my humble intention to found a protection shed after the manner of the Pinjarapole My bumble proposal is to buy those animals offered for sale in my adjoining and surrounding villages and to preserve them in a shed to be raised for that purpose. The initial cost of buying the cows and erecting the shed etc., is all that is needed at present, the cost of its up-keep etc. I shall be glad to take upon my poor shoulders and it is believed that when the institution will be of some standing the cost of its up keep, management etc. will be mostly met from the selling of milk, manure, hides etc, and the defecit will be easily met by begging from the pious villagers who will then surely realize the benefit of the proposed institution.

The Chairman, Arambagh Municipality, Hooghly says :—

Arambagh Municipality.

That the state of cattle and of milk supply in this locality is not unsatisfactory.

3.—Burdwan.

Burdwan is by far the most extensive and was at one time the premier district of the division which is named after it. Unfortunately with the introduction of Railways and the consequent raising of embankments stopping the natural water passages in the town and the neighbouring areas, a most malignant and fatal type of malarial fever, popularly known as Burdwan fever, made its appearance and carried away the inhabitants by thousands and

tens of thousands to an untimely grave. Since then the whole of the district of Burdwan has been the hot-bed of malaria, and the wealth and population of the district has been considerably reduced in consequence.

It is the largest paddy-growing district in western Bengal, and it was once full of healthy milch and agricultural cattle. But now the cattle and the people have both appreciably deteriorated and the prospects of agriculture and the health of the inhabitants are the poorest imaginable.

The plough-cattle of the district, like those of the rest of Bengal, seem to belong to a special breed, perhaps indigenous to the Gangetic delta. Generally speaking only as many animals are kept as are needed for the cultivation of the land and the supply of a few ounces of milk for family use. All the livestock that an average farmer possesses consist of a pair of bullocks and a milking cow and calf. Sometimes one spare bullock is kept, but as often as not the cow and the calf are wanting.

Burdwan District Gazetteer.

The area of land that can be worked with a pair of bullocks depends very much on the nature of the soil. Where rice is the only crop grown a pair of good animals is considered sufficient for 20 to 25 bighas of land.

Cattle suffer much from want of pasturage. In the west the country is hilly and undulating and mostly devoid of natural vegetation; the wild grasses on the laterite soil are few in number and yield a very small amount of fodder. In the eastern portion of the district the pressure of the population is such that no land which is in any way fit for cultivation can be spared for pasture or for raising any crop specially meant for fodder The grazing grounds which were formerly common to the village have been absorbed, and the rice straw which is by far the most important if not the only fodder for the cattle is required for thatching. Hay, making is practically unknown, and the system of grazing followed is most wasteful. The grazing grounds, where such exist, and the fields are never protected by fences and the cattle are at liberty to run over them at all times without restriction. Grasses thus get no chance to grow as the cattle crop them down as soon as they appear above ground .*(a)*.

R. F. Lodge Esqr., I.C.S., Sub-Divisional Officer, Assansol writes :—

Sub-Divisional Officer, Assansol.

That the state of cattle and milk-supply is by no means satisfactory in this Sub-Division. The cattle are insufficiently fed and no care is taken in breeding. This has been clearly established by Babu Aghore Nath Mukherji of Nadiha near Durgapore E. I. Railway Station and Post Office in this Sub-Division, by experiment.

Chairman Raniganj, Municipality states as follows :—

Raniganj Municipality.

1 The milk-supply in the town is not at all satisfactory.

2. The number of cattle is less, quality poor, breeding defective, no pasture, and fodder is very dear and scanty.

3 The remedies are to have a common pasture ground, prime cows should be protected, fodder should be available at a cheaper rate, system of breeding improved and the Brahmani Bulls should be protected by legislation.

Babu Debendra Krishna Chandra, Vice-Chairman, Dainhat Municipality says :—

Dainhat Municipality.

1. The state of cattle and of milk-supply in the municipality is not satisfactory.

2. It is considered to be unsatisfactory in regard to the number of cattle, pasture and milk production.

3 The evils of which I complain may be cured if it can only be arranged for free pasture.

4.—Birbhum.

Oxen and buffaloes are used for agricultural purposes. Besides doing plough work, bullocks are used as beasts of burden, for drawing carts and carrying packs of grain or other merchandise, they are also yoked in the oil-mills. Buffaloes are occasionally sold for purposes of sacrifice at the Durga and the Kali Pujas, but otherwise they are kept merely for ploughing or for their milk. The local breed of cattle is poor, inspite of the attempts made to improve it, for the cultivators and graziers give very little care or attention

Birbhum District Gazetteer

to breeding. Since the establishment, however, of the Suri cattle and produce show, and of a dairy farm at Suri, they have begun to take more interest in this important matter. Some Hissar and English bulls have also been imported by the District Board and the Suri cattle show committee for the improvement of the local varieties, and a veterinary dispensary has been opened at Suri.

There is a growing difficulty in finding good pasturage for the cattle owing to the extension of cultivation, and grazing grounds are scarce in the east of the district. Here practically the only grazing lands are small plots of common near the villages which yield poor and scarce grass. No rent is charged for the right of pasturage over them, and there is a tacit understanding that they shall be reserved for this purpose by the zamindar. These commons and the chance herbage found in uncultivated and uncultivable land, on the tank banks or the raised boundaries of the fields, and the stuble left in the rice fields, provide all the grazing of plough cattle and have to be supplemented by fodder consisting of rice straw. In the west there are still pasture lands on the uplands but the sal forests in which the cattle used to graze have mostly been cut down.(a)

District Officer, Birbhum, Suri writes :—

1. The state of cattle and of milk supply in this district is not satisfactory.

2. The chief defect lies in the quality and number of cattle and want of pasture land as well as the want of good breeding bulls. Milk supply is small in as much as cattle are not properly fed by the majority of tenants who are poverty-stricken and consequently sell off straw for thatching purposes in order to get money for their own maintenance, so the cattle have only to depend on pasture lands which are rarely available in this district; most of the pasture grounds having been already turned into cultivated lands.

Collector of Birbhum

3. The *most urgent measure* that may be taken for the improvement of cattle is the *provision of good bulls* to serve small areas. It is intended that the Agricultural Associations which

(a) Birbhum District Gazetteer by L. S. S. O'Malley [1910] p56.

have been formed here in this district, will eventually maintain such bulls within their areas. It would be well to get each Union Committee to maintain a bull or two in their respective areas. A part of the cost can be met for from small charges levied for service of each cow which the people will willingly pay. The question of pasture land is the most important thing to improve the state and health of cows. It should be the duty of every zamindar to maintain some lands as pasture lands in each village or mouzah of his zamindary instead of allowing them (the pasture lands) to be converted into arable lands.

The Secretary of the District Agricultural Association, Birbhum says :—

District Agricultural Association Birbhum.

The state of cattle and milk supply in my locality in my opinion is not at all satisfactory from the stand point of number, quality, breeding, pasture and fodder. One seldom finds cows of good milking strain and sturdy draught bulls which are natives of this district. The number can be increased if we can prevent by law, slaughter of cattle of standard size and age, propagate sanitary laws about cattle and secure able veterinary doctors having knowledge of foreign and indigenous drugs. The quality can be improved if we can procure good stud bulls and eliminate weaklings by castrating or otherwise. To improve the quality and to increase the number of cattle a law should be passed to the effect that every village must have a fixed proportion of pasture and arable lands and steps to be taken accordingly and the public should be encouraged to cultivate fodder crops and to use better concentrated food according to the health and sex of cattle.

Babu Adhar Chandra Roy, Secretary, Branch Agricultural Association Bolpur, (Burdwan) sends this note.

Number of cattle.—Not sufficient and dwindling.

Agricultural Association, Bolpur.

Quality.—Miserable, the bullocks or plough-cattle only being taken care of—milch cows totally neglected—no grass in the fields and no fodder for them at home. Sorry figures exciting compassion at their sight—hardly yielding a *poa* of milk in the average.

Breeding.—Most unsatisfactory; the breeding bulls of bygone days no longer to be seen. Very often those employed to breed are wretched animals and hardly able to stand on the legs with vigour.

Pasture.—With the growing avarice of petty land-lords and tenure-holders of the second, third and fourth grades pasture lands are just disappearing and are soon to be things of the past.

Fodder.—Only straw and that is for the most part used for thatching roofs and feeding the plough-cattle only.

Milk production.—¼th seer per cow on the average as stated above. Milk which sold at 10 seers per rupee only a few years back are selling at 4 seers or 5 seers. Pure unadulterated milk is an absolutely rare thing.

Remedies.—(*a*) Creating a healthy public opinion and educating the masses about the sanctity and good preservation of the cows and calves at least from the economic point of view.

(*b*) Keeping of good breeding bulls

(*c*) Preservation of sufficient pasture lands

(*d*) Sufficient fodder for the cows

(*e*) Prevention of Slaughter and transportation of cows which, it seems, are growing to an alarming extent.

The problem is, in my humble opinion, a grave one and ought to be grappled with at no distant date and healthy legislation may, if necessary, be resorted to.

Abhoya Pada Mukherjee, Secretary, Branch Agricultural Association, Rampur-Haut, E. I. Railway (Loop) says that—

Agricultural Association, Rampurhat.

(i) The state of cattle in our locality is most unsatisfactory.

(ii) I consider that the number of cattle, quality of cattle, breeding, pasture, milk production and arrangements for treatment of diseased cattle are most unsatisfactory in our locality and I beg to suggest the following to cure the evils abovementioned.

(i) One breeding bull may be supplied to each chowkidary union, if not for still more smaller area and arrangements may be made for the maintenance of the said bull.

(ii) Pasture lands to the extent of 10 to 30 acres, may be specially reserved in each villlage.

(iii) Veterinary Hospitals may be opened at smaller areas.

(iv) Some qualified touring officers may be directed to give instructions to the villagers direct for some years.

5.—Bankura.

Bankura was formerly known as *jangal mehal* (forest district) on account of the backwardness of the people and the prevalence of jungles in the locality. It had an abundant supply of milk, especially under its independent Raja of Vishnupur. The cattle are now found to be stunted in size and deteriorated in quality—the milk-producing capacity having been almost reduced to a minimum.

Bankura District Gazetteer.

The breeds of cattle ponies, sheeps, goats, etc., in this district are of the poorest kind, the animals being generally weak, stunted and small. There is ample pasturage in the west of the district where there are large areas under jungle, but not in the east, and especially in Thanas Indas and Kotalpur. In the latter tract the extension of cultivation of late years has converted the pasture grounds lying on the outskirts of the villages into paddy fields and consequently there is considerable difficulty in feeding cattle when the crops are on the fields. (a)

J. Vas, Esq., I. C. S. Collector of Bankura is of opinion that the state of cattle is not at all satisfactory, neither good milk in sufficient quantity is available. This is mainly due to the following causes :—

Collector of Bankura.

(1) The number of milch cattle is very limited and as a class bad milkers; whatever quantity of milk is produced is invariably adulterated or skimmed by the goalas before distribution.

(2) Want of good breeding bulls.

(3) Want of pasture lands in its proper sense.

(a) Bankura District Gazetteer by L. S. S. O'Malley, I.C.S. [1918] p. 93.

(4) Want of fodder nearly throughout the year due to scanty rainfall, generally unfertile soil and over and above these high price of fodder.

(5) Want of proper care and attention to the animals by their owners in respect of their housing and feeding.

(6) No system of feeding the young stock. The whole milk of mother is drawn out for human consumption.

Remedies may be suggested in the following way :—

Regarding 1.

(i) Small dairy farms on improved lines may be started by well-to-do men of the locality and by enterprising associations where sufficient care and attention may be paid to the young stock and thus gradually increase the number of healthy animals.

(ii) A few acclimatised good milkers may be kept in those farms by way of experimenting whether they can stand the local condition.

(iii) The adulteration of milk by the goalas may be put a stop to by Municipal laws etc.

(iv) Establishment of a cattle breeding and a dairy farm in each district by Government; this farm can be easily placed under the Veterinary Assistants working in the districts.

Though agriculture and agricultural farms have received the attention of Government, the question of cattle-breeding and improvement has not received the same attention. Cattle and agriculture are closely connected and cattle breeding and dairy farms may be established simultaneously with agricultural farms. These farms when successful may be made over to private persons or companies.

Regarding 2. A decent number of good stud bulls may be procured from some Government cattle-breeding station by the District Board or other local bodies and should be kept within easy and cheap access of the local cattle owners.

Regarding 3 and 4. (i). The introduction of draught resisting fodder grasses over the large tracts of waste lands may be taken resort to by way of experimenting and educating the people about

the utility and methods of growing fodder crops, also arrangements for irrigation may be attempted.

(ii) The price of paddy straw, the main fodder, should be kept under control by the local authorities. And if in the rainy season there is a considerable quantity of green grass a portion of it may be preserved as silage. The process of ensilage making may be explained to the cattle owners.

(iii) Provision of pasture lands for every village and their preservation from cultivation.

(iv) Introduction and improvement of fodder grass or plants.

(v) Introduction of the cultivation of the chhun grass on the high lands for thatching if possible—thus setting free paddy straw for fodder. The introduction of cheap tiles for roofing as in the Ranchi District—may also reduce the use of paddy for thatching.

Regarding 5. The advantages of giving good housing and food to cattle may be gradually appreciated by the cattle-owners if they see these things being done in the small Dairy farms on improved lines, as suggested above.

Regarding 6. All cattle-owners may be encouraged to take particular care of their young stock by giving them some artificial food such as boiled rice, rice gruel mixed with salt and oil-cake etc. so long as they do not pass the suckling stage. This system would not affect them very much, although the whole quantity of the mother's milk is drawn out.

Babu R. G. Banerji, Chairman Sonamukhi Municipality sends the following: The state of cattle and of milk supply in this Municipality is not satisfactory.

The number of cattle is not sufficient and their quality is not good.

No good bull is available here for breeding. There is no reserved pasture. Fodder is not always sufficient for want of rains. For high prices of almost all the necessaries of life the owners of the cattle cannot afford to feed their cattle properly.

Sonamukhi Municipality

The chief source of milk is buffalo. Some cattle of good quality are to be brought here from some other places by big merchants. Some good bulls are to be kept here for breeding. Big zeminders such as the Maharaja of Burdwan may be requested by Government to set apart land for the purpose of pasture. Unless high prices of necessaries of life are diminished there is very little hope of curing the evils.

Vishnupur Municipality

The Chairman Vishnupur Municipality writes: The state of cattle and milk supply in the locality is not adequate and satisfactory.

The number of cattle is not satisfactory or considerable, quality is not good, generally of small size and growth, due to the small size of the male cattle.

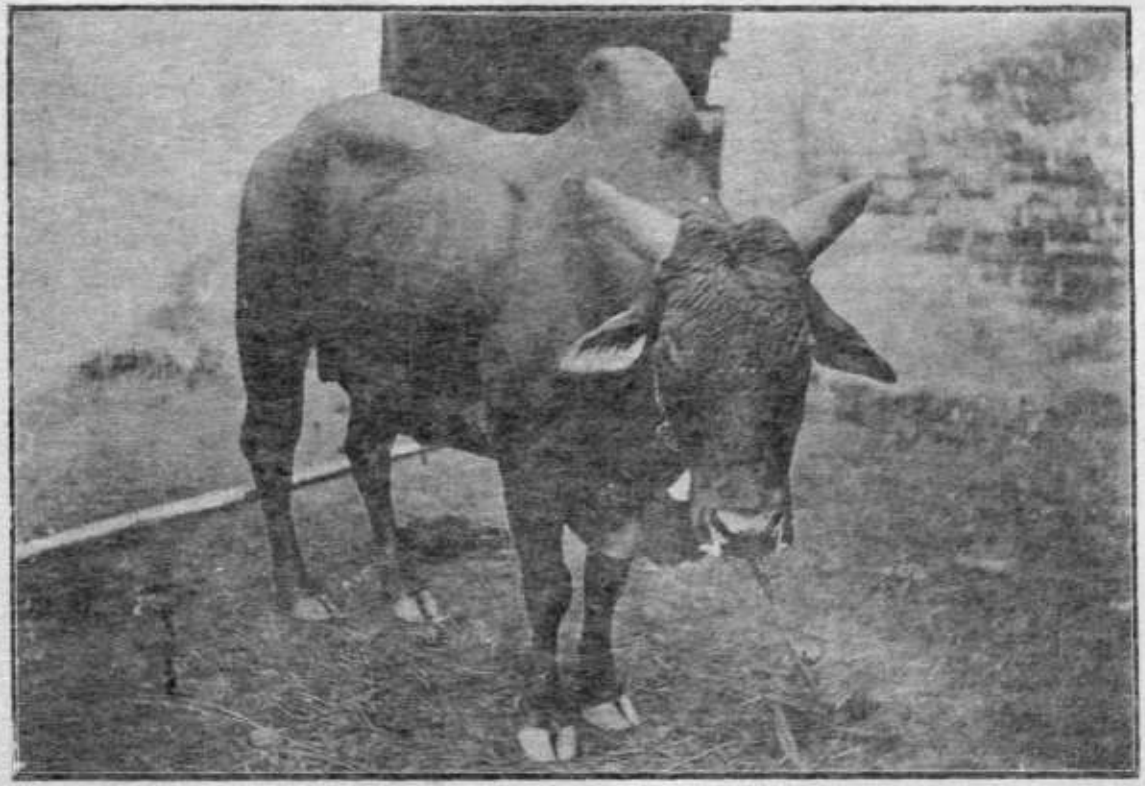
Pasture lands have mostly been converted into arable lands. Fodder is not quite sufficient except in the rainy seasons. The quantity of milk given by milch cows is very small.

Good dairy-farming is necessary in the jungle lands adjoining the town and good cattle breeding is necessary. Steps should be taken to prevent pasture land from being reclaimed and converted into culturable lands.

6.—Midnapore.

Midnapur District Gazetteer.

The cattle of the district are of the degenerate species usually met with in the plains of Bengal, and it is to be feared that there is little chance of any general improvement because the pasture lands in the alluvial tract are being encroached upon with extension of cultivation, and also it may be. because the practice of dedicating Brahmani bulls and turning them loose is growing less common. Owing to the shrinkage of pasture-lands, cattle are now grazed in the fallow fields, on the slopes of embankments, and on any waste lands there may be. Bullocks, while employed on work are fed on straw, oilcake etc., but it is evident that a great many do not get sufficient food in the dry months of the year. Attempts have been made at the headquarters station, with some success, to improve the local breed



Midnapur Bull. (By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House, Calcutta.

of cattle by importing cows from Bihar and bulls from Hissar. Buffaloes are common in the south of the district, where there were formerly wild animals of this species; they are mostly kept for milk. (a)

Babu Krittibas Mandal B.L., Chairman Ghatal Municipality, writes to say that the animals are small in stature, lean and not of proper quality for regular want of good breeding and fodder. There are no proper pasture grounds in the locality. Owing to the high price of food grains, the pasture grounds or village waste lands have been brought under cultivation. There are no good breeding bulls in the town or in the Sub-Division The number of cattle is insufficient. The high prices of fodder are an obstacle to the maintaining of sufficient number of cattle by the people of ordinary or small means. Poor supply of milk is due to the insufficient number and famished condition of milch cows. The decline in the number of cattle is due to another cause which is serious. Calves are sold at high prices for food purposes. The only means by which this state of cattle and of milk supply may be ameliorated is by putting a stop to the killing of cows or cow-calves and by improving the breeding by maintaining healthy bulls and increasing the number of common pasture grounds. Without legislation it is difficult to make provision for common pasture grounds, for maintaining sufficient number of bulls. You cannot depend upon private effort. The District Boards and the Municipalities are earnestly to take this duty upon themselves.

Ghatal Municipality.

The Chairman of the Chandrakona Municipality also complains of the insufficiency of cattle and cattle-fodder and of deterioration of stock and suggests that the owners and keepers of cattle are to be supplied with necessary rules and regulations how to breed cattle, use wholesome fodder and treatment necessary for illness. Grounds are to be specified for grazing and every caution will be adopted to see whether they adhere to the rules and regulations supplied to them.

Chandrakona Municipality.

(a) Midnapur District Gazetteer by L. S. S. O'Malley I. C. S. (1911) pp 88-89.

CHAPTER IV—RAJSHAHI DIVISION.

1.—Rajshahi.

Rajshahi is the most important district in this Division. Its chief town Rampur-Boalia was once a prosperous town on the Ganges. The district has got two very enlightened Zeminder families—the Maharajah of Natore and the Raja of Dighapatia. Pandit Matadin Sukul, Executive Engineer, started with the help of the Maharajah of Kasimbazar and other local gentry a cattle breeding station which worked very succesfully during the few years that he stayed at Rajshahi. With his transfer however the whole thing collapsed for want of local interest and enthusiasm.

Rajshahi, District Gazetteer.

The District Board has a staff of 3 Veterinary assistants, one for each subdivision. It has decided to establish a veterinary dispensary at Rampur-Boalia and the building will be erected shortly.

Rajshahi Bar.

Babu Anukul Chandra Chakravarty Secretary, Bar Association Rajshahi reports that—(a) The number of cattle has been much reduced on account of various reasons There are (1) cattle diseases (2) insufficient feeding and the last though not the least (3) the high price of hides (b) The quality of cattle has also been much worse owing to diseases which are not properly treated and to insufficient feeding, and also for want of breeding bulls from other parts of India.

(c) In this part of the country there are very few bulls kept for breeding purposes. The bulls used for breeding purposes are what are called Brahmini bulls, that is bulls consecrated at the time of Brishotsarga Sradh. These bulls are haphazardly selected and therefore cannot be said to be quite fit for breeding purposes. But as a matter of fact, they are used only for that purpose. This is one of the reasons why the quality has deteriorated and the number has much fallen.

(c) On account of the high price of food and jute every rood of ground is now cultivated and the result is that there is no pasture land in this part of the country. For this reason cultivation is going on improperly with ill-fed and over-worked bullocks

and the supply of fodder as regards quality and quantity is poor. For the very same reasons the milk supply is also meagre.

To increase the number of and improve the quality it is necessary to make arrangements for the proper treatment of cattle at as little expense as possible and to feed them properly and prevent overwork in bullocks and over-milking of milch cows and the killing of cattle for hides by hide dealers.

Both the quality and quantity may be improved by providing breeding bulls to the agricultural people and by law compelling the proprietors of land to set apart a certain portion of their land for pasturage.

2.—Pabna.

Pabna is a rather backward district and its cattle are reported to be of inferior quality and few in number. The principal fodder is paddy straw supplemented in the case of cart bullocks with oil cake, Karja grass is used as a fodder in the rains and pulse in winter. The number of cattle is 729, 772 as against population of 1,428,586 The proportion of Brahmini bulls to cows in this district 1 to 239.

3.—Bogra.

Bogra has nothing to boast of—cattle or anything else. The only novelty is that bullocks and cows are promiscuosly used for ploughing.

Mr. J. N. Gupta M.A., I.C.S. writing in the District Gazetteer says that the domestic animals used for the purpose of agriculture are buffaloes and oxen. Cows are also sometimes employed in ploughing by Mussulmans but even amongst them there is a prejudice against the practice. The local cattle are generally small but a few buffaloes and large Bihar bullocks have been imported.

Bogra District Gazetteer.

There are no regular pasture grounds in the rains except in Khas mahal but in most parts of the district the cattle find a sufficiency of grazing though there is considerable difficulty in providing food for them in flooded tracts.

Babu Purna Chandra Ray, Vice Chairman, Bogra Municipality has sent the following Note :—

(a) Number of Cattle—Gradually decreasing on account of the vast number of cattle annually slaughtered. Cattle mortality has of late years increased much for want of proper nourishment.

Bogra Municipality.

(b) Quality of cattle—Deteriorating day by day for want of sufficient number of pedigree stud bulls and also for the want of proper nourishment.

(c) Breeding—Promiscuous.

(d) Pasture— Very few pasture lands; these too daily disappearing.

(e) Fodder—There is scarcity of fodder.

(f) Milk production—Yield very poor for the unsatisfactory condition of our cows.

The improvement of milk supply is of imperative necessity for reducing the very high infantile mortality and this cannot be effected unless and until the state of our cows be made satisfactory.

For a solution of the problem the following remedies are suggested:—

(I) The vast number of annual slaughter of cattle should be kept within certain well-defined limits.

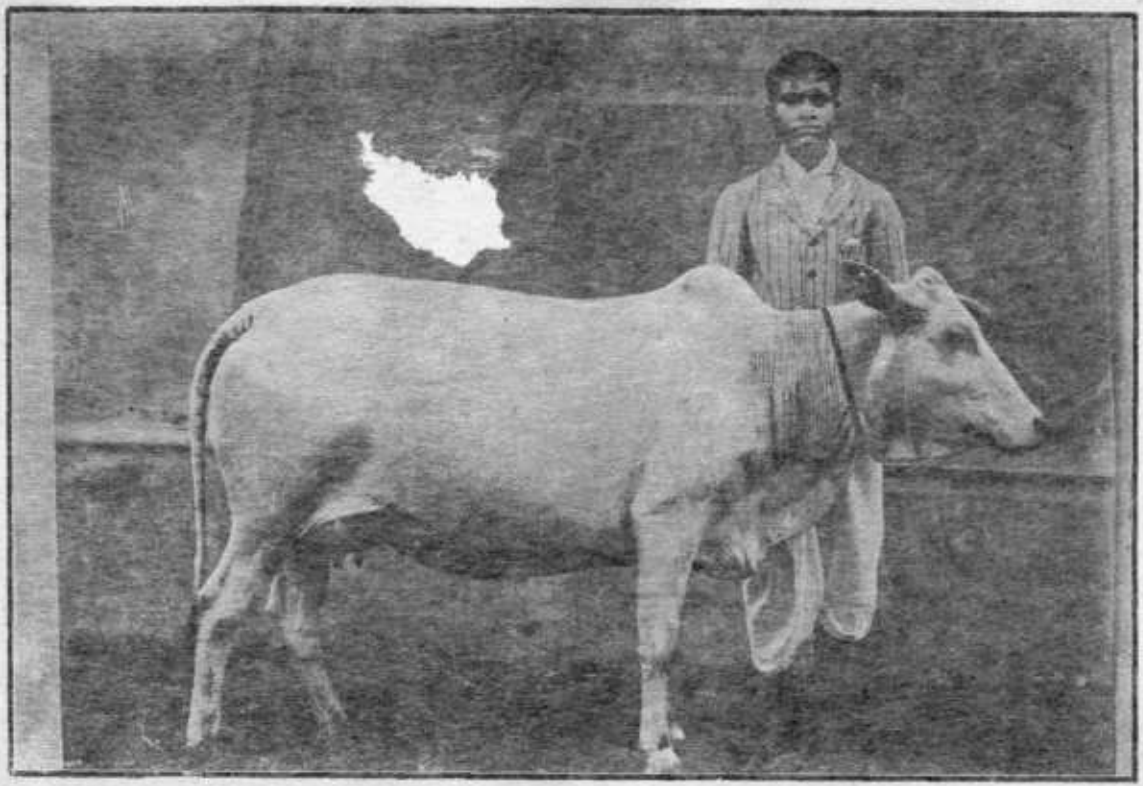
(II) Sufficient pasture-lands should be set apart.

(III) Brahmini bulls should be preserved by State legislation for breeding purposes. There should also be sufficient number of pedigree stud-bulls maintained by public as well as private bodies.

(IV) Dairies should be maintained by public and private bodies.

4.—Maldah.

The local breeds are poor but large numbers of buffaloes and bullocks are brought from Bihar and the oxen used for carting on



SANTI—**Maldah Cow with an Admixture of foreign Blood.** (By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House, Calcutta.

Rangpur Cow Pure Indigenous Breed. (By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House, Calcutta.

the Rajmahal Road are generally upcountry beasts. The difficulties in the way of keeping cattle in condition are firstly the want of fodder in the rains when large areas are under water and the cattle cannot forage for themselves on account of the crops and secondly the insect pests which in some parts of the district necessitate fires being lit at night to protect the cattle from insect bites. Large numbers of cattle from Bihar on their way to the big cattle markets of the Rajshahi Division are fed in the *Tal* and *dubas* in the cold weather, regular bathans or encampments being formed. Some attempts have been made to improve the local breed by upcountry bulls, but the resulting calves are poor, being long-legged and weedy. There seems no doubt that the only way to improve the general stamp of the cattle is by selection of the best local bulls and improved feeding. Buffaloes, which are largely used for cultivation are nearly all foreign-bred.

Malda District Gazetteer.

From 1906, the District Board has maintained a veterinary Assistant at English Bazar and a Hospital. The Assistant is largely employed in touring. The chief diseases are rinder pest, hæmorrhagic scepticæmia and foot and mouth disease. (a)

A. K. Jameson, Esq. I. C. S., Collector of Malda states that in this district deterioration in the quality of cattle is gradually taking place owing to absence of good breeding bulls and for want of sufficient pasture lands. As a result of the degeneration of cattle, milk-supply is becoming less with the consequent rise in its price. The present supply is not sufficient for the requirements of the district. The remedy lies in increasing the number of stud bulls and providing for sufficient pasture lands within easy reach of every village.

Collector of Maldah.

5.—Rangpur.

The cattle bred in the district are small and rarely exceed four feet in height. Their stunted growth is due principally to the want of grazing land which is increasingly felt as cultivation advances. During the rains beaten straw is in many places the only provision available. Another cause is the total absence of any systematic breeding

Rangpur District Gazetteer.

(a) Malda District Gazetteer by G. E. Lambourn B. A. I. C.S. [1918]. P. 48.

The District Board has imported two stud bulls which are sent on tour throughout the district, but the people are indifferent and their services are in little demand. There is a Veterinary dispensary and hospital at Rangpur in charge of a Veterinary Assistant who goes into the interior to attend to outbreaks of contagious and infectious diseases.

6.—Dinajpur.

Dinajpur District Gazetteer.

The local breed of cattle resembles that in most other parts of the province, being small and stunted. No attempt at systematic breeding is made. There is hardly a good bull in the district and the sires are the immature uncastrated males running with the herds.

The necessity of reserving grazing areas and for growing fodder crops has never been seriously considered. The whole question of cattle-breeding has in fact been hitherto ignored. The local cattle, owing to their small size, are unfit for anything but ploughing and are also very poor milkers, a seer of milk per diem being a fair average yield of milk for a cow. The reason why the necessity has never apparently come home to the people is that large numbers of fine cart-bullocks are annually brought to the big fairs or melas from Bihar and up-country and sold to local merchants, traders and professional carters. The people are thus saved the trouble of breeding their own cart-bullocks, while for ploughing purposes they are content with the small animals locally available.

The buffaloes found in the district are generally imported and not bred locally. They are smallish animals of the Behar type and very inferior to the fine buffaloes of the Brahmaputra valley. They are sometimes used for carting and Sonthal settlers make use of them for ploughing also. Milch buffaloes are kept in small numbers in the low-lying country on the lower reaches of the Punarbhaba and in the western portions of the Ranisankoil thana. *(a)*

Dinajpur does not suffer very much from cattle disease. In the year 1909-10 one outbreak of rinderpest and two of foot and mouth disease were reported, but the mortality does not appear to have been heavy.

(a) *Dinajpur District Gazetteer* by E. W. Bizong I.C.S. [1912] p. 62.

Veterinary relief is afforded at a Veterinary Dispensary at Dinajpur at which in 1909-10, 5 equines, 15 bovines and 4 other animals were treated as in-patients and 51 equines, 221 bovines and 67 other animals as out-patients. The numbers are very small but as the Veterinary Assistant has to spend part of his time in touring the attendance at the dispensary and hospital is bound to suffer during his absence. In the same year, besides the inoculations for rinderpest, the Veterinary Assistant during his tours in the mofussil treated 873 animals for contagious and 539 for non-contagious diseases.

H. G. Blomfield, Esq., I.C.S., Collector of Dinajpur intimates that—

(1) The state of cattle and of the milk supply in this District is far from satisfactory.

(2.) The Cattle are of inferior size and quality.—weak and unhealthy for the most part, though they are better than the horses. No attempt is made to breed systematically from good stocks, and no proper care is taken by owners either of bulls or cows. Good pasturage is very scarce, and there is an unfortunate tendency to convert all waste places into agricultural rather than pastural land.

Collector of Dinajpur.

(3.) Dried paddy straw is the sole kind of fodder, and as the cows are not looked after properly, the supply of milk is both inferior and inadequate. It is sold at 4 seers to the rupee.

(4.) As regards remedies, the chief need is good pasturage and improved methods of breeding. Land would have to be reclaimed in the case of the former and as to the latter, steps would have to be taken to arouse interest in cattle-owners. More attention should be paid to the feeding of the animals, and they should be better looked after generally.

S. D. O. Thakurgaon.

The Sub-Divisional Officer of Thakurgaon, District Dinajpur, writes that the quality of cattle and milk supply are far from being satisfactory in this Sub-Division. The cattle are of inferior quality and though there is no dearth

of waste lands good fodder is not plentiful. Scientific breeding may improve matters.

7.—Jalpaiguri.

The local cattle are small and weakly and no attempt has been made to improve the breed. An imported bull has been brought recently for the Jalpaiguri Jail, but his services will be confined to the jail cow. Owing to the damp climate of the Western Duars, mortality among cattle is very great and it is not uncommon after a severe epidemic to see cows used for ploughing. Pasturage is abundant; in the Northern Taluks of the Western Duars green fodder is always available and paddy straw is not always used for cattle. Meches and other cultivators throw away the straw as soon as they have finished threshing or allow any one who pleases to take it away. In the regulation parganas and in the Southern Taluks of the Western Duars straw is stored for fodder and cattle are fed on it while the amon rice is growing and they cannot be allowed to graze in the fields. During the winter months large herds of buffaloes from Purnea, Rangpur and Cooch Behar are grazed in the reserved forest and in the waste lands of the Falakata and Alipur tahsils. Buffaloes are seldom used for agricultural purposes; the professional graziers keep them for milk, most of which is made into ghee. Although there is no lack of pasturage in the dristrict taken as a whole, sufficient grazing lands near the homesteads of the cultivators have not been reserved in all parts; the want of these is particularly felt in the pargana of South Mainaguri. In the Bhalka tahsil there are plenty of grazing lands. (a)

Jalpaiguri District Gazetteer.

A Veterinary Assistant is stationed at Jalpaiguri and paid by Government. His duty is to tour in the interior of the district and do what he can to deal with outbreaks of epidemic diseases. The most common disease is rinderpest, which causes great mortality among wild animals as well as among cattle and buffaloes; much can be done during an epidemic by inoculation with a specially prepared serum to save uninfected animals and to check the spread of the disease.

(a) *Jalpaiguri District Gazetteer* by John F. Gruning I.C.S. [1911.] p. 62

8.—Darjeeling.

In the Terai the common domestic animals do not differ from those found elsewhere in Bengal, oxen being used for agriculture, buffaloes reared for their milk and for sale. In the hills there are two special breeds of mountain cattle, the Siri and the Nepali, a cross between the two being called siri kutcha. The former are large and rough coated and the latter small and smooth skinned; both breeds are good climbers and thrive in the forests. The siri and siri kutcha are especially powerful animals which are largely used for cart traffic. The Sharpe Bhotiahs from Nepal as well as the Bhootanese Bhutias graze large herds of cows and buffaloes, while the Nepalese cultivators use a few bullocks for the ploughs or for transport. When these are no longer fit for ploughing or cart work, they are generally used for food. The Bhootias being a pastoral race, are the chief graziers and keep a large number of cows, even when they take to cultivation. The buffaloes are not used for agricultural purposes; the females are kept for milk, while the males are slaughtered for food.

Darjeeling District Gazetteer.

The principal pasture grounds are the reserved Government forests. In the cold and hot weather the lower ranges are used, but as the rains approach, the scourge of leeches drives the cattle and sheep up to the higher mountains between 10,000 and 12,000 feet. For the herds of the professional graziers, which are too large for village grazing, the reserved forests as a rule, afford the only pasturage available. The plough cattle of the cultivators and such milch cows as they keep for their daily use, find pasturage in the cultivator's own fields, the maize fields being utilised for two or three months after the maize is cut and the rice stubble after the rice is reaped. But after the maize is in the land again, and until it is reaped i.e. from March to September, the need of grazing as near as possible to his homestead is strongly felt by the cultivator, and to supply this want village grazing grounds have now been reserved in the Kalimpong Government estate. Veterinary aid is afforded by an itinerant Veterinary Assistant, paid by the Darjeeling Improvement fund, his duty being to tour in the interior and deal with outbreaks of epidemic diseases.

The diseases most common are rinderpest and foot and mouth disease.

Special breeds of cattle [by Lieut.-Col F. Raymond, Superintendent Civil Veterinary Department].—

Darjeeling has two ordinary zebu breeds of cattle which go by the names of Siri and Nepali or Paharia; a cross of these two is called the sirikutcha. There are a few tame specimens of the mithun or Gayal to be found and some crosses between it and siri breed, but they are very few in number. The word siri comes from the Sanskrit word *sri* and signifies that the breed is handsome and has good qualities. The usual colour is black, black and white or red and white. The bulls have well developed humps with a tuft of hair growing on it. The cows have only rudimentary humps. In height the bulls measure up to 54" behind the hump and the cows up to 50". They are remarkably well-suited to the highlands of the Himalayas and withstand the cold and wet, leeches and other hill pests in an extraordinary manner and are able to feed themselves by grazing, if turned loose in the forests. As workers they do well, a pair being able to drag about 8 maunds of materials in light carts up to about 12 miles a day on fair roads. They are also very useful as milkers, a well-fed cow giving about 6 seers of really excellent milk daily.

Nepali Breed:—The Nepali or *Paharia* cattle are considerably smaller than the siri breed and are good climbers. The bulls stand only about 45" the cows are rarely over 40", generally less. They only give about 2 seers of milk. Though they are hardy animals, they are essentially poor men's cattle, and whenever the owner finds an opportunity to do so he crosses his Nepali cow with a siri bull

Sri Kutcha Breed:—The Sri Kutcha is the result of a cross between a Nepali cow with a Siri bull and is always a great improvement upon the Nepali and most of the cattle which are seen working on the District are Siri kutchas of sorts. They are not, however, in any way as good as the pure bred siris.

The Mithun breed—The Mithun (bos frontalis), also known as *Gayal* are really wild cattle in the Bhutan, Burmese and other jungles; a few have been caught and tamed by Bhotia and Indo-

Chinese tribes, and some few in a domesticated condition, can be found in Darjeeling. They are generally a deep chestnut or brown in colour, but they look black in forests. Their legs are white. The dewlap is broad and heavy, and the anterior dorsal ridge is prominent. The bulls are about 58" high and the cows about 50". they are heavily built, short-legged and very powerful. They become very docile when tamed. The cows give 3 to 4 seers of very rich milk. From time to time the Gayal has been crossed with the siri and it is said the result has been satisfactory; Though the quantity of milk has been somewhat diminished, the quality has considerably improved; and power and endurance of the progeny has notably developed. The people, however, generally object to crossing the Gayal with the siri for the same reason that Hindus refuse to breed mules.(a)

Attempts have been made from time to time to import English and Australian cattle into the hills; but they promptly die if allowed to graze; or they fall down the khuds. Hence they have to be stable-fed and treated as exotics. The result, as far as is known, has been discouraging and unprofitable.

A. A. Price Esquire, Secretary, Darjeeling Municipality, informs that the milk supply of Darjeeling is not satisfactory.

Darjeeling Municipality.

An inherent defect in the milk supply there is belived to be the poor quality of the cattle. Pasture is also deficient. The introduction of more good bulls for stud purposes would probably improve the physique of the hill cattle.

(a) *Darjeeling Distric Gazetteer* by L. S. S. O'Malley I.C.S. [1907] p. 68-71

CHAPTER V.—CHITTAGONG DIVISION.

1.—Chittagong.

The local breeds of cattle are poor, and little has been done to improve them. For the most part they are small and stunted and there is no attempt at systematic breeding. Good sized buffaloes graze in the forests and on the river flats, and are the most valuable of the domestic animals. Pasturage abounds in most parts of the district, but in the highly cultivated central valleys it is scarce in the neighbourhood of the villages so long as the rice crop is on the ground.

Chittagong District Gazetter.

The disease most prevalent among cattle is rinderpest Veterinary relief is afforded at a veterinary dispensary at Chittagong.(a)

Rai Sahib Sarada Kumar Dutta Vice-Chairman, Cox's Bazar Municipality writer, that the state of cattle and of milk in our locality is not satisfactory. It is due to the small number and bad quality of cattle and also to want of suffiicient pasturage. As a remedy he suggests that cattle slaughter should be stopped and sufficient pasture land should be provided for in every village.

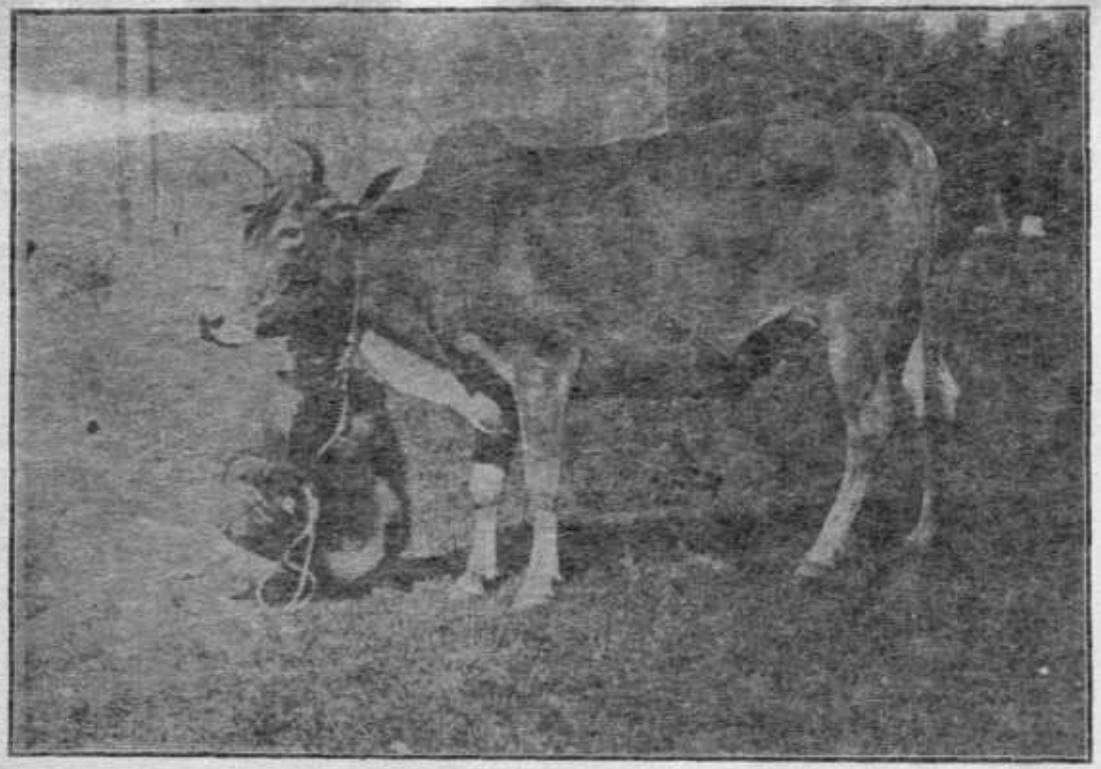
Cox's Bazar Municipality.

2.—Noakhali.

The cattle of the district are small but compare favourably enough with those of the rest of Eastern Bengal. Although there are few lands reserved for pasturage except chars not yet fit for the plough, the cattle get a certain amount of grazing on the roadsides and on the ridges which separate the fields and appear on the whole to be fairly well-fed.

No census of the cattle in the whole district has been made but in tracts surveyed during the years 1892-1908 (about 192 sq. miles) the number of cattle found averaged just under 400 to the square mile. Of these about one-twelfth were buffaloes, and a tenth calves, while among the rest five bulls or bullocks are found to every two cows.

(a) Chittagong District Gazetteer by L. S. S. O'Malley, I.C.S. [1908] p. 90.

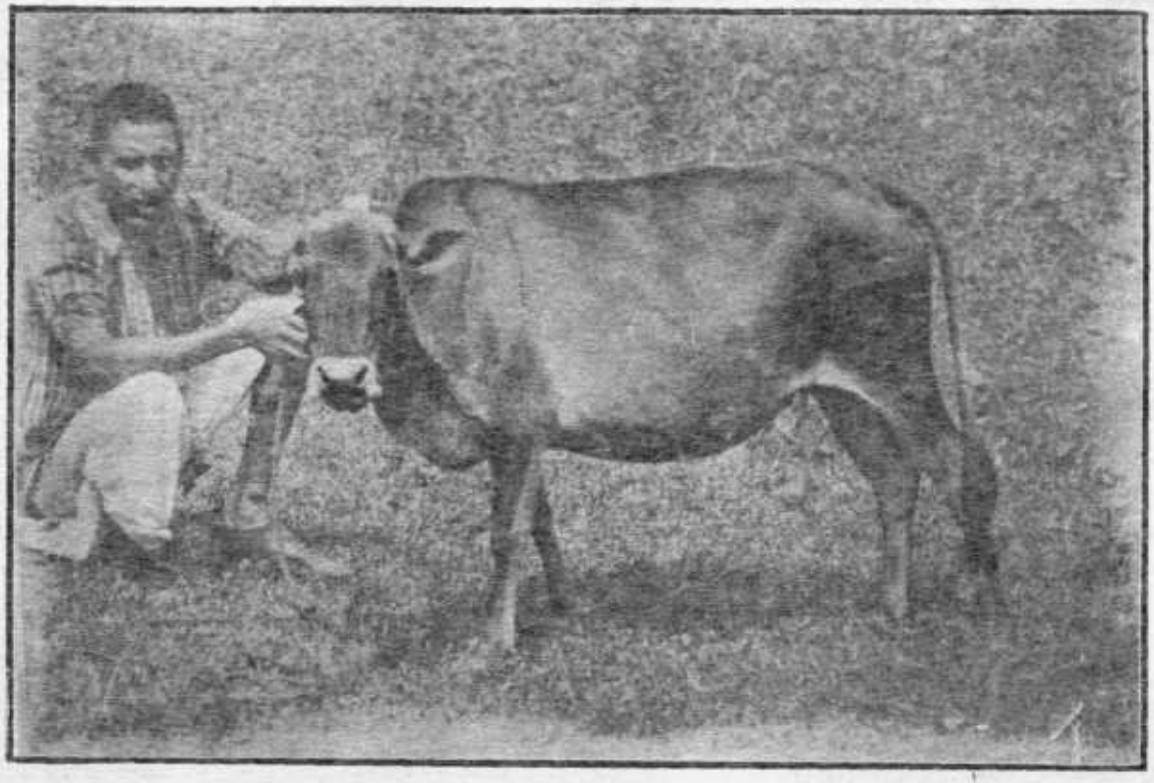


Chittagong Bullock. (By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House, Calcutta.

Gauga a Cow purchased in Dacca which has an Admixture of foreign Blood. (By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House.



Chittagong Cow. (By the courtesy of the Govt. of Bengal).

Bhoodeb Publishing House, Calcutta.

Rinderpest is common in the district. In 1874-75 it was recorded that 20,522 head of cattle were attacked, and only 2,409 recovered; 2,542 cattle died in 1903. In 1908-1909 the deaths reported were 1095 of which 1,077 were due to rinderpest. Cases of anthrax also occur and occasionally foot and mouth disease and haemorrhagic septicaemia. There is a dispensary at Noakhali in charge of a civil veterinary assistant.(a)

A. J. Dash, Esq., I.C S. Offg. Collector, Noakhali sends the following reply to our queries.

Cattle —— Number sufficient, quality poor, weak and poor milk givers.

Breeding —— Very little is done owing to lack of knowledge of breeding principles—the District Board kept a stud bull some time ago which was only moderately successful. They are taking up the matter again in consultation with the veterinary Department. No large Zaminders interest themselves in breeding. Pasture is inadequate except on the chars; any pasture land in existence is encroched on as fast as possible and converted into arable lands No fodder crops are grown.

Collector of Noakhali.

The only remedy I can suggest is local demonstration of cattle-breeding by either government departmental action or by large resident Zaminders. It does not appear that a suitable type of cattle has been found from which breeding can be profitable. Research in this direction might be carried out together with the demonstration

Upendra Nath Roy, Secretary, Bar Association, Noakhali writes:

The condition of cattle in this district is far from being satisfactory. The size of the cattle is very small and it is gradually getting smaller day by day. The yield of milk per day from the average cow is about one seer. The condition of Bull is also very bad. Most of the bulls being castrated early in their youth, bulls are not thought worth preserving as such for breeding purposes.

(a) Noakhali District Gazetteer by J. E. Webster, I.C.S. [1911] p.

Noakhali Bar.

1. In every village there ought to be a quantity of land proportionate to its population set apart for pasture-ground which can be utilised by the villagers on payment of a small tax which will be an income from this land and may be directed to the recurring expenses for the maintenance up-keep and improvement of the lands.

2. The plot of land must have a tank in it and must in no case be smaller than 3 acres in any village and the taxation more or less than one rupee per annum in any village for a family. It must always be in a higher level than the rest of the village grounds.

3. Cattle show be organised throughout the district and the result of breeding be announced by suitable methods of publication in these shows to agriculturists. Prize should be distributed to the successful cattle-breeders.

4. Inter-provincial cross-breeding amongst cattle should be facilitated or rather improved breeding should be provided for by introducing strong and healthy bulls from other provinces or places where they are available. Present attempt by the D. B. in maintaining one or two bulls in the District head quarters is altogether inadequate for the purpose.

5. In every group of 5 or 6 villages grouped according to the geographical condition of the locality there must be an Agricultural Station to supply good fodder.

3.—Tippera.

The local cattle are small in size and poor in quality, a result due to insufficient food and the absence of any organised means or method of improving the breed. The deterioration thus caused is aggravated by the steady tendency to bring waste lands under cultivation, thereby reducing the area available for pasturage.

Tippera District Gazetteer.

The chief grazing grounds left are the marshy lands or bills, the sites of deserted villages and the sides of swamps, tanks and roads; the latter are the chief fodder-sources of cattle during the rains and there can be little doubt that there is a scarcity of fodder in many villages at this time

of the year when the rice and the jute crops are on the ground. The cattle are then partly stall-fed but it is the exception for them to get anything but straw for fodder; and their sheds are of a wretched flimsy description with scarcely a mat wall to keep out wind and rain.

Both bullocks and buffaloes are used for the plough and the Muhammadans employ cows for the same purpose. Plough bullocks are imported from Dacca, Rangpur, Mymensingh, and Manipur; the best breed being the sturdy dark coloured cattle brought from Manipur.

Cultivators often plough in turn for one another, and a man can generally hire a plough, or may even get his field entirely prepared for a lump sum down, about Rs. 2 per bigha.

Malignant sore throat, *galaphula*, is the commonest of the more serious diseases and out-breaks of it occur in the cold weather and spring. There are in most years sporadic cases of foot and mouth disease (batan) and occasional epidemics of rinderpest (jharan). Anthrax sometimes visits the district and it is considered unsafe to give grass cut near Comilla to valuable horses. There is a Veterinary dispensary at Comilla in charge of a qualified practitioner. (a)

Babu Prasanna Kumar Chakraverty—Secretary District Bar Association Comilla says :—

The state of cattle and of milk supply in the District of Tipperah is not satisfactory. This is not only due to gradual decrease in the number of cattle in the district but also due to gradual deterioration of the quality of cattle. And it is for want of proper nourishment, good breeding and pasture land that the quality of cattle is deteriorating. Other equally strong reasons are want of education and poverty of the people. For remedy I would suggest education of mass, increase of pasture land, provision for improved breeding and better treatment of cattle disease, which may be possible only with the help of Government. If possible, steps should be taken to stop indiscriminate slaughter of the cows.

Comilla Bar.

(a) Tippera District Gazetteer by J. E. Webster, I.C.S., [1910] p. 45.

Babu Haradayal Nag, President of the local Association, *Chandpur*, District Tippera, writes:—

The number of kine in this part of the country is very limited. The quality of cattle is generally deplorable. Breeding pasture, fodder and milk production are unsatisfactory. In most cases cattle are low breed, and insufficiently fed on account of scarcity of fodder and paucity of pasture lands.

Chandpur Association.

To my mind the remedies are very simple. In every town, or village some upcountry bulls should be maintained for purposes of breeding. Extensive jute cultivation is responsible for scarcity of fodder and paucity of pasture lands. Fodder difficulty may be removed to certain extent by restricting jute cultivation. In every town or village some lands should be preserved for pasture.

Chandpur Municipality.

The Chairman of the Chandpur Municipality reports that the state of cattle and of milk supply in this locality is not satisfactory as regards the number and quality of cattle, breeding, pasture, fodder, and milk production. As for remedies he is of opinion that in every town and village some breeding bulls should be maintained for purposes of covering. Fodder difficulty may be removed to a certain extent by reserving lands for pasture. Model dairy farms should be established and cattle shows held in every important place.

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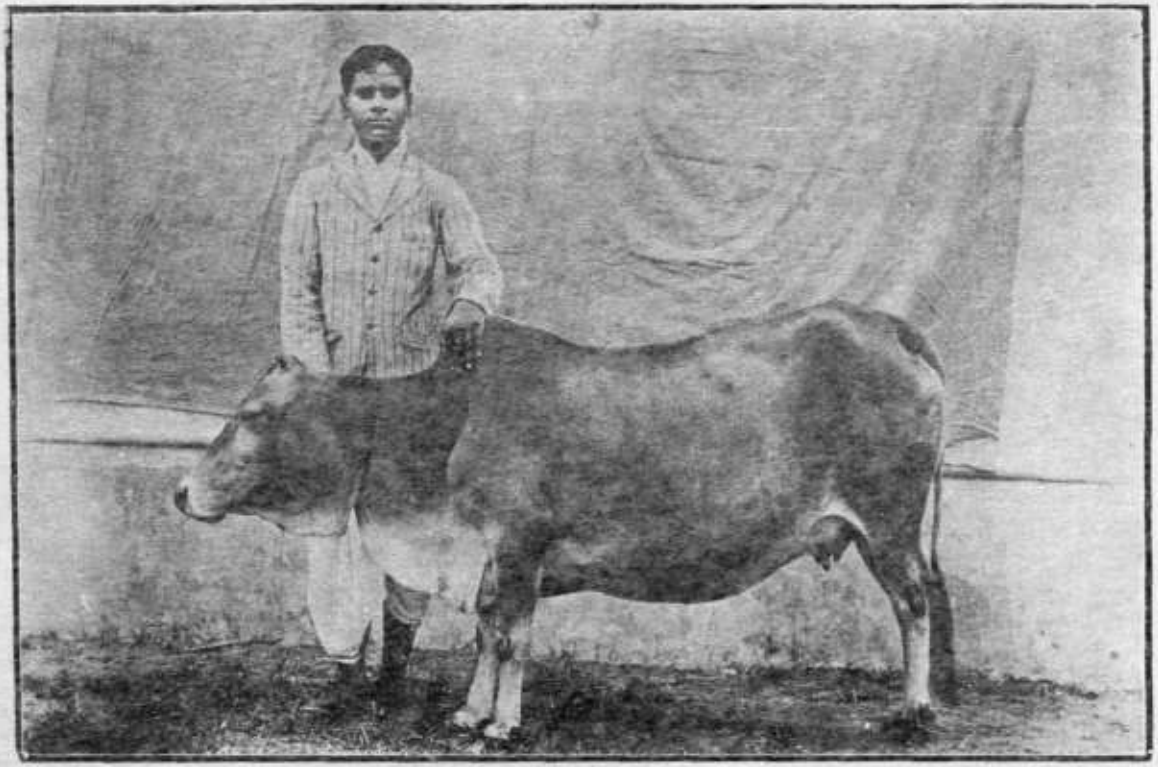

Dacca Cow—Pure Indigenous Breed. (By the courtesy of the Govt. of Bengal.

Bhoodeb Publishing House, Calcutta.

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CHAPTER VI.—DACCA DIVISION.

1.—Dacca District.

The indigenous cattle are undersized and poor milkers but they are fairly hardy and do not require much fodder. Efforts have, from time to time, been made to improve the breed by the importation of Hissar bulls but the lack of good grazing ground or suitable fodder crops soon produces a deterioration in their descendants. The Teota zamindars have been more successful with Nagra bulls which are small and hardy but get offspring capable of yielding four to seven seers of milk a day. In Dacca itself the big white Hissar bullocks are sometimes used for traction, but though there are a large number of carts in the north of the district, it is very seldom that anything more than the small country bullock is employed in them. In the lower parts of the district there is no grazing ground above water in the rains and the cattle are tethered on mounds often up to their knees in water and stall-fed. In the Madhupur jungle there is generally grazing land available but the grass is poor. In addition to what they can pick up on the grazing grounds or the stubble of the rice-fields, milch cows are fed on dub grass, khalia grass, oil cake, bran and occasionally boiled rice. An ordinary country cow seldom gives more than two quarts of milk per diem. An up-country cow will yield as much as ten quarts but the milk is of inferior quality. Buffaloes as a rule are finer animals than cattle but they are not kept in large numbers. (a)

Dacca District Gazetteer.

There is a veterinary dispensary in the city of Dacca and a travelling veterinary surgeon is also employed by the District Board. The diseases most prevalent are foot and mouth disease, rinderpest, tympanites, dysentery, diarrhœa and fever. The principal centres for the purpose of sale of indigenous cattle are the markets held at the following places :—Madhabd in Rupganj thana, Beradi in Narayanganj, Chatakchur in Manohandi thana, Putia in Raipore thana, Ali Panchdona in Karniganj thana and Jhitka in Harirampur thana. (b)

(a) Dacca District Gazetteer by B. C. Allen, I. C. S. 1912 p. 102—103.

(b) See Chapter VII—poste.

The Chairman, *Dacca Municipality* writes :—

1. State of cattle and of milk supply in this locality is not satisfactory.

2. *(a)* Number of cattle.....Very few.

(b) Quality of cattle.....Weak, not satisfactory.

(c) Breeding.. .....It is done by weak cattle, consequently the result is not satisfactory.

(d) Pasture.....In this locality generally the land is very low. All the land which can be used for this purpose go under the water during the flood and remain in this condition nearly for 6 months or so in the year. Consequently cattle cannot graze freely.

Dacca Municipality.

(e) Fodder-cultivation of this locality is not satisfactory. The area of land which can be used for this purpose being very few in comparison with other parts of Bengal the result is that the out-turn is not sufficient.

(f) Milk production—It is not satisfactory owing to above reasons.

3. *(a)* If respectable and reliable dairy farms be established in suitable places with proper grazing grounds and arrangement for good breeding be made with up-country bulls and special care is taken for their maintenance, the complaints to cure the evils may be remedied to some extent.

(b) Every attempt should be made to remove the defects which are generally found in the milk supply of the town *viz* :—

(*i*) Insanitary condition of cow-sheds.

(*ii*) Insanitary condition of the surroundings of the sheds.

(*iii*) Keeping of cows in dirty conditions.

(*iv*) Unclean milk vessels, dirty habits and dirty hands of the milkers.

(*v*) No protection from contamination in transit.

(*vi*) Dirty condition of markets.

(*vii*) Adulteration with dirty water etc.

These defects may be remedied by (1) obtaining necessary legal power, 2 establishing markets in which milk must be examined before sale and by (3) providing appliances for cleansing milk and pasturising it and putting all milk through these

The people (Goalas as well as customers) should be educated to understand the importance of pure milk supply by popular lectures with practical demonstrations and by establishing Municipal dairy farms which may prove a good moral lesson to the Goalas.

Rai Shaheb Promatha Nath Ghose, Hony. Magistrate, Member District Board, Dacca submits that the condition of cattle and the milk supply in Munshiganj Sub-Division (Bikrampur) at present cannot, on the whole, be held satisfactory.

The number of cows has considerably decreased although the number of bullocks has increased in consequence of the increase in the cultivated area. The demand for bullocks being greater, the cultivators or farmers have made it a point to get hold of as many bullocks as may be necessary to serve their purpose; but the profit accruing from milk-cow is not sufficient to meet the expenses required for maintaining it.

The cattle as a class are degenerating here for want of sufficient quantity of fodder and for want of breeding.

District Board Dacca.

The only means that are adopted here for this purpose is by breeding bulls kept by professional men. They procure huge bulls from foreign markets which generally prove unequal

match for the small country cows. Therefore the result of cross-breeding seems to be far from satisfactory and sometimes fatal too.

Pasture grounds are nowhere available here. Jute cultivation has, of late, attracted an all-absorbing attention of the cultivators and has replaced the cultivation of paddy and the dearth of fooder is very keenly felt.

There must be laws for the protection of the dedicated bulls and the cultivators may be induced to keep at least one bull in the village for breeding purposes with their herd of cattle.

The difficulty of fodder in the dry season may be overcome if broad ails or hathails be kept between the *khets* in which the cattle freely graze. For the rainy season there should be extensive cultures of dalkhalia grass in low lands and dried up tanks where no other crop will grow.

Babu Hara Lall Saha Roy of Gram Amta within the jurisdiction of District Dacca and a Member of the Dacca District Board sends the following information relating to the condition of cattle :—

1. Not satisfactory.

2. In all respects;
   (a) Number of cattle decreasing.
   (b) Quality deteriorating.
   (c) Breeding not satisfactory for want of healthy and strong bulls, and the cows are engaged in tilling lands in most of the cases.
   (d) No lands are kept vacant for pasture.
   (e) Want of sufficient fodder.
   (f) Production of milk decreasing.

3. The following are the remedies, which I suggest.
   (a) To keep some lands vacant for pasture by the Government, taxes can be levied and collected for pasturep

(b) To advance money to the cultivators at the lowest possible rate of interest for the purchase of good cows as well as bullocks, because the cultivators engage cows for tilling land, most of them cannot afford to pay for bullocks as they are too poor. They buy cows of poorer quality and use them in cultivating the lands and get scanty milk from such cows, so they become unsuccessful in both the purposes.

Dacca : Mofussil.

(c) To keep some Punjab or U. P. Bulls in every Thana of the District.

(d) One Veterinary Surgeon ought to be engaged in every Thana, to save the cows from untimely death, because when epidemics prevail, cows die in numbers without any sort of medical aid. I never saw any Veterinary Surgeon visit this locality when epidemic amongst cattle prevailed and the cultivators lost heavily.

(e) Model dairy farms ought to be opened in every District with large capital under experts. Under the present circumstances Dairy Farms will be successful, I believe.

Babu Phani Bhushan Banerjee, Member, Sadar Local Board and District Board Dacca, writes :—

Local Board Dacca.

1. The state of cattle in our locality is not good and the supply of milk is unsatisfactory. The cattle are sickly for want of proper treatment and want of food as there is no sufficient pasture ground.

2. Breeding is no good as there is no good breeding bull. The number of cattle is tolerable but their quality is bad. This is partly on account of want of pasture ground and want of bathing and drinking water which is very scarce in the locality.

3. The remedy is to supply breeding bulls and excavate old silted up tanks for their use and also to keep large open fields close to each *Basti* as pasture ground for cattle and to arrange for free treatment by veterinary assistants as the poeple who own them are generally very poor.

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Rai Shahib Jogesh Chandra Dutta Gupta, President, Kaligunge Union, Dacca supplies the following information :

1. The state of cow (not bullocks) is not satisfactory in my Union. The state of milk is also the same.

2. The state of cow is not satisfactory as regards (a) number, (b) pasture, (c) fodder and consequently (d) milk production.

3. If pasture and fodder can be made easily and sufficiently available, I think everything will go right.

Kaliganj Union.

I further beg to inform you that my country is a jute producing one. As such, cultivators have become accustomed to take more care for their jute plots and their bullocks, than their cow and pasture and fodder. As almost all the *Aush* paddy plots and even some of the *Aman* paddy plots have been turned into Jute plots, fodder has become available in small quantity and with much difficulty. Under the circumstances it is a little difficult to suggest any easy method for the redress of the evils.

Now, if by any enactment cultivators are made to cultivate jute at a fixed ratio with their total area of land, and i Zaminders are made to keep aloof adequate land for grazing, I think, things will go on as before.

The Sub-Divisional Officer, Naraingunj reports :—

1. The state of the cattle and of the milk supply in this Sub-Division is not satisfactory.

2. *(a)* Number of cattle is not sufficiently large because poor cultivators cannot afford to buy cattle for want of funds.

(b) Quality of the cattle is inferior and so they can not bear the fatigue to which they are subjected by their owners. So rich cultivators often

import cattle of superior quality from Harichattar Mela in Behar.

(c) Breeding of cattle—Excessive labour and fatigue render the cattle incapable of good breeding.

S. D. O. Naraingunj

Pasture and fodder :—

(d) As fresh green fodder is available only for three months in a year the cattle have generally to live upon dry paddy stubble. Rural areas are notoriously characterised by absence of pasture.

(e) Milk production is not satisfactory being not commensurate with the demand, since the cattle are of inferior quality and the owners mix water with the milk.

(f) When cattle disease breaks out the staff of Veterinary Assistants here is insufficient to cope with the situation.

(g) Inadequate supply of water is one of the causes of the outbreak of cattle disease.

3. Remedies :—

(i) Ploughing implements should be introduced.

(ii) Pasture should be reserved in every village.

(iii) Construction of sufficient number of wells at suitable distances in every village is necessary.

(iv) Veterinary staff should be increased.

Babu Dwijendra Mohan Sen, M.A. Sub-Divisional Officer, Manikganj writes:—

The state of cattle in this Sub-division is in my opinion not unsatisfactory but during the rainy season it becomes a little bad owing to the want of adequate quantity of fodder and other food stuffs. Sometimes during the winter some sort of cattle disease appears in epidemic form and carries away many of the cattle.

S. D. O. Manikganj

I think it would be desirable to have a few breeding bulls here so that the quality of the cattle may be improved. During the winter the assistance of a Veterinary Surgeon will be beneficial to the safety of the cattle.

S. D. O. Munshiganj

The Sub-Divisional-Officer, Munshiganj informs that the state of cattle and milk supply in this Sub-Division seems to him to be satisfactory.

2.—Bakargunj.

Bakargunj District Gazetteer.

A careful cattle census has lately been taken in the province, but the statistics and reports have not as yet been published. It is known, however, that the cattle enumerated in the district were nearly 1,400,000 or more than one to every agricultural family. The Bakargunj cultivator is certainly extremely well off in cattle, especially in Sahabazpur and the south of the district. In the absence of the figures and the report of this census, it is impossible to comment in more detail. The cattle include about 50,000 buffaloes, as enumerated in the settlement operations, which are divided between the Shahabazpur and Patuakhali Sub-Divisions. There is no special breed of cattle indigenous to the district, and although the District Board, Local Boards, Court of Wards and Jail in Barisal keep bulls from Sithamarhi, Bihar and Nagpur, their services are utilised to a very small extent. The cattle are generally of very poor quality and are fed on straw and what they can find on the ails of the fields. Oilcake is rarely given to them, and fodder crops are not grown at all. They are stalled generally in poor huts which are so insufficiently raised that the cattle have often to stand in liquid mud or water. The appearance of the cattle is still more diminished by the rotting of their horns, apparently due to the swampy nature of the country. The breed of cattle is said to have fallen off, since the practice of dedicating bulls and turning them loose has been given up owing, it is said, to the High Court ruling that as such bulls were *nullius proprietas* no offence is committed in killing them. The Hindu is fearful of being accessory to their slaughter and so dedicates no more. In the south of the district and the Meghna islands large tracts of grass are kept for grazing (bathan) in which the fee is one Rupee a head and as a consequence the cattle are stronger and better-looking. The buffaloes are expecially grazed in such pastures. The Maghs use

buffaloes exclusively for ploughing; but the Muhummadans keep them largely for their milk and draught. Draught cattle and buffaloes are only found in the Sahabazpur island. There is little other livestock in the district. It may be added that a cow sells for Rs. 30 and a bullock for Rs. 50 as compared with about Rs. 20 in 1870. The value of a pair of buffaloes is Rs. 200 as compared with Rs. 135 in 1870. Ploughs are twice as numerous as in Bihar, numbering 43 per hundred agricultural families. In the stiff soil of Patuakhali every family needs and retains a plough.

Cattle disease has several times broken out virulently in the district. Thus in 1865 forty thousand were reported to have died and in 1910 the mortality was almost as severe. It may be added that the frequent storm waves, although local in their destruction often drown all the cattle of the locality. After the great waves of 1822 and 1876, the mortality amongst the cattle was terrible, being estimated at 98, 834 head in 1882 and about 80 per cent. in 1876. A veterinary establishment was introduced into the district by the District Board in 1902. Veterinary Assistants are retained and are expected to go out and treat cattle reported to be diseased. Altogether 3,617 cases were treated in 1914; but the service is not as yet properly appreciated by the cultivators. (a)

Barisal Bar.

The Secretary, Bar Association, Barisal, informs that the state of cattle and of milk-supply in his locality is far from satisfactory. The number of milch cows as well as of the plough and draught cattle falls far short of the demand, and for want of sufficient pasturage and fodder-crops the cattle are underfed and consequently the yield of milk is rather poor. Ploughmen are often found to yoke cows to their ploughs for want of bulls. The want of breeding bulls and Veterinary Hospitals and Doctors is very keenly felt, large number of cattle is dying for want of treatment.

To remedy the evils referred to, I would suggest that means may be devised :—

(1) to increase grazing grounds,

(a) Bakarganj District Gazettee by J. C. Jack, I. C. S. [1918] p. p. 56—58.

(2) to grow and preserve fodder-crops,

(3) to increase the number of breeding bulls and to establish breeding-studs,

(4) to establish a large number of Veterinary Hospitals for treatment of diseases of cattle.

3.—Faridpur.

Faridpur has got a human population of 2,121,914 as against a cattle population of 895,935 only. The number of Brahmani bulls per cow is 1 in 136. Paddy-straw supplemented with oilcakes form the principal food of cattle. In char lands a grass called *khalia* grass is used as fodder and during floods the bark and leaves of the *Asvatha* tree are used. Grass, which is weeded out of the paddy, is also given to cattle. *Mas-kalai* is grown as a fodder crop. In August and September cattle cannot usually stir for sometime from the mounds of earth on which homesteads are built. Khalia grass has the quality of being able to rise with the level of the water like *boro* paddy, and is therefore extremely useful in areas liable to flood.

J. N. Roy Esqr. O. B. E., Collector of Faridpur, writes that :—

(1) The state of cattle and of the milk supply in the district is on the whole not satisfactory.

(2) It is unsatisfactory in respect of the number and quality of cattle, breeding, pasture, fodder and milk production.

(3) The number of the milch cattle should be increased by the importation of good cows from the neighbouring districts.

Collector Faridpur.

The quality of cattle, except in some parts of chars, is really inferior. The reasons are mainly as follows :—

(1) Breeding (2) Insufficiency of food and (3) Ignorance of the cultivators as to how to take care of and manage them.

Breeding—There is no adequate supply of good breeding bulls in the district. The number of Brahmani Bulls is getting smaller every year. The deficiency of such bulls is enormous. The covering is done by immature and useless bulls. The same bull is generally used for too many coverings. Sometimes cows are brought from a great distance for covering and weak cows are usually subjected to coverings. The insufficiency of milk supplied to calves is undoubtedly one of the chief adverse influences tending to diminish the vitality of cattle. To remedy these evils the best existing indigenous animals and crossings with superior but nearly allied species, should be imported. It should be an animal which the ordinary cultivators will be prepared to use and feed. A number of these bulls proportionate with the cows should be stationed in convenient places in charge of reliable persons (the veterinary or Agricultural officers where their are such) and a record should be kept as to their feeding and covering &c. All the undesirables should be eliminated and attempts should be made to prevent covering at an early age of the cows or too many coverings by the same bulls.

Fodder, pasture—One of the main reasons for the degeneration of the cattle is the deficiency of pasture. Straw is the principal food in the district. The grazing is utilised in the cold weather and pulses—such as masur, kalai, peas &c. are given to the cattle during the winter season but the real deficiency of fodder is always felt in the rainy season as the stock of straw becomes then exhausted and grazing becomes impossible. Several grasses such as—Khalia, lata and arali are given to the cattle as the main food during this part of the year. The leaves of *Aswatha* trees are also used as fodder in the rainy season specially in the sadar Sub-division. During this time of the year straw is imported from Dinajpur, Maldah, Rajshai &c. and sold in the local hats. Grasses weeded out from the paddy and jute fields go a great way to supplement

the fodders. The district does not afford much land to grow fodder crops such as maize, Jawar, Lucerne and Guinea grass.

Care and management of the cattle. The climate of the district is not very favourable to the development of strong and vigorous cattle. The most unfavourable period is the rainy season. Almost the whole district remains under water and the cattle often find difficulty in getting dry land on which to stand. The present cattle sheds are in most unsatisfactory and insanitary condition. Model cattle sheds should be prepared by the District Board or other Local bodies in suitable places and the sons of cultivators should be trained in the management of the cattle. Exhibition should be held to encourage the tendency of improving the breed of the cattle.

Babu Mono Mohon Ganguly, Chairman, Madaripur Municipality says that the state of cattle and of milk supply is not unsatisfactory in this Municipal area. But the quality of cattle is not good here which requires improvement by the introduction of good breeding. There is no pasture ground within this Municipality which can be used throughout the year. The supply of fodder is generally received from Char and Bhil areas outside the Municipality. The remedy which he suggests to cure the evils is to introduce good breeding and to make suitable arrangement for pasture-ground and fodder.

Madaripur Municipality.

4.—Mymensingh.

Mymensingh is the biggest district in the Dacca Division, and for the matter of that in the whole of Bengal. It had a rich and enlightened Zeminder in the late Maharajah Suryya Kanta Acharjya Bahadur of Muktagacha, who took a keen interest in cattle and tried his best to improve the breed by judicious cross-breeding.

There are about two million cattle in the district and fifty thousand buffaloes. The number of bullocks and cows per square mile varies from 1270 in Kenua to 240 in Gafargaon. The average for the district is 31 bulls, 89 bullocks, 97 cows and 93 calves.

Mymensing District Gazetteer.

In 1809 bullocks cost Rs. 3 to 6. Now-a-days many are imported from Bihar and a really good pair are worth from Rs. 80 to 250. Cows giving 2 seers of milk cost from Rs. 40 to 100. The imported animals are chiefly used by cartmen and the cultivators as a whole have to be content with the weedy and undersized cattle that are bred locally. No trouble is taken about the breeding, quite young and unsuitable bulls being allowed to roam among the flocks, and very few of the cattle are properly fed. In the cold weather in the bil areas dub grass grows luxuriantly and for this reason the eastern thanas and Sherpur have the best supply of cattle. Elsewhere the cattle have to satisfy their hunger on meagre grass which grows on the ails of fields or on the road side. In the rains they are tied up in the bari and fed on coarse grass cut from the bils, or on chopped up straw and water. Insufficient grazing grounds combined with the enervating climate and overwork are responsible for the poor quality of the cattle which is only to some extent made up by the prodigality of their numbers. In many places it is quite common to see cows yoked to the plough and the best mofussil cow gives only one or two seers of milk a day. The calf is allowed to suck all day but is tied up at night and the cow is milked as soon as the calf gets to her in the morning. Indian cows do not give milk until the calf has had a first pull.

Before the Mahomedan conquest Hindus never castrated bulls, but Muhammadans do it regularly. The bullock is worked in its fourth year and its average life is 12 years. A cow has its first calf in its fifth year and usually produces eight in all. Buffaloes are used for carts and ploughs in all parts of the district but chiefly near the Garo Hills and in the Madhupur jungle. A certain amount of cattle disease is endemic, chiefly anthrax and foot and mouth disease. The District Board has a Veterinary Hospital at Mymensingh and employs nine Veterinary Assistants. (a)

Babu Kumud Nath Chowdhury, Chairman, *Sherpur* Municipality, District Mymensing writes :—

1. The state of cattle and of milk supply in this Municipality is not satisfactory.

(a) Mymensing District Gazetter by F. A. Sachise, I. C. S. [1917] p. 56—57.

2. The number of cattle is on the decrease due to (1) Slaughter for meat, (2) Shortage of fodder crops and pasturage and consequently supply of milk is insufficient and infantile mortality is very high.

Sherpur Municipality.

3. (a) The number of animals slaughtered for meat should be limited by legislation.

(b) Export of dairy products should be reduced to a minimum.

(c) Arrangement should be made to make good the shortage of fodder crops and pasturage.

Babu Prokash Chandra Nandy B.L., Chairman, *Kishorganj* Municipality writes ;—

1. The milk supply within this Municipality in my opinion is not satisfactory.

2. I think it is unsatisfactory in respect of small number of cattle, want of good quality of cattle, breeding, pasture and fodder.

Kishoregunj Municipality.

3. Proper remedy is to supply good breeding, to keep sufficient pasture ground.

CHAPTER VII—CATTLE FAIRS ETC.

Statement of Cattle Fairs, hats and markets in Bengal, District by Distric

PRESIDENCY DIVISION.

24-PARGANAS.

Subdivision	Thana.	Name of *hat* or market.	Day of the week on which held.	Average number of cattle sold.
Sadar ...	Bistupur ...	Bibirhat ...	Thursday ...	200
	Ditto ...	Bankrahat ...	Ditto ...	200
	Mohestala	Jalkhura Halderbagan.	Tuesday and Friday ...	50
Barrackpur	Dum-Dum	Gouripore-Hat	Monday ...	500
	Ditto	Nagerbazar or Dum-Dum Cantonment Hat	Tuesday ...	400
Baraset ...	Habra ...	Habra Fatakhat	Sunday ...	25
	Do.	Khordelpur Cattle Hat.	Ditto	30
	Barasat ...	Jogodighata ...	Ditto ...	20
Diamond-Harbour.	Kulpi ...	Dholahat ...	Sunday and Wednesday ...	30
	Magrahat	Magrahat ...	Sunday and Thursday ...	50
	Ditto	Jhinkirhat ...	Wednesday and Sunday. ...	30
	Falta ...	Fatehpur Hat ...	Monday and Thursday.	30

NADIA.

Kushtia	Kushtia ...	Kushtia Rajarhat	Sunday and Thursday.	80
	Daulatpur	Baragangdia ...	Tuesday ...	100
	Mirpur ...	Mirpurhat ...	Wednesday and Saturday.	10
	Kumarkhali	Bhabaniganj ...	Saturday and Tuesday.	16
	"	Panti ...	Friday ...	100
	"	Kumarkhali town	Sunday ...	10

NADIA.—*cont'd.*

ubdivision	Thana.	Name of fair hat or market.	Day on which held.	Average number of cattle sold.
huadanga	Chuadanga	Padmabilhat ...	Wednesday and Saturday ...	7
	Dammurhuda	Dug-dug Hat ...	Monday and Friday.	20
	Alamdanga	Alamdanga ...	Sunday and Thursday.	50
		Jarajami ...	Sunday and Thursday.	30
,,	,,	Gokulkhali ...	Tuesday ...	50

MURSHIDABAD.

ngipur	Lalgola ...	Lalgolahat ...	Sunday ...	40
andi ...	Barwan ...	Panchthupi ...	Sunday ...	35

JESSORE.

adar ...	Manirampur	Manirampur ...	Tuesday and Saturday.	10
	Chowgacha	Chowgacha hat	Monday and Friday	6
	,,	Khalshi hat ...	Sunday and Thursday.	3
	Kotwali ...	Jessore hat ...	Monday and Friday.	15
	,,	Rupdia hat ...	Ditto.	5
	Jhinkergacha	Jhinkergacha ...	Thursday ...	100
		Bankura ...	Tuesdayand Saturday.	10
	Nowapara	Alinagor hat ...	Saturday and Tuesday	50
				10
	Keshobpur	Keshobpur hat	Monday and Wednesday and Saturday	50
	,,	Trimohini hat	Every day	4 or 5
	Bagherpara	Manahargonj hat	Sunday and Thursday.	30 to 35
	,,	Telirdhanyapura hat	Ditto.	20 to 25

JESSORE—*contd.*

Subdivision	Thana.	Name of fair, hat or market	Date on which held.	Average number of cattle sold.
Sadar ...	Bagherpara	Narikelbania hat	Saturday and Tuesday	75 to 80
Narail ...	Narail ...	Gokhali hat ...	Tuesday and Saturday.	15
	"	Sarashpur hat	Monday and Friday.	15
	Kalia ...	Bordia hat ...	Tuesday and Saturday.	50
	"	Baruipara hat ...	Tuesday and Saturday.	20
Bongaon	Sarsa ...	Benapole ...	Friday ...	800
	Gaighata ...	Baikara ...	Saturday ...	80
Magura ...	Magura ...	Ichakhada hat	Tuesday ...	40
	"	Jagatdal hat ...	Saturday ...	20
	Mahmudpur	Nohatta hat ...	Sunday and Wednessday	13
	"	Benodepur hat	Thursday ...	15
	Sripur ...	Dwariapa hat ...	Tuesday ...	65
	Salikha ...	Chaturabaria hat.	Tuesday and Friday	50
	"	Pulum hat ...	Sunday and Tuesday	20

KHULNA.

Sadar ...	Khulna ...	Khulna hat ...	Wednesday and Saturday.	3
	Dumuria ...	(1) Shapur hat	Thursday and Sunday.	2
		(2) Chupnagar hat	Tuesday and Friday.	2
		(3) Dumuria hat	Monday and Friday.	2
		(4) Sarabpur hat	Monday, Wednesday and Friday.	3

CSL

KHULNA.—*contd.*

Subdivision	Thana.	Name of fair hat or market.	Day on which held.	Average number of cattle sold.
	Paikgacha	(1) Godaipur hat	Monday and Friday.	100
		(2) Kapilmuni hat	Thursday and Saturday.	200
	Fultola ...	Fultola hat ...	Sunday and Wednesday.	4
Bagerhat	Bagerhat	Chitalmari hat	Twice in every week.	200 or 300
	Fakirhat ...	Sukdeb Roy's hat ...	Tuesday and Saturday.	20
Satkhira	Satkhira ...	(1) Abad hat ...	Tuesday and Friday.	20
		(2) Dhulihar hat	Sunday and Thursday.	15
	Kalaroa ...	Khordo hat, 8 Miles north-east	Sunday and Thursday.	20
	Debhatta	Madine-Dargahat near Parulia.	April to July ... Every day.	200 to 300
	Syamnagar	Nakipur hat ...	Every Saturday and Tuesday.	40
	Kaligunge	(1) Kushtia hat	Wednesday and Saturday.	2,500 per annum.
		(2) Kaligunge hat.	Sunday and Thursday.	200 ditto.
		(3) Nalta hat ...	Wednesday and Saturday.	2,500 ditto.
		(4) Nurnagar hat	Ditto.	300 ditto.
	Tala ...	(1) Jatpur hat ...	Sunday and Thursday.	75 or 80
		(2) Sonergati hat	Wednesday and Saturday.	100 or 125

BURDWAN DIVISION.

BURDWAN.

Subdivision	Thana.	Name of fair, hat or market.	Day on which held.	Average number of cattle sold.
Katwa ...	Ketugram	Panchamdihat...	Thursday ...	600
	Mangalkot	Koychar ...	Sunday ...	100
Asansol ...	Asansol ...	Lalliganj cattle hat.	Tuesday ...	1000

MIDNAPORE.

Sadar ...	Gopiballavpore.	Charchita hat	Thursday ...	2
	Dantoon ...	Dhangachhi ...	Ditto.	500
	Jhargram	Parlhati hat ...	Tuesday ...	200
	Kharagpur	Tengrabinda hat	Sunday and Thursday.	400
	Narayangarh.	Adda hat ...	Sunday ...	200-300
	Kespore ...	Amdubi ...	January to June	100
	Debra ...	Kedor mela ...	January 14th to 21st.	200
Contai ...	Egra ...	Purusottampore hat.	Sunday ...	100
	Contai ...	Kantanadu bazar	Sunday and Thursday.	10
Tamluk ...	Panskura ...	Mareepukhur hat	Thursday	200-400
	Maisadal ...	Sridharpur hat	Thursday ...	100-150
	Nandigram	Narghat hat ...	Wednesday and Saturday.	150-200

HOWRAH.

Sadar ...	Golabari ...	Nandibagan.	Tuesday ...	50
Uluberia	Uluberia ...	Goruhatta. ...	Friday to Sunday	300 to 350

BANKURA.

Subdivision.	Thana.	Name of hat or	Date on which held.	Average number of cattle sold.
Vishnupur	Kotalpur ...	Kotalpore cattle hat.	Friday	400

BIRBHUM.

Sadar ...	Sainthia ...	Sainthia cattle hat.	Saturday	600
	Ilambazar.	Suk Bazar hat	Ditto.	300
	Labpur ...	Hat Valda	Ditto.	10 to 20
	Dubrajpur.	Kristanagore hat.	Sunday	200
Rampurhat	Muraroi ...	Chatra hat ...	Wednesday	250
	Do.	Belia hat ...	Tuesday	25

RAJSHAHI DIVISION.

RAJSHAHI.

Naugaon	Badalgachi	Mithapur	Thursday	150
	Do.	Goborchapa	Monday	15
	Do.	Kola	Friday	30
	Mahadebpur	Matazihat	Thursday	400
	Do.	Santirhat	Tuesday	100
	Do.	Chak Gourihat	Thurs. & Sun.	10
	Manda	Daluabari	Saturday	100
	Do.	Shibpur	Sunday	15
	Panchupur	Suktigachhat	Sunday	400 to 500
	Do.	Raninagar	Tuesday	100
	Do.	Kashiabari	Saturday	35

RAJSHAHI.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Naugaon	Naogaon	Naogaon hat	Wednesday	60
Natore	Nandigram	Rambagha hat	Friday	600
	Do.	Dhanohat	Sun & Wed.	50
	Baraigram	Menkhara	Friday	100
	Do.	Jonail	Saturday	60
	Do.	Nazirpur	Thursday	50
	Do.	Poalsura	Monday	50
	Singra	Kaliganje hat	Sun & Wed.	60
	Natore	Takia hat	Wed. & Sun	100
	Do.	Tabariahat	Thurs & Sun.	200
Sadar	Boalia	Binodepur hat	Wed. & Sun.	15
	Do.	Parila hat	Fri. & Tues.	10
	Do.	Darisha hat	Thurs. & Mon.	10
	Tanor	Keshor hat	Wed. & Satur.	50
	Godagari	Gobindapur hat	Wednesday	50
	Charghat	Puthimari hat	Thursday	20
	Puthia	Shibpur hat	Satur. & Tues.	300
	Do.	Mollapara	Satur. & Tues.	25
	Bagmara	Tahirpur hat	Friday	50
	Do.	Mohonganj hat	Thursday	25
	Do.	Khalgram hat	Do.	10

DINAJPUR.

Subdivision.	Thana.	market. market.*	Date on which held.	Average number of cattle sold.
Sadar	Kotwali	Kasidanga fair	15th Falgoon	300
	Do.	Birole fair	20th Agrahayan	100
	Do.	Railbazar hat	Sun & Thurs.	20
	Chirirbandar	Ranirbandar hat	Mon. & Thurs.	300
	Do.	Bhusir hat	Thurs. & Fri	200
	Do.	Bimeakuri hat	Do.	1000
	Do.	Digharan fair	February	200
	Parbati pur	Sultanpur fair	Nov. 28 to Dec. 10	150
	Do.	Jashai hat	Sun. & Thurs.	400
	Do.	Khayerpukur hat	Satur. & Wed.	125
	Nawabganj	Bhaduria	Dec. 15 to Jan. 14	8,000
	Do.	Magarpara	April	550
	Do.	Daudpur hat	Mon. & Thurs.	5
	Ghoraghat	Ghoraghat fair	November	300
	Kaliaganj	Kukramoni fair	May	317
	Do.	Dhankole hat	Monday	11
	Do.	Kaliaganj hat	Wednesday	9
	Itahar	Chhaghati fair	Baisakh	100
	Do.	Patiraj hat	Sunday	15
	Do.	Durgapur hat	Saturday	10
	Do.	Baragram hat	Thursday	5
	Bangsihari	Harirampur hat	Friday	60

DINAJPUR.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Sadar	Bangsihari	Saraihat	Tuesday	10
	Do.	Kotabari hat	Sun. & Thurs	80
	Do.	Babur hat	Thursday	25
	Raiganj	Bindole hat	Saturday	10
	Do.	Maharaja hat	Saturday	10
	Do.	Kamalabari hat	Friday	5
	Hemtabad	Samaspur hat	Saturday	12
Thakurgaon	Thakurgaon	Muktear's fair	11 Dec. to 11 Jan.	30
	Do.	Goreya fair	12th Falgoon	71
	Do.	Shibganj fair	3rd February	35
	Do.	Shibganj hat	Mon. & Thurs.	6
	Do.	Goreya	Sun. & Wed.	8
	Do.	Kochubari	Satur. & Tues.	2
	Do.	Boredswari hat Uttar Botira	Satur & Tues	4
	Atwari	Alwakhoa fair	23—28 November	18,802
	Do.	Fakirganj hat	Sun. & Thurs.	16
	Balidangi	Lahiri hat	Fri. & Mon.	128
	Pirganj	Bochaganj fair	Mar. 25 to April 10	600
	Do.	Bochaganj hat	Monday	25
	Do.	Fakirganj	Thursday	15
	Ranisankoil	Jagatdal hat	Thurs. & Mon.	16

DINAJPUR.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Thakurgaon	Ranisankoil	Lakhiganj hat	Sunday	15
	Do.	Katihar hat	Saturday	12
	Do.	Dhirganja hat	Tuesday	24
	Do.	Haripur fair	1—15, March	7,347
	Do.	Nekmard fair	April	26,000
	Birganj	Dhandhami fair	Kali Puja	5,000
	Do.	Kaharole hat	Sunday	100
	Do.	Mahanpur hat	Tues. & Satur	100
	Do.	Gopalganj hat	Mon. & Thurs.	40
	Khansama	Joyganj fair	18—30 March	1,074
	Do.	Paker hat	Tues. & Satur.	25
	Do.	Katchuia	Sun. & Wed.	10
Balurghat	Balurghat	Patiram fair	25 Jan to 20 Feb	5,000
	Do.	Balurghat hat	Jaistho to Sraban Saturday	60
	Do.	Matash hat	Paus to Asar Saturday	25
	Patnitola	Pharsipara fair	March, 3—17.	791
	Do.	Sibpur hat	Wednesday	40
	Do.	Dhamoir hat	Sunday	50
	Phulbari	Samjia fair	Chait	2,000
	Do.	Chintamon fair	Baisakh	4,000
	Gangarampur	Dhaldighi fair	8th to 28th Feb.	20,000
	Do.	Kadmadighi	4—18 March	200

DINAJPUR.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Balurghat	Gangarampur	Daral hat	Tuesday	50
	Do.	Badalpur hat	Thursday	50
	Do.	Bishrail hat	Saturday	25
	Porza	Sapahar hat	Do.	30

JALPAIGURI.

Alipur	Alipur	Siltari	Wed. & Sun.	10
	Falakata	Madhari	Saturday	25
	Do.	Joteshwar hat	Tues. & Satur	20
	Dhupguri	Dhupguri	Tues. & Satur.	15
	Do.	Naothoa	Mon. & Thurs.	30
	Kumargram	Kumargram hat	Tues. & Satur.	8
	Do.	Daldali hat	Mon. & Thurs.	2
Sadar	Dam-Dim	Chengmari hat	Monday	15
	Do.	Baradighi	Tuesday	150
	Maynaguri	Domohani hat	Sun. & Wed.	25
	Do.	Moselli hat	Tues. & Satur	5
	Debiganj	Bhaolaganj hat	Sun. & Wed.	14
	Do.	Debiganj	Satur. & Tues.	3
	Do.	Lakmiganj hat	Sun. & Thurs.	15
	Do.	Saldanga hat	Mon. & Fri.	8
	Jalpaiguri	Berubari hat	Wed. & Satur.	6

JALPAIGURI.—*contd.*

Subdivision.	Thana.	market. market.	Date on which held.	Average number of cattle sold.
Sadar	Pachaggar	Rajnagar hat	Sun. & Thurs.	22
	Boda	Boda hat	Wed. & Satur	8
	Do.	Mirgarh hat	Mon. & Fri.	12
	Do.	Sakwa hat	Sun. & Thurs.	8
	Patgram	Baragir hat	Tues. & Thurs.	18
	Do.	Bocha Bairagi	Thurs. & Fri.	9
	Do.	Bagura hat	Mon. & Thurs.	16
	Rajganj	Rajganj hat	Thurs. & Sun.	40
	Do.	Sanayasir hat	Wed. & Satur	10
	Jalpaiguri	Nutan Raniganj	Tues. & Fri.	15
	Maynaguri	Jiranganj hat	Mon. & Thurs.	10
	Boda	Boalmari fair	March & April	250
	Patgram	Banskata baruni	10 days	2
	Pochagarh	Jagdal hat	Wed. & Satur	10
	Do.	Choulhati hat	Sun. & Thurs.	14
	Do.	Paharah hat	Tues. & Fri.	8
	Boda	Moydandighi	Mon. & Fri.	5
	Do.	Jhalui hat	Tues. & Satur.	3
	Tetulya	Nagar Tetulya	Mon. & Fri.	8
	Rajgunge	Salbahan hat	Wed. & Satur.	10

RANGPUR.

Rangpur	Pirgani	Bhendabari fair	19th January	2,357

RANGPUR.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Rangpur	Pirgani	Ekbarpur fair	24th January	1,423
	Do.	Laldighi fair	1st January	6,083
	Do.	Chandanpara	1st January	67
	Badarganj	Badarganj fair	20th December	11,923
	Do.	Shyamganj fair	28th March	335
	Mahiganj	Dewti fair	16th November	4,124
	Mithapukur	Bairati fair	3rd Nebruary	802
	Kaliganj	Madati fair	Do.	441
	Gangachaura	Gangachaura fair	18th October	2,562
Kurigram	Kurigram	Kurigram fair	15th January	1,330
	Lalmonirhat	Nalsindura	28th January	300
	Do.	Nagdaha Mela	13th November	603
	Do.	Panger bhiter Mela	Do.	502
Gaibandha	Sundarganj	Bamandanga	7th November	414
	Do.	Birat fair	15th April	500
	Do.	Belka fair	Do.	8
	Do.	Haripur fair	Do.	12
Nilphamari	Domar	Panga fair	14th January	5,627
	Nilphamari	Pachapukur fair	6th October	400
	Do.	Darwani fair	17th February	20,080
	Jaldhaka	Kakra fair	30th December	180

RANGPUR.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Nilphamari	Jaldhaka	Kishoreganj fair	1st November	22,962
	Do.	Barabhita fair	1st December	
	Do.	Pathanpara fair	9th March	
	Dimla	Chatnai fair	14th April	1,000

BOGRA.

Sadar	Bogra	Naruamala hat	Mon. & Fri.	100
	Do.	Noongola hat	Tues. & Satur.	300
	Do.	Domonpukur	Wednesday	50
	Do.	Kalitala hat	Sun. & Thurs.	25
	Do.	Shabgram hat	Tues. & Satur.	75
	Khetlal	Punut fair	15th Magh	200
	Do.	Khalishagari	1—7, Magh	5
	Sherpur	Baroduary hat	Thursday	100
	Shariakandi	Chandonbasia fair	March	300
	Do.	Chhaibata Mela	January	200
	Do.	Karanja Mela	Oct. & Nov.	250
	Do.	Hat Sherpur	Sun. & Thurs.	10
	Do.	Karanja hat	Thurs. & Fri.	10
	Do.	Banla hat	Do.	25
	Do.	Chandonbasia hat	Friday	25
	Sarjakandi	Fulbari hat	Sun. & Thurs.	10
	Dupchanchia	Dhap hat	Thursday	250

BOGRA.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Sadar	Shibganj	Mokamtala	Mon. & Thurs.	50
	Do.	Mahasthan fair	18 to 30th Mar.	300
	Do.	Jamur hat	Mon. & Fri.	30
	Do.	Behar hat	Tues. & Satur.	30
	Panchbibi	Hili hat	Sun. & Thurs.	172
	Do.	Joypur hat	Wed. & Satur.	50
	Do.	Balighata hat	Tues. & Fri.	108
	Dhunot	Gosaibari hat	Wednesday	125
	Do.	Mothurapur hat	Mon. & Fri.	100
	Adamdighi	Gopinathpur mela	March—April	7,500
	Do.	Adamdighi hat	Satur. & Tues.	60
	Do.	Sonamukhi hat	Sunday	100
	Do.	Akkelpur hat	Satur. & Wed.	100
	Do.	Jhakair hat	Do.	200
	Dupchanchia	Dhap hat	Thursday	250
	Do.	Durgapur hat	Tuesday	150

MALDA.

Sadar	Tulshihatta	1. Tulshihatta	Sunday	1,500
		2. Bkaluka hat	Tuesday	500
	Gomostapur	Sonaichandi hat	Wednesday	60
	Ratna	Matiganj hat	Saturday	150
	Malda	Balia Nawabganj	Wednesday	15

MALDA.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Sadar	Kaliachak	Gossain hat	Wednesday	200
	Kharba	Chawchal hat	Do.	50
	Do.	Behala hat	Thursday	15
	Gajole	Gazal hat	Do.	50
	Do.	Babupur hat	Tuesday	20
	Eng. Bazar	Garmahali hat	Thursday	230
	Do.	Eng. Bazar	Mon. & Thurs.	10

PABNA.

Sadar	Pabna	Ekdamta hat	Thursday	4,000
	Do.	Dogachi	Do.	3,000
	Chatmohor	Mathurapur hat	Sun. & Wed.	300
	Santhia	Kasinathpore hat	Thursday	500
	Do.	Bongram hat	Saturday	50
	Sara out-post	Arankhola hat	Tuesday	2,000
	Do.	Dashuria hat	Sat. & Tues.	300
	Sujanagor	Nazirganj hat	Friday	50 to 60
	Do.	Sajanagor hat	Sunday	5 to 10
	Faridpore out-post	Dhulaori hat	Friday	50 to 60
	Serajganj	Beara hat	Tues. & Satur.	300
	Do.	Kaliha hat	Thursday	900
	Do.	Hatboyra hat	Thurs. & Sun.	600

PABNA.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
	Serajganj	Bagbari hat	Thursday	300
	Ullapara ...	Ullapara hat	Mon. & Fri.	50
	Ullapara, Police-Stn.	Protap hat	Sun. & Thurs.	50
	Shazadpore	Talgochi hat	Sunday	200 to 250
	Tara, (out-post).	Gurpipul	Sun. & Wed.	100
	Chowhali, out-post.	Chowhali hat	Mon. & Thurs.	100
	Do.	Nowhatta hat	Tues. & Sat.	40 to 50
	Kazirpur, out-post.	Patigaon hat	Tuesday	15
	Do.	Mathailchapur	Sat. & Thurs.	10
	Belkuchi	Kandupara hat	Sunday	50
	Kamarkhand	Kamarkhand hat	Tues. & Sat.	100
	Raiganj—	1. Solonga	Friday	300
	Do.	2. Pangashi	Fri. & Satur.	20 to 25
	Do.	3. Dhanghora	Wednesday	4 or 5

DARJEELING.

Kalimpong	Kalimpong	Kalimpong	Wed. & Sat.	10
	Do.	Pedong	Thurs & Sat.	4
	Do.	Rambi	Sunday	2
	Do.	Teesta Bridge	Do.	5
Siliguri	Siliguri	Bagdogra Mela	February	1,145

DARJEELING.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Siliguri	Siliguri	Matigarah hat	Tes. & Fri	253
	Do.	Navalbari hat	Tes. & Sat.	374

DACCA DIVISION.

DACCA.

Sadar	Kapasia	Sreepurhat	Tues. & Sat.	100
	Do.	Raniganj	Twice a month	60
	Do.	Tarajang	Do.	40
	Kaliganj	Charnagardi	Sunday	60
	Karaniganj	Mirpore	Saturday	60
	Do.	Ati	Tuesday	250
	Do.	Demra	Thursday	30
	Do.	Nayamati	Saturday	15
	Jaidebpore	Jaidebpore	Monday	200
	Do.	Do.	Sunday	300
	Nawabganj	Karimganj	Tuesday	100
	Do.	Daudpore	Thursday	300
	Sabhor	Kashara	Do.	30
	Do.	Goailbari	Friday	100
	Do.	Dhamrai	Do.	50
	Do.	Shuapore	Wednesday	40
	Kaliakoir	Kaliakoir	Friday	150
	Do.	Baliadi	Thursday	60

DARJEELING.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Sadar	Kaliakoir	Fulbaria	Monday	100
	Do.	Barendu	Sunday	50
Narainganj	Narainganj	Fatulla	Tuesday	60
	Do.	Barady	Friday	60
	Rupganj	Madhabdi	Monday	500
	Monohandi	Chatakchar	Do.	1,000
	Raipara	Putia	Saturday	500
	Do.	Kultuabazar	Tuesday	20
	Do.	Hashanabad	Sunday	50
	Do.	Sreerampore	Monday	100
	Do.	Paratali	Do.	100
	Do.	Baliakandi	Sunday	100
	Do.	Belabs	Friday	200
Munshiganj	Munshiganj	Munshiganj	Sat. & Thurs.	150
	Do.	Bhelakandi	Sun. & Wed.	8
	Rajabari	Karimganj	Sunday	17
	Sreenagar	Deolbhag	Saturday	18
	Do.	Imamganj	Thursday	15
	Do.	Kedarpore	Friday	25
	Manikganj	Manikganj	Wednesday	100
	Do.	Baira	Tuesday	200
	Do.	Sataria	Thursday	500

DARJEELING.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Manikganj	Manikganj	Harganj (new)	Thursday	200
	Do.	Joyra	Friday	50
	Gheor	Gheor	Wednesday	350
	Do.	Tarasree	Tuesday	200
	Harirampore	Jhitka	Saturday	200

MYMENSINGH.

Sadar	Kotwali	Sambhuganj	Sun. & Thurs.	55
	Do.	Charkhai	Tues. & Sat.	30
	Do.	Dapunia	Sun. & Thurs.	30
	Do.	Sutiakhali	Wed. & Sat.	30
	Trishal	Trishal Bazar	Thursday	100
	Do.	Ram Amrilaganj	Sunday	200
	Gaffargaon	Shatiahat	Monday	350
	Do.	Datter Bazar	Do.	55
	Muktagachia	Muktagachia	Wednesday	50
	Do.	Chechuyahat	Saturday	15
	Haluaghat	Haluaghat	Thursday	15
	Iswarganj	Laksmiganj	Sun. & Tues.	500
	Do.	Govindaganj	Mon. & Fri.	1,000
	Do.	Pach hat	Tuesday	300
	Do.	Gauripur hat	Tues. & Sun.	700
	Nandail	Kaligunge Bazar	Saturday	40

MYMENSING.—*contd.*

Subdivision.	Thana.	market. market.	Date on which held.	Average number of cattle sold.
Sadar	Nandail	Kaliapar Bazar	Thursday	50
	Fulpur	Ammakunda	Sunday	40
	Do.	Defalia	Thursday	10
	Do.	Kashiganj	Friday	15
	Do.	Tarakanda	Wednesday	40
	Fulbaria	Fulbaria hat	Sun. & Wed.	100
Jamalpur	Jamalpur	Jamalpur Mela	Magh to Chaitra.	13,500
	Do.	Melandahat	Thurs. & Sun.	500
	Do.	Kendua Kalibari-hat.	Thursday	40
	Do.	Nandinahat	Friday	50
	Do.	Bansirhat	Sunday	100
	Do.	Chuntiahat	Tuesday	5
	Nalitabari	Nalitabarihat	Do.	100
	Do.	Bangawhat	Friday	30
	Do.	Nunnihat	Tuesday	50
	Dewanganj	Bonegunge	Thursday	100
	Madarganj	Golabarihat	Friday.	40
	Do.	Baligunge fair	1st Kartick.	200 to 250
	Do.	Jonail fair	1st Pous,	300 to 350
Jamalpur	Sherpur	2¾-Annas, Bazar, Sherpur Town.	Thursday.	100
Tangail	Tangail	Karatia	Do.	50

MYMENSINGH.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Tangail	Tangail	Aniapur	Tuesday	100
	Do.	Porabari	Do.	50
	Do.	Buma fair	Sunday.	50
	Do.	Puthiajani	Friday.	25
	Gopalpur	Gopalpur	Saturday.	100
	Do.	Dhanbari	Monday.	125
	Do.	Shealkhole	Saturday.	80
	Kalihati	Ellenga	Wednesday.	50
	Do.	Ballah	Tues. & Sat.	40
	Do.	Bhondeswar	Saturday.	30
	Mirzapur	Mirzapur	Friday.	100
	Do.	Fatepur	Tuesday.	100
	Do.	Dhantara	Monday.	125
	Nagarpur	Nagarpur	Wednesday.	30
	Do.	Goybata	Saturday.	25
	Basail	Jamurki	Do.	100
	Ghatail	Ghatail	Tuesday.	50
	Do.	Haripur	Do.	40
Kishoreganj	Kishoreganj	Karinigunge	Do.	150
	Do.	Edkhatra Bazar	Friday.	250
	Do.	Pitalgunge	Wednesday.	175
	Bazitpur	Fatehpur	Saturday.	350

MYMENSINGH.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattl sold.e
Kishoreganj	Bazitpur	Jhagrachar	Friday.	150
	Kathiadi	Kathiadi	Thursday.	250
	Do.	Kaliachapara	Tuesday.	250
	Do.	Pakundia	Wednesday.	15
	Badia	Tarail	Saturday.	55
Netrakona	Kendua	Cherang	Wednesday.	250
	Do.	Sener Bazar	Tues. & Sat.	50
	Do.	Madar	Saturday.	100
	Netrakona	Netrakona hat	Ditto	40
	Do.	Lakshmigunj	Thursday.	20
	Do.	Simulkandi	Do.	25
	Do.	Shyamgunge	Friday.	30
	Do.	Bousi (Rupgunj)	Thursday.	15
	Durgapur	Durgapur Bazar	Wednesday	15
	Do.	Hogla Hat	Tuesday.	30
	Barhatta	Mohangunge	Wednesday.	50
	Do.	Teligati	Friday.	20
	Do.	Alipur	Tuesday.	8

FARIDPUR.

Sadar	Kotwali	Dignagorehat	Saturday.	3,000 to 3,500
	Nagorkonda	Maniknagorehat	Wednesday.	125
	Bushna	Boalmarihat	Sunday.	100

FARIDPUR.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Sadar	Madhukhali	Madhukhalihat	Monday.	85
	Bhanga	Lochanganj Hat	Do.	300
	Do.	Duair Hat	Tuesday.	100
	Sadarpur	Krishnaporehat	Wednesday.	28,000
	Do.	Shohabazarhat	Thursday.	100
	Do.	Rahmaddimatberes Hat.	Do.	8,400
Goalundo	Goalundo	Rajbarihat	Thurs. & Mon.	50
	Do.	Fultollahat	Tues. & Fri.	35
	Do.	Ujanchar	Sun. & Thurs.	100
	Baliakandi	Baliakandi	Thursday	50
	Do.	Jalmalpore	Wednesday.	30
	Goalundo	Shonapore	Thursday.	20
	Pangsha	Jargihat	Do.	25
	Do.	Kumarkhali	Sun. & Wed.	15
Madaripur	Madaripur	Habiganj	Thursday.	150 to 200
	Do.	Fazanganj or Kazir Bokai.	Saturday.	200
	Do.	Gopalpore	Thursday.	300
	Do.	Tekirhat	Wed. & Sat.	250
	Shibchar	Punchar	Mon. & Fri.	40 to 50
		Kristonagore	Sat. & Wed.	60 to 70
	Gosairhat	Bansgarihat	Saturday.	1,500

FARIDPUR.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Madaripur	Gosairhat	Haturia	Friday.	1,200
	Palong	Burirhat	Tues. & Fri.	150
	Do.	Surjamonihat	Monday.	200
	Do.	Goyatolahat	Friday.	40
	Do.	Tekarhat	Sat. & Wed.	50
Gopalganj	Gopalganj	Gopalganj Hat	Mon. & Fri.	50
		Booliahat	Wed. & Sat.	75
	Kotalipara	Radhaganj	Wed. & Sat.	11
	Muksudpur	Tengrakhola	Mon. & Tues.	50
	Kassiani	Joynagore	Tues. & Sat.	25

BAKARGANJ.

Sadar	Jalakati	Jhalakati Hat	Mon. & Fri.	1,500
	Bakarganj	Kaliganj	Thursday.	15
	Do.	Niamati	Thurs. & Sun.	20
	Do.	Bakarganj	Thurs. & Sun.	5
	Do.	Kabiraj	Mon. & Fri.	10
	Gournadi	Torki Hat	Tues. & Fri.	300
	Muladi	Muladi Hat	Monday.	5 or 6
	Do.	Panchani Hat	Thurs. & Sun.	14
	Do.	Char Kalika Mirdha's Hat.	Wed. & Fri.	8
	Mehdiganj	Hizla Hat	Friday.	10
	Do.	Lata Hat	Thursday.	10

BAKARGANJ.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Perojpur	Matbaria	Shapa	Mon. & Fri.	15
	Do.	Matbaria	Wednesday.	10
	Do.	Debatra	Mon. & Thu.	5
	Do.	Shap-leza	Thurs. & Sun.	20
	Nazirpur	Sreramkati	Sun. & Wed.	100
Patuakhali	Patuakhali	Shehakati	Mon. & Fri.	100 to 120
	Do.	Pakhia	Tues. & Sat.	80 to 100
	Barguha	Barguna Hat	Tues. & Sat.	10
	Do.	Fuljhuri Hat	Sun. & Wed.	10
	Do.	Kumarkhali Hat	Friday.	10
	Do.	Nali Hat	Thurs. & Mon.	10
	Do.	Garjanbunia Hat	Tues. & Fri.	10
	Do.	Keorabunia Hat	Mon. & Thurs.	10
	Do.	Aila Hat	Thurs. & Fri.	10
	Betagi	Betagi Hat	Sat. & Wed.	20
	Do.	Badrikhali Hat	Mon. & Thurs.	20
	Do.	Gandakhali Hat	Sunday.	20
	Banphal	Kalaia Hat	Mon. & Thurs.	68
	Banphal	Kalisuri Hat	Wed. & Sun.	3
	Do.	Gasipur	Thursday.	100
	Do.	Haldia	Monday.	20
Bhola	Bhola	Bhola Hat	Mon. & Fri.	25

BAKARGANJ.—*contd.*

Subdivision.	Thana.	Name of hat of market.	Date on which held.	Average number of cattle held.
	Bhola	Gahipura Hat	Sun. & Wed.	15
	Do.	Madhupura Hat	Tue. & Sat.	10
	Do.	Dhonpura Hedayatkhan Hat.	Sun. & Wed.	25
	Do.	Ratanpura Hat	Wed. & Sat.	8
	Daulatkhan	Shaheber Hat	Sun. & Wed.	20
	Do.	Chatolia Hat	Sun. & Thurs.	25
	Tazumaddi	Gurindar Hat	Fri. & Tues. (*a*)	15
	Baranadi	Mirza Kalu	Wed. & Sat. (*b*)	17
	Ditto	Nazirpur	Friday (*c*)	8

CHITTAGONG DIVISION.

CHITTAGONG

Chittagong	Town	Deere's Hat	Mon. & Thurs.	150
	Do.	Bibir Hat	Tue. & Sat.	150
	Patiya	Bagichar Hat	Mon. & Fri.	100
	Jaldi	Ramdaser Hat	Sun. & Thurs.	120
	Mirsarai	Ahamed Ulla Chowdhury's Hat.	Mon. & Fri.	50
	Do.	Mithachara hat	Sun. & Thurs.	50
	Ramzan	Ramjan Ali Hat	Wed. & Sat.	50
	Fatickchery	Bibirhat	Mon. & Thurs.	100

(*a*) Held from March to August.
(*b*) " September to November.
(*c*) " April to June.

CHITTAGONG—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
Chittagong	Hathazari	Hazarihat	Son. & Thur.	150
		NOAKHALI.		
Sadar	Sudhàram	Jagadananda	Tue. & Sat.	150
	Do.	Santasita	Sun. & Wed.	250 to 300
	Do.	Dutt's Hat	Mon. & Thurs.	100
	Companyganj	Boses' Hat	Thurs. & Son.	100
	Sandip	Bhuiya's Hat	Monday & Fri.	5
	Do.	Chariania Hat	Sun. & Wed.	5
	Do.	Akbar's Hat	Tues. & Fri.	5
	Do.	Baktar's Hat	Mom. & Fri.	5
	Do.	Sabir Hat	Do.	5
	Sidhi	Nanda Bhuya's Hat.	Wed. & Sat.	15 to 20
	Do.	Munsbir Hat	Mon. & Thurs.	4 to 6
	Hatia	Shaheber Hat	Do.	15
	Do.	Ramkumar Pal's Hat.	Sat. & Tues.	15
	Do.	Ramgatir Hat	Tues. & Fri.	5
	Lakhipur	Dulal Bazar	Mon. & Fri.	35
	Do.	Farashganj	Do.	25
	Do.	Bhowaniganj	No fixed day.	5
	Raipur	Raipur	Mon. & Fri.	5
	Do.	Haiderganj	Wed. & Sun.	35

NOAKHALI.—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
	Begamganj	Jamidar Hat	Mon. & Fri.	30
	Do.	Dewanjir Hat	Wed. & Sat. & Mon.	15
	Senbag	Satarpaiya Hat Sami Munshir Hat, Mirjaganj Hat, Kolyandi Hat.	Id-day	15
Feni	Feni	Sonagazi	Wed. & Sat.	100
	Do.	South Rajapur	Sat. & Tue. & Thurs.	30
	Do.	Lemua	Sun. & Thurs.	300
	Do.	Krosh Munshi	Mon. & Thurs.	30
	Do.	Pachgachia	Tues. & Fri.	150
	Chhagalnaia	Mirdhars' Hat	Tues. & Sat.	15
	Do.	Karaiah	Wed. & Sun.	10
	Pashuram	Pashuram Hat	Sun. & Thurs.	300
	Do.	Fulgazi Bazar	Sat. & Wed.	200
		TIPPERA.		
Sadar	Kotwali	Mainamotimilla	Friday.	20
	Do.	Comilla chek bazar market.	Sun. & Thurs.	30 to 40
	Do.	Baldha Hat	Do.	15
	Chandina	Chandina market	Thurs. & Sat.	60
	Do.	Mahichel Market	Thursday.	50

TIPPERA—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Average number of cattle sold.
	Do.	Barura	Saturday.	60
	Do.	Nawabpara	Friday.	50
	Daudkandi	Elleatganj market	Thurs. & Sat.	700 to 800
	Do.	Gouripur market	Sunday.	100 to 125
	Do.	Batakandy market	Wednesday.	250 to 300
	Muradnagar	Companiganj Hat	Thursday	150
	Chandragram	Kazirbazar Hat	Sun. & Wed.	50
	Do.	Dhalua Hat	Tue. & Sat.	25
	Do.	Manikmura	Tue. & Sat.	20
	Laksam	Laksam market	Wednesday.	30
	Do.	Heshakhali Hat	Thu. & Sat.	35
	Do.	Mudaferganj	Fri. & Mon.	18
Chandpur	Hajiganj	Sachar Hat	Tuesday.	15
	Do.	Kachua Hat	Do.	10
	Do.	Palakhat Hat	Wednesday.	20
	Do.	Kadladarbesh Hat.	Sunday.	8
	Do.	Rajargaur Hat	Wednesday.	15
	Do.	Rahimnagore Hat	Thursday.	12
	Do.	Hajiganj Hat	Friday.	5
	Matlab	Chengurchar	Fri. & Mon.	100
Brahmanbaria	Brahmanbaria.	Medda	Sun. & Thurs.	3

TIPPERA—*contd.*

Subdivision.	Thana.	Name of hat or market.	Date on which held.	Averag numbe of cattl sold.
	Do.	Sarail	Mon. & Fri.	
	Nabinagore	Kaliganj Hat	Wednesday.	1
	Do.	Sreeghar Hat	Saturday.	1
	Do.	Bholachang Hat	Mon. & Fri.	
	Do.	Charto'a Hat	Tuesday.	1
	Do.	Asheeganj Hat	Wednesday.	
	Kasba	Kuthir bazar	Fri. & Mon.	50 to
	Do.	Magra bazar	Sat. & Tues.	1
	Do.	Masinpur bazar	Fri. & Mon.	20 to
	Nasinagcre	Fandauk Hat	Monday.	1
	Do.	Tekanagore Hat	Thursday.	2
	Do.	Bancharampore	Sunday.	1

CHAPTER VIII.—BRAHMANI BULLS.

The following Statement shows the proportion of Brahmani Bulls to Local Cows District by District (a).

PRESIDENCY DIVISION.

Name of district.		Number of Brahmani bulls.	Number of local cows.	Proportion of Brahmani bulls to cows.
-Parganas ...	...	1,034	161,098	1 to 156
urshidabad...	...	744	185,302	1 „ 249
adia ...	...	1,590	281,695	1 „ 177
ssore ...	...	1,533	275,272	1 „ 179
hulna ...	...	1,277	245,573	1 „ 192
Total	...	6,178	1,148,940	1 to 191
BURDWAN DIVISION.				
ankura ...	...	889	189,222	1 to 213
idnapore ...	...	1,636	508,519	1 „ 311
rdwan ...	...	750	274,493	1 „ 366
ooghly ...	...	175	146,294	1 „ 836
ooralı ...	...	54	82,941	1 „ 1,535
rbhum ...	...	579	187,513	1 „ 324
Total	...	4,083	1,388,982	1 to 347
RAJSHAHI DIVISION.				
ajshahi ...	...	723	283,209	1 to 402
naajpur ...	...	2,911	450,208	1 „ 157

(a) A Survey and Census of the Cattle of Bengal by J. R. Blackwood, I. C. S.

RAJSHAHI DIVISION—*contd.*

Rangpur ...	...	2,892	419,964	1 „ 140
Jalpaiguri ...	...	708	281,462	1 „ 397
Darjeeling ...	...	74	53,173	1 „ 719
Pabna ...	...	892	213,109	1 „ 239
Bogra ...	...	423	164,280	1 „ 388
Malda ...	...	584	173,436	1 „ 297
Total	...	9,107	2,038,841	1 to 216

DACCA DIVISION.

Dacca ...	...	759	566,621	1 to 746
Mymensingh...	...	2,583	379,118	1 „ 147
Faridpore ...	...	1,440	196,078	1 „ 136
Bakarganj ...	...	899	480,214	1 „ 545
Total	...	5,681	1,622,031	1 to 340

CHITTAGONG DIVISION.

Chittagong ...	...	261	164,572	1 to 625·55
Tipperah ...	...	400	294,016	1 „ 746·25
Noakhali ...	...	41	156,116	1 „ 3,807·70
Chttagong Hill Tracts ...		292	18,546	1 „ 62·92
Total	...	994	633,250	1 „ 635

PART IV.—BIHAR & ORISSA.

CHAPTER I.—GENERAL.

The province of Bihar and Orissa with an area of 83,181 sq. miles and a population of 38,435,293 (1) comprises 5 Civil Divisions and 21 districts, and two groups ofpetty states situated in Orissa and Chota-Nagpur. Bihar embraces the valleys of the Ganges and its tributaries and Orissa those of the Mahanadi and neighbouring rivers, while Chota-Nagpur is a mountaneous region which separates Bihar and Orissa from the Central Indian Plateau. The principal industry is agriculture, North Bihar being known as the "Garden of India." Rice is the staple crop, while the spring crops wheat barley and the like are of no less importance. Rice comprises about 16 millions acres *i.e.* 48 per cent of the total cropped area, and the areas under wheat, barley and maize are 1, 1·4 and 1.6 million acres respectively. Oil-seeds occupy an area of about 2 million acres. The acreage under jute and indigo are com paratively low, and especially that under the latter head due to the manufacture of synthetic indigo in Germany. Opium, cigarettes, iron and steel, copper and coal are some of the important manufactures.

Area Population and Agriculture

Hindus form an over-whelming majority of the population. Though the Mahomedans form one-tenth of the total population they constitute more than one-fifth of the urban population of the Province. The province is almost wholly rural about 911 per 1,000 of the population living in villages. The number of human population per sq. mile is 344, while that of cattle for a similar area is about 243.

All the districts of Bihar, with the exception of Purnea, are liable to famine mainly due to scarcity of water. In any year in which the monsoon arrives late or ceases abruptly before September the agricultural situation becomes very grave. There are a number of canals in Orissa but practically none in Bihar and

(1) Census Report 1921.

the main source of water-supply for agricultural purposes are the wells.

Estates in the province are of 3 kinds, *viz.*, (*a*) those permanently settled from 1793, which are to be found in the Patna Tirhut and Bhagulpur Divisions, (*b*) those temporarily settled as in Chota-Nagpur and parts of Orissa; and (*c*) estates held direct by Government (*Khas Mahal*) or managed by the Court of Wards.

The Province of Bihar and Orissa, as already stated consists of five Civil Divisions, each under a Divisional Commissioner and 21 Districts, each under a District Magistrate or Deputy Commissioner. The names of the different Divisions, Districts and Sub-divisions, are given below :—

I. *Bhagalpur Division*—4 *Districts* (1) BHAGALPUR. [4 *Sub-divisions* (i) Bhagalpur, (ii) Supaul, (iii) Madhipura and (iv) Banka] (2) MONGHYR—[3 *Subdivisions* (i) Monghyr, (ii) Begusarai and (iii) Jamui.] (3) PURNEA [3 *Sub-divisions* (i) Purnea (ii) Araria and (iii) Kishanganj.] (4) SONTHAL PERGUNNAHS [6 *Sub-divisions* (i) Deoghur (ii) Dumka, (iii) Godda, (iv) Jamtara (v) Rajmahal and (vi) Pakur.]

II. *Patna Division*—3 *Districts* (1) PATNA—[4 *Sub-divisions* (i) Patna, (ii) Dinapore, (iii) Barh and (iv) Bihar.] (2) GAYA—[4 *Sub-divisions* (i) Gaya, (ii) Nawadah (ii) Jahanabad and (iv) Aurangabad.] (3) SHAHABAD—[4 *Sub-divisions* (i) Arrah (ii) Buxar (iii) Sassaram, and (iv) Bhabhua.]

Divisions, Districts and Sub-divisions.

III. *Tirhut Division*—1 *Districts* (1) SARAN—[3 *Sub-divisions* (i) Chapra, (ii) Gopalganj and (iii) Siwan]. (2) CHAMPARAN—[2 *Sub divisions* (i) Motihari, and (ii) Bettiah]. (3) MUZAFFARPUR—[3 *Sub-divisions* (i) Sitamarhi, (ii) Muzaffarpur, and (iii) Hajipur] and (4) DARBHANGA—[3 *Sub-divisions* (i) Laheria Sera. (ii) Madhubani and (iii) Samastipur.]

IV. *Orissa Division*—5 *Districts* (1) CUTTACK—[3 *Sub-divisions* (i) Cuttack, (ii) Kendrapara and (iii) Jajpur.] (2) BALASORE—[2 *Sub-divisions*—(i) Bhadrak and (ii) Balasore.] (3) ANGUL—2 [*Sub-divisions*—(i) Angul and (ii) Khondmahals.] (4) PURI—[2 *Sub-divisions* (i) Puri and (ii) Khurda.] (5) SAMBALPUR—[2 *Sub-divisions* (i) Sambalpur and (ii) Bargarh.]

V. *Chota-Nagpur Division*—5 *Districts*. (1) HAZARIBAGH—[3 *Sub-divisions*—(i) Hazaribagh, (ii) Chatra and (iii) Giridih.] (2) RANCHI—[3 *Sub-divisions* (i) Ranchi, (ii) Khunti Gamla, and (iii) Simdega.] (3) PALAMAU [Daltongunj—*No. Sub-division*] (4) MANBHUM—[2 *Sub-divisions*. (i) Purulia, and (ii) Dhanbaid.] (5) SINGHBHUM [Chaibassa—*No. sub-division*].

The Government has at last realised that among the essential factors required for the development of Indian agriculture, the improvement of cattle is perhaps the most important, as the bullock is still the principal motive power in the fields and will continue to be so for generations to come. Large expanses of culturable waste are no longer available for grazing. If cattle are to be profitably reared in arable areas, the husbandman must have a cow which will give sufficient milk and *ghee* and at the same time rear a good draught bullock. The Cattle-breeding programmes of the Agricultural Departments therefore aim at evolving dual purpose animals by grading up existing breeds by selection, crossing and better feeding. The question of introducing crops in the rotation which will provide wholesome fodder for cattle is also receiving attention. Luscious fodder have been introduced, methods of storing green fodders in silos have been devised and accurate information regarding the digestibilty and nutritive values of different food-stuffs and fodder is being collected. The Government of Bihar and Orissa has adopted the policy of breeding cattle primarily for milk with a view to making the production of bullocks on arable holdings profitable. Herds of milch cows of mixed breeds have been started on farms where a demand for milk gives an opportunity of maintaining them economically. These cows are mated with bulls of the Sahiwal breed. The attempt to grade up a herd of pure Patna cows, by eliminating inferior animals, is now producing definite results at the Upper Shillong farm in Assam. Within the last 5 years the daily yield per cow has risen from 3½ to 6 lbs. Eight Thar-Parkar cows were selected in Sindh by the Imperial Dairy Expert and sent to the Sabour farm of the Bihar and Orissa Agricultural Department and 2 gowalas were also procured in the Punjab for this farm. A set of dairy building plans was

Cattle—breeding by Govt.

furnished to the Deputy Director of Agriculture, North Bihar Range, for the proposed central farm near Sipaya.

There is no Government Dairy farm in Bihar. With the exception of the Agricultural Research Institute at Pusa, which is fully described below, there is no farm which may serve as a model and economically successful dairy farm. In the U. P., the Lucknow and Benares dairies are practically dead, and the Allahabad Dairy is losing ground. In Bihar and Orissa, the Mayaganj dairy society in Bhagalpur just paid its way (a)

Milk & Milk-supply.

Research at Pusa disclosed the fact that percentage of fat varied from 3 to 7·5 in the case of Montgomery cows and from 2·8 to 8·6 in the case of Ayrshire Montgomery cross-bred cows and that the variation between the morning and evening milk of the same cow was from 3 to 7. It was also observed that there was a gradual rise in the fat content between the fifth and seventh month after calving, followed by a slight fall towards the close. Similar analyses carried out at Sabour disclosed large variations in the fat content during the hot weather.

Much is made of the Pusa Institute by Government and pro-Government men, from the Viceroy downwards and so let us examine a little minutely the nature and extent of the work in cattle breeding that is carried on there. The latest report of the Pusa Institute shows that there are 7 pure Montgomery bulls and 4 Montgomery-Ayrshire bulls and 86 pure Montgomery cows and 36 Montgomery-Ayrshire cows, besides an equal number of pure-bred and cross-bred young stock, and one Ayrshire bull. In the province of Bihar and Orissa there are about 7 millions cows and she-buffaloes and it is beyond one's comprehension how 11 or 12 high-class bulls at Pusa can help to improve the breed of cattle in the province far less of the whole of India, inspite of the ambitious conclusion in the Report that "the Pusa herd is well on the way to solve the problem of dairying in India." Neither is the milk-yield of the Pusa cows much above the average. "From the tables, and statements the average yield per cow per day can be seen to

Pusa Institute.

(a) Agricultural Operations in India 1923-24 P. 84.

stand at a figure of 10·5 lbs. in November to 15·8 in March There is only one solitary exception—Lauxa No. 98, a half-bred got by Lessnessock which started with a yield of 32 lbs.

The Hon'ble Mr. T. S. Macpherson, I.C.S., Superintendent and Remembrancer of Legal Affairs Bihar and Orissa writes:—

Cattle are valued by the aboriginal population of Ranchi District more for labour than for milk, and the aboriginals and semi-aboriginals are by far the most important section of the community. The experiment made some 14 years ago of bringing bulls from Tirhut was not a success. The best opinion now is that it is wisest to improve the local breed particularly so far as agricultural needs are concerned The following *Note by two assistants* to the Legal Remembrancer relating to Ranchi Town (including Doranda) will be found of interest to the reader.

Legal Remembrancer Bihar.

I. The supply of milk in this locality is not at all satisfactory. The number of cattle is not very meagre but the milk production and supply are insufficient to meet the requirements of the people.

Cows imported from other places gradually lose their milk-yielding power. It may perhaps be due to the climate or the quantity of fodder supplied. Good pasture is also very much wanting. The quality of cattle is not above the average. The milkman here scarcely provides his cattle with good fodder; and he very largely uses 'mahua' which almost universally deteriorates the quality of the milk though it enhances the quantity. This mahua is a bye-product in the manufacture of country liquors.

Ranchi Town.

II. The milk supplied by the milkman in my locality is far from satisfactory. The quality of the milk is not good. The goalas dilute milk with water. In 99 cases out of 100 I found it so. Sometimes very bad milk, apparently after butter being extracted from it, is sold in the market which is perhaps detrimental to the health of the consumers. This abuse is said to be widely prevalent.

GSL

During the hot weather cattle do not thrive here. To improve the breeding of cattle, bulls of fine quality, which are hardly seen here, are essentially needed. The need of one or two dairy farms, where cattle can be properly kept and fed, is badly felt here.

The Department of Agriculture, Bihar and Orissa, Ranchi Secretariat sends the following information.

(1) Neither the cattle nor the milk supply are satisfactory in the greater part of Bihar and Orissa.

(2) The number of cattle is sufficient but the cows are inferior milkers and the cattle are frequently very small and insufficiently fed.

(3) Wherever sufficient demand exists for pure milk breeding herds should be established and proper milk records kept. Meanwhile the literate public should be educated, by propaganda in the newspapers, to appreciate good milk and in the commoner methods of testing milk (*e.g.* by the lactometer.) At present it is quite certain that owing to their inability to recognise good milk the majority of the people prefer to buy a mixture of milk and water in which the milk is actually much dearer than the maximum price which the same people would be willing to give for pure milk. If milk production could be made to pay well, as opposed to adulteration, both cattle and feeding would be rapidly improved.

Agriculture Department B&O.

The Inspector General of Civil Hospitals, Bihar and Orissa writes:—

1. When travelling through the province of Bihar and Orissa I have been struck by the generally poor appearance of the cattle. As regards the milk supply I know that it is often difficult to obtain and the quality is generally indifferent.

2. I have no information as to the number of cattle, but a great many, probably the majority of those that I have seen are thin half starved looking animals. Breeding I understand, is, as a rule, paid little attention to with regard to the selection of bulls and cows. Pasture in many parts of the province, for a considerable part of the year seems to be practically non-existent, the cattle apparently picking

Inspector General of Civil Hospitals B&O.

up a few blades of grass from dry and parched fields. I have no information as to fodder, but what I have seen seems to be poor in quality and scanty in quantity. My general impression is that the milk production is very poor but I can give no details.

3. I can only suggest better pasture, better fodder and better housing. Proper care in the selection of animals for breeding purposes and leaving the young calves to be suckled by their mothers for a longer period than I understand, is the usual practice.

I would also suggest that more humane treatment of cattle generally might have some effect in improving them. It is a matter of common observation that the cattle in this country are frequently treated in a cruel and inhuman manner.

Dr. S. N. Tiwari, offg. Sanitary Commissioner, Bihar and Orissa, writes:—

(1) Neither the state of cattle nor that of the milk-supply in this place is satisfactory.

(2) It is unsatisfactory in all respects.

(3) An improvement is needed in all directions, and with regard to breeding, pasture co-operative dairies and production and milk in a sanitary manner.

Sanitary Commissioner B&O.

GSL

CHAPTER II.—BHAGALPUR DIVISION.

1.—Bhagalpur.

The Bhagalpur District Board maintains an itinerant veterinary assistant, the value of whose service is gradually receiving due recognition by the cultivating classes. In Banka subdivision there was an outbreak of rinder-pest in 1907 and the innoculation treatment was successfully practised. Babu Surendra Mohan Sinha, a public-spirited zeminder built and equipped a veterinary hospital at a cost of about Rs. 12,000 and made it over to the District Board. The Institution fills a long-felt want and has a sphere of action of unquestioned utility and of boundless extent before it.(a)

Bhagalpur District Gazetteer.

Babu Basanta Lall Shaw, Vice-Chairman *Bhagalpur* Municipality writes :—

(1) The state of cattle and of milk supply is decidedly unsatisfactory.

(2) The number of cattle is insufficient. The quality of the cattle is very poor for want of proper breeding pasture and fodder. Milk is adulterated.

Bhagalpur Municipality.

(3) Cattle may be bought in sufficient numbers by Municipalities and District Boards and public dairies may be opened. Breeding may be improved by keeping first class bulls. Sufficient grounds may be set apart for pasture and fodder may be imported.

Babu Harihar Prosad, Vice-Chairman *Tekari* Municipality writes that there is a sufficient supply of milk in that Municipality.

Tekari Municipality.

2.—Monghyr.

The cattle are generally small and of poor quality. There is good pasturage among the hills to the south during the rainy season and in the grass lands of Pharkiya in the dry season but elsewhere grazing lands are deficient and the account given 30 years ago applies to-day, "Everyone

Monghyr District Gazetteer.

(a) Bhagalpur District Gazetteer by J. Bryne I.C.S., p. 77, [1911.]

who has travelled through this district must have been struck with the miserable condition of the cattle. Their only chance of getting a good meal is by trespassing and eating the growing crops, their usual fodder consisting of the scanty grass which grows along the roadside and the weeds which spring up among the stubble after the crops have been cut." Even in the south of the district the jungle yields poor grazing during the dry season, and only those who can afford to send them to the north Gangetic plains in pargana Pharkya keep good stock There is no attempt at breeding. Oxen and buffaloes are undersized and of poor stamina. There is a veterinary dispensary at Monghyr.(a)

The Hon'ble Kumar Shivanandan Parsad Singha, O. B. E Chairman Monghyr Municipality writes :—

(1) The number of cows is quite inadequate to meet the requirements of the town there being only one cow to 24·5 persons.

(2) The cows are weak and sickly owing to the insufficiency of pasture and fodder.

(3) There are about half a dozen brahmani bulls to cover 1875 cows.

(4) Pasturage is very insufficient Fodder also is quite inadequate to meet the demand, Though imported it is generally out of reach of ordinary cow-owners.

Monghyr Municipality.

The milk-supply is quite inadequate. The daily average yield per cow comes to 1·02 seer. This poor production of milk is due mainly to want of sufficient pasturage, to chronic scarcity of fodder and also to some extent to promiscuous breeding.

He suggests the following remedies :—

(1) Better feeding—Local bodies like the Municipalities and District Boards should keep a number of good breeding bulls and lend them to the people on nominal charges.

(a) Monghyr District Gazetteer by L.S.S., O'Malley I.C.S., p, 102, [1909.]

(2) Provision of pasturage—If about 2,000 acres of land be reserved for pasturage and the production of fodder the condition of cattle will improve and will check infantile mortality to a large extent.

The Private Secretary to H. H. the Maharaja Bahadur of Gidhour writes "that the part of the province where the Raj is situated is mainly hilly and devoid of good pasturage. The chronic poverty of the people abetted by the uncharitable character of the soil has been responsible for the degeneration of cattle. Facilities for breeding are also badly wanted and the quality of cattle as mostly poor indeed except in certain small areas the supply of milk is not satisfactory. Though there has been no appreciable diminution in the number of the cattle or much scarcity of fodder the general condition is considered to be unsatisfactory"

Maharaja of Gidhour.

8—Purnea.

Purnea has long been noted for its great herds of cattle. Walter Hamilton, for instance, in his, *Description of Hindustan* (1820) wrote :—"Cattle are an important article of stock, and it is hence that Bengal is supplied with a great proportion of the carriage bullocks, but the fine cattle used in the artillery are not bred in this district although usually termed Purnea bullocks, being from further west. The herds of cattle and buffaloe are so numerous that all the resources of the country would be unequal to their support were it not for the adjacent wilds of the Morang."

Purnea District Gazetteer.

At the present day the cattle of Purnea are of an inferior breed, being small thin and weedy. One cause of this apart from want of care and selection of breeding seems to be the practice of using cows as plough-cattle, which has a bad effect on young stock. This practice is common in those parts of the district where Muhammadans predominate. Good cart bullocks are imported from Chapra and Tirhut, the principal markets being Khagra, Islampur and Madanpur fairs in this district and the Alawakhawa fair in Dinajpur. In the vast grass prairies on the banks of the Kosi and Ganges fine buffaloes are bred in large

numbers, the *arens* or long-horned variety, which are said to contain a strain of the wild buffalo, being more common in the south and the *bhangris* or shorthorns in the north.

Pasturage grounds are of greater extent in Purnea than in any other tract of equal size in Bengal or Bihar One of the most marked physical characteristics of the district is that great grassy plains or ramnas that surround the head quarters station and extend nearly to the northern and western boundary. These expanses of country are used during the rains as pasture grounds, and form valuable properties. The Goalas drive off their cattle to the Tarai of Nepal or to the lowlands in *pargana* Dharampur and along the Ganges. Most of the two latter tracts are the property of the Maharaja of Darbhanga, forming what is known as the Charri Mahal or grazing estate Formerly free grazing in this Mahal was allowed to all the cattle owned by resident ryots except buffaloes.

At present a fee of two to eight annas is charged. The Banaili Raj, however, takes no fee from its own tenants for grazing their cattle on waste-lands.

In the western thanas the cattle are fed not only on the grass of the pasturelands, but also on khesari. This is sown broadcast as a catch crop as soon as the *aghani* rice crop is cut and also on the silt left behind by the receding floods.

Herds of cows and buffaloes come across from Bhagalpur and are put to graze on the *khesari*, which springs up rapidly and has a luxuriant growth. The proprietors of the herds pay high prices for these grazing rights, sometimes for instance, four to five rupees per acre; but the investment is a good one for the yield of milk is much inproved both in quality and quantity. Curds and *ghi* are prepared on the spot and sold, the *ghi* being often consigned to Calcutta.

A veterinary Dispensary was opened at Purnea in 1903-4. (a)

M. G. Hallett Esq., I.C.S., Collector of *Purnea* writes :—

(1) In my opinion the state of cattle and milk supply is not satisfactory.

(a) Purnea District Gazetteer by L.S.S.O. 'Malley I.C.S., p. 94 [1911.]

(2) The number of cattle is very large but there are few large animals suitable for heavy work. In old days this distri had some reputation as a cattle breeding centre but the extensic of cultivation has considerably restricted the number of grazing grounds and in many villages the zamindars appear to have kept too little land for pasture. A further cause of the inferiority of cattle is to be found in the fact that no selective breeding is attempted by the people. Immature bulls are used for breeding and are often used to serve cows which are too old to produce healthy stock.

Collector of Purnea.

(3) The main remedies which appear to me are (a) reduction of number of cattle (b) selection breeding and (c) production of fodder crops. At present in this district unlike the other distri of Behar very few cattle are stall-fed owing to the lack of sui fodder. If the best animals were stall-fed there is very little d that there will be considerable improvement in the milk-supply as well as in the young animals.

4.—Sonthal Pergs.

Babu Charoo Chandra Mittra, Chairman Dumka Municipality writes:—

Dumka Municipality.

In my opinion the state of cattle and of milk in this place is not unsatisfactory. The supply of milk, so far as this small town and its neighbourhood are concerned, appears to be adequate as milk sells at 8 seers the rupee on an average throughout the year.

The cattle are mostly of Local species and although the price of fodder has gone up very high owing to scarcity and war prices, yet there is enough of pasture lands for grazing purposes where cattle can freely graze.

The only difficulty felt here is the want of good breeding bulls, the Local bulls are not very strong. A proposal has however been set on foot amongst the Local Marwari merchants to get one or two big and strong bulls from outside for breeding purposes and when that is done this difficulty will be removed.

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CHAPTER III.—PATNA DIVISION.

1—Patna.

In addition to the ordinary country breeds there are two local varieties of cattle, one a cross between the Hansi and the country breeds and the other a three-quarters or half English breed known as the "Bankipore breed." The former class are large massive animals, the bullocks do well for carts and for ploughing, but the cows are not very good milkers. The Bankipore breed is the residue of an English stock imported some fifty years ago by Mr. William Tayler formerly Commissioner of Patna, who started a cattle farm at Lohanipur south of the Bankipore railway station and also inaugurated an agricultural exhibition. The animals are not usually very large, but the cows are excellent milkers giving from 10 to 16 seers daily, owing to their smaller size they cost much less to keep than the other breed. The bullocks are not heavy and strong enough for the work required of them and are not thought much of by the natives. The breed has deteriorated greatly through in-breeding and want of new blood. To improve the strain the Patna District Board imported two bulls from Australia, and more recently it has purchased a Montgomery bull for the improvement of the indigenous breed.

Patna District Gazetteer.

Cattle fairs are held at Bihia in the Dinapore Subdivision twice in the year, about the 13th Phagun and the 18th Baisakh. An agricultural exhibition is held annually in connection with the former fair towards which the District Board contributes, and which also receives grants from Imperial and Provincial Funds for prizes for cattle. A cattle fair is also held at Ainkhan Bazar in the Bikram thana of the Dinapore Subdivision. Cattle of the local breed, through hardy and suited to the climate, are of a generally very mediocre stamp, little or no care is taken in selecting bulls, for breeding, immature or poor specimens being used, and the Brahmani or dedicated bulls are

usually no better than their fellows, though freedom with which they are allowed to graze keeps them in better condition. The stock has thus little chance of improvement, and besides the want of careful and systematic breeding, there is difficulty in obtaining pasturage. Grazing grounds are few and fodder is scarce, for during the hot weather the ground retains little moisture and the grass is parched up by the burning sun. Nearly all the land available for pasturage, moreover, has been given up to cultivation, and the cattle have to be content with the scanty herbage found in the arid fields or are stall-fed on chopped straw, maize stalks, and occasionally linseed.

Buffaloes are employed for the plough, specially when deep mud is being prepared for the transplantation of paddy, and are also used for slow draught work, but their chief value is for the milk which they yield in large quantities.

Veterinary assistance is afforded at a Veterinary Dispensary which the District Board and the Patna Municipality jointly maintain at Patna (a).

Babu Gopilal Agarwala, Chairman, Dinapore Nizamat Municipality writes that a subcommittee specially called for the purpose expressed the opinion that

(1) The state of cattle and of milk is very unsatisfactory.

(2) The unsatisfactory state is considered to be due to want of pasture land, good breeding cattle, scarcity of fodder and specially to *a considerable reduction in the number of cows.*

Dinapur Municipality.

There has now been an abnormal rise in the price of milk and ghi—milk being formerly sold at 12 seers per rupee and ghi 1¼ sers per rupee while milk now sells at three annas per seer and ghee at Rs. 2 per seer

(a) Patna District Gazetteer by L. S. S. O'Malley I. C. S. p. 101 [1907].

(3) The remedies suggested to cure the evils are :—

(a) Stoppage of cow killing.

(b) Government be moved to provide good pasture lands.

(c) Import of good breeding bulls.

Babu U. C, Singh, Vice-Chairman Jhalda Municipality writes :—

(1) The state of cattle and milk supply is not satisfactory.

(2) The following are the reasons.

Jhalda Municipality.

Poverty compels people to sell their cattle to butchers and and this reduces their number. Strong breeding bulls and selective breeding are wanting. The high price of straw tempts the cultivator to sell his straw and thus the cattle suffer from want of fodder. Pasture lands are being converted into cultivable lands and this is largely responsible for the sad state of the cattle. Sufficient fields should be reserved for grazing to remedy this state of things.

P. T. Mansfield Esqr, I. C. S., Sub-Divisional Officer, *Barh* writes :—

S. D. O. Barh.

(1) The state of cattle and milk supply is unsatisfactory.

(2) The quality, breeding, pasture and milk production are defective. It is not numbers that are lacking.

(3) If the numbers of the poor cattle were replaced by fewer cattle of better quality, the production of milk could be increased with no increse in the pasture accomodation. Something can be done by the introduction of breeding bulls.

The Sub-Divisional Officer, *Bihar*, writes that the state of the cattle and of milk supply in this locality is not satisfactory.

The number of the cattle is not very small but there are no cattle of good qualities as there is no good arrangement for breeding. There is also want of pasture grounds which the zamindars have converted into fields for cultivation and that has discouraged the peasants in keeping cattle and hence the decrease in the number thereof.

The remedies suggested are :—

S. D. O. Sihar.

(1) To suggest to Government to amend the Bengal Tenancy Act so as to compel the zamindars to provide pasture ground and penalise the cultivation of the same.

(2) To provide good breeding bulls.

(3) To increase the number of Vety. Surgeons so that the cattle may be properly looked after.

2.—Gaya.

The cattle raised in the district though hardy and suited to the climate, are generally of a very mediocre stamp, little or no care is taken in selecting bulls for breeding, immature or poor specimens being used; and the Brahmani or dedicated bulls are usually no better than their fellows, though the freedom with which they are allowed to graze keeps them in better condition. The cattle are especially small in the south and in consequence of their poor physique, three bullocks, *viz* a pair under a shaft and a leader attached in front of the shaft, are constantly used to draw a loaded cart. The stock has little chance of improvement, as besides the want of careful and systematic breeding there is difficulty in obtaining pasturage. In the thinly cultivated tracts to the south, there is much pasture land and sufficiency of grass for the herds, but elsewhere the ground retains little moisture during the hot weather, and the grass being parched up by the burning sun,

Gaya District Gazetteer.

fodder is scarce. Nearly all the land available has been given up to cultivation, and the cattle have to be content with the scanty herbage found in the arid fields or are stall fed on chopped straw.

Buffaloes are employed for the plough, especially when deep mud is being prepared for the transplantation of paddy, and are also used for slow draught work but their chief value is for the milk which they yield in large quantities.

The diseases most prevalent among cattle are rinderpest and foot mouth disease Veterinary assistance is afforded by itinerary Veterinary Assistants, and also at a Veterinary Dispensary which the district board maintains at Gaya *(a)*.

The Collector and Chairman Gaya District Board writes:—

(1) Condition of the cattle and milk supply can not be said to be satisfactory.

(2) The number of cattle seems satisfactory but the quality is deficient. This is I think largely due to carelessness in breeding and lack of good bulls. Cows are allowed to be covered by ordinary pigmy bulls, a large number of which is to be found in every herd. People generally take no trouble regarding breeding from good stock.

Collector Gaya.

As regards pasture this district is not so badly off as some districts are in respect of pasture. Pasture is however gradually disappearing under the plough. What is required is legislation to enable the existing pasture land to be preserved and securing the setting aside of a definite proportion of pasture land for a group of villages. The proprietorship of pasture land in this district vests in the proprietor and not in the village community. Hence the difficulty. Nothing can be done without legislation.

(a) Gaya District Gazetteer by L. S. S. O'Malley I. C. S. p. 115. [1906].

As regards fodder, there is in normal years plenty of fodder in the district though in years of failure of crop its want is felt.

As regards milk produce, the local cows hardly ever give more than two to three seers of milk even when well fed. This is due to their being of inferior breed.

(3) Remedies—(a) Supply of more breeding bulls both for milk and draught stock. People should be educated up to the importance of good breeding and the distinction between draught stock and milk stock. Villages might be constituted into convenient groups, and each group to purchase its own bullock by subscription, the District Board helping where necessary.

(b) All the pigmy heifers should be castrated before they can cover cows and no bulls used except the imported breeding bulls.

(c) Cattle insurance to be gradually introduced.

(d) The number of Veterinary Officers to be gradually increased as funds permit and inoculation of cattle to be made obligatory by law at times of epidemic.

(e) Keeping of pasture lands to be made obligatory by law.

3—Shahabad.

The cattle are generally of a mediocre stamp, little or no care being taken in selecting bulls for breeding. Brahmani or dedicated bulls are usually no better than their fellows though the freedom with which they are allowed to graze keeps them in better condition. The stock has little chance of improve-

ment, as besides the want of careful and systematic breeding, there is great difficulty in obtaining pasturage. The herds near the hills are driven up the grazing lands on the plateau, but in the plains all the lands available have been given up to cultivation, and the cattle have to be content with the scanty herbage found in the arid fields, or are stall-fed on khesari or chopped rice straw. Attempts have been made to improve the strain; a Hissar bulls kept on the Government estate of Nasirganj, his services being given free; and the ryots readily buy the cattle bred from the bulls at the Buxar Central Jail. Apart, however, from the question whether heavy Hissar bulls are fit for serving the light and often feeble cows indigenous to the country, these bulls only affect the strain of cattle in the neighbourhood and it is reported that no general improvement in the stock can be observed.

Shahabad District Gazetteer.

Buffaloes are employed for agricultural purposes and for other slow draught work, but chiefly for the milk which they yield in large quantities.

The district contains one Veterinary Dispensary at Dumraon, which carries on a useful work and is much appreciated by the public. The most prevalent disease among cattle is rinderpest, which was practically rife in 1904-05, when it caused no less than 4226 deaths. (a).

The Secretary, Arrah Gowshala, writes that the state of cattle and milk supply is not satisfactory.

Arrah Goshala.

This is due to waat of pasture and want of fodder.

Provision of sufficient grazing grounds will improve matters to a considerable degree.

(a) Shahabad District Gazetteer by L. S. S. O'Malley I. C. S. p. 58. [1906].

Babu Sitala Prosad, Vakil, writes that the milk supply is wholly inadequate to meet the demand of town people. Milk is a luxury to villagers who have hardly two meals a day.

Arrah Town.

The number of cattle is enough but they give very little milk. An average cow gives only two to three seers a day for the first four months after delivery and a buffalo from five to six seers. There are no good bulls for breeding purposes. Pasture there is none. Fodder is scarce. The result is cows give very little milk.

He suggests the following remedies :—

(1) A large area of ground near the rivers or osar and jungle land must be reserved as a common pasture ground.

(2) Provision of good breeding bulls to be lent to cattle owners by some society formed for the purpose.

(3) Some amount of preventive as well as curative medicine must be provided in headquarters and villages where it is needed.

Y. A. Godbole Esqr., I. C. S., B. A. L., L. B. (Cantab) Sub-Divisional Officer, Sasaram says :—

(1). The *state of cattle* and of milk supply in my Sub-Division is not satisfactory.

(2). *(a)* The *number of cattle* is not much below the requirements of population.

(b) The quality of the local cattle is, in my opinion, very indifferent.

(c) The breeding is done by village *sand* extremely miserable looking animals.

They are ill cared, ill-fed, diseased and overworked. Their number is small, and I know for certain that on many an occasion owners of cows find it difficult to secure the services of a bull.

S. D. O. Sassaram.

(d) Regarding *pasture* my Sub-division can be divided into two well-defined areas. One is hilly where there is no scarcity of pasture for the major portion of the year. As a matter of fact, good many cattle from the other part of this Sub-division and from neighbouring districts are taken up these hills for the four months of the rainy season when the plains are all tilled up and sown and there is not an acre of pasture left in many a village.

In the second part of my Sub-division which consists of undulating plains crossed by the canals and distributaries of the Sone, almost every inch of earth and even a large sandy area has been brought under the plough owing to facilities for irrigation. Consequently all the old fertile pastures have been lost to the public and what is left is waste land covered by nothing but poor scrub.

(e) As regards *fodder*, it may said the agriculturists in the irrigated portion of this Sub-division take good care of the fodder for their cattle. They keep in their stock mainly the chaff and husk of their Rabi crops and their paddy straw as fodder. Their cattle also get the leaves and stalks of sugarcane when the juice is expressed. In the hilly part of the Sub-division comparatively less fodder is available.

(f) The *breeding and feeding* arrangements not being satisfactory, milk production is very poor.

But in individual cases where the cow is of a good quality and is well-fed the milk is ample and good.

I may add here that this Sub-division is almost every year subject to cattle diseases and epidemics. There is much room for improvement in the Veterinary knowledge of the average cultivator or Ahir or the Ojha.

There is only one trained Veterinary Assistant in the whole of the Sub-division, an area of about 1500 square miles and as yet there is no Veterinary Hospital.

(3). The *remedies* for improving the evils noticed above are :—

(a). Introduction and propagation of a good type of breeding bull. Government should establish or help local bodies to establish at least at one place in every district an agricultural and stud farm.

(b). Acquisition and reserving of land by Government and local bodies like District and Local Boards, Union Committees etc., for pasture.

(c). Government may appoint Committees to inquire into the condition of the old public pastures and have them secured again for the public by ejectment of trespassers or by helping local bodies to acquire them under the Land Acquisition Act.

(d). Dissemination of a knowledge of crops which grow quickly and serve as fodder. This knowledge is particularly useful and indispensable in a year like the present *i e.*, after a year full of failures of the staple crops.

A vigorous attempt on this line is at present being made by the Bombay Presidency by the public jointly with the

Agricultural Department of the Government. Improved methods of serving fodder to cattle *e. g.*, by cutting it into small pieces and sprinkling salt over it will have to be introduced.

This remedy of education will attain only a little success at present through the existing local bodies. The Rural Co-operative Societies may help in the matter. But unless the villagers are compulsorily given primary education this remedy will not be as successful as it should.

(e). Veterinary Assistance should be made more easily available by establishment of suitable hospitals in a larger number of places.

CHAPTER IV.—TIRHUT DIVISION.

1.—Saran.

The *cattle* are generally poor in quality, the best coming from Muzaffarpur and Darbhanga and from the United Provinces. Owing to the appropriation of all available land for crops, pasturage is insufficient, but in the cold weather a large number of cattle are sent to Champaran to graze. Milch buffaloes and cart bullocks are the best tended and fed; plough bullocks and cows are not infrequently neglected and underfed, fortunately the nature of the soil and the system of shallow ploughing, which is all that is generally required, do not necessitate the use of other than small bullocks.

Saran District Gazetteer.

The Hathwa Raj has established a cattle breeding farm at Sripur in the north-west of the district, and it is hoped gradually to improve the local breeds by the systematic selection of good bull calves to be brought up in the farm and subsequently turned loose among the village herds. More is hoped from this system than from crossing local cows with up-country and other foreign bulls.

There is considerable difficulty about pasturage, as no large grazing grounds are left and proper stall-feeding is costly. *Usar* lands on which a salt deposit called reh forms, and which will grow nothing but very inferior grass are generally used for grazing and in fact afford the only real pasturage in the district, except such scanty pickings as the cattle may find in roadsides, field boundaries and groves of trees. In September October and November there is abundance of food in maize stalks and kodo straw, mixed with green bajra and grass chopped up, in December and January rice straw is added. In February fodder is supplied by latri, in March the straw of the rabi crop comes in, and in April wheat chaff is stored up for use. May, June and July are the months in which it is most

difficult to feed the cattle, but in August bajra is again procurable.

The principal fairs are the Sonepur fair, the Godua fair held at Revelganj in November, the Silhauri and Mehuar fairs in February, and the Thawe fair in March. Of these fairs by far the most important is that held at Sonepur, which is in fact one of the largest cattle and horse fairs in India. It is held on the full moon of November every year and lasts about a fortnight. A cattle show is held annually at Sripur. Veterinary relief is afforded at a Veterinary Dispensary at Larpur under the management of the Hathwa Raj. (a)

The Secretary, Chapra Gowshala, writes that the condition of cattle and of milk supply is unsatisfactory.

Want of suitable pasture lands and scarcity of fodder due to abnormal rise in the price of foodstuff are mainly responsible for this state of things,

Chapra Gowshala.

The remedies he suggests are :—

(1) Accomodation and proper treatment of helpless beasts roaming hither and thither;

(2) Provision of sufficient pasture lands

(3) Supply of fodder to the people at cheaper rates than the market-rate.

For these he suggests the establishment of a committee in each Sub-division of a Province.

Babu Rajendra Prasad, Chairman, Municipal Board, Revilganj, Saran, writes.

(1) That the state of cattle and of milk supply in this locality is unsatisfactory.

(2) The number of cattle has decreased. There is no pasture land in the locality. The supply of fodder has also

(a) Saran District Gazetter by L. S. S. O'Malley, I. C. S. p. 69 [1908.]

decreased on account of the failure of crops. The production of milk has considerably decreased.

Saran Municipality.

(3) The remedies suggested are :—
(a) Improvement in agriculture ;
(b) Extension or creation of pasture-land.

The Chairman, Municipal Board *Gorakhpur* writes :—

Gorakhpur Municipality.

(1) The state of cattle and of milk supply is not satisfactory.

(2) The quantity of milk is poor. Breeding is primitive. Fodder is so far sufficient but shortage is anticipated. Owners do not feed their cattle properly.

He suggests the following remedies ;—

(a) Reserved farms for fodder (b) enforcement of sanitary rules by the Municipality and a model dairy under the patronage of the Government.

The Managing Director, Goraknath Goshala Ltd., Gorakpur writes :—

Gorakhnath Goshala.

(1) The state of cattle and of milk supply is entirely unsatisfactory and deplorable; pasture is fast disappearing under the plough.

2. The only possible remedy is that by legislation, one-tenth of the whole area of a village should be marked for pasturage only.

The Government should forego the corresponding revenue assessed on such land. But even if the Government does not forego the whole revenune on pasture land any portion remitted will be welcomed by the people. Even the favour by the Government to separate the pasturage land will be welcomed by this locality.

—

2.—Champaran.

There is abundant pasture in Bagaha and Sikarpur which attracts great herds of cattle from the southern Thanas as well as from the adjoining districts of Saran, Muzaffarpur and to a great extent, Gorakhpur. Cattle are conseqeutly numerous, and every family in the district owns three head of cattle on the average. Milch kine are particularly numerous in the north and even in the headquarters sub-division there are 12 milch kine for every 100 persons *i. e.*, more than one supply milk and *ghi* to 10 persons. Draught cattle are also numerous owing to the deficiency of railway communications, the large demand for carts by the indigo factories, and the trade to and from Nepal, which is carried on by bullock carts. Buffaloes are less common than in the districts south of the Ganges, and the soil being generally light they are not required to draw the plough.

Champaran District Gazetteer.

Veterinary relief is afforded at a Veterinary dispensary at Motihari; and large cattle fairs are held annually at Madhuban and Bettiah. (*a*)

Mr. J. L. Merriman Esq., I. C. S., Sub-Divisional Officer, *Bettiah* writes that the state of cattle and of milk supply is far from satisfactory.

The following are the reasons:—

S. D. O. Bettiah.

(a) Lack of supervision and selection in beeding.

(b) Lack of good grazing. What is wanted is fewer cattle of a better quality.

(c) The character of the gowalas and the ahirs in whose hands the majority of the cattle are. They are recklessly improvident, buy a milch cow as a speculation and sell her again the moment she runs dry.

Babu Charu Chandra Mitra, Chairman, *Dumka* Municipality writes:—

(a) Champaran District Gazetteer by L. S. S. O'Malley, I. C. S. p. 74 [1907

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Dumka Municipality.

The state of cattle and of milk supply in the place is not unsatisfactoy.

The only difficulty felt here is the want of good breeding bulls, the local bulls are not very strong. Import of good breeding bulls will remove this difficulty.

3.—Mozafferpur.

Tirhut has always had a high reputation for cattle. The Sitamarhi Subdivision is still the breeding ground from which most of North Bihar is supplied, the Sitamarhi strain being one of the best in Bengal. It is said however that the breeding is deteriorating. In the north floods destroy large number of cattle and militate against success in breeding and in the district as a whole though there is never an absolute, lack of food even in the driest season, the want of good pasturage is a serious draw-back.

Mozafferpur District Gazetteer.

There are large grazing grounds in the north, but in the south and particularly in Hazipur thana, where almost all the land is under cultivation the cattle have to be content with such scanty herbage as the road sides, tank banks and boundary ridges afford and are partly stall-fed on chopped rice-straw. A large number of bullocks and bulls are maintained for sale and to supply the large cart traffic in the Sitamarhi subdivision, but on the whole the number of pack-bullocks is not large on account of the extensive railway system. The number of plough cattle is also small as it is useless for cultivators to keep to ploughs when they have no space to graze two pairs of bullocks. In the south especially where the rural population is congested and the average holding is small individual owners can keep few cattle and no attention is paid to systematic breeding. Immature or poor specimens are used by the ordinary cultivator and though Brahmani or delicated bulls

are common, they are generally of little use for stock purposes. Buffaloes are bred in considerable numbers and are chiefly valuable for the milk they yield in large quantities. The soil being lighter than in the South Bihar districts they are generally not used for ploughing.

Veterinary Assistance is afforded at the Veterinary Dispensaries established at Muzaffarpur and Sitamarhi as well as by itinerant Veterinary Assistants (a).

Babu Radha Krishna, Vice-Chairman Muzaffarpur Municipality writes;—

(1) The state of cattle and milk supply in this locality is not satisfactory.

(2) It is unsatisfactory in all respects as regards number of cattle, quality of cattle, breeding, pasture, fodder and milk supply.

(3) In my opinion the remedies which may cure the evils are that all zamindars be requested to leave pasture lands for cows they used to do before. Municipalities, District Boards, Gourakshinis and zamindars to purchase good bulls for use and to open dairy farms This will improve the quality and breeding of cattle and this improvement can also be accelerated if Government arrange supplying cattle-meat to soldiers as once suggested by the President from Australia where cattle are not so much wanted and the work of the agriculture is done by machine and the fund is available.

Mozafferpur Municipality.

Copy of proceedings of Sub-committee, Sitamarhi Municipality.

(1) That the state of cattle and of milk supply in this locality is very unsatisfactory in all respects, viz in respect of number, quantity, quality, breeding, pasture and fodder.

(a) Muzafferpur District Gazetteer by L. S. S. O' Malley I. C. S. p. 61 [1907.]

Sitamarhi Municipality.

(2) To remove these evils some particular land should be acquired for the grazing of cattle.

(3) For breeding purposes Municipalities should be moved to supply as many buffalo bulls and cow bulls as required.

J. G. Shearer, Esq. I. C. S., Sub Divisional Officer, *Hazipur*, writes :—

S. D. O. Hazipur.

"The state of cattle and of milk supply in this Sub-Division is not at all satisfactory. This may perhaps be judged from the fact that very few cows can be found to yield more than one seer of milk per diem. The root cause of the trouble is lack of pasture. This is due to the fact that owing the pressure of the population very little land is left uncultivated. In consequence cattle have to be fed in such stray corners as are available. In many cases they depend for food on the stems of banana trees and in consequence the milk which they give is of a very poor quality. In the Diaras where more pasture is available conditions are much more satisfactory. There is also no attempt at scientific breeding.

The only real remedy for the existing state of affairs would be to bring pressure to bear on landlords and tenants to leave more land fallows but I very much doubt whether this is possible as the locality is over-populated and the pressure of the population on the land is intense. Something might also be done by the agricultural departments undertaking breeding experiments and encouraging scientific breeding. I understand that in the neighbouring district of Patna the cattle are of a much better breed and something might be done to improve the breed here by importing a few bulls from there.

4.—Darbhanga

Tirhut has always had a high reputation for its cattle and the East India Company used to obtain draught bullocks from

it for the Ordnance Department. The best strain in the district is the Bachaur, so called from the Northern parganah in which the breed is common. Further south floods militate against success in breeding and though there is never an absolute lack of food, the want of good pasturage is a serious drawback. There are large grazing grounds in the north, but in the south where nearly all the land is under cultivation, the cattle have to be content with some scanty herbage as the road-sides, tankbanks and boundary ridges afford and are partly stall-fed on chopped straw, the grazing ground necessary for the maintenance of a sufficient agricultural stock has indeed probably been reduced to the lowest possible limit.

Darbhanga District Gazetteer.

The Madhubani Sub-division is well stocked with cattle and the Khajauli and Phulpara thanas contain a large number of milch kine, draught cattle and agricultural stock of all kinds. These two thanas contain the Jabdi and Bachaur Parganas, which are noted for their breed of cattle. The Head quarters Sub-division and the Warisugar thana are the worst stocked of all. The whole of this area is liable to inundation, from which the cattle always suffer most severely; and in addition a large part of Bahera and Peusera are badly off for roads and but few carts are kept there. Samastipur and Dalsingh Sarai are wonderfully well-stocked, considering the small proportion of waste land which they contain, but the high cultivation practiced in this area no doubt necessitates the maintenance of a considerable stock.

Buffaloes are reared in considerable numbers and the district has long been noted for its breed, good males fetching a high price and being largely exported to Bengal. They are chiefly valuable for the milk they yield in large quantities; the soil being lighter than in the South Bihar districts, they are rarely used for ploughing in this part of the country.

The diseases most prevalent among the cattle are rinderpest and foot and mouth disease. There is a veterinary dispensary

at Laheria Serai and people are beginning to appreciate its usefulness (a).

Moulvi Mahammad Jalil M. A. B. L., Vice-Chairman, Darbhanga Municipality writes,

Darbhanga Municipality.

(1) The number of cattle is not sufficient. Cattle of good quality are very rare. No proper arrangement for breeding, pasture insufficient, fodder dear. Milk production is left in the hands of illiterate goalas and others who follow the old primitive way of rearing cattle and producing milk.

(2) Opening of model dairies by public bodies or through private enterprise. Acquisition and reservation of sufficient pasture lands. Introduction of cattle of good breed.

These are the remedies he suggests.

(a) Darbhanga District Gazetteer by L. S. O'Malley I. C. S. p. 62 (1907).

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CHAPTER V.—ORISSA DIVISION.

1—Cuttack.

The cattle are similar to those found in the southern districts of Lower Bengal, but owing to the deficiency of pasture the stock is generally poor. Some improvement has, however been effected in the towns and a few places in the rural areas by crossing the local breeds with bulls imported from up-country. Pasture grounds abound on the sea-board and along the foot of the hills. During the hot weather large herds of cattle are grazed in the lowlying lands of Kujang Kanika and other estates on the coast, and are driven up to the jungly uplands on the west in the rains. Elsewhere the ground retains little moisture during the hot weather, and the grass being parched up by the burning sun, fodder is scarce. Cultivation has encroached on the grazing lands for many years past, though much has been done in the course of the recent settlement to reserve lands for pasturage; and the cattle have to be content with the dry stubble of the fields and such scanty herbage as the road-sides, river bank, tank, tank banks and the boundary ridges of the fields afford. A cheap and abundant supply of *birhi* and *kulthi* is always available but though these pulses make an excellant food for cattle, very few can afford to give them; while even the straw which might eke out the scanty supply of grass is largely used for thatching purposes. In the dry months therefore the cattle have only what they can pick up in the fields, though they are partly stall-fed on chopped rice-straw while at work; they are generally underfed and miserably housed and no attempt is made to improve the breed *(a)*.

Cuttack District Gazetteer.

The diseases most prevalent are Rinderpest and Foot and Mouth. There is a veterinary dispensary at Cuttack town where out-patients are treated.

(a) Cuttack District Gazetteer by L. S. S. Malley, I. C. S. p. 86 [1906].

Rai Nemal Charan Mitter Bahadur, Vice-Chairman of the *Cuttack District Board* writes :—

(1) The state of cattle and of milk supply is not satisfactory in this district.

Cuttack District Board.

(2) Though the number of milch cattle is not low the quality of cattle is not satisfactory as regards yield of milk due to want of bulls of superior breed and adeqate pasture. The small plots of land which serve the purpose of pasture are highly rented specially in Kujang Estate which is the only source of milk supply in Orissa. Fodder is sufficient but very costly at present. Milk is badly adulterated and the open-mouthed earthen pots used by the goalas are insanitary.

(3) The quality of cattle may be improved by importing bulls of good milking strain. A breeding farm may be started at the head quarters of a district by forming a co-operative society for the purpose who will have control over Gowals as regards adulteration and sanitary points. In the sub-divisions however dairy farms may be established, and superior bulls if imported kept in the Veterinary Dispensary where the people can bring their cows for being covered or distributed to the local Zamindars and influential villagers who, I think will be glad to maintain them for their benefit as well as for their co-villagers Extra lots of land may be acquired for free pasture.

The Sub-Divisional Officer *Kendrapara* writes :—

(1) The state of cattle and of milk supply is not satisfactory.

(2) This is due to (a) inferior quality of cattle (b) bad breeding (c) Insufficient fodder and pasture except

in the estates, Kujung and Kanika which border on the sea and abound in jungle. (*d*) Want of stall feeding (as a rule more care is taken of plough cattle than cows.)

S. D. O. Kendrapara.

All these reasons are responsible for the very poor yield of milk.

(3) Arrangements at convenient centres may be made for import of bulls of good breed.

Government may be moved to take steps to prevent the gradual diminution of areas reserved for pasture (*gochar* and *godand*) and if possible to reserve more areas out of Anabadi lands.

2—Balasore.

The cattle are similar to those found in the southern districts of Lower Bengal, but owing to deficiency of pasture the stock is generally poor. Pasture-grounds abound on the seaboard and along the foot of the hills. During the hot weather large herds of cattle are grazed in the low-lying lands on the coast and in the rains are driven to the up lands on the west where there is good pasturage in the hilly ravines. Elsewhere the ground retains little moisture during the hot weather and the grass being parched up by the burning sun, fodder is scarce. Cultivation has encroached on the grazing lands for many years past, though much has been done in the course of the recent settlement to reserve lands for pasturage; and the cattle have to be content with the dry stubble of the fields and such scanty herbage as they can find on the road sides, river banks, tank banks and the boundary ridges of the the fields; even the straw which which might eke out the scanty supply of grass is largely used for thatching purposes. They are partly stall-fed on

Balasore District Gazetteer.

chopped rice-straw while at work, but at other times have only what they can pick up in the fields on in the patches of waste found here and there, and they return home almost as hungry as when driven out to graze. They are generally underfed and miserably housed and no attempt is made to improve the breed or to prevent it from degenerating.

Buffaloes are bred for the milk which they yield in large quantities, but are not used for agicultural purposes.

Rinderpest is the prevailing disease among cattle. Veterinary relief is afforded at a Veterinary Dispensary at Balassore (*a.*)

3—Angul.

The cattle are on the whole poor, mainly because they are allowed to roam at will and not properly looked after. Pasturage is abundant but in many parts of the Angul sub-division the grazing grounds would be either insufficient or not fit for fodder in a year of drought. In such a year the only means of saving the cattle would be to drive them into the reserved forests but there again there would be difficulties owing to a deficient water supply. To guard against such an emergeny five tanks have been excavated in the reserved forests (*b.*)

Angul District Gazetteer.

4—Puri.

The cattle of the district are similar to those found in the south of Bengal and no description of them is required. Cows buffaloes and oxen are kept by the pastoral caste of Ganras and by cultivators generally.

(a) Balasore District Gazetteer by L. S. S O'Malley I. C. S. *p.* 24 [1907]
(b) Angul District Gazetteer by L. S. S. O'Malley I. C. S. *p.* 98 [1908.]

In the head-quarters sub-division an area of 21,400 acres representing from 3 to 5 per cent. of the total area of the villages, was set apart at the last settlement for grazing grounds. The procedure adopted is described as follows by Mr. Maddox :—"With two objects in view, the establishment of fuel and fodder reserves, and the setting apart of specific places for sanitary purposes the settlement officer caused all waste lands and tanks, to the use of which the villages appeared to have a customary right, to be recorded as the property of the community (sarba sadharan.) Such lands were found in most villages, though the right was, by no means, always admitted by the Zamindars.

Puri District Gazetteer.

In the rules of 1896 provision was made for the reservation of lands for grazing grounds with the consent of the Zamindar, and the Assistant Settlement Officers were directed to select in each village a few large fields, not more than 15 to 20 acres in an average village of 400 acres, suitable for grazing, and to enter them in a separate khatian, to which they were required to get the signatures of some of the leading ryots and of the Zamindars, or sub-proprietor or his agent. A note was then made in the khatian that the village community were entitled to graze their cattle without charge on this land, and that it was on this ground exempted from assessment. To safeguard these lands against subsequent encroachment, a clause has been inserted in the form of a kabuliyat to be executed by all Zamindars and sub-proprietors entering into engagements for the payment of revenue, binding them to preserve as grazing grounds, cremation grounds and reserved tanks, the plots specified, to take no rent or grazing charge, and to take action in the courts to eject trespassers, if required by the Collector to do so." These areas were set apart after calculating the approximate number of cattle in a village and if the lands were maintained in tact, no difficulty should be experienced by the villagers in obtaining sufficient pasturage for their cattle. But unfortunately this has not proved to be as efficient a safeguard as expected.

In the Khurda sub-division the cultivators depend mainly on the protected forests for pasturage, *i. e.* on the lands not included in the reserved forests or in the holdings of the ryots. Elsewhere in Orissa rice-fields form a valuable pasture ground the stubble, weeds, and grass being intentionally left for fodder; but in Khurda in order to convert the stubble and other vegetable growth into manure, the fields are ploughed immediately after reaping from November to January, so that with the exception of a scanty herbage on the ails, next to nothing springs up in the fields before ploughing recommences in May for the new crop. Under the rules laid down, the tenants are allowed to graze free of charge one pair of bullocks and five cows for every 4 acres which they hold in the Government estate. Cattle in excess of the prescribed number are charged for at the rate of 8 annas for each buffaloe, 4 annas for each bullock, cow and yearling calf and of 2 annas for each goat.

From enquiries made at the last settlement it appears that the area available for grazing even if it could be equally distributed over the whole estate is not sufficient for the number of cattle. As a matter of fact, the distribution is unequal and in many villages the pasturage is probably less than is actually required. *(a)*

About 250 District Officers placed throughout the whole of India were requested by the Hon'ble Sir John Woodroffe, President of the All India Cow Conference Association, Calcutta to supply information on certain points relating to the local condition of cattle and milk supply, about facilities of breeding and pasturage. Almost all the District Officers, mostly Europeans and members of the Indian Civil Service, very courteously and promptly acceded to the request, collected necessary information by taking a personal interest in the matter and supplied it to the Associa-

Collector of Puri.

(a) Puri District Gazetteer by L. S. S. O'Malley I. E. S. p. 158 [1908.]

tion. But it pains one to find that the solitary exception to this was the Indian Collector of Puri, Rai Bahadur Mano Mohan Roy, apparently a Hindu Deputy Collector promoted to the post of a District Officer evidently for his worth, was not ashamed to send this reply *viz.* "I am unable to supply the information required by the Association, as the collection of the information would require much time and labour," but we are ashamed to record it here. I personally know how backward the district is in the matter of cattle, and a responsible Indian Officer is reasonably expected to take an intelligent and active interest in the subject. But unfortunately the reality is just the reverse, and the reader will draw his own conclusions from examples like these, as to how far the Indians themselves are responsible for bringing about the present condition of our cattle.

The Hon'ble Babu Gopa Bandhu Das, Satyabati, *District Puri* writes :—

1. That the state of cattle and of milk supply in the District of Puri (as a matter of fact in the whole of Orissa) is not satisfactory.

2. Though increasing in number the cattle are becoming smaller and weaker day by day. This is due to several causes the chief of which are diminution of pasturage and want of fodder. Consequently the production of milk has been very insufficient.

Gopa Bandhu Das.

3. The remedies are

(*a*) Introduction of strong and good bulls among the herds of cattle of each village or group of villages.

(*b*) Setting apart of sufficient pasture land in each village.

(*c*) Supply of water for the drinking of the cattle.

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(*b*) Setting apart of sufficient pasture land in each village.

(*c*) Supply of water for the drinking of the cattle.

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(*d*) Growing of fodder on waste lands or cultivation of such crops which would give large quantity of fodder.

5—Sambalpur.

The cattle of the district are miserably poor and of small size; but fortunately heavy cattle are not required for the plough owing to the light sandy soil. For draught purposes larger animals are imported from Behar. The poverty of the cattle is due to the carelessness of the people about breeding and also to the want of nourishing food. For the greater part of the year the cattle are given no food by their owners; they are turned out each morning in charge of the village herdsman to pick up what they can, and it is only in the hot weather months that some rice straw is thrown before them when they return at nightfall. During the rainy season and cold weather they lie without food or litter all night. No fodder crop is grown, ensilage is unknown, and after the month of November the grazing grounds of the open tracts yield the minimum of fodder. Buffaloes are largely used for cultivation and frequently also for draught and for pressing oil and sugarcane. They are not bred locally to any great extent, but imported from the northern districts through Bilaspur and Sirguja. These reared in the district are distinctly inferior in quality. Bhukta near Ambabhona is the largest cattle-market in the district, and after it rank those of Bargarh and Talpatia. A veterinary dispensary was opened at Sambalpur in June 1906. The most common disease is rinderpest (which in 1906-07 caused 1339 deaths.) Cattles are exibited annually at the Agricultural show held formerly at Hima and now at Sambalpur.

Sambalpur District Gazetteer.

(a) Sambalpur District Gazetteer by L. S. S. O'Malley I. C. S. *p.* 121 [1909]

6—Feudatory States of Orissa.

The ordinary value of each kind of domestic animal is—cow, Rs. 5 to 15, bullock Rs 5 to 20, she-buffaloes Rs. 10 to 20, he-buffaloes Rs 10 to 30.

Feudatory States of Orissa.

Cattle—Buffaloes and bullocks are employed in ploughing, the former being especially useful in tilling hard soil. Cow and she-buffaloes are prized for their milk, which besides being drunk is largely utilized for making ghi both for local consumption and export. Pasture lands are generally plentiful on account of the existence of extensive waste lands and forest areas and no difficulty is experienced in feeding cattle. In fact herds are annually brought in large numbers from the plains to graze in the states. The local breeds of cattle, however, are exceedingly poor and of small stature. The quality of milk which a cow gives is very small, it is difficult to find an animal which will give a seer a day, the sale price of a milch cow is one rupee per chittack ($\frac{1}{16}$ of a seer) of milk given daily. (a)

(a) Feudatory States of Orissa by L. E. B. Cobden Ramsay, I.C.S. p. 76 [1910

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CHAPTER VI.—CHOTA NAGPUR.

I.—Hazaribagh.

The oxen are generally very feeble. The cultivator begins buying the cheapest cattle obtainable and these be feeds on grass so long as grazing is possible, and on leaves in the jungle during the hot weather. Straw lasts barely six months and the raiyat will not trouble to chop it up for them. The milk cattle are similarly neglected, and it is a common practice among the Goalas to allow female calves to die for want of nourishment, and this great source of food is practically lost to the district. After struggling through the hot weather as best as they may, the plough cattle are naturally unequal to the strain of anything but the surface by a light plough, often guided by the feeble hands of a boy. Another result of the disposal of the lands which make up the holding, and the excessive cost of fencing all but the *Baris*, is the impracticability of independent action. The universal custom is that when a crop has been cleared from a field, pasturage is open to all and so each cultivator is compelled to grow the same crops as his neighbours and at the same time. If they are left on the ground after those of his neighbours have been removed they are at the mercy of the cattle which by them are turned loose in the village. Only the Koiris have met the difficulty successfully. They build a high wall of earth round their land, dig one or more shallow wells and grow irrigated garden crops till late into the hot weather. (a)

Hazaribagh District Gazetteer.

Babu Bansi Lal, Vice-Chairman, *Hazaribagh* Municipality writes :—

(1) The state of cattle and of milk supply within this Municipality is not at all good.

(a) Hazaribagh District Gazetteer by E. Lister C. I. E., I. C. S. p. 108 [1917.]

Hazaribagh Municipality.

(2) It is unsatisfactory in every respect viz., as regards number of cattle, quality of cattle, breeding, pasture, fodder and milk production. The principal things affecting this place are fodder and good breeding and frequent appearance of Rinderpest for which no medicine has yet been discovered.

(3) These complaints will be largely remedied if arrangements be made for fodder and large pasture grounds and if good breeding bulls are kept.

Compulsory inoculation may check the frequent appearance of Rinderpest.

2.—Ranchi.

The cattle are usually stunted in size, ill-fed, and ill-cared for. The average milk-yield of cows is very poor, say about half a seer per day during the lactation period. The local cattle are practically unfit for heavy work which is done by buffaloes and imported cattle. Though there are large uncultivated tracts near about the hills, there is very little to graze upon and the small herbage that grows on them is perched up by the burning rays of the sun during summer months. Good breeding bulls are also not available and local people who are generally poor and illiterate, pay or rather can afford to pay very little heed to this subject of breeding. A few good cows can be seen in the houses of well-to-do settlers from Bengal and other places, but their number is so small that they are not worth consideration for any practical purposes.

3.—Palamau.

Palamau is well stocked with cattle, but the local breed is, on the whole, of poor quality. There is, in fact, a supreme indifference to the welfare of cattle which are rarely housed

and die of cold and disease as they stand tethered to some tree during the rains. Some improvement has been effected by crossing with half-bred bulls from Bihar but otherwise little or no attempt has been made to improve the breed. In the south and south-west the forests form a vast grazing ground and the remainder of the district, with the exception of the well-cultivated valleys, is coated with a thin covering of jungle in which the village herds are pastured. In the rains the jungles contain an abundance of grass, but in the hot weather grass is scanty, and as the springs and pools dry up, there is great scarcity of water. During this period of the year, therefore, the owners of cattle feed them on such straw and husks as they have managed to save during the winter months or, which is far more common, send the herds to the uplands of Sirguja where water and pasturage are found in abundance. At the close of the rains they are brought back and grazed in the jungles adjoining the villages until the approach of the hot weather.

Palamau District Gazetteer.

Large herds of buffaloes are found in nearly every part of the district, especially in the south and west. They are rarely used for the plough, except by Oraons, and are chiefly valued for the milk which they yield in large quantities. This is made up into ghi which is one of the chief articles of export.

The most prevalent diseases among cattle are rinderpest and foot-and-mouth disease. There is a Veterinary Dispensary at Daltonganj, established a few years ago, which is steadily gaining popularity. Animals in the interior are also treated by the Veterinary Assistants on tour. In 1907 another Veterinary Assistant was appointed to attend to cattle in the estates managed under the Encumbered Estates Act *(a)*.

The Deputy Commissioner, Palaman, (Daltonganj) writes :—

(a) Palamau District Gazetteer by L. S. S. O'Malley I. C. S. p. 86, [1907.]

(1) Cattle are very bad. Local cows give rarely more than ½ seer of milk per head. They are poor plough cattle and almost useless as cart-bullocks. Cart bullocks are invariably imported.

(2) Villagers value cattle mainly for their manure and take no care of them. More than half the District is uncultivated. There is abundant pasturage during the rains. In the hot weather this burns up and little is left, just enough to keep cattle going with a handful of straw. There is much more grazing than in Shahabad, a bordering district where cattle are very good. In Shahabad fodder crops are grown for cattle and they are stall-fed. Not so here. Hence the difference.

Deputy Commissioner Palamau.

(3) What are wanted are :—

(1) Education as to : *(a)* methods of ensilage. It is unknown here though thousands of tons of grass are burnt in the jungles yearly. *(b)* in growing fodder crops. *(c)* General care of cattle.

Until there is a general improvement in these respects attempts at improvement in breeding would be useless. Ensilage seems to me to be the main thing for the district and many other jungle districts.

4.—Manbhum.

The cattle are gradually small and of poor quality, the main cause of which is no doubt the entire absence of good grazing, outside the hill areas, for more than half the year. An additional reason is the insufficient attention paid to reservation of bulls for breeding purposes, numbers of undersized, ill-fed and barely mature bulls being regularly found with every herd. A few superior bulls are available here and there, and in the north and west some interbreeding with Hazaribagh stock is done, with good results. Buffaloes compare favourably on

Manbhum District Gazetteer.

the whole with the cattle, and in many parts of the district they are extensively used both in carts and ploughing. There is a Veterinary Dispensary at Purulia, in charge of a Veterinary Assistant, established in 1905, and also an Itinery Veterinary Assistant with head-quarters at Dhanbad. *(a)*

Babu Sarat Chandra Sen, *Purulia*, writes :—

(1) The state of cattle and of milk supply is unsatisfactory. They are reduced in size and are growing fewer.

(2) There is not sufficient pasturage, fodder is inadequate owing to its large use in thatching houses. The poor quality and quantity of milk is due to the large exports of oil-seeds. The breeding bulls are very poor and scientific breeding is unknown.

Purulia Town.

He suggests the following remedies :—

Every village should keep sufficient pasturage, and at least one good breeding-bull. Oil-seeds should not be exported from the country and fodder should be very sparingly used for the purpose of thatching.

5.—Singbhum.

Buffaloes, oxen and cows are employed for agriculture but the cattle are on the whole poor, the *Hos* taking no interest in improving the breed. Pasturage is generally ample, for there are wide stretches of jungle and hilly country and there is usually enough rain at intervals throughout the year to keep the grass and other vegetation fairly green. In addition to the grass in the jungles and on the waste lands, cattle get grazing in the rice-fields, where few second crops are grown. On the other hand the

Singhbhum District Gazetteer.

(a) Manbhum District Gazetteer by H. Coupland I. C. S. p. 127 [1911].

available grazing areas are insufficient in the Sadant Pirs of Chakradharpur and Porahat, in Kera, Chainpur and parts of Bondgaon. In these tracts the tenants experience difficulty in getting fodder for their cattle and have to take them considerable distances to graze *(a)*.

Babu Shashi Bhusan Sarkar, Chairman, *Chaibassa* Municipality, writes :—

(1) The state of cattle and of milk supply in the whole of the district is wholly unsatisfactory.

(2) This is mainly due to bad breeding ; the number and quality of cattle are also poor. Fodder and pasture are available.

Chaibassa Municipality.

(3) The District Boards and District Committees and the Municipalities should be enjoined to maintain Dairy Farms in convenient centres and to provide good bulls for breeding purposes. Serious attempts should be made to secure lands for pasture and Government may be approached for the purpose.

The Vice-Chairman, Municipal office writes :—

(1) That the state of cattle and of milk supply is unsatisfactory in all respects *viz.* in respect of number, quantity, quality, breeding, pasture and fodder.

(2) Land should be acquired for the grazing of cattle. Municipalities should be moved to supply buffalo bulls and cow-bulls for breeding purposes.

The Gorakshini Sabha, Chaibassa, District Singbhum :

Gorakshini Sabha.

There are no pasture lands in the District. If there is any little pasture-land near towns the grass is put to auction. The cattle of those people only who pay fees to the Government are allowed to graze in the pasture-lands. The cattle of other people have to stand on sandy places. People can get pasture-land if the Government let out land on nominal fees. The reserved

(a) Singhbhum District Gazetteer by L. S. S. O'Malley I.C.S. p. 118. [1910.]

forests should be thrown open for the use of the public. There are no bulls. The forest people sell their cattle to butchers when they have not got sufficient pasture. They kill some cattle for their own use. Some people keep cows. Some people send them to Goshala.

(a) The cows of the forest people give very little milk—too little even for their calves.

(b) Two things are absolutely necessary for the improvement of the condition of cattle (1) pasture and (2) pedigree-bulls and bulls and bullocks for agriculture. Such bulls should be supplied to agricultural people at reduced prices. The forest people employ cows in ploughing. These cows do not give milk however. We cannot expect their calves to grow into bulls and bullocks.

(c) In former times people had sufficient quantity of grain for the calves and they had enough pasture but both these are sadly wanting now-a-days. The cows are confined to their rooms and never allowed to go outside.

(d) The ryots are too poor to support even their own children—how can they support their cows? The scarcity of milch cows and buffaloes has caused the prices of ghi and milk to increase fourfold.

(e) In former times each peasant had 100 to 200 buffaloes and there was sufficient pasture. It is very difficult for them to maintain their cows as pasture lands have been brought under cultivation. No bulls are provided by the Government. Rinderpest and Septicaemia (haemorrhagic) and many other cattle diseases are prevalent but there are no Veterinary Hospitals with the exception of only one. There is a Goshala. Pamphlets have been published by same for the protection of cattle. The number of cattle slaughtered can not be given as they are not supplied to us by the officials.

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CHAPTER VII.—BIHAR CATTLE-COMMITTEE.

The Bihar and Orissa Government, in a Resolution No. 787-D. dated the 23rd March 1925, appointed a Committee to consider the question of cattle breeding in the province, consisting of the following persons :—

(1) Dr. Clouston, C.I.E., Agricultural Advisor to the Government of India, *President.*

(2) Mr. D. Quinlan, Director, Civil Veterinary Department, Bihar and Orissa, *Member.*

(3) Rai Sahib Hardhyan Sinha, Buxar, *Member.*

(4) Mr. A. C. Dobbs, Director of Agriculture, Bihar and Orissa, *Member and Secretary.*

The terms of reference were (1) to consider the state of cattle-breeding in Bihar and Orissa and (2) to make recommendations to Government as to what further steps should be taken to improve the cattle of the province.

The Committee held its first meeting at Patna on 24th March 1925 when the Phulwari site originally selected for Patna University was visited, in view of its possibilities for the purpose of a dairy farm. We subsequently visited Dumraon, Buxar, Arrah, Maner, Chapra, Bettiah, Pusa and Sitamarhi.

At Dumraon, we saw several of the bulls distributed from Sepaya and some of their progeny, as well as local Brahmani bulls and agreed that the Sepaya bulls were considerably superior both in type and physique to the others. We also cross-examined some of the local cattle-owners.

At Buxar, we inspected the cattle at the jail where a bull of the Hissar type has been used for some years. We also inspected an area near Itari which Rai Sahib Hardhyan Sinha had suggested as a possible site for a breeding farm.

At Arrah, we saw a number of cattle belonging to the local goalas, including bulls both from Sepaya and from the immediate locality, the services of which were in demand by local breeders. We were also fortunate in interviewing Rai Bahadur Harihar Prashad Sinha; he gave us information regarding his own experience of cattle breeding in the villages, and made several useful suggestions.

At Chapra we visited Shitab diara and interviewed one of the leading zamindars who explainded to us the difficulties of maintaining breeding bulls for which no one was definitely responsible. We also interviewed local goalas and cultivators in the neighbourhood of Chapra.

At Bettiah, we inspected the herd of desi cattle originally brought from Pusa, and recently crossed with bulls of the Hissar type It was agreed that the progeny of the cross were not suitable for local purposes and were not likely to prove popular. In any case, it appears that the demand for the services, at Bettiah, of bulls generally, except when treated as Brahmani bulls, is insufficient to warrant continued attempts to maintain them in any other way.

The Committee also saw the Murrah buffalo bulls brought from the Punjab and kept at the Raj Veterinary hospital, for the services of which there is a very great demand in the locality. We were very much impressed with the excellent arrangements made at the hospital and with the value of the services which it renders to the tenantry in this and other ways. We wish to draw the attention of public-spirited land-owners throughout the Province to this demonstration at Betiah and to the good that can be done by work of this nature. We examined goalas, and consulted planters in the neighbourhood on the state of cattle-breeding in Champaran and the possibility of developing it.

We visited Sitamarhi on the first day of the Mela, and enquired into the local practice as regards breeding and rearing of cattle. We also saw two Montgomery bulls purchased by the district board and maintained at the Sitamarhi veterinary hospital.

At Pusa, we inspected some pairs of Malvi bullocks and also saw the Montgomery herd.

Recommendations.

I. The Committee had before them Mr. Milne's Note of 1914 on cattle in Bihar and Orissa, and a note by Mr. Quinlan on cattle breeding and improvement, and after hearing the evidence of goalas cultivators, zamindars and planters in Bihar, we are of opinion that owing to diversity of conditions in the province, and in the absence of any

definite type of cattle or any coherent ideas as to cattle-breeding among the people even in the most advanced tracts, any work undertaken in the next ten years except in regard to the supply of milk must be considered as experimental.

II. The evidence before us shows that in cultivated tracts there are very few exceptions to the rule that people will neither buy nor take care of bulls other than Brahmani bulls.

The best system of distribution that has hitherto been tried has been in Shahabad where arrangements were made with the district board to take over 10 bulls annually at a cost of Rs. 250 per head and distribute one to each village in the diara north of the East Indian Railway main line to begin with.

The bull was placed in charge of a reliable cultivator who was to get Rs. 3 a month for looking after him this sum being paid at the end of the year at one of the larger villages where a show for the cows and young female stock was to be held. If the condition of a bull was unsatisfactory the owner was fined for each bad mark and the amount so deducted given to those whose bulls were in good condition. This system was working well and the villagers were taking a keen interest in the shows when for reasons far beyond the control of the originators, funds could not be allotted by the District Board. We wish to draw particular attention to this and to the moral involved that there must be continuity if there is to be any progress and that the only way to secure continuity is by Government control. It was suggested, however, that Government should take advantage of the system of dedicating Brahmani bulls and we therefore made particular enquiries into the system on which the supply of these animals is maintained and on which they are allowed to forage for themselves in the cultivators' fields.

It appears that when the relatives of a man who has died wish to dedicate a bull in his honour they select the best bull-calf obtainable for whatever sum they can afford to pay. But through poverty or other motives the best bull-calves are rarely in fact selected for the purpose and so the stock in the villages tends to deteriorate. Simultaneously the best cows are continually being sold to dealers and exported to the towns where their calves are reared under the most adverse conditions. The general feeling in Shahabad seemed in fact to be in favour of stopping the export of cattle altogether, so as to reduce the prices both of bulls and cows. But this is clearly impracticable and a better way of securing the same object would seem to be to concentrate the

best animals in herds under competent supervision with a view to putting cattle-breeding on an economic basis through the sale of milk; and to take advantage of the demand for good bull-caves for dedication, to dispose of the surplus male stock on such farms at an early age, thus solving one of the chief economic difficulties in the management of breeding herds.

The regulation by Government of the system of dedicating Brahmani bulls may in fact be suggested as the best means of improving the local breeds. The bulls already distributed from Sepaya in the Shahabad distriict are of the type required for draught purposes. At the same time the number required is very large and operations should therefore begin in one centre and extend at others Government should in certain specified thanas arrange to supply, at their market value, superior bulls of different ages for dedication as Brahmani bulls. These bulls should bear a special brand indicating their origin. The slaughter or castration of the bulls in these thanas or their detention, otherwise than in the authorised pounds, should be made illegal.

III. These bulls should be of the local breed already found in the Shahabad diaras, a herd of which should be built up by selective breeding. To start with, about 200 of the best available cows should be purchased and a good milch herd gradually established by disposing of inferior animals and buying others. The information before us goes to show that good milch cows could probably be purchased at about Rs. 100 a piece. Apart from physical and constitutional defects the principal object of selection should be milking capacity. The Veterinary department should be responsible for the purchase, selection, distribution and supervision of these animals. The herd should be managed by a thoroughly well qualified man on a pay not less than that of the provincial agricultural service and he will require about six assistants in the subordinate service. If the herd is started on the University site of 600 acres at Patna the available area will be ample, and the annual cost, apart from the cost of establishment and of the replacement of inferior cows by purchase, will be about Rs. 30,000. If this system of improvement proves a success it will be capable of indefinite extension over the province. It has also the advantage of creating a definite type of good young bulls and of developing a definite standard on which public opinion may be focussed and by which it may be educated.

IV. We recommend that the merits of the Thar-Pakar breed should also be specially considered with a view to the possibility of its utilization for breeding a dual purpose animal for the province.

V. Meanwhile, other experiments may be tried. Experiments on crossing selected Montgometry bull with local cattle are in progress on two of the farms of the Agricultural Department with a view to introducing the milking capacity of the Montgomery breed and eliminating its objectionable characters. These experiments should be continued. Montgomery bulls may also be distributed where demanded, as at present.

VI. The Committee had the advantage of the Agricultural Adviser's experience with Malvi cattle in the Central Proivnces. A definite type of these already exists on the Powar Khara farm, near Hosangabad, whence bulls can be obtained. The bullocks are in great demand generally and in particular some of the planters in Bihar are importing them in considerable number. They are not a milch breed, and as the evidence before us shows that the required bullocks for draft purpose in Bihar are reared in the grazing tracts where the price of milk is low, experiments with this breed should be confined to those tracts. The Committee have reason to believe that there will be little difficulty in finding owners of large herds in such tracts who will appreciate and look after such bulls.

VII. Buffaloes.—There is already a buffalo farm at Natarhat, but no definite results have been achieved because of difficulties in getting a manager to remain there for any considerable time. We are of opinion that if this farm is to be continued, it is worth while giving any necessary allowance to induce a competent man to live there permanently.

VIII. There is an undoubted demand for buffalo bulls of the Murra type in all the tracts we visited. But in the absence of any system for preserving buffalo bulls either by dedication or otherwise such bulls would either have to be made over to selected breeders in grazing areas, or maintained, as at Bettiah, at Veterinary hospitals, or on Government farms.

IX. As regards the means of obtaining these bulls, an experiment has already been made and has proved successful, of buying calves from heavy milking buffaloes at the Allahabad Military Dairy

and rearing them at Sepaya. We recommend that this system should be extended; and in case the Sepaya farm is abandoned, they should be reared on another Government farm.

X. But we strongly recommend that Sepaya, which appears to be suitable for rearing buffaloes, should be kept on for the purpose of breeding them. The type kept should be the pure Murra. The demand for bulls of this type is a definite one which could not be guaranteed in the case of a crossbred. The bulls should be stationed at small farms and at Veterinary hospitals and maintained at Government expense. The desirability of keeping a small herd of buffaloes on the farm suggested at Patna with a view to economy should be carefully considered.

XI. In order to bring about the retention of good milking cows in the province generally, the possibility of organising the collection, pasteurisation and export to Calcutta of milk by rail should be kept in view.

D. CLOUSTON. D. QUINLAN.
HARDHYAN SINHA. A. C. DOBBS.

PART V.—BOMBAY

CHAPTER I.—GENERAL.

Area, Population and Agriculture.

The Bombay Presidency including Sindh and Indian States has an area of 1,86,923 sq. miles and a population of 27,084,317. Of this total 65,761 sq. miles and a population of 7,411,675 are in the Indian States. Baroda, of course, forms the premier of these Indian States with an area of 8,182 sq. miles and a population of 20,32,798. Aden which is included within this Presidency has an area of 80 sq. miles and a population of 46,165. It comprises 4 Divisions and 27 Collectorates, and embraces a wide diversity of soil, climate and people. There are the rich plains of Guzrat watered by the Nerbada and the Tapti, which is called the Garden of India for its fertility, then come the Deccan districts with a poor soil and climate, and south of these are the Karnatic districts. Konkan is a rice-growing tract on the sea side while in the far north is Sindh a wide and monotonous desert excepting plots where irrigation from the Indus has brought abounding fertility.

The principal industry is agriculture which supports 64 p. c. of the population. The dominant soil characteristic is the black soil of Guzrat, which produces cotton, wheat, gram, millet and sugar.cane, while the alluvial soil of Ahmedabad and Kaira makes splendid garden land. The cotton of Broach and Dharwar are perhaps the best in India. This presidency has been scourged by famine and plague during the past 20 years. The land is held on ryotwari tenure by each cultivator direct from the Government. There are no great perennial rivers suitable for irrigation and the harvest is largely dependent upon the seasonal rainfall supplemented by irrigation from wells and lands.

Building stone, salt and manganese are the principal mineral products. Bombay is famous for its large and varied textile manufactures, while the silver and brass wares of Poona and Nasik are widely known.

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The population varies as markedly as soil and climate. In Sindh Mahomedans predominate, while in Guzrat the Hindus form an overwhelming majority. In Deccan 30 p. c. are Marhattas, Karnatic is the land of Lingayets—a reformed Hindu sect of the 12th century while in the Konkan there is a large proportion of Christians.

The several divisions, districts and sub-districts or taluks of the Presidency are stated below.

I. Northern Division.—7 Collectorates.

1. *Ahmedabad.* Taluks—(i) North Daskroi, (ii) South Daskroi, (iii) Dhandhuka, (iv) Prantij, (v) Viramgam and (vi) Dholka.
2. *Bombay Island.*
3. *Broach.* Taluks—(i) Vagra Jambusar, (ii) Ankleswar, (iii) Amod and (iv) Broach.
4. *Kaira.* Taluks—(i) Borsad, (ii) Anand, (iii) Mehmadabaff, (iv) Thasra, (v) Nadiad, (vi) Matar and (vii) Kapadvanj.
5. *Panch Mahals.* Taluks—(i) Dohad, (ii) Kalol and (iii) Godhra.
6. *Surad.* Taluks—(i) Bardoli, (ii) Olpa, (iii) Jalalpur, (iv) Mandivi, (v) Chorasi, (vi) Bulsar (vii) Chikhli and (viii) Pardi.
7. *Thana.* Taluks—(i) Murbad, (ii) Shahapur Bhiwandi, (iii) Dahanu, (iv) Bassein, (v) Kalyan, (vi) Mahim, (vii) Wada, (viii) Baudra and (ix) Salsette.

II. Central Division—7 Collectorates.

1. *Ahmednagar.* Taluks—(i) Sangamner, (ii) Shevgaon, (iii) Nagar, (iv) Karjat, (v) Akola, (vi) Kopargaon, (vii) Shrigonda, (viii) Parner and (ix) Newasa.
2. *Khandesh East.* Taluks—(i) Erandol, (ii) Amalner, (iii) Raver Jalgaon, (iv) Pachora, (v) Bhusawal, (vi) Chopda, (vii) Jamner, (viii) Chalisgaon, (ix) Yawal and (x) Parola.

3. *Khandesh West.* Taluks—(i) Dhulia, (ii) Taloda, (iii) Sakri, (iv) Nandurbar, (v) Shirpur, (vi) Shahada, (vii) Sindkheda and (viii) Kavapur.

4. *Nasik.* Taluks—(i) Kalwan, (ii) Igatpuri Chandor, (iii) Niphad, (iv) Yeola, (v) Nandgaon, (vi) Nasik Sinnar, (vii) Baglan, (viii) Malegaon, (ix) Peint and (x) Dindori.

5. *Poona.* Taluks—(i) Sirur, (ii) Junnar, (iii) Purandhar, (iv) Poona City, (v) Bhimthadi, (vi) Mawal, (vii) Haveli, (viii) Indapur and (ix) Khed.

6. *Satara.* Taluks—(i) Tasgaon Man, (ii) Walva, (iii) Wai, (iv) Khanapur, (v) Karad, (vi) Javli, (vii Khatav and (iii) Koregaon.

7. *Sholapur.* Taluks—(i) Pandharpur, (ii) Sholapur, (iii) Malsiras, (iv) Sangola, (v) Barsi, (vi) Karmala and (vii) Madha.

III. Southern Division—6 Collectorates:

1. *Belgaum.* Taluks—(i) Chikodi, (ii) Gokak, (iii) Khanapur, (iv) Athni, (v) Belgaum, (vi) Hukeri, (vii) Parasgad and (viii) Bailhongal.

2. *Bijapur.* Taluks—(i) Bagalkot, (ii) Indi, (iii) Bagevadi, (iv) Bijapur, (v) Hungund, (vi) Sindgi, (vii) Badami and (viii) Mudbihal.

3. *Dharwar.* Taluks—(i) Ranebenmer, (ii) Gadag, (iii) Ron, (iv) Hubli, (v) Hangal, (vi) Dharwar, (vii) Kod, (viii) Navalgund, (ix) Kalghatgi and (x) Bankapur.

4. *Kanara* (Karwar). Taluks—(i) Haliyal, (ii) Sirsi, (iii) Ankola, (iv) Karwar, (v) Siddapur, (vi) Yellapur, (vii) Kumta and (viii) Honavar.

5. *Kolaba.* Taluks—(i) Mangaon, (ii) Alibag, (iii) Karjat, (iv) Pen, (v) Panvel, (vi) Mahad and (vii) Roha.

6. *Ratnagiri.* Taluks—(i) Vengurla, (ii) Dapoli. (iii) Chiplun, (iv) Devgad, (v) Sangmeshvar (vi) Ratnagiri, (vii) Khed, (viii) Malvan and (ix) Rajapur.

IV. Sindh—7 Collectorates.

1. *Hyderabad.* Taluks—(i) Hyderabad, (ii) Dero Mohbat, (iii) Badin, (iv) Hala, (v) Tando Bago Allahyar Guni.

2. *Karachi.* Taluks—(i M)irpur, (ii) Bathoro, (iii) Kotri, (iv) Talta, (v) Sujawal, (vi) Jati, (vii) Ghorabari, (viii) Karachi and (ix) Shahbandar.

3. *Sukkur.* Taluks—(i) Shikarpur, (ii) Rohri, (iii) Mirpur, (iv) Mathelo, (v) Garhi Yasin, (vi) Pano Akil, (vii) Sukkur and (viii) Ghotki Ubauro.

4. *Larkana.* Taluks—(i) Larkana, (ii) Mirokhan, (iii) Labdarya, (iv) Kakar, (v) Kambar, (vi) Dader, (vii) Ratodero, (viii) Seh-wan, (ix) Mehar and (x) Warah.

5. *Thar and Pakar.* Taluks—(i) Pithoro, (ii) Umarkot, (iii) Jamesabad, (iv) Mithi, (v) Diplo, (vi) Sanghar, (vii) Khipro, (viii) Digri Nagar Parkar and (ix) Mirpurkhas.

6. *Nawabshah.* Taluks—(i) Nanshahro, (ii) Nawabshah, (iii) Sinjhoro, (iv) Kandiaro, (v) Moro, (vi) Shadadpur, (vii) Sakrand and (viii) Indo Aden.

7. *Upper Sind Frontier.* Taluks—(i) Thul, (ii) Shahdadkot, (iii) Jacobabad, (ix) Kandhkot, (v) Kashmor and (vi) Mirpursakro.

Political charges :

1. Aden, 2. Cutch, 3. Kathiawar, 4. Kohlapur and Southern Marhatta Country, 5. Mahi Kantha and 6. Palanpur under Political Agents.

The following are the principal breeds of cattle in the Bombay Presidency:—

(1) *Kankreji.*—A tall, substantial, grey breed, active but docile, and very valuable for all agricultural operations. They walk fast and perform the lighter operations such as sowing and interculturing very neatly and fast. They make good cart bullocks on unmetalled roads. The cows are fair milkers, some of them very good, and if bred for milk purposes the breed would probably become a first class milk breed. They are very carefully bred for draught purposes in the Palanpur Agency and in parts of the Ahmedabad and Kaira Districts.

(2) *Guzarathi.*—This breed may be regarded as the same as the Kankreji, but less carefully bred, and containing an admixture of other blood, especially amongst those bred in lower Guzarat where there has been much crossing with Gir and Khandesh breeds. They are consequently wanting in the quality of the Kankreji.

Breeds of cattle.

(3) *Talabda.*—Is the name commonly given to home-bred Guzarathi cattle. The breed is very similar to the Guzarathi cattle, but in parts of the Surat District, where these animals have been carefully bred and have a high reputation, they may be considered as a separate breed.

(4) *Gir, Surati or Sorathi.*—The bullock is a medium sized, heavy animal, useful for general agricultural purposes. The cows are good milkers and are freely imported into most parts of the Presidency. Predominating colours red, speckled red and white. In the Deccan farmers often import a Gir bull to cross with Deccani cows to get more weight and the cross-bred animal makes a hardy, useful bullock for farm purposes. The Gir cattle are bred in Kathiawar.

(5) *Malvi.*—A handsome, useful breed of moderate size, usually pure white. The bullocks are freely imported from Malwa into Guzarat and the Northern Deccan. They are

bred in a degenerate form in the Panch Mahals. They are much used for carting and lifting water by the *mhot*. They are sturdy, but slower than Kankrejis. The cows are fair milkers.

(6) *Sindhi.*—A useful type of bullock for general purposes, known as Sindhi, is imorted into upper Guzarat from Sindh and Rajputana.

(7) *Khillari*—A large, active bullock, fiery and intractable, much valued in the Deccan, especially for cart work. The cows are very poor milkers and the calves run with the herd, and are seldom handled till they are broken in for work. Predominating colours white and grey.

(8) *Sonkheri.*—A red and white breed peculiar to parts of Nasik and West Khandesh. The bullocks are strong, useful animals for general purposes, and the cows are fairly good milkers.

(9) *Deccani.*—A small, active, hardy breed, suitable for light field and road work, intractable and difficult to train. When pure bred they are symmetrical, sturdy animals; but comparatively few well bred Deccani cattle are to be found.

(10) *Krishna Valley.*—A very massive, slow, powerful breed, suitable for heavy tillage in deep black soil. The cows are moderate milkers.

(11) *Mysore and Amrit Mahal.*—Strong, active cattle useful for all draught work. The Amrit Mahal is a very fine and pure breed, active and shapely, with neat limbs and good feet. Bad milkers.

(12) *Dongri and Dangri.*—Are bred immediately above and below the Ghats in the Nasik, Nagar and Thana Districts. They are strong, useful animals for miscellaneous work, larger than the Deccani cattle, and have a characteristic colour of black and white in patches.

(18) *Karachi.*—A smallish breed of red cattle, carefully bred for milk production and much prized on that account. The bullocks are fair, useful animals.

Buffaloes.

(1) *Jaffarabadi.*—A very large breed of buffaloes bred in Kathiawar, heavy milkers but somewhat irregular breeders, and the extra milk that they give hardly repays the cost of the additional food which their size demands.

(2) *Delhi.*—A medium sized, massive breed of very good milkers probably the best in India. They are much in demand everywhere for milk production. Regular breeders and of quiet disposition.

(3) *Surati or Nadiadi.*—A medium sized, shapely breed, bred in Guzarat. Regular breeders and economical animals which milk well above the average when well looked after.

(4) *Varadi or Nagpuri.*—A medium sized breed, bred in Central Provinces and parts of the Hyderabad State. Intermediate in appearance between the Surati and Deccani. Good milkers, but their period of lactation is of short duration.

(5) *Deccani.*—The common breed of the Deccan, Karnatak and Khandesh. Smallish and similar in appearance to the Surati, except that they have long horns. Their average milk yield is low.

Apart from these distinctive breeds, on the breeding and rearing of which care and trouble are taken, there are a number of cross breeds everywhere. In Guzarati such cross-breeds usually show signs of Gir or Malvi blood, in the Deccan of Khillari and Gir (Sorti) blood, and in the Karnatak of Mysore blood. In parts of the Deccan it is a common practice for the cultivators to introduce a Khillari or Gir bull to run with the village herd, the object being to increase the size of the non-

descript Deccani cattle. In the Dharwar District also a bull of the Mysore type is sometimes introduced with success, and the resulting cross-breeds are known as Hatti cattle. In most parts, however, the bulk of the cattle consist of nondescript mongrels, underbred and underfed, the position of which in the economy of village life will be considered later on.

The Director of Agriculture, Bombay, Poona writes :—

Director of Agriculture.

The state of the cattle and of milk supply is not satisfactory in the Bombay Presidency.

There are too many cattle of an inferior type both as regards working cattle and as regards milking animals. Conditions would have been much better if they were fewer in number.

For this reason we are devoting time, attention, money and energy to breeding better cattle than at present exist, to distributing the bulls which make better cattle obtainable, to propaganda in favour of better attention to fewer cattle and in favour of better feeding which will be made possible by the increased cultivation of fodder crops.

The Sanitary Commissioner for the Government of Bombay, Poona writes :—

Sanitary Commissioner.

1. The condition of both cattle and milk supply in Sind alone is reported as satisfactory. Sind cattle are the best in this Presidency. In the larger towns of Sind as elsewhere the milk supplied to the consumer is not usually of the standard it should be. Adulteration and the question of supply and demand help to produce this. In the remaining districts the milk supply and milch stock are both defective. Bad and insanitary stabling, lack of attention to feeding requirements, specially during the seasons when fodder is scarce, and indiscriminate breeding are given in the reports as the causes of the poor quality of stock. The same causes and the manner in

which it is drawn, handled, adulterated and distributed are stated to be the reasons for defects in quantity and quality of the milk supply of towns. The famine of 1918 resulted in the death of much of the livestock of the affected areas of the Province. Organised relief measures on lines of importation and for supply of fodder, preparation of prickly pear for use as cattle food were carried out by Government and by local authorities on a large scale but it was impossble to serve all parts of the country.

3. General suggestions for improvement of milk supply of towns :—

(a) Establishment of a model dairy with model cattle sheds on the out-skirts of the town.

(b) Inspection of cattle, cattle-sheds, supervision of gowlis and regular supervision of utensils by officers of the Sanitary and Veterinary Departments.

(c) Insistence on the use of wire gauze covers for milk vessels by gowlis. These might be supplied at cost price.

(d) Legislation against sophistication and contamination of milk.

(e) Allotting of pasture land for milch cattle.

(f) Improving breed by supplying at nominal rates good quality breeding bulls and encouragement to owners to take a more intelligent interest in the matter of breeding.

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CHAPTER II.—NORTHERN DIVISION.

1.—Ahmedabad.

Ahmedabad District Gazetteer.

The chief domestic animals of the district are oxen, cows, buffaloes. Of oxen the 1876-77 returns show a total of 148, 399 head. The finest worth from Rs. 150 to 300 the pair, owned by the well-to-do Kanbi and Bohora cultivators of Daskroi, Dholka and Dhandhuka, are brought from Kathiwar and Kankrej in Palanpur. The cattle of the other parts of the district, especially in Modasa, are small and poor. The Gogha oxen though small and lean, are said for endurance and power of draught to equal the larger breed, Of cows the total is returned at 90,414 and of she-buffaloes at 110,089. Cows of the Dhandhuka breed are much prized and said to yield as much as sixteen pints of milk a day. The other details given in the Kaira statistical account applies to Ahmedabad.

Year.	1880-81. No.	1990-91. No.	1900-01. No.	1901-02. No.	REMARKS.
Plough-cattle		145,274	80,501	90,882	
Breeding-bulls	160,237	1,410	325	579	
Oxen and he-buffaloes for other purposes		5,721	3,026	2,925	
Milch cattle	177,837	187,483	50,258	63096,	
Young stock	.....	91,858	30,367	40,481	
Total cattle	338,074	431,746	164,557	197,963	
Ploughs	63,496	67.361	38,584	43,365	
Carts	21,389	23,622	17,288	17,466	

Rao Bahadur Ramanbhai M. Nilkanth, B. A. L. L. B., President Ahmedabad Municipality, Ahmedabad writes:—

(1) The state of cattle is generally fair though it cannot be said to be satisfactory. The state of the milk supply has been generally unsatisfactory.

Ahmedabad Municipality.

(2) There is a large business of making butter and cream out of milk. The butter and cream is exported to cantonments &c., and the skimmed milk left after butter and cream taken out by mechanical processes is sold at a comparatively cheap price and is also fraudulently mixed with unskimmed milk. This also spoils the milk supply.

(3) There should be sanitary control and regulations about the stabling, feeding, watering, pasturing etc., of cattle as well as about milking conditions and cleanliness of milk utensils. Good and healthy fodder as well as large grazing grounds should be available for cattle.

2.—Bombay.

Imperial Gazetteer Bombay.

Cattle are in general allowed to breed promiscuously. Good milch cows are raised in the Gir forest of Kathiwar, while the plains of Guzrat support cattle of exceptionally fine type, large, big-boned, powerful and docile. The best cattle in the Deccan are bred in the Kistna Valley, but throughout the greater part of the Deccan and Carnatic the cattle are of no fixed type or particular breed. They are small, hardy and active. In Sind good cattle are bred, of medium size but sturdy proportions; the milch-cows are well known and are exported to other parts of the Presidency. The following prices are obtainable for cattle of these descriptions. Gir cow Rs. 60, bullock Rs. 75, Guzarat cow Rs. 80, bullock Rs. 125; Deccan cow Rs. 50, bullock Rs. 35, Sindh cow Rs. 70, bullock Rs. 35.

Buffaloes are of four types: namely, Jafarabadi, Delhi, Surati and Deccani. They are usually kept for milk but in districts of heavy rainfall buffaloes are often used for draught purposes in preference to bullocks. A good cow-buffalo fetches Rs. 150. The number of cattle was greatly reduced by the famine years between 1896 and 1901. The broad plains of Sindh and Northern Guzerat furnish abundant pasture. In central Guzerat the best milch and plough cattle are stall-fed, while the herds of the Deccan for the most part pick up what they can on the borders of the fields except where, as near the Ghats there are forest lands open to grazing. There are no great yearly cattle fairs. The common cattle diseases are rinderpest, food and mouth disease, and anthrax. There are in the whole Presidency 21 Veterinary Dispensaries, at which 34,320 animals were treated in 1903-04.

Statement showing the number of animals slaughtered in Bombay during the five years from 1st April 1919 to 31st March 1924.

Cows	2,29,257	
Buffaloes	90,804	
Bullocks	73,636	
Sheep and Goats	40,50,018	
		44,43,715
Calves and young Buffaloes tortured to death in the stables		97,583
TOTAL ...		45,41,298

Statement showing the number of animals slaughtered at the Bandra and Kurla Municipal Slaughter-houses during five years from 1st April 1919. to 31st March 1924.

Year ending 31st March.	Cows.	Buffaloes Bandra.	Buffaloes Kurla.	Bullocks.	Total	Sheep and Goats.
1920	54,736	10,240	6,782	18,887	90,645	8,76,651
1921	61,298	10,241	6,282	15,402	93,223	7,83,612
1922	40,454	11,536	7,408	14,674	74,072	8,15,498
1923	39,046	11,009	8,205	11,638	69,898	7,87,915
1924	33,723	11,396	7,705	13,035	65,859	7,86,342
Grand Total	2,29,257	54,422	36,382	73,636	3,93,697	40,50,018

Mr. Gokuldas K. Parekh of Bombay writes :—

Bombay City.

(1) In my opinion the milk supply for the urban population of the Bombay Presidency is unsatisfactory and insufficient. In some parts of the Presidency the state of cattle is fairly good. In some it is very poor. I have no doubt that with better knowledge of scientific cattle-breeding, superior organisation of the cattle-breeding industory, more liberal allocation by Government of pasture and grazing lands, some relaxation of forest restrictions, adoption of the necessary measures for preventing the spread of cattle epidemics and cattle disease, and the establishment of a sufficient number of cattle hospitals that may be accessible to the entire rural population of the country, the state of the cattle can be considerably improved.

3.—Broach.

Broach Gazetteer.

The cattle are of two breeds, the small indigenous bullock, and the large bullock of Northern Guzarat. The smaller breed of bullocks generally

driven in trotting carts, are worth from Rs. 80 to 120 each. Prosperous cultivators pay much attention to the appearance and condition of their cattle.

Statement showing number of cattle. (a)

Year.	1880-81.	1890-91.	1900-01.	1905-06	1909-10.
Plough-cattle		55,582	43,680	45,522	49,406
Breeding bulls		152	109	211	247
Oxen and he-buffaoes for other purposes	67,609	739	1,106	1,082	946
Milch cattle	52,832	40,702	18,783	25,870	33,452
Young stock	.....	34,702	13,087	29,439	39,982
Total cattle	1,20,441	1,31,877	76,765	1,02,124	1,24,033
Ploughs	26,228	26,972	22,385	22,114	24,405
Carts	18,489	19,155	15,811	16,661	17,845

Khan Bahadur Adarji Mancherji Dalal B.A. President, District Local Board, Broach, furnishes the following information:—

(1) The state of cattle and of milk supply in Broach city and in the villages of the District is not satisfactory.

District Local Board.

(2) The number of milch cattle is inadequate in proportion to the population of the District. This is due to the fact that there are no great pasturages in the District. Most of the land having come under cultivation and so fodder is also insufficient. There is also scope for improvement in the breeding of cattle.

(a) *Broach Gazetteer* by A. M. Green. Vol. II, B. [1914] p. 6.

(3) Large areas of land should be kept apart as pasturage by Government in every village. If necessary land may be acquired from private owners.

Good bulls and he-buffaloes should be supplied to villages for improving the breed of cattle. In this respect the District Local Boards might give some help. This year the Broach District Local Board has provided Rs. 500 for the purchase of good bulls which will be supplied to some selected villages.

Model Dairy Farms should be established, one in each District by Government under the Agricultural Department as guides to the people.

The large export of cotton-seed and other oil-seed cakes to foreign countries has produced a marked effect on the quality and quantity of milk and on butter and ghee which have become very dear. Either this export should be prohibited or checked by imposing a heavy duty on exports.

Year by year the health of the people and of the live-stock is depreciating resulting in a great economic loss to this country which was once famous for its cheap and abundant milk supply.

Mr. Mamilal Matilal Arya, Secretary, District Association, Broach, writes:—

District Association.

(1) The state of cattle and milk supply is not satisfactory.

(2) Their number is less than necessary. There is 1 cattle to seven men. Quality of cattle ought to be improved. Good, strong bulls and he-buffaloes should be imported from Kathiwar and other places. Adequate pasture should be provided by the Government in each village and city. Fodder should also be adequate. Government should encourage cattle-breeding.

4.—Kaira.

Kaira District Gazetteer.

The chief domestic animals of the district are oxen, cows, buffaloes, sheep and goats, horses, camels and asses. Of oxen the 1876-77 returns show a total of 128, 247 head. A few of the finest worth from Rs. 150 to Rs. 300 the pair owned by well-to-do Kanbi cultivators are brought from Kathiawar and Kankrej in northern Guzrat. But some of the largest are bred in the district, Bhalaj and other villages of the Nadiad Sub-division being famous for their bullocks. The poorer cultivators have smaller leaner, and less valuable cattle worth from Rs. 30—100 a pair. But except in Thasra and Kapadvanj, where they are small and in poor condition, the Kaira cattle are on the whole large and fine animals. Among cultivators the common practice is to buy and rear calves. Besides a full supply of grass and millet stalks, the rich man's bullocks have every day a pound or two of crushed oil-seeds and from four to six pounds of pulse. Except in the busy season (June—November) when they have a pound or two of oil-seed and grain, millet stalk are the only fodder of the poor man's cattle, and sometimes they are turned out on the village grazing ground to shift for themselves. Of male-buffaloes the 1876-77 returns show a total of 10,315 head. Most male calves are kept from the mother's milk and allowed to die. Of cows the total is returned at 49, 264 and of she-buffaloes at 180, 223. Well-to-do cultivators own from three to ten milch-cows and buffaloes. A cow varies in value from Rs. 20—50 and a she-buffalo from Rs 30—80. These animals are except in the rainy season (July-October) almost all stall-fed. Their fodder is grass and millet-stalks with, when in milk, every day a pound or two of oil-seed cake and cotton-seed, kapasia. The towns-man generally keeps only one cow or buffalo and uses all its milk in his own family. The cultivator makes most of the milk into clarified butter, sending weekly supplies to market. Professional herdsmen or Rabaris, as well as cultivators, rear milch cattle both cows and she-buffaloes, Their cattle are not stall-fed. They are supposed

to graze them on the common pasture ground. But finding scanty fodder there the Raberis have little scruple in letting their animals stray into any unguarded field. Brahmans and Vanias generally make over their young calves to Kambis and Kolis to be reared. On handing it over the calf is valued and the common agreement is that when the calf is full-grown and again valued the owner pays the man who reared it one-half of the increased price. Milch-buffaloes are sent from the district by rail in considerable number chiefly to Surat and Bombay.

Years.	1880-81. No.	1890-91. No.	1900-01. No.	1901-92. No.	1905-06. No.	1909-10. No.
Plough cattle		112,871	80,613	84,517	85 010	100,906
Breeding bulls		624	268	391	908	947
Oxen and he-buffaloes for other purposes	150,857	1,038	846	815	556	765
Milch cattle	202,105	155 258	61,602	72,901	67,487	95,958
Young stock	.....	114,749	39 899	53,239	68,490	100,864
Total cattle	352,962	384,540	183,228	211,863	222,451	299,440
Ploughs	5,803	63,122	45,613	47,438	42,865	48,641
Carts	27 719	28 379	23,204	23,465	9 482	10 023

The President Borsad Pinjrapole and Municipality writes:—

Borsad Municipality.

So far as Borsad town is concerned the state of cattle and of milk supply is excellent. The establishment of a creamery or a cream factory threatens to upset this condition of things. People have always opposed

such industr.y In the villages they are numerous and milk is adulterated and is not available for consumption.

Kapadwanj Municipality.

The Vice-President, Kapadwanj Municipality writes that the state of cattle and milk-supply is not satisfactory those in respect of number of cattle, pasture fodder and milk production owing to the prevalence of famine conditions. He hopes, however, that with good monsoon most of the defects will be removed. He suggests that the sale of milk should be controlled for checking adulteration.

5.—Panch Mahals

Panch Mahals District Gazetteer.

Of oxen the 1876-77 returns show a total of 86,024 head. Little care is taken in breeding oxen. Compared with the neighbouring Kaira and Baroda bullocks, most of them are poor, small and weak. At the same time they are hardy and active and can work on the poorest fare. A pair of them costs from Rs. 30—50. In some of the larger towns is a better class of bullocks. Those belonging to the Godhra Ghanchis, apparently a cross between the local and the the large Kaira cattle, are of fair size and good draught power. A pair of these draught bullocks is worth from Rs. 50—100. Of cows the total is returned at 90,928 and of she-buffaloes at 31,762. Like the bullocks the cows are poor, yielding from two to five pints of milk a day and costing from Rs. 10—20. Buffaloes are common, many of them of fair size and quality. Large herds are owned by professional herdsmen of the charan caste. These men came chiefly from Kathiwar and many of their buffaloes are of the well-known Nagodi-breed. She-buffaloes, when in milk, give from six to fifteen pints a day and vary in value from Rs. 30—60. Male-buffaloes (5911) are not used either in draught or in tillage. They are either killed when young or sold in other parts of Guzrat.

	1880-81 No.	1890-91 No.	1900-01 No.	1901-02. No.	1905-06. No.	1909-10. No.
Plough cattle		78,995	69,021	73,662	85,010	100,906
Breeding bulls		887	284	363	908	947
Oxen and he-buffaloes for other purpose	76,201	1,701	694	607	556	765
Milch cattle	100,730	85,883	29,601	40,582	67,487	95,958
Young stock	.....	73,343	18,407	32,384	68,490	100,864
Total cattle	176,931	240,809	118,007	147,598	222,451	299,440
Ploughs	32,124	39,578	34,290	36,970	42,865	48,641
Carts	7,027	8,394	7,588	7,714	9,482	10,623

Mr. K. H. Desai, Secretary, Godhra Municipality writes:—

1. The state of cattle and milk-supply is not satisfactory.

Godhra Municipality.

2. This is due to want of stud-bulls and bad as well as insufficient fodder.

3. The remedy lies in the provision of more stud-bulls, supply of good and sufficient fodder and starting milch-cattle farms by public bodies.

6.—Surat.

Surat Gazetteer.

The indigenous or talabda bullock is generally of medium size and is used chiefly for agricultural purposes. The large muscular bullocks or hedia are brought from Northern Guzarat. A third class of bullock, small but

hardy and a quick mover, is much used in harness. The cows and buffaloes of the District are greatly esteemed the cows for their appearance and the buffaloes for their yield of milk.

Otto Rothfield Esqr., I.C.S., Collector of Surat says that

1. The state of cattle and the supply of milk in this district is not satisfactory.

2. The number of milch cattle is very limited. The quality of such cattle is very poor. The breeding is not up-to-mark. Pasture is limited. Fodder not very plentiful in many taluks and the production of milk is very little.

Collector of Surat.

3. As remedies to stop the above evils he makes the following suggestions:—

(a) The number of milch cattle should be increased.

(b) The breeding of cattle should be improved. The number of bulls and he-buffaloes should be increased and best quality should be selected for breeding purposes.

(c) Pasture land is limited in this district. In old times every khatedar was keeping at least one third of his holding uncultivated. Now-a-days such a thing is a rare instance. Cultivators should be induced to keep at least one-fourth if not one-third of their holdings to grow grass.

(d) So long as the number of milch cattle is not increased the dairy industry in this part of the country should be discouraged. Cream is exported and the wastage of milk is only available to the poor. The poor do not get better milk and that is why they are losing in strength and physic.

(e) The price of fodder has gone abnormally high. Some steps should therefore be taken to restrict the prices of fodder.

(f) To prevent adulteration stringest measures should be adopted and to supply pure milk the number of milch cattle at Government Farm should be increased.

7.—Thana.

Thana Gazetteer.

Except in Mokhada, the east of Vada, and Shahapur, little attention is paid to the breeding of cattle. In Mokhada care is taken in the selection of bulls, which are bought from Nasik graziers, the Kanadas cattle from the hills or the Nasik border being considered the best.

Mr. Mohan Lal, Secretary, M.C. *Basin* writes :—

That the state of cattle and of milk-supply in his locality is not satisfactory.

2. The reasons are :—

Basin Municipality.

(a) Short number of cattle, (b) Inferior quality of cattle, (c) Want of good breeding, (d) Want of pasture and fodder. The production of milk is quite insufficient.

Suggested remedies :—

Nothing can be done unless pasture-lands are increased and the slaughter of cows is stopped.

The Government should make some restrictive laws in this respect.

Lt. Col. M. P. Kharegat, I.M.S., President, Matheran Municipality, writes ;—

1. The state of cattle and of milk-supply here is not satisfactory.

2. Because the demand is intermittent, pasture and fodder scanty and dear, water-supply dear and the quality of cattle poor.

Matheran Municipality.

3. Cannot suggest any remedy.

	1880-81.	1890-91.	1900-01.	1905-06	1909-10.
Plough-cattle		1,83,041	1,63,436	1,67,937	1,71,619
Breeding bulls		915	760	883	713
Oxen and he-buffaloes for other purposes	2,04,569	4,322	5,410	5,171	4,410
Milch cattle	1,45,981	1,36,189	1,24,856	1,30,087	1,36,220
Young stock	.....	1,26,532	1,03,349	1,08,207	1,21,675
Total cattle	3,50,550	4,50,999	3,97,811	4,12,285	4,34,637
Ploughs	87,247	84,170	75,616	76,604	79,867
Carts	24,507	30,007	32,091	33,832	34,908

(a) District Gazetteer, Thana, by G. S Hardy Vol. II, B. [1913] p. 7.

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CHAPTER III.—CENTRAL DIVISION.

1.—Ahmednagar.

Ahmednagar District Gazetteer.

The chief domestic animals are oxen, cows, buffaloes. Their number considerably decreased during 1876-77 famine but the returns seem to show that the stock is gradually regaining its former strength. The best breeding grounds for horned cattle are Muthatne, Kumbhalne and Tirde in Akola which are favourite resorts for the Kanadas and other cattle-breeders. The chief markets for their stock are Bhiwudi and other places in Thana. Of oxen the 1812-13 returns showed a total of 252, 602. Oxen are of three kinds. A well-to do husbandman has at least two pairs of Khilari oxen usually large and known by their long, straight horns and pretty shape costing Rs. 150—300 the pair. Dhangars bring young animals from Khandesh and the Satpura hills. They are prized above any other oxen especially for their speed in light travelling carts. The Deccan or local bullock like the Lamani bullock, is used by middling and poor husbandmen, Though poor and small in comparison with the others, it is well-set and strong and very useful for tillage and cart-drawing. They cost Rs. 100—200 the pair. If allowed plenty of milk when young the Deccan bullock turns out a stout useful animal. Besides the above a few Guzrati bulls and cows are reared by Ahmednagar milk-sellers because of the large yield of milk of the cows and because they cost little to keep as they graze in the forest and grass-lands along the banks of the Bhima. Twenty years ago field oxen of an ordinary middle size were also abundant and are said to have been cheapest and stronger than those now seen. Before the time of railways herds of 100 to 500 cattle were brought into the district by Vanjari traders loaded with grain, salt and firewood. From June to January grass is generally abundant and husbandmen give bullocks nothing else to eat. At other times the supply of

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grass is eked out by millet-stalks or kadba and by oil-cake. In the dry season, three to four pounds a head are given daily. Husbandmen are usually careful to leave the calves a large share of their mother's milk. Marwar Jains, Brahmans and other non-agricultural classes take most of the milk for themselves and leave little to the calves. Bullocks pinched in this way are small and weak and unfit for ploughing or draught. They are bought by butchers and sent to Poona or Bombay. Of cows the 1882-83 returns showed a total of 1,95,210 head A husbandman has generally one to six cows worth Rs. 20—40 each. The cows are of an ordinary middle size. lighter and smaller than the Khandesh breed. After the calf has its share the milk is partly used for house purposes and partly made into clarified butter and sold. A cow for eight months after calving yields two to three pints of milk (1—5 seers) a day. The Kunbi keeps many cattle which at first sight seem useless. Many are too weak for the plough or the cart. But these weak cattle have a great value as fuel and manure makers.

Of buffaloes the 1882-83 returns showed a total of 46, 522 head, 11,547 of them male and 34,945 female. She-buffaloes are reared for their milk, which is a necessity in every household. They are stout and healthy, and are found in large numbers. For ten months after calving their daily yield is eight to twenty-four pints (4—12 seers) and sometimes more. They are of five kinds. Of these the Jafrabadi costing Rs, 150—209 and yielding nearly 24 pints (12 seers) a day, is the most valuable, but as it is very large and costly it is uncommon. The Deccan or local buffaloe is of two kinds the Gaularu or herdsmens' buffalo and the Gauranu or villagers' buffalo. Of these the Gaularu, with long horns and thin face, reared by Gaulis and costing Rs. 100—150, is the best yielding from 14—20 pints (7—10 seers) of milk a day. The Gauranu, the commoner variety costs Rs. 50—100 and yields a smaller quantity of milk Except by the Gaulis who

make and sell clarified butter the milk is generally kept for home use. Male buffaloes are seldom reared except for breeding. The male calf as a rule is neglected. Male buffaloes are seldom worth more than Rs 30—40. Except in Akola where there is much forest and pasture land, there no wondering herdsmen who deal solely in horned cattle. Weekly cattle markets are held at Valki in Nagar, at Godgaon, Kukuna and Pumpalgaon in Nevasa, at Pathardi in Sheogaon; at Mirajgaon in Karjat, and at Kharde in Jauked.

In 1825 the cattle of the district were reported to be inferior. Mr. Dunley, the Collector, asked Government to supply him with twenty bulls for breeding, ten of them from Khandesh and ten from Kankrej to the north of Ahmedabad where the finest Guzrat cattle are grown. In 1826 the first annual show of cattle was held at Ahmednagar when Rs. 400 were distributed in prizes for bulls and cows.

	1880-81. No.	1890-91. No.	1900-01. No.	1905-06. No.	1909-10. No.	REMARKS
Plough-cattle		290,123	181,254	194,075	241,870	
Breeding-bulls		866	415	587	737	
Oxen and he-buffaloes for other purposes	251,633	11,426	3667	4,474	5,504	
Milch cattle	183,089	230,743	111,134	151,024	189,261	
Young stock	.....	140,735	81,667	122,433	152,697	
Total cattle	434,722	673,893	378,137	472593.	590,069	
Ploughs	58,790	73,397	37,905	36,360	44,569	
Carts	21,802	29,842	28,425	30,935	34,736	

The Cantonment Magistrate, Ahmednagar writes:—

1. The state of cattle and of milk-supply is not satisfactory in this Cantonment.

2. The cause of above is shortage of cattle as

Cantonment Magistrate, Ahmednagar.

(a) A large number was starved the death and slaughtered by the butchers in the famine.

(b) No arrangements for breeding are made. It is left to chance.

(c) The prices of fodder were too high on account of famine, hence the gowlis could not give a more nutritious fodder than hay which they are purchasing from the Military Grass Farms at Rs. 15 per 1,000 lbs.

3. All the neighbouring forest of this Cantonment are taken over by the Grass Farms and unless the cattle are allowed to graze on payment of nominal fees as before the health of cattle will not be improved.

2.—Khandesh.

None of the breeds of Khandesh domestic animals are of any special excellence. Bullocks, returned at 314400 are not, as a rule, of any great value. There is a very good breed known as the Khilari, somewhat small but strong and hardy, first trotting and very teachable. It has suffered much from injudicious crossing. Weak and stunted bulls are allowed to roam at large with the village herds, and even where, as at the Government farm a good bull is at hand, little care seems to be taken to obtain his services. Want of fodder in the hot dry weather goes far to injure the breed; only the more wealthy cultivators give their cattle anything like proper maintenance. A pair of good bullocks costs from Rs. 100-150. Cows, returned at 2,22,215 are poor and ill-fed. Little care is taken of the breed. Khandesh suffers terribly from cattle disease, apparently of many types and showing various symptoms. Most forms of the disease may probably be traced to the want of proper food and clean water, and to exposure

to the cold at night and the heat in the day. The price of a cow varies from Rs. 4 to 10.

Buffaloes, returned at 103,428 are on the whole much better than the other cattle. The people prefer their milk to cows' milk and take more care of them, feeding and tending them better. The young males are usually sold into other districts as they are not much used for carriage or pack-purposes. The finest buffaloes are found in the wilder parts where grazing is plentiful, especially near rivers. But there is not a hamlet where buffaloes, sometimes in considerable numbers, are not found. Female buffaloes cost from Rs. 15 to 30. The roving Vanjaris sometimes bring fine cattle for sale from Nemad and Malwa and thus enable the local farmers to improve their stock.

	Khandesh.			West Khandesh.	East Khandesh.
	1880-81. No.	1890-91. No.	1900-01. No.	1909-10. No.	1910-11. No.
Plough-cattle		358,692	281,916	132,487	190,647
Breeding-bulls	384,980	5,503	2,276	1,715	1,691
Oxen and he-buffaloes for other purposes		24,011	11,723	4,301	10,895
Milch cattle	398,706	300,961	129,949	114,377	161,993
Young stock	.....	208,301	75,109	93,811	139,864
Total cattle	783,686	897,468	500,973	346,691	505,090
Ploughs	107,993	122,586	95,608	53,749	41,447
Carts	707,332	104,718	100,565	38,588	76,567

The Chairman of the *Jalgaon Municipality, East Khandesh* suggests the following remedies :—

Jalgaon Municipality.

Forest restrictions on grass should be removed, breeding camps should be established. Slaughter of strong cattle including cows should be forbidden. There is a provision for District Magistrate to prevent cows being sold to slaughterers; but it is very rarely put in force.

Caste Panchayats should make it a rule to punish those who sell cows to slaughterers and who mix water in milk before selling tt. The condition of cattle in general cannot be said to be satisfactory and it is found to be gradually deteriorating. The supply of cows milk is deplorably short perhaps owning to a gradual decrease in the number of cows. The conditions in the market are getting acute day by day and it is but natural that there should be an increase in the rates of milk. With the poor milk has become an article of luxury.

The number of cattle is decreasing. Particularly the decrease in the number of cows is deplorable on the ground of consequent decrease in the number of oxen which are a necessary and an important factor in agriculture. There is no system of good breeding in the district. There are no breeding institutions and importation of good breed is scarce.

Mr. D. G. Kulkarni, Vety. Assistant, Dhulia writes (through the Collector of West Khandesh, Dhulia) :—

1. The state of cattle and of milk-supply is not satisfactory.

Dhulia West Khandesh.

2. The number and also quality of cattle is not satisfactory. There is neither sufficient pasture nor fodder. All good land is brought under cultivation. No good stud-bull are available.

Remedies suggested :—

3. Stud-bulls should be kept at centres, pastures should be

kept according to number of cattle. Cultivators should make provision for fodder. Shows may be held and breeders encouraged by award of prizes. Facility or concession should be given to fodder growers. Restrictions should be put on the slaughtering of young heifers.

3.—Nasik.

The local breed of oxen is fit for most kinds of field-work. Six other breeds are also common *viz.*, Surti, Varhadi, Kilhari or Tilhari Gavrani, Malvi and Bahali. Surti oxen are tall, white and wild-looking Gavrani oxen are of various colours with crooked horns.

Nasik District Gazetteer.

Oxen are bred by Kunbis and by Kilharis or Tilharis, a class of professional herdsmen. They begin work at about three years old, and from one to three pairs are yoked to a plough. Ordinary carts want only one pair of bullocks, but heavy grain and grass wagons are sometimes drawn by as many as five pairs. Pack bullocks are used in the hilly district by Vanjaris for carrying grain and salt. They are also used for carrying tobacco, cloth, pots, bangles and oil. Oxen are fed on millet stalks, rice husks and khurasni oilcake with an occasional feed of gram or a dose of salt.

Cows calve when three years old, and live from fifteen to twenty years. A good cow will give five seers of milk for four months in the year. Milch cows are fed on millet stalks, wheat straw, carrots, boiled onions, cotton-seed and pulse bran. Their price varies from Rs. 5 to 30 and the monthly cost of their keep from Rs. 2 to 6. Cows are sometimes given to herdsmen to take care of, on the understanding that the owner is to take the male and the herdsmen the female calves, sometimes the calves are shared equally.

He-buffaloes are commonly used for ploughing, dragging timber, drawing heavy carts, and sometimes for carrying water. She buffaloes calve when four or five years old. They live to sixteen or eighteen. A good buffalo will give seven seers of milk for eight months in the year. They are fed in the same way as cows, at a monthly cost of about Rs. 8. Their price varies from Rs. 25 to 80. (a)

	1880-81. No.	1890-91. No.	1900-01. No.	1905-06. No.	1909-10. No.
Plough-cattle		2 36,793	1,80,668	2 06,786	2,32,722
Breeding-bulls	2 25,802	3,709	2,064	3,438	3 555
Oxen and he-buffaloes for other purposes		11,810	6629.	7,596	9,754
Milch cattle	2,10 954	1,86,381	1,17,634	1,58,403	1,78,547
Young stock	.....	99,768	64,452	1.10,094	1,2.0921
Total cattle	4,36,756	5,38,461	3,71,447	4,86 317	54,5,499
Ploughs	60,014	77,850	66,157	74,522	78,946
Carts	25,217	34,636	33,723	36,543	39,733

4.—Poona.

Poona District Gazetteer.

The domestic animals of Poona are the same as those found in other parts of the Deccan. The pasturage is uncertain. In a few seasons it is abundant, in many it is scanty or precarious, and in times of drought it fails. When the grass fails the cattle have to be sent to distant pastures in the higher hills and large numbers

(a) Nasik District Gazetteer by G. S. Hardy. [1923.] Vol.. B, P. 7.

perish. The district has no class of professional cattle-breeders. But Kurbis who form the bulk of the husbandmen own large numbers of cattle, rear them with care and sometimes deal in cattle. The 1881-82 returns show a total about 200,000 oxen and 140,000 cows. Deccan cattle are hardy little animals, inferior in size and appearance to those of Guzrat. Every village has its public grazing grounds, inferior waste lands free of Government assessment, the resort of almost all the village cattle. The mixing of the cattle in the grazing grounds does much to injure the breed and to spread disease.

Bullocks, returned at 206, 632 and cows at 139, 793 are of ten kinds, Khilari, Malvi etc. Khilari cattle are the most valuable draught animals in the Deccan. They are of good size, active, strong and fairly teachable. One of the favoured breeding grounds of the Khilari cattle is the hilly country between Satara and Pandharpur whence they are generally brought. Oxen of this breed cost Rs. 30—200 and cows Rs. 25—90 each. Cows are seldom sold as the owners are unwilling to part with them and when a promising calf is born allow it to drink the whole of its mother's milk. Oxen are generally used in field work, for drawing water from wells, for drawing carts, for pressing oilseed and sometimes for riding. Except that barren cows are used by Vanjaris as pack-animals no cows are made to work. Working-bullocks are fed with grass chaff, cotton-seed, oil-cake, millet ears etc. When out of work the bullocks are sent with the cows to the village grazing lands under the charge of a cow-herd. At night they get nothing to eat but grass. During the rains when there is no field work some of the oxen are taken to the hills and left at large to graze. As regards the feeding of cows there is diversity both of opinion and of practice, but millet stalks, both Indian millet or juari and spiked millet or bajori are considered the best food. According to some authorities oilcake of all kinds lessens the quantity of milk but increases the amount of

butter and cream. When cows are kept only for milk, it is usual to milk three of the four teats, leaving the fourth for the calf. When it is meant to be reared for field-work or for other purposes, the calf is allowed to drink whole of the milk. The monthly cost of a buffaloe's keep may be estimated at about Rs. 12. If fed in this way a country cow will give 4—6 Poona seers a day and a Kathiwar or Aden cow 8—11 seers. A buffalo gives at 12 Poona seers. Oxen which are being prepared for sale or are extra-fed to make them stronger and more useful in the field are kept at home day and night and fed largely on ground or bruised pulse, ground-nut, cotton-seed, sesamum, fresh joari stalks, bajri flour and sometimes a small quantity of oil.

Cattle disease :—The chief forms of cattle-disease are *tiva* a disease of the stomach, *lal* a disease of the mouth, *sushi* a a disease of the bowels. *khiorkut* a disease of the hoofs *dhendal* or fatal diarrhœa and *phasi* a disease of the tongue. *Huoe*, caused by gas in the stomach after imprudent feeding, is easily cured by an aperient of hot linseed oil, peppermint and ginger or epsom salts. The Indian form of the foot and mouth disease is easily cured with cleanliness, carbolic acid and careful feeding.

Except Ghirs or sorthis, which live for more than thirty years, the age of a bullock or cow varies from twenty to twenty-five years. The custom of keeping a sacred bull or *pol* free from work and fed by all is still kept in many villages. But as young bulls are seldom castrated till they are four or five years old and as till then they graze with the other cattle, the advantage of the village bull is to a great extent lost.

Buffaloes, returned at 53, 122 in 1881—82 are common over the whole of the district. The cow-buffaloes (41,055) provide most of the milk. They are considered hardier and thrive on coarser food than other cattle. Many male calves are allowed to perish but especially in the western rice-fields some are used in the plough. They are of special

value in the rainy season when the sun is not oppressive. A cow-buffalo is not made to work except when she gets fat and unmanageable. Eleven kinds of buffaloes are found in the district. In order to get a larger quantity of milk the professional buffalo-breeders often destroy the young calf as soon as it is born, taking care to prevent the mother seeing it. Most rich and middle-class people keep she-buffaloes for their milk. The male- buffaloes (12 068) are in such little esteem in the Deccan that few people keep them. A male calf when born is thrown away or deserted. Buffaloes are fed with grass, millet stalks or sarum and chaff. In the rainy seasons they are sent to graze in fields or on hill-sides. She-buffaloes almost always stall-fed are well cared for. A cow-buffalo calves once every two years and usually gives milk for a year after calving. Buffaloes live from twenty to twenty- five years. As a rule it is only in working rice-fields that the buffalo is preferred to the bullock (a)

Years.	1880-81. No.	1890-91. No.	1900-01. No.	1905-06. No.	1909-10. No.	REMARKS.
Plough-cattle	220 823	256 360	189,054	189,182	228,753	
Breeding-bulls		1,115	634	1,354	780	
Oxen and he-buffaloes for other purposes		9,442	4,796	6.539	6,795	
Milch cattle	158,552	198,189	136,497	157,266	188,192	
Young stock	.....	97,571	78,497	109,468	144 329	
Total cattle	379 375	562,677	409,478	463 809	568,849	
Ploughs	49,074	56,941	49,144	49,111	51,877	
Carts	18,366	25,136	24 558	27,173	30,809	

(a) 1913. Vol. B, Poona and Bhor by G. S. Hardy.

The Chief Officer, Poona City Municipality, Poona, writes :—

1. The state of cattle and of the milk-supply in and about Poona is most unsatisfactory.

Poona City. Municipality

2. Poona cows and buffaloes are generally of small stature, of indifferent breed and give small quantities of milk. The pasture available is very meagre and of very inferior quality. There is very little pasture land reserved for cows and cattle, and the surrounding country is poor in soil and productiveness.

There are no institutions of a co-operative character for milk production and distribution. Infant mortality is rapidly increasing for want of sufficient milk, which is selling at 4 to 5 lbs. per rupee in Poona City.

3. The remedies to be adopted in Poona are nearly the same as those required for other parts of India. I may detail a few of them.

(a) Government should reserve sufficient pasture land of a good quality for grazing of milch cattle. Ryots should be allowed to use the pasture lands on payment of very moderate fees.

(b) Stringent measures should be adopted against adulteration of milk and ghee by Municipalities, Local Boards and Goverment Officers.

(c) The slaughter of milch cattle should be kept within very restricted limits.

(d) Encouragement should be given to the importation and breeding of cattle of good milking quality by Government and by private agencies.

Mr. P. P. Paranjpye, Principal Fergusson College, Poona writes :—

Milk is getting dearer and dearer every day. Fodder is getting scarce and very dear. In Poona City many middle class people are in the habit of keeping a cow or buffalo at home but it is getting now beyond their means Attempts are being made to organise the distribution of milk but a greater, and better supply of fodder is very necessay. Dry cattle are sold often for a song and often go to the butcher. I have no objection to raise cattle for their meat but it is a disaster if dry cows and buffaloes have to go to the butcher simply because the cost of keeping them when dry is becoming prohibitive.

Mr. Paranjpye.

5.—Satara.

Cattle:—According to the Collector's 1882 returns the district farm stock included 246,921 oxen, 152,640 cows, 115,311 buffaloes.

Oxen:—The oxen, returned at 246,921, are of two breeds, the local and the khillari. The khillari bullocks are said to come from the east. Both breeds are used for field purposes. The khillari, though the larger and the more muscular animal, is somewhat delicate and does not live so long as the local bullock. A common khillari bullock will sell for Rs. 50 in the cattle market of Mhasvad, in Man good ones sell for Rs. 100 and in parts of the district a choice animal fetches as much as Rs. 100. The tiny, quick running Surat bullocks are occasionally seen in light riding carts. Except a few from the Bhima valley oxen are seldom imported.

Cows and buffaloes:—There is no special breed of cows or of buffaloes. It is said that Surat cows were imported a century ago. Cows and she-buffaloes are used for their milk only except when necessity compels their use for field purposes. He-buffaloes and oxen are used for draught The price of a good cow varies from Rs. 20—40 and of a good she buffaloe from Rs. 30—40. Large herds of buffaloes are often seen on the Sayadris in charge of a single boy or

girl. They are driven at night into enclosures hedged with rough posts generally five or six feet high. In other parts of the district the cows and buffaloes live either close to or inside of their owner's house.

	1880-81. No.	1890-91. No.	1900-01. No.	1905-06. No.	1909-10. No.
Plough-cattle	250,667	251,558	177,008	180 119	193 094
Breeding-bulls		718	539	781	506
Oxen and he-buffalo for other purooses		7,265	3,304	4.174	3,656
Milch cattle	197,419	215,555	153,958	171.695	187 304
Young stock	.....	140,629	109,552	130 432	145,175
Total cattle	448,086	615,725	444,361	487 201	529,735
Ploughs	42,0176	49 440	50,223	45,332	44 895
Carts	15,550	22,924	22,771	24,158	24 187

The above are taken from the B Vol. of the Gazetteer of the Satra district published in 1913. It was compiled by Mr. G. S. Hardy, I.C.S.

The Secretary, Satara Bar, says :—

1. The state of cattle and of milk supply in our locality is in no way satisfactory.

2. The causes are (*a*) Butchery (*b*) Want of fodder and pasture and (*c*) Want of breeding.

Whenever one visits any cattle market, one finds that the majority of customers, prrobably the only class of customers, consists of this butcher class, whatsoever

Satara Bar.

may be the cause of this either (1) the proverbal Indian poverty or (2) the extra premium set upon cow-flesh, the result is there and it means a loss of certain number of cows every bazar day, the loss increasing in proportion to the greatness of the bazar; such a drain on the stock of cattle, unless sufficiently replenished, no nation can bear.

2. As regards fodder and pasture. The system of keeping pasture-grounds for the common use of every village has became a historical fact. Government can set apart some land for every village to be utilised as common pasture.

Good breeding will supply a good quality of cattle; but before reaching the quality the quantity itself is being speedily reduced.

The remedies would be (1) Strict prohibition against killing of cows. (2) Free and sufficient allotment of common pasture for every village and (3) Competent arrangement for good breeding of cattle.

The Vice-President, District Local Board Satara, writes:—

District Local Board, Satara.

The local breed, though not a special one is stout and hardy and best suitable for ploughing. The milk-cows are fairly good and their daily yield is nearly 6 lbs. The Khilari breed is noted for its good production of milk and for generating good plough bulls. The milk-supply before famine was sufficient.

In order to maintain the agricultural strength of the district which has been deteriorating on account of famine the breeding of the Khilari kind must be encouraged by granting free pastures and giving rewards for good stamps during shows.

The Chairman, Talegaon Dabbada Municipality writes:—

1. The state of cattle and milk-supply is by no means satisfactory.

2. The state of cattle is unsatisfactory because of the want and dearness of fodder.

3. A good supply of fodder at a low rate will improve the present state of cattle and milk-supply. A substantial diet is also necessary for the improvement of milk.

Talegaon Municipality.

The Chief Officer, Barsi City Municipality, writes that the state of cattle and milk-supply is satisfactory in that locality.

Barsi Municipality.

6.—Sholapur.

In 1832-83 the stock returns showed 1,92,733 oxen, 1,01,318 cows, 55,523 buffaloes. Exclusive of ponies, sheep, goats and asses, the returns give an average of 510 head of cattle to each village. In the Sholapur district large grass lands or kurans are few and are either private or mixed with forest land. Throughout the year the village cattle, except the plough bullocks are generally sent everyday about eight in the morning to graze in waste or padit numbers and are brought back to the cattle sheds in the evening by boys paid to attend them. During the five months ending in November the cattle generally have excellent fodder, improve greatly in health and make up what they lose in the hot season. During December and January the cattle are fed on millet stalks or kadbi. During the remaining four months from March to June the village cattle suffer much from want of fodder, and grow weak and thin. In these months as the fields are empty, the cattle find little fodder outside of the house. At home the allowance is generally very scanty a bundle or two of millet stalks a head. Every morning and evening the cows and she-buffaloes are milked, and after meeting local wants, the milk is made into clarified butter.

Sholapur District Gazetteer

Oxen returned at 192,733 are of six breeds Khilari raised by Dhangars of that name, Deshi or local, Lamani or Laman's

Malvi from Malwa, Sorti from Guzarat and Gokaki from Gokak in Belgaum. The Khilari bullocks are the best and the local the commonest. The Khilari bullocks are largely found in the state of Jath and the Atpadi Sub-Division of the Pant Prantinidhi's state to south and south-west of Sholapur. They are stout, hardy and well-made, mostly of one bright colour with straight horns, red eyes, and somewhat fierce look and an illtemper. As they cost as much as Rs 100-300 the pair only the rich can afford Khilari bullocks. The local bullocks are mostly home-bred and are quiet and tame. Though equally lasting and patient the local bullock is inferior to the Khilari bullock in strength and beauty. In the plough and in the cart one pair of Khilaris will do as much as two pairs of local bullocks. They (the local bullocks) are much cheaper costing Rs. 40-100 the pair. The four remaining breeds are rare. The Gokaki bullocks are better suited for carting than ploughing. The bullocks are usually owned by husbandmen who use them chiefly in the field. Plough and cart bullocks are never sent to graze with the village herd. During about ten months in the year from April to February, bullocks have constant work. From July to February (for about eight months), a well-to-do husbandman can supply his bullocks every day with fresh fodder. In July and early August the husbandman feeds them on the fresh stalks of the hundi or eighty days joari; in late August, September, October and November on fresh grass, which under the care of a young boy the working bullocks are allowed to graze three hours every morning. In December, January and part of February he feeds them on the green fodder of the early and late crops. During March, April, May and June the bullocks are given dry stale and unnourishing fodder. To keep them in strength during these dry months working bullocks are also given corn and oilcakes. From March to May the poorer husbandmen who have not much field work take to carting. As Sholapur is the trade centre for the Nizam's dominions in the north and north-east and the Bombay Karnatak in the south a large traffic, chiefly in cotton

and wheat giving constant work to carts, finds its way through and out of the district. Carting pays well and enables both the husbandmen and the bullocks to pass comfortably through the hot season and to return to field work in good strength. No special care is given to bullock breeding. Bullocks begin to work when four years old. About 1,000 pounds is the heaviest load one pair of bullocks can draw in a cart. As the district is generally flat good roads have lately been made and carts have almost entirely taken the place of packs. A few pack-bullocks, are used by Tambolis or betel-sellers, Manyars or hardware dealers, and other petty traders. A bullock seldom lives more than twenty five years. About twenty they become unfit for work. Then the poor generally sell them to the butcher, and the well-to-do keep them at home till they die. The great bullock festival is Pola or ox Day which in Sholapur falls on the thirtieth day of Shravan or July-August. On this day bullocks are well washed, gaily dressed and richly fed and in the evening they are taken to the village deity with much show and music.

Cows returned at 1,01,318 are mostly of local breed. The cows are all sent to graze daily with the village herd. At home milch cows get a little fodder at night and again in the early morning. Cows not in milk, get no fodder till the month of Poush or January-February. A good cow costs Rs. 30-40 and an ordinary cow Rs. 10-20. When about four years old the cow begins to bear, and continues to bear every year for ten or twelve years. At sixteen she generally becomes barren and is left to herd with other cattle. As she gets little help from her owner, except a handful of millet stalks or kadbi, the rice-chaff or bhusa, she soon loses strength and dies after two or three years. For a day or two after calving a cow is generally fed on Indian millet or joari. To increase her milk the well-to-do give her for a week khir or boiled wheat and the poor give ghugri that is bajri boiled unsplit and unhusked. Along with the khir or the ghugri four tonics or masalas are mixed, ketchu kath, aloes bol, rocksalt saindhab and sweet

fennel badishep. Cows are milked twice a day in the morning and in the evening; only half the milk is taken, the rest being left for the calf. At each milking a good cow gives about six pints (3 seers) of milk and an ordinary cow three pints (1½ seers.) Two months after calving the supply of milk falls off about a third and in the fifth and sixth months about two-thirds. At about eight months after calving the milk ceases. Of the two chief products of the cow husbandmen care more for the calves and other classes for the milk, by whom cow's milk is especially valued as the most wholesome food for children. To husbandmen who have nothing to pay for grass, a cow in milk costs about Re. 1 a month for corn and oil-cakes; to others who have to pay for grass, she costs about Rs. 2 in villages and Rs. 4 in towns.

Buffaloes are returned at 55,523 of which 718,739 are he and 36,784 are she-buffaloes. During the day both he and she-buffaloes are sent to graze with the village herd. He-buffaloes are generally used for draught and field work and she-buffaloes for milk. Their dullness and slowness make he-buffaloes unpopular. Few except the poor own them. Watermen or Bhistis use them in carrying water skins, Mhars in carrying fuel and timber and poor husbandmen in carrying millet stalks and other field produce. As they are neglected from infancy few he-buffaloes are well formed. The specially strong and well-made, which are kept for breeding fetch about Rs 75; the others fetch Rs. 10-25. They are chiefly bought by Devaru Gosavis who sell them in the Konkan at a good profit. She-buffaloes are of two breeds gaoli or milkman's and deshi or local. The gaoli's or milkman's she-buffaloes have long horns and are of a deep black colour; the deshis have short horns and are of a dirty colour. Well-to-do husbandmen keep one or two and gaolis keep herds of she-buffaloes. When about four years old a she-buffalo begins to calve and continues to bear once every year. She generally turns barren at fifteen and dies at twenty. A first class gaoli she-buffalo gives eight to sixteen pints

(4—8 seers) at each milking. As it gives more butter than the cow's milk, the she-buffaloes milk is much valued and sells at twenty-four pints (12 seers) the rupee. A deshi she-buffalo costs Rs. 20-50, a gaoli she-buffalo not less than Rs. 80 and she-buffaloes are better fed than cows. In towns a good she-buffalo costs Rs. 10 to Rs. 12 a month. In village the cost is about a fourth. The skins of buffaloes are especially valued as they are used in making motes or leather water-bags. (a)

	1880-81. No.	1890-91. No.	1900-01. No.	1905-06. No.	1909-10. No.
Plough-cattle		2,07,639	1,25,477	1,21,372	1 51,679
Breeding bulls		1,218	524	530	716
Oxen and he-buffaloes for other purposes	1,45,627	13,305	4,230	5,542	5,228
Milch cattle	79,819	1,73,214	78,611	86,005	1,15,607
Young stock	.....	1,27,057	74,383	85,079	1,12,317
Total cattle	2,25,466	5,22,423	2,83,225	2,98,528	38,554
Ploughs	9,657	10,744	14,390	13,261	18,501
Carts	8,248	13,544	13,703	15,204	17,243

(a) Sholapur District Gazetteer by J. M. Cambell, Vol. XX [1884,] B. Supplementary Vol. [1913].

GSL

CHAPTER IV.—SOUTHERN DIVISION.

1.—Belgaum.

Buffaloes do not thrive on the Sahyadris though a few are kept in most villages. The best buffaloes come from Sampgaon and Gokak and the country to the east. She-buffaloes which are bred by cultivators and milkmen have their first calf at the age of five and go on bearing till they are about sixteen. They are of four breeds. Except that it is taller and stronger the Dhangari breed differs little from the country breed. When in full milk a good she-buffalo gives 5—10 seers of milk a day, keeps in milk for ten months at a time. The price of a milch-buffalo which has just calved, is about Rs. 25 if she gives 3 seers of milk a day and Rs 10 more for every seer above three. He-buffaloes begin to work when four years old and are used for ploughing, draught and burden. For heavy work a pair of he-buffaloes are often kept and are most useful on account of their great strength and when well-broken, on account of their steadiness. The trade between Savantvadi, Goa and Belgaum is carried on almost entirely by pack bullocks and buffaloes which take down grain, fruit and tobacco, and bring back salt, cocoanuts and dried fish. The price of a draught buffalo varies from Rs. 30—50.

Belgaum District Gazetteer.

Cows are found all over the district. Those living on the Sahyadris are smaller than those of the more level country and give little milk. The breed further inland is on the whole better fed and larger, but in all parts of the district small cattle always far outnumber the large. Cows first calve when three to four years old, and go on bearing till they are about fifteen. They feed on grass, millet stalks, cotton-seeds and oil-cake. A good cow when in full milk gives about 4 seers of milk and continues in milk about six months. The price of a young full grown cow varies from Rs. 15—40. There are eight breeds of bullocks sorti, mudla, etc., etc. Of the first four the *sorti* or south Kathiwar bullocks are the strongest and

largest, about 13½ hands at the shoulder. They have thick black horns, large ears and long thick tails. Though they are slow no team for ploughing is considered complete without one or more pairs of sortis.

Bullocks are generally reared by the cultivating classes and are put to work when they are three years old. A pair of mudla or nagdi bullocks ploughs four acres of lands in six days, while three or four pairs of sorti and kundalvari bullocks, working together at one plough, take ten days to plough an equal area of land. A pair of bullocks of the sorti breed costs Rs. 90—200, of the mudla breed Rs. 50—200, of the kundalvari breed Rs. 30—100 and of the nagdi breed Rs. 25-80. On a fair level road, a pair of good well-fed oxen can as an ordinary day's work draw a load of half a ton sixteen miles a day. For carriages or dhamanis, fast trotting bullocks of the Maisur breed are often used which sometimes cost as much as Rs. 300 a pair. Pack-bullocks owned by pedlers and traders carry about 8 maunds of grain or cloth packed in gunny bags.

	1880-81. No.	1890-91. No.	1900-01. No.	1905-06. No.	1909-10. No.
Plough-cattle	212,153	207,844	166,788	158,947	171,429
Breeding-bulls		2 302	812	1,139	830
Oxen and hebuffaloes for other purposes		10,584	5,390	5,284	4,497
Milch cattle	156,537	186,125	140,244	138,299	159 023
Young stock	.....	148,829	111,687	114 646	128,078
Total cattle	368,690	555,684	424,921	418,315	463,857
Ploughs	59 414	68,328	64 408	62,152	66,954
Carts	21,320	28,803	30,556	30,990	32,045

Dr. R. D. Dalal, Deputy Sanitary Commissioner S.R.D., writes :—

State of cattle and milk supply.

Deputy Sanitary Commissioner.

The state of cattle and milk supply in this southern Registration District is unsatisfactory. The milch animals chiefly buffaloes kept for sale of milk are generally illfed emaciated and dirty. Milk is insufficient in quantity and bad in quality; and the price has largely increased, The quantity of water added varies with the price. It is impossible to get pure milk at more than 3 to 4 seers per rupee. The conditions under which milk is produced and distributed are insanitary. Milkers are dirty and much of the milk is dirty. Cow-sheds are insanitary and there is much over-crowding. Fodder and grain have to be purchased at enhanced rates. There are practically no pastures and no grazing lands. In large towns cattle feed on human excrement. Breeds are country-bed such as Jawari, Gowli, Surti etc

Suggestions for the improvement of milk supply.

(*a*) Arrangements for accomodation of the milch cattle by offering Gowlis sanitary cowsheds and grazing land on low rentals in the outskirts of the town or in the neighbourhood.

(*b*) Registration of milch animals kept for sale of milk after veterinary inspection.

(*c*) Inspection of cattle, cattle-sheds and supervision of Gowlis and utensils.

(*d*) Dry animals should be allowed to graze in Forest Areas at reasonable rates.

(*e*) Every Municipality should posses a model Dairy and should erect model cattle sheds on the outskirts of the town.

(f) Prevention of Adulteration Act should be introduced.

(g) Milk should be examined by experts before sale.

(h) Establishment of Co-operative milk Dairies and grain stores.

(i) The Forest Department should store fodder and sell it at cheap rates to the Gowlis.

(j) Improvement of the breeds of milch cattle and careful rearing of calves.

Suitable stud-bulls and he-buffaloes should be provided and services of these should be free of charge. A breeding expert may be appointed.

(k) Slaughter of good milch animals should be prohibited.

(l) Education of the public as to dangers of impure milk by handbills and lectures.

Gokak Municipality.

L. M. Vantmurimath Esqr. President, Gokak Municipality writes that the state of cattle in respect of its number and quality and of milk supply is not satisfactory and this unsatisfactory state is chiefly due to the want of free scope for the cattle to graze in the forest. If the rigid rules of the Forest Department are modified into mild ones so as to enable to owners of the cattle to allow their cattle freely in the forest he hopes that the state of cattle in all respects and milk supply will improve.

2—Bijapur.

Bijapur District Gazetteer.

Though there is no want of fodder and though the climate is favourable for rearing animals, foreign cattle are generally preferred to the local breeds. The finest district-bred cattle are found in villages

bordering the river Krishna where there is always an abundant supply of good fresh water and excellent grazing. The only good market for cattle is held weekly at Amingud, about eight miles west of Hungund, where cattle are brought for sale from parts of the Nizam's territory and Dharwar.

Oxen.—Of oxen the 1832-83 returns show a total of 201,752 head. They are of four kinds. The finest of these the Mudalshimi, come from Bangalor, Bellari Chitaldrug and other places in Madras. They stand about five feet high, are very large and muscular and are useful both for draught and as plough cattle. An ordinary pair costs about Rs. 150 and a fine pair as much as Rs. 400. Surat and Malwa oxen sell for about Rs. 100 a pair or nearly double the price of an ordinary pair of country-bred animals.

Cows—Of cows the total is returned at 104,948. Except that there are no Mudalshimi cows and that Malwa cows are rare, the cows are of the same breeds as the oxen. Both the Malwa and Surat cows are considered superior to the Deshi cows; they are much larger and stronger and give double the quantity of milk. A pair of Surat cows costs Rs. 50—150 while the price of an ordinary pair is about Rs. 30, and a pair of Malwa cows can be had between Rs. 30 and Rs. 50.

Buffaloes.—They are of 2 kinds, a bettar called Gavlaru or Gaoli's buffaloes, and the ordinary inferior one known simply as *mhais*. The Gavlaru buffaloes come from Nagpur. It has long horns, is much stouter and gives better milk than the common district buffaloes. A pair of common buffaloes costs Rs. 50 while the Gavlaru costs from Rs. 75 to 150 a pair. (a)

The Hon'ble Mr. P. A. Desai of Bijapur writes:—

(1) The state of cattle in our district or rather in this part of the Presidency, is at present, deplorable.

(a) Bijapur District Gazetteer by J. M. Campbell [1884.]

(2) There is a great scarcity of fodder since last year. The number of cattle that we have in this district is in my opinion sufficient while the quality of cattle and breeding must occupy more attention of the public. Cattle farms have been established by the Government to give instructions on the art of cattle-breeding. There is no system of reserving pastures for each village. It is advisable that Government should make some arrangement in times of scarcity by throwing open the reserved forests for grazing. Government should take steps to reserve pastures for each and every village where there is Government waste land and should keep a large stock of grass in the district and Taluka towns.

Hon'ble P. A. Desai.

(3) Some rules requiring a particular portion of the holding to be grown with fodder-yielding crops should be introduced.

Rai Bahadur, R. K. Kemchavi, Vice-President District Local Board, Bijapur, writes :—

(1) The state of cattle and of milk supply is not satisfactory generally in this district.

(2) It is unsatisfactory as regards quality of cattle, breeding, pasture and adulteration of milk.

Remedies suggested :—

There is absolutely no system of good breeding. There should be good stud-bulls in the principal centres of the district. Government should keep free pasture grounds in all villages. Adulteration of milk should be punished by law. There should be Dairies all over the district under the control of Dairy Co-operative Societies.

Bijapur District Board.

3.—Dharwar.

Dharwar is not a cattle-breeding country. The local breed is decidedly poor. The demand for good cattle is supplied from Sholapur, Pandharpur, Maisur and Bellari. The chief cattle-marts are

Dharwar District Gazetteer.

Dharwar, Hubli, Navalgund, Kalghatgi and Alur in Hangal. The cattle-breeders are Davri, Gosavis, Dhangars, Gaulis, Airgaulis and Lambanis. Formerly the abundance of cheap grazing encouraged the people to keep a number of miserable beasts which could never do a day's work. The average animal has of late somewhat improved in quality and as it now costs money to feed cattle none are kept which cannot earn their keep.

Of oxen the 1882-83 returns show a total of 2,58,510 head. These are principally of three kinds. Of these the finest are the large white Maisur bullocks which cost Rs. 150 Rs. 300 or even more; the holsal or Krishna bullocks cost Rs. 50—100; and the local bullocks which are smaller cost Rs. 30—60. All three kinds are used for ploughing, for riding, and for drawing carts, but the Maisur bullocks are said to be best suited for carts. The larger bullocks last about 16 or even 20 years and the smaller about 12 years. Of cow the total is returned at 1,51,379 and of buffaloes at 1,23,975 of which 83,452 were she-buffaloes. The best buffaloes come from the black soil country in Navalgund, Ron and Gadag on the east and north. A cow costs Rs. 8—30 and a she-buffalo Rs. 30—60. *(a)*

The Vice-President, Navalgund Municipality, Dharwar District, says :—

(1) The state of cattle and of milk supply in the Navalgund Taluk (Dharwar District) is not satisfactory.

(2) The number of milch cattle is very small. There is no breeding institution here; most of the oxen for agricultural purposes are imported from Mysore Province where cattle-breeding is maintained by the Mysore Durbar. There are no pasture grounds here either reserved by Government or retained privately. Almost all

Navalgund Municipality.

(a) From Dharwar District Gazetteer by James M. Campbell [1884.]

the lands are turned into arable by land-owners. The only grounds of pasturage are the river or the nalla sides where there are rivers and streams, and in other places the either sides of roads and small streams, and hence the state of pasturage is always worse in the event of shortage of rains when fodder crops are not grown.

(3) The only remedies that can be suggested are.

(*a*) There should be sufficient number of pasture lands reserved free or otherwise in every village.

(*b*) Extension of Railways and thereby facilitating importation of fodder from other parts.

(*c*) Irrigation from rivers wherever feasible.

(*d*) The maintenance of cattle-breeding in big towns either by Government or private societies is the essential point to improve the condition of cattle and also opening of Dairies throughout all the parts of the country.

4.—Kanara. (Karwar)

Kanara District Gazetteer.

The domestic animals of the district are according to 1881-82 returns, oxen (1,09,034), cows (1,11,354), buffaloes (63,773). Everywhere but especially below the Sahyadris the stock is inferior. On the coast the pasture yields little nourishment. No Indian millet is grown, and rice straw is a poor substitute. In Karwar, Kumta, Ankola and Hanaver there are few domestic animals of local breed; bullocks in these coast subdivisions are thin,

weak and stunted. Above the Sahyadris in the forest subdivisions of Supa and Yellapur domestic animals are exceedingly rare. In Mundgod, Haliyal, Sirsi and Siddapur ponies are kept for carrying packs by Pendharis, and some good bullocks and buffaloes are also found. Both above and below the Sahyadris the best cattle are imported from Dharwar and Maisur.

Bullocks begin to work at about six years old. Carts and ploughs are generally drawn by one pair of bullocks The usual cart-load varies from twenty to thirty mds. of twenty-eight pounds. Pack-bullocks are used by Lambanis, Korchars and Maris who move from village to village selling rice, cocoanuts, plantains and salt. A pack-load is three or four *mans*. In the rainy season the pack-bullocks are left to graze in the fields, but in the fair season they are stallfed on straw, grain, oilcake and cotton-seed. The price of a bullock varies from Rs. 20—40. Cows begin to calve at about five years of age and go on bearing until they are about fifteen. They give one or two pints of milk a day for about six months after calving. The price of a cow varies from Rs. 8—20 and is sometimes as high as Rs. 20

She-buffaloes begin to calve at five and go on bearing till they are about fifteen. They yield about six pints of milk a day for about eight months and their price varies from Rs. 25—50. He-buffaloes are used for draught, ploughing and pack-carrying, and are stronger than bullocks. Formerly Gaolis used to roam in the forest with large herds of buffaloes. These animals were found to cause much damage to the saplings and the Gaolis were ordered to leave the district unless they took to tillage and kept no more animals than were wanted for farm work. Hubli is the chief buffalo mart. In Hubli the price of a good she-buffalo varies from Rs. 40—50. Haiga Brahmans keep a large number of buffaloes as milk is their chief article of diet.

	1880-81. No.	1890-91. No.	1900-01. No.	1905-06. No.	1909-10. No.
Plough-cattle	1,29,221	1,07,349	1,04,209	1,06,316	96,372
Breeding-bulls		697	684	1,259	1,125
Oxen and he-buffaloes for other purposes		7,163	4,826	5,134	3,938
Milch cattle	1,37,882	1,08,521	97,995	1,04,691	90,576
Young stock	.....	68,964	77,060	75,205	70,579
Total cattle	2,67,103	2,92,694	2,84,774	2,92,005	2,62,590
Ploughs	44,795	47,743	55,492	54,871	53,814
Carts	4,374	5,844	6,409	6,093	5,974

R. A. Nadkarni Esqr. B.A. Huzur Deputy Collector, Kanara, writes :—

(1) Neither the state of cattle nor of milk supply in this locality is in any way satisfactory.

Deputy Collector Kanara.

(2) The number of cattle is insufficient. They are stunted and rickety in appearance. No regular process of breeding is followed here. The chief difficulty for the rearing of cattle here is the want of pasture and fodder. Nearly all the lands fit for grazing are included in the reserved forest. The kind of fodder used here is rather of poor quality.

(3) The first and foremost thing is the provision of sufficient pasture for the cattle.

Rao Bahadur, R. R. Gangolli, President *Karwar* Muni-

cipality and Retired Subordinate Judge, writes:—

(1) The state of the cattle and of the milk supply in Karwar (Kanara, Bombay Presidency) is not satisfactory.

Karwar Municipality.

(2) From inquiries made by me I have come to know that the number of cattle at present is less than what it was 25 years ago, though the population has enormously increased. There has been depreciation in the quality of cattle owing to the non-existence of stud-bullocks of he-buffaloes here. Fodder has recently become very costly. Milk production is poor owing to the high prices during these hard times.

(3) The only suggestion I wish to make in this connection is that the Government may be moved to set apart a larger area in the forests in the vicinity of this town (Karwar) and other places in the coast Talukas of this District for pasturage, on condition that the owners of the cattle pay moderate fees to the Government.

5.—Kolaba.

Kolaba District Gazetteer.

The returns of domestic animals for 1880-81 show 51,848 oxen, 40,632 cows 39,811 buffaloes. This gives for each village an average of about 150 head of cattle. Among these there are generally many worn-out buffaloes, cows and bullocks, though of late the proportion of useless animals is said to have become smaller, as few but rich husbandmen scruple to dispose of their worn-out cattle to the butcher. As the hill-sides grow bare, the cows and buffaloes follow and for the rest of the season they are allowed to wander about the fields picking what they find during the day and at night brought back to their stalls. Towards the end of the hot weather most of them grow very thin, and getting little except a few handfuls of straw, stubble or rice-husks are, before the rainfalls, little better than skeletons. They do not recover condition till after they have

fed on the new grass for some weeks and the sudden change from starving to rich feeding often causes outbreaks of cattle diseases. In different parts of the district, chiefly on the flat tops of the Nagothue and Alibag hills, are settlements of professional herdsmen of the Dhangar and Gaoli castes. Their cattle both buffaloes and cows, spend the whole year on the hills, sheltered during the rains in rough sheds and in the cool and hot months, moved to places where water and shed are easily found.

Except a few traders and large land-owners who have Guzrati bullocks, almost all the oxen of the district are of the local breed. Though hardy, active and neatly made, most of them are poor, small and weak compared with Deccan and Guzrati bullocks. No attention is paid to breeding. Most villages have two or three bulls, neither specially chosen for strength nor specially cared for. From among the calves the husbandman generally chooses or buys a likely young male and taking him home makes a pet of him and looks for another to match him. They are allowed to graze near the house during the day and at night have a bundle of good grass. Scraps of food and rice husks are carefully put aside for them; and they are occassionally given handfuls of green grain, urid or some other grain. The cost of a good pair varies from Rs. 50—60 and of a second class pair from Rs, 20—30. The monthly cost of keeping a town bullock varies in Alibag and the larger towns from Rs. 6—8 and in outlying parts from Rs. 5—7.

Cows are returned at a total of 40,632. A good cow is worth from Rs 20—30 and a second class cow from Rs. 12 to Rs. 20. A heifer has her first calf when four years old and for about twelve years continues to bear every other year. About sixteen she becomes barren and is either sold to the butcher or left to herd with the village cattle. Receiving no help, except a few handfuls of straw or stubble in the hot season, she soon looses strength and seldom lives more than two or three years. An ordinary cow will, for three months

after calving, yield four pounds of milk a day, for the next six months she will yield three pounds and for the next four about two pounds till the supply gradually ceases. Except when grazing on the hills, cows when in milk, get every night about a pound of oilcake and *tur* husks and a bundle of grass. When not in milk the oilcake and pulse are stopped and the bundle of gaass made smaller. To a husbandman the monthly cost of a cow's keep is not more than Re. 1. Town cows get grass and oilcake all the year round at a monthly cost of about Rs. 3-8. Cow's milk, specially for young children, is more highly prized than buffaloe's milk. But the quantity is small and it is seldom kept separate.

Buffaloes numbered 39,811 head, 22,648 of them males and 17,163 females. All are of the local breed, smaller but blacker and smoother skinned than those of the Deccan and Guzrat. In the larger towns Dhangars and Gaolis keep a stout, healthy well-fed bull-buffalo for whose services they are paid As. 8. Most villages have a few bull buffaloes who herd with the village cattle, and no care is taken that they should be either specially well made or well fed. Except those kept for breeding, male buffaloes, in their fifth year, are castrated and used either in ploughing or levelling fields, drawing stones or timber carts, or in dragging timber in the forests. A good male buffalo is worth from Rs. 30—40. Female buffaloes are much more valuable than males. A first class cow-buffalo costs from Rs. 50—80, a second class animal from Rs. 30—40 and a poor animal from Rs 15 to Rs. 20. A cow buffalo has her first calf generally in her fifth year. She calves every third year and seldom lives to be more than twenty. After the second or third calf she yields from twelve to sixteen pounds of milk a day and at other times about eight pounds. A buffalo's monthly yield of clarified butter is estimated to be worth about Rs. 4. Except that a buffalo requires about twice as much food, the arrangements for her feeding and grazing are the same as those for a cow.

Year.	1880-81. No.	1890-91. No.	1900-01. No.	1905-06. No.	1909-10. No.
Plough-cattle	74,496	93,410	1,19,817	1,15,544	1,18,730
Breeding-bulls		497	316	418	211
Oxen and he-buffaloes for other purposes		4,523	3,265	2,392	2,775
Milch cattle	57,795	79,437	96,482	1,02,351	1,04,282
Young stock	.....	65,680	79,799	80,042	97,493
Total cattle	1,32,291	2,48,547	19,97,679	3,00,747	3,23,491
Ploughs	30,655	45,378	57,626	52,590	56,525
Carts	3,021	6,047	9,058	8,849	10,253

[Vol, B. Ko'aba by G. S. Hardy. 1913.]

6.—Ratnagiri.

Ratnagiri District Gazetteer.

The livestock reared in the district are of very inferior breeds. The pasturage is, both in land and on the coast, poor and devoid of nutriment. No Indian millet, Juvari, Sorghum vulgare, is grown, and the straw of the nachui, Elensine corocana, is but a poor substitute. Except during the latter months of the rainy season green fodder is not procurable, and the *harali* grass, Cynodon dactylon, is scarce and difficult to get. The cattle are lean, ill-fed and of stunted growth. Buffaloes are of two breeds, the Jafarabad and the country-bred, the former being held the more valuable and being scarce. Good milch buffaloes cannot be obtained, and if imported from the Deccan districts, give a

reduced supply of milk. The average price of a country bred she-buffalo is about Rs. 40 and of a bull Rs. 25 (twenty-five). A few Jafarabad cows are also kept here and there as well as the country-bred. The average price of country-bred bullocks is Rs 20 and of cows Rs. 15.

	1880-81. No.	1890-91. No.	1900-01. No.	1905-06. No.	1909-10. No.
Plough-cattle	2,15,750	57,771	61,650	76,560	1,16,357
Breeding-bulls		40	29	31	83
Oxen and he-buffaloes for other purposes		1,223	1,192	1,151	1,303
Milch cattle	1,68,313	40,616	34,784	46,053	67,676
Young stock	.....	32,672	31471	40,684	63,138
Total cattle	3,84,063	1,32,322	1,29,126	1,64,479	2,48,557
Ploughs	93,668	29,122	32,629	40,241	59,683
Carts	757	956	1,081	1,243	2,008

C. G. Henderson Esqr., I.C.S. Collector of Ratnagiri, writes :—

(1) The state of cattle and of milk supply in this district is not satisfactory.

(2) The quality of cattle is poor though their number is sufficient. Most of them are offspring of haphazard mating of cattle and are not properly fed. The grass here is unsubstantial and an average cattle-keeper

Collector of Ratnagiri.

cannot feed all his cattle with heavy fodder owing to their high prices.

(8) It is necessary to establish dairy farms at important centres for bringing up a good breed of cattle and for providing a good supply of milk. Importation of good fodder and reservation of more pasturing grounds will greatly improve the condition of cattle.

CHAPTER V.—SINDH.

Sindh Province—Large herds of buffaloes graze on the swampy tracts of the Delta; and ghee made from their milk forms an important item of export. Bullocks are chiefly used for draught or for turning irrigation wheels. Good cattle are bred of medium size. The milch-cows are well-known and are exported to other parts of the Presidency. The bullocks are small in size when compared with the finer kinds in other parts of India. (a)

1.—Hyderabad.

The domestic animals include the horse, camel, bullock, buffalo, donkey, sheep and goat. Camels and bullocks are used for draught and in turning water-wheels for the irrigation of land.

R. E. Gibson Esq. I.C.S., Collector of Hyderabad says :—

The unsatisfactory condition of the milch-cattle and of milk-supply is attributed to export of cattle and fodder during the war and to the shortage of fodder during the two past seasons.

Collector of Hyderabad.

The vast population of cattle owners in Sind generally is (1) to look ahead and collect and conserve in good condition the surplus stock of fodder in bumper years for use in lean years;

(2) to breed with care and selection from good stock and not to allow promiscuous coverings by inferior bulls.

(a) From Gazetteer of Sindh by A. W. Hughes, F. R. G. S. [1876.]

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Hala Municipality.

The Vice-President, Hala and Natiari Municipalities, writes that the state of cattle and milk-supply in those localities is satisfactory.

Tando Mahomed Khan.

H. Montgomery Esq., I.C.S., President *Tando Mahomed Khan Municipality* writes that the milk-supply is largely from buffaloes and is sufficient when fodder is sufficient. the state of fodder depends entirely on rains and the inundation of the Indus river.

2—Karachi.

The chief domestic animals are camel, buffaloes and cattle. The buffaloes are commonest in the deltaic swamps, and produce ghee famous all over Western India. The Karachi cows are noted as good milkers and many of them are shipped to Bombay for sale. The best of these cattle are bred within a radius of 30 or 40 miles from Karachi city, chiefly in the hill tracts.

J. R. Martin Esq., I.C.S., Collector of Karachi, writes:—

Collector of Karachi.

(1) The state of cattle and of the milk supply is usually good but not at the present moment. The district is essentially a grazing one.

(2) The state of cattle is not good at present owing to the late inundation and rains which have made fodder scarce.

(3) In bad years such as the present, measures are taken to remit grazing-fees, assessment on grass grown for fodder etc. The establishment of the Willingdon Cattle Farm is expected to improve the breed of cattle.

Kotri Municipality.

The Chief Officer, Kotri Municipality, writes that the milk supply of Kotri town is very unsatisfactory. The milk is adulterated and is brought from small villages. This is due to the scarcity of fodder and pasture on account of want of water and rain. The breeding of cattle is

also unsatisfactory. The only remedy he can suggest is to arrange for pasture-lands by fitting up an engine on the river and thus irrigating lands which are lying as waste-lands.

3.—Sukkur.

The Deputy Collector, Sukkur, writes :—

(1) The state of cattle and of milk-supply is not satisfactory.

Deputy Collector Sukkur.

(2) There are no fixed pastures in this division as the rainfal is negligible and floods scarce. The canals specially in the last year did not work well and consequently there has been great scarcity of fodder. The fodder famine is resposible for the heavy mortality among the cattle. Breeding is unkown and the quality of cattle therefore is very inferior and is neither good for milking purposes nor for draught.

The people of this division are so apathetic that they wont call in the aid of any veterinary surgeon in time of disease.

(3) The quality of cattle could be improved by the service of good stallions and this can only be done at the expense of Local Fund and Government.

Deputy Collector Shikarpur.

Vahid Baksh Gul Mahomed, Esq, Deputy Collector, Shikarpur, writes that the state of cattle and milk-supply in that division is not quite satisfactory owing to the scarcity of fodder but he hopes that the condition will improve when the green grass comes out in the fields.

The Secretary, Temperance League, Sukkur, writes :—

Temperance League Sukkur.

In ordinary times the state of cattle is satisfactory. Scarcity of fodder sometimes compels cattle-owners to sell their cattle to butchers. The late famine of fodder has greatly reduced the number of

cattle. Slaughter of cattle also causes great decrease in the number of cattle. The supply of milk is very inadequate in consequence. Milk is often adulterated.

2. The reasons are :—

(a) Slaughter of cattle and fodder famine are responsible for the inadequate number of cattle.

(b) The process of breeding is highly objectionable.

(c) Milk is always diluted with water sometimes dirty water. In many dairies butter and cream are extracted out of milk and then it is sold in the bazar as pure milk. The use of such milk is the cause of many diseases.

(d) There are few pasture-lands.

Remedies suggested :—

(a) The present unproductive Gaoshalas should be kept under good supervision and some farms should be attached to them. A free grant of land should be made to them for grazing and growing fodder.

(b) Pasture-grounds should be opened freely by the Government in every town and village. Forests should also be thrown open for grazing.

(c) Milk should be examined by experts and adulteration of milk should be severely punished.

(d) Government should open dairies and encourage private enterprise in opening the same.

Mr. Jiwatram P. Chandnani Esq., Deputy Collector, Rohri, writes :—

1. The state of cattle and milk-supply are far from satisfactory.

Deputy Collector Rohri.

2. Insufficiency of fodder due to want of floods for the last three or four years has considerably reduced the number of cattle and decreased the supply of milk. Owing to weakness there is not much of breeding.

3. More land should be reserved for pasturage specially round big towns.

4. Good bullocks be imported from Guzrat and Punjab and other places for breeding purposes.

Rohri Municipality.

G. A. Sidiki Esq., President, Rohri Municipality, writes that the state of cattle and milk supply is not satisfactory. It is due to insufficient number of cattle available in the town. The remedy lies in opening dairies in every big town and city for the supply of pure milk. Government should grant them agricultural land for the cultivation of fodder-crops. Government should reserve free pasture lands.

Ghotki Municipality.

The Municipal Secretary, *Ghotki*, writes that the state of cattle and milk supply is not satisfactory for want of fodder and pasture. He suggests that the cultivation of fodder crops should be carried on in an extensive scale which will remedy this state of things.

The Mukhtearkar and Vice-President, Bubak Municipality writes :—

1. The state of cattle and milk supply is not satisfactory in this Taluka.

Bubak Municipality.

2. This is due to the scarcity of fodder. The Taluka has suffered very much from failure of rains for some successive years.

3. There should be an agricultural farm which should device ways and means for sufficient growth and supply of fodder.

4.—Larkana.

N. H. Hey Esq., I.C.S., Collector of Larkana, writes:—

1. There have been two successive bad seasons in the Larkana District which consists of 11 taluks. During the present year, therefore the state of cattle and milk supply is unsatisfactory in most talukas.

Collector of Larkana.

2. The quality, the breeding as well as the number of cattle are said to have suffered greatly owing to the scarcity of fodder.

3. The prospect of the present kharif crop is good and normal conditions might be restored in a few years, yet there is ample room for improvement both in the state of cattle and milk supply and the following remedies are suggested.

(*a*) Fodder reserves should be formed at convenient centres as a measure of insurance against famine years.

(*b*) The necessity of strong grass should be brought home to the villagers and the utility of such a course should be impressed upon them by lectures and leaflets before the lessons of the present year are lost.

(*c*) The fullest possible use of forest areas for grazing in time of scarcity.

(*d*) Maintenance of stallion bulls for breeding purposes.

(*e*) Opening of dairies by private enterprise to be encouraged by grant of land and by affording water and other facilities.

(*f*) Veterinary Dispensaries should be established at every Taluka Head Quarter where milch cattle should be treated free.

(*g*) Sufficient number of wells should be provided in tracts dependent on rainfall to prevent already

weak and starving cattle being driven, in a rainless year to irrigated tracts where they seldom thrive but mostly die.

The Chief Officer, Larkana Municipality, writes :—

1. The state of cattle and milk supply is not satisfactory.

Larkana Municipality.

2. The number of cattle is large and they are of good quality but want of adequate pasture and fodder is the cause of this sad state of things. The prices of fodder are very high and often times it does not pay to feed the cattle.

3. The only remedy is the supply of sufficient pasture and fodder. The only way is to induce land owners to grow an adequate quantity of fodder crops and sell them at reasonable prices.

5.—Thar and Pakar.

C. M. Baker Esq., B.A., (Oxon) I.C.S., Collector of Thar and Parkar, writes :—

1. The milk supply of this district is satisfactory in the sense that it is sufficient in normal years There is considerable export of ghee in normal years.

Collector Thar and Pakar.

2. The supply is only kept up by an enormous number of cattle with unlimited though precarious pasturage. The breed is not a good milking breed.

3. The chief remedy is the storage of fodder. In good years there is a fair growth of grass but no hay whatever is made except in a few villages. Consequently the cattle starve in dry years and this spoils the young stock.

The Chief Officer, Mirpurkhas Municipality, writes :—

Mirpurkhas Municipality.

That the state of cattle and milk supply in this locality is satisfactory in comparison to other areas in Sind.

6.—Nawabshah

Deputy Collector Nawabshah.

Hardasmal Udernomal Esq., B.A., Deputy Collector Nawabshah, writes that the condition of cattle and milk supply in the Municipal District of Shahdadpur and Tando Adam is not quite satisfactory. The quality of cattle is rather inferior, nor is there any special arrangement for pasture. Proposal has recently been sent for remedying the latter defect by reserving certain areas in every village for pasture. But the quality of cattle can only improve by providing suitable arrangements for breeding and having cattle farms at central places to educate people in this connection.

7.—Upper Sindh Frontier.

The cattle used for draught are generally of fair quality; but the Kachhi breed from the Nari river, near Bhag, is especially famous throughout both Sindh and the Punjab.

GSL

CHAPTER VI.—INDIAN STATES.

1.—Kathiawar.

Kathiawar Gazetteer.

There are four chief kinds of buffaloes known as deshan or local, Sindhan from Sindh, nagli or handsome, and gujar from the Guzrati mainland. Of these the deshan or the local are the best, especially those from the Gir or Bagada country. The Bhabnagar chief has a famous breed of very large Gir buffaloes which have won numerous prizes. A good deshan buffalo will yield sixteen quarts at a milking or about thirty-two quarts a day. The milk is very rich and by the natives is preferred to cow's milk. The other kinds of buffalo are reckoned inferior to the deshan and yield less milk. The points in a good deshan buffalo, besides great size and stature, are a peculiar form of horn which almost covers the eye and causes the animal to resemble the African buffalo, of which it seems to be a congener. The buffalo graziers support themselves almost entirely by the sale of the clarified butter which they make from the buffalo milk. At Rajkot or Wadhwan, the price of a good cow buffalo of the deshan breed varies from Rs. 70—100. Male buffaloes when used at all are employed in carrying water or manure, and in the rainy season are sometimes ridden. The price of a male-buffalo varies from Rs. 30—40. They are powerful animals and an attempt is being made by the Wadhwan state to utilize them for draught purposes for which they seem suited.

Kathiawar cows are considered good milkers. They are of four kinds, Deshan or local, Vadhiari from Vadiar in Palanpur, Malvi from Malva and Cangra a small inferior animal. Of these the deshans are the best milkers and vadhiaris though poor milkers are the most beautiful. The Malvi and Cangra

are inferior breeds. A good deshan cow will give six quarts at a milking or twelve quarts a day. The Gir cows favoured by the richness of the grass and the abundance of the water, are famous. Though the milk of the cow is considered inferior to that of the buffalo, it is admitted to be more digestible. Most of it is made into butter. The price of a good deshan cow is Rs. 25—40 and of a Gir cow which yields ten to fifteen pounds of milk a day Rs. 40—70. Local bullocks are hard-working and fairly good animals. They cost about Rs. 50—80 a pair.

2.—Kolhapur.

The 1881-82 returns show a total of about 149762 oxen.

Kolhapur Gazetteer.

During the last thirty years the breed of oxen has been improved by the introduction of Guzrat bulls and the breed of buffaloes by the introduction of Maisur buffalo bulls. Three breeds of bullocks are used for field and draught purposes the Hanam or half-Maisur breed, the Surati or half-Guzrati breed and the Khadki or local breed. The hanam bull is a straight-horned handsome animal of middle size, strong and hardy but bad-tempered and hard to tame. They trot faster than other bullocks and will do thirty-six miles in a day. A good pair of hanam bullocks costs Rs. 100 to Rs. 200. The Surti is taller than the hanam and has long ears and a hanging dewlap. It is less active than the hanam but is stronger and better suited for field work. A surati bullock cost Rs. 50—250 and a good pair Rs. 100—500. The khadki is small and has little strength or beauty. But as it costs only Rs. 15—75 it is much used in ploughing, draught and pack carrying. Some khadki bullocks are brought into Kolhapur from the cattle fairs at Chinchili fifty-five miles east of Kolhapur, Narshoba's Vadi twenty-five miles east Kolhapur and at Mangsoli forty miles north-east of Kolhapur but most are reared in Kolhapur by husbandmen. Bull calves are generally castrated when five years old. The area that can be ploughed in a day varies from half an acre in heavy soil to

one acre in light soil. In working wells two pairs of bullocks are required to dress a water-bag or mote holding sixty gallons of water. A pair of bullocks will draw a country cart with a load of about 8½ cwts (6 mans). The field wagons or gadas are much larger and are drawn by two to four pairs of oxen. With the opening of roads, especially of cart roads down the Sahyadris the Lamans (who kept pack-bullock to carry grain) have disappeared and the number of pack-bullocks has greatly fallen. Bullocks are ridden by Lingayat husbandmen and women among Lingayats when the bridegroom brings the bride home, the newly married couple generally ride on a bullock. Bullocks are also used to carry water either in leather bags or in metal pots. In towns a single small bullock is often driven in a light driving cart. Bulls are often devoted to the village gods and never put to work, and are allowed to roam through the streets and fields and serve as stallions. The setting loose of calves and heifers is also a part of the twelfth day funeral services

The 1881 returns show a total of about 112,000 cows. In the east especially in the Krishna bank villages, the Surati or half Guzrati cows are greatly prized and for six to eight months after calving are said to yield as much as twenty-one pints of milk a day. In the west of the state the cows are small and poor. The price of a cow varies from Rs. 5 to 40. Cows calve in their fourth or fifth year and for six to eight months give two to ten pints of milk morning and evening. They give milk till their fifteenth year and calve nine or ten times. The cultivating classes, and in towns, Brahmans and other high class Hindus keep cows. Husbandmen rear their own calves. Towns-people generally hand their calves to husbandmen to be taken care of, the owner receiving them back when full grown at half the market value,

The 1880-81 returns show about 61,000 male-buffaloes. They are chiefly found in the west where they are used in field-work and for carrying water-bags. Vadars or quarrymen

also use them for drawing loads of stone in their loss block-wheeled carts. Gaolis or milkmen give male calves no share of their mother's milk and either give them away or let them die. The price of a male buffalo varies from Rs. 10 to Rs. 40. Male buffaloes are sometimes brought to Chinchili fair from as far north as Dhulia and Malegaon. They are put to work in their fourth or fifth year. Female buffaloes are returned at about 74,000. The best variety is known as Jafrabadi from Jafrabad in south Kathiwar. Animals of this breed are said to yield twenty-seven pints of milk a day from six to twelve months after calving. A good she buffalo costs Rs. 80 but fair animals can be bought at Rs. 30—50. Buffaloes usually calve in their third or fourth year and give over bearing at eighteen or twenty. They have twelve to fifteen calves. Buffaloes are kept by husbandmen. Well-to-do townspeople, Gaolis or milkmen, and Dhangars or forest herdsmen. Buffalo's milk is preferred to cow's except for infants and for the weak. Towns-people who keep cattle generally use all the milk in their own families. Townspeople who do not keep cattle are supplied with milk and to some extent with butter, by milkmen of the Gaoli caste. The rest of the butter used in towns is brought from the country by Dhangars who send in weekly supplies of clarified butter and drink the buttermilk or give it to the calves.

The east is well off for fodder, millet stalks or kadbi, river-bank grass, and the juicy creeping hariali Crynodon dactylon. Most of the cattle are healthy and well nourished. Draught cattle are also allowed some grain generally millet or math and salt or oil in the cold season or when sick. The monthly keep of a field bullock costs about Rs. 4 and of a draught bullock about Rs. 8. Milch cows and buffaloes are stall-fed at night and are left to graze in grass-lands or fields during the day. They are given cotton seed, oilcake, chopped gourds, and boiled grain such as millet wheat and gram. The monthly cost of a cows' keep varies from Rs. 4—6 and of a buffalo's from Rs. 6—8.

	1893-94. No.	1900-01. No.	1911-12. No.
Oxen and he-buffaloes	239,779	206,954	205658
Milch cattle	213,978	191,831	197,215
Total cattle	453,757	398,785	402,873
Ploughs	56,419	53,632	53,711
Carts	17,955	19,042	19,670

3.—Rewa Kantha.

The domestic animals of the district are buffaloes, cows etc. The cultivating classes keep cows and buffaloes. Brahmans and other townspeople prefer cows to buffaloes as less costly. Bullocks are chiefly kept by the cultivators as the country is too rough for bullock carriages. Charans from Kathiwar bring buffaloes and settle in good grazing villages.

4.—Dharampur and Sachin.

Some statistics available for these States are given below.

Cattle.	1880-81. No.	1890-91. No.	1900-01. No.	1905-06. No.	1909-10. No.
Plough cattle		103,918	90,777	94 071	96,515
Breeding-bulls	151,716	492	463	675	506
Oxen and he-buffaloes for other purposes		9,269	7,311	7,032	6,673
Milch cattle	161,186	109,521	94,500	107,168	102,756
Young stock	.....	111,547	92 834	116,437	113,505
Total cattle	312,902	334,747	285,885	325,383	319,952
Ploughs	52,100	48,466	44,127	46,596	46,350
Carts	34,470	37,680	37,257	37,839	38,782

Dharampur.

	1893-94. No.	1900-01 No.	1902-03. No.	1910-11. No.
Cattle—				
Bullocks	21,305	21,496	21,921	24,766
Cows	26,791	20,190	20,063	21,233
Buffaloes { Male	2,521	1,901	1 970	2,318
Buffaloes { Female	2,481	2,470	1,969	3,546
Total				
Ploughs	9,980	9,620	10,124	11,820
Catts	1,237	1,290	1,097	1,356

Sachin.

	1893-94. No.	1900-01. No.	1902-03. No.	1910-1.1 No.
Oxen and he-buffaloes	3,661	3,117	3,117	3,340
Milch cattle	5,246	4,149	4,334	4,911
Total cattle	8,907	7,266	7 451	8,251
Ploughs	1,162	1,103	1,015	1,077
Carts	1,288	1,323	1,339	1,223

5.—Cambay.

The domestic animal are the same as in Kaira.

Cattle.	1893-94. No.	1900-01. No.	1902-03. No.	1910-11. No.
Oxen and he-buffaloes		7,335	8,225	14,938
Milch cattle	43,367	4,706	6,740	22,355
Young stock		2,863	4,666	
Total cattle	43,367	14,904	19,631	37,293
Ploughs	5,277	3,666	3,836	5,029
Carts	3,412	2,948	2,991	3,149

6.—Bansdah.

Animals—Except that, from scanty pasturage, the cattle are smaller and poorer, the domestic animals do dot differ from those found in Central Guzrat.

Cattle.	1893-94 No.	1900-01. No.	1902-03. No.	1910-11. No.
Oxen and he-buffaloes	16,990	12,392	15,496	15,916
Milch cattle	14,320	10,369	12,537	13,976
Total	31,310	22,761	28,033	29,892
Ploughs	6,130	5,622	5,719	5,719
Carts	1,355	1,267	1,295	1,068

7.—Baroda. (a)

Central Division.

The domestic animals are elephants, oxen, cows, buffaloes, horses, sheep, goats. These last are for the most part not indigenous but are imported from Kathiwar and Marwar. Of oxen there is the large kind used in ploughing and for driving and the small hardy kind of quick steppers used only for driving. Both kinds are reared in the country, but the small breed has the more particular renown. The ordinary food of oxen is hay and millet-stalks. but when hard worked they are allowed a daily feed of bruised sesamum or gram. All agricultural work is performed by oxen, never by buffaloes or horses.

A pair of indigenous oxen will fetch price in the market varying from Rs. 40 to Rs. 250. A pair of driving bullocks from Petlad will fetch over Rs. 500. A well-to-do cultivator generally keeps two cows and two she-buffaloes. Large herds of these animals are kept by professional herdsmen or Rabaris, who sell their produce in the shape of clarified butter or ghee. The male offspring of the buffalo is generally kept from its mother's milk and allowed to die of starvation. The milch kine reared in this district are, as a rule, lean, stunted and poorly fed. A cow costs from Rs 10 to Rs. 40 and gives from 2 to 8 seers of milk; a she-buffalo costs from Rs. 15 to Rs. 60 and gives from 5 to 12 seers. The ordinary feed of the cow is made up of millet stalks and other corn refuse, while the buffalo is often fed with the husks of gram raw or boiled. Dry and liquid manures are employed in agricultural operations The manure of cattle is also dried on cakes and used as fuel. and it is also made use of to cleanse the floors and the walls of dwellings.

Southern Division.

The oxen (of the Navsari district) are of two kinds, the indigenous or talabda and the large powerful oxen or hedia, imported by travelling herdsmen from

(a) Baroda by F. A. H Elliot. [1883.]

the northern district of Kadi and other parts of Northern Guzrat. A beast of the former class costs from Rs. 25 to Rs. 50, of the latter from Rs. 50 to Rs. 90. The former lives about 15 years the latter not more than 12. The cows and buffaloes are produced in the district itself; the former cost from Rs. 10 to Rs. 30 the latter from Rs. 30 to Rs. 50. Except poor Kolis and Dublas, most cultivators have their oxen and buffaloes. It is the custom of most village communities to keep a bull and a buffalo in the village at the common expense for breeding purposes. The number of milch cattle in the Kadi division is larger than in any other part of Guzrat and the breed is held to be very superior. He buffaloes are not used as draught cattle and for the most part are allowed to die of want of milk soon after birth.

Director of Agriculture Baroda.

Amritlal C. Desai Esq., L.Ag., M.A. (Wis), Director of Agriculture, Baroda State, says that the questions of milk and of cattle breed, so far as Guzarat and Kathiwar are con- cerned, are intimately connected with the question of fodder. Every third or fourth year, there occurs a drought resulting in the loss or destruction of a large number of cattle. The farm economy in such years is so much upset that it takes two or three years before the normal condition is reached. The primary question for dairy or cattle-breeding is the preservation of fodder.

The number of cattle is fairly sufficient. The milk supply in all the big and small towns is deficient and pure unadulterated milk is rarely to be obtained.

8.—Nizam's State Hyderabad.

Director, Medical Department, Nizam's Govt.

The Major Nawab Khedive Jung Bahadur, M.B., C.M., Officiating Director Medical Department and Sanitary Department to H. E. H., the Nizam's Government gives a general survey of the condition of the milk supplied in the Hyderabad State.

"1. The state of cattle in our State is really unsatisfactory and the supply of milk is locally inadequate and is getting dearer and dearer every day.

2. The chief causes are :—

(i) Diminution in the number of cows.

(ii) Deterioration in their milk producing capacity.

(iii) Diseases chiefly Rinderpest, and lack of proper treatment of animals.

(iv) Want of fodder.

(v) And want of good breeding-bulls.

3. Suggested remedies :—

(i) The *Gowlies* must be afforded adequate facilities to graze their cattle.

(ii) Sufficient pasture lands must be acquired and maintained and model breeding studs may be kept.

(iii) Private bodies ought to be encouraged to open model dairy farms wherever possible.

(iv) Agricultural farms should be attached to dairies and arrangments made on a co-operative basis for the transport and sale of products.

Necessary steps are being taken by the department of the Director General of Industries and Commerce &c, in this connection and that a model dairy farm and a breeding stud are being established under its control and guidance."

Karmala Municipality.

The President *Karmala* Municipality writes that the state of cattle and milk supply is satisfactory at Karmala.

Pranty Municipality.

The Chairman, Pranty Municipality writes that the state of cattle and milk supply in that locality is fairly satisfactory.

The Muktiarkar of *Umarkot* writes that the state of cattle and milk supply in that locality is very satisfactory except in the year which does not rain.

Umarkot.

Hotchand Chandumal Esq., Municipal Commissioner, City of Hyderabad, writes :—

The state of milch cattle which include cows and buffaloes and of milk supply in the city of Hyderabad is far from satisfactory at present.

Hyderabad Municipality.

The number of cattle, specially the cows, is quite inadequate for the requirements of this city. The present deficiency is largely due to the export of cows in large number. The cows which now remain in the possession of herdsmen are generally of a very poor quality. The existing state of milch cattle is partly due to the indifferent breeding and partly to dearth and increasing price of fodder.

I venture to suggest the following the remedies.

1. Encouragement of cultivation of fodder crops within a radius of five miles round this city. by charging very low rates of assessment and by imposing prohibitive rates on cotton and other non-fodder crops.

2. Maintenance by the Municipality of good bulls for breeding purposes, their services being offered to herdsmen at nominal rates.

3. Construction by the Municipality of sanitary cowsheds in open spaces. These cowsheds should be rented to herdsmen who should be made to remove their cattle from insanitary sheds in the town.

9.—Cutch

Of domestic animals the camel is the most important being famous for its fleetness. The Rao possesses large herds of these animals as well as of cows and buffaloes.

10.—Palanpur.

The bullocks of Kankreej have been highly esteemed since the time of Akbar. They are the finest animals of other kind in Guzarat. Buffaloes. cows are also bred in both Palanpur and Radhanpur.

CHAPTER VII.—BOMBAY CATTLE COMMITTEE.

The question raised by the public of the Bombay Presidency of the rapid deterioration of both draught and milch cattle and the differences of opinion as to the causes of this deterioration led the Government of Bombay to appoint a Committee to investigate the question. By Government Order No. 3252 of the 24th December 1921, R. D., the following Committee were appointed :—

Rao Bahadur G. K. Chitale, M.L.C. *(Chairman)*.

Mr. Nariman B. Kothawala.

Mr. S. H. Kurli.

Mr. E. M. Hodgson, Conservator of Forests, C. C.

Khan Saheb J. D. Buxy, Deputy Superintendent, Civil Veterinary Department, Bombay Presidency.

Rao Saheb Bhimbhai M. Desai, Deputy Director of Agriculture, Guzrat.

Mr. E. J. Bruen, Deputy Director of Agriculture for Animal Breeding, Bombay Presidency (Secretary).

The Committee met in Poona on the 13th March 1922 to settle its plan of campaign. The following two days were occupied in examining local experts and witnessess. It was decided on the evidence obtained that it would be impossible to make any suggestions without first seeing the actual condition under which breeding was carried on.

The Committee decided on collecting evidence from some of the leading persons of Bombay to ascertain how far religious sentiment has to be respected. The other non-official witnesses were selected from persons interested in the cattle trade, dairying, &c. The Committee, to satisfy themselves on

the many points raised, visited Dharwar, Nagar, Khandesh, Nasik and Gujerat districts. The method adopted in cattle raising is totally different in each of the above mentioned tracts. All the Pinjrapols and Gou Rakshans situated in these tracts were visited, and the evidence of the controlling bodies recorded. The Committee have, after careful deliberation, arrived at the following conclusions.

Summary of Proposals

1. *Fodder.* (1) Increased areas to be alloted for grazing.

(2) Pressed jungle grass (hay) to be gradually replaced by stored kadbi and stored local grass.

(3) Village Panchayat Stores of kadbi.

(4) Use of chaff-cutters extended.

(5) Encouragement of use of silage.

(6) Erection of pumping plants for growing fodder.

(7) Small tanks and wells in the Satpudas.

2. *Cattle.* (1) For the present professional cattle breeeder to be encouraged.

(2) Existing farms to be maintained.

(3) Extra farms to be opened.

(4) Local indigenous, pure breeds to be encouraged and foreign breeds to be excluded.

(5) The milk-producing capacity of all breeds to be developed.

(6) Milch buffaloes to be bred, both at farms and schools.

(7) Giving out of Premium Bulls to be continuned, but on a larger and more liberal scale. Some bulls to be purchased.

(8) Concentration of the Animal Breeding Department on limited areas.

(9) Certain modifications in the Agricultural Department Establishment.

(10) Legislation regarding control of uncastrated bulls.

(11) Funds to be allotted for shows, &c.

(12) Dairy farming to be encouraged in various ways.

(13) Steps to be taken for reducing the slaughter of cattle.

(14) Legislation proposed in connection with dairies.

(15) Increased expenditure proposed for farms.

(16) Discovering or evolving a suitable breed of cattle for the Malad country and Central Deccan.

(17) Recommendations for the improvement of the sheep.

(18) Recommendations regarding staff required.

(19) Veterinary suggestions.

(20) Permanent Cattle Committee suggested.

Conclusion.

The Committee recommend to Government that the present Committee be appointed permanently to meet once or twice a year to discuss and lay out the lines to be followed each year, for the following reasons.

The improvement of the cattle does not entirely rest on expert knowledge in breeding, though this is very essential; the question involves many other very intricate matters, such as religious sentiment, grazing and the reservation of lands, diseases and cultivation; while the great weight of unofficial opinion is also of extreme importance. As in the Agricultural Department the work is practically being controlled by a mixed Board, so the Committee consider that to get the best results from the Animal Breeding Branch of this Department, a

Board consisting partly of non-officials should be permanently appointed, which would to a certain extent control the policy of the Department, make necessary suggestions to Government from time to time, and insure work being carried on continuously. The Cattle Breeding Branch of the Agricultural Department must have a continuous policy as the good work done in one year can by neglect easily be lost in one month. The Governments of all other civilized countries have allotted and set aside a large sum of money for cattle improvement, and this money is well repaid from the results obtained. In India the improvement is not only essential to the welfare of the country, but the religious sentiment of the greater portion of the population calls for some substantial help to maintain and keep the cattle of the country in a prosperous state.

The Committee finally take the liberty of pointing out to Government that from all the evidence obtained and from public opinion Government can at no time pay too much attention to the improvement of the cattle, both draught and milch, of the Presidency, and that every rupee spent will have the whole-hearted support of the entire public of the Presidency. This expenditure, apart from religion and sentiment, is essential from an economic point of view, as milk at a reasonable price is the cheapest and most beneficial form of food any nation could have, especially in India, where the majority of the people are vegetarians. The remedy lies in the improvement of the cattle.

Finally the Committee suggest that if their recommendations should meet with the approval of Government, this report should be translated into the vernaculars and published.

GSL

PART. VI.—BURMA.

CHAPTER I.—GENERAL.

Area Population & Agriculture.

The province of Burma with an area of about 270,000 sq. miles and population 12,115,217 is mainly divded into Lower and Upper Burma, each having 4 Divisions and several districts within its jurisdiction. The Burmans who form the bulk of the population, belong to the Tibetan group and are essentially an agricultural people 80 p. c., of the agriculture of the country being in their hands. The nett total cropped area comes to about 1·5 million acres a year, the main crop being paddy, of which about 3 million tons are annually exported as surplus. Forests and mines form the next important industries.

The following are the Divisions and Districts:

Lower Burma. [4 Divisions.]

I. *Arakan Division.* (4 Districts.)

(1) Akyab, (2) Arakan, (3) Kyaukpyu and (4) Sandoway.

II. *Pegu Division.* (6 Districts.)

Divisions and Districts.

(1) Rangoon, (2) Insein, (3) Hanthawaddy, (4) Tharrawaddy, (5) Pegu and (6) Prome.

III. *Irrawaddy Division.* (5 Districts.) (1) Bassein, (2) Henzada, (3) Myaungmya, (4) Ma-ubin and (5) Pyapon.

IV. *Tenasserim Division.* (6 Districts.) (1) Toungoo, (2) Salween, (2) Thaton, (4) Amherst, (5) Tavoy and (6) Mergui.

Upper Burma [4 Divisions.]

I. *Magwe Division.* (4 Districts.) (1) Thayetmyo,* (2) Pakokku, (3) Minbu, (4) Magwe.

II. *Mandalay Division.* (6 Districts.) (1) Mandalay, (2) Bhamo, (3) Myitkynia, (4) Putas, (5) Kathar and 6 Ruby Mines.

III. *Sagaing Division.* (4 Districts.) (1) Shwebo, (2) Sagaing, (3) Lower Chindwin and (4) Upper Chindwin.

IIV. *Meiktila Division.* (4 Districts.) (1) Kyaukse, (2) Meiktila, (3) Yamethin and (4) Myingyan.

Shan States.—(1) Southern Shan States, (2) Northern Shan States and (3) Chin Hills.

Cattle in Burma.

The cattle both in quantity and quality are better off in Burma than in India, but still they fall far short of the standard kept in Europe and America. The following description of Burmese cattle taken from Col. Evans's Monograph will give an idea of their particulars.

Bullock.

Head.—Shapely and well carried, broad between the eyes, forehead usually flat, often slightly concave, rarely convex.

Muzzle.—Full and broad with large nostrils.

Horns.—Are invariable very small, due to the habit of paring and cutting them. The usual method is, either to cut and pare with a *da*, or by friction with a strip of green bamboo *(knee)* A piece of string is tied above and below the place where it is intended to remove the horn, the bamboo is then worked to and fro very quickly as a saw. Two ideas are expressed with regard to this custom—(*a*) long horns are considered a nuisance, as likely to interfere with the high ornamental "bows" often employed on the yoke, and (*b*) for appearance' sake. The horns are round and are sprung well apart.

*This district though attached to an Upper Burma Division, is still in Lower Burma.

Ears.—Are of moderate size, or small if compared with Indian breeds seen here, and are more or less erect.

Eyes.—Dark in colour, mild in expression, but full and lively.

Neck.—Is short, varyingly heavy in accordance with sex and period of emasculation.

Dewlap.—Moderate, extending from chin to sternum, but small compared with some of the Indian cattle.

Hump.—Is not nearly as well developed as in many Indian breeds. In bulls it is from 6″ to 7″ in height, in bullocks 4″ to 5½″ and is but slightly marked in cows.

Back.—Straight from shoulder to loins, or even to root of tail. The croup sometimes droops to a varying extent, though it is usually slight. The loins and back are wide, pelvis moderate with the hind quarters showing considerable power.

Tail.—Is set on usually a trifle below the line of the back. It is well formed free from blemishes and is generally long and tapering, extending to a few inches below the hocks, and is invariably provided with a fine long and ample tuft of hair which at times reaches the ground.

Shoulders.—Well sloped, lying well back over the ribs.

Forelegs.—Short, shapely, with a well developed forearm ranging from 15″ to 17″. The joints are large, bone good.

Body.—Chest is wide and deep and of good girth, ribs are broad, well sprung and deep The barrel is round and substantial, the measurement exceeding the girth by some 10″ or 12″.

Hind quarters.—Fairly well packed, thighs are thick, broad and muscular.

Feet.—Are of good size and shape, hard, the clause fairly closed, generally dark coloured (horn green).

Skin.—The skin is generally dark in colour of moderate thickness, pliant and loose with abundant hair, which is soft and anything but what might be described as coarse.

Colour—Without doubt the predominating colour of the Burmese breed is of varying shades of bay, generally called red. The hair on the dewlap, abdomen, inside of thigh, is of much lighter tint than that of the upper parts of the body but blending softly and harmoniously. In these red cattle it is usual to find a lighter (whitish) patch running down each buttock and extending down the back and inside of the thighs, but not including the tail, a point in common with the wild cattle. The general colour often runs to a lighter shade from just above the knees and hocks to the hoofs, white stockings being sometimes met with. This lighter shade of colouring is often observed around the eyes, muffle, chin, jowl and sometimes throat. In a great number of cattle a dorsal stripe is evident from hump to insertion of tail. Marled or broken colours though met with are infrequent.

In the higher hill ranges it would appear that black becomes the predominating colour.

Sheath.—This is a peculiar feature about the Burmese breed, inasmuch as it is exceedingly small and close with a tuft of hair at the orifice. Burmans are particular about this point. The very slightest tendency to a pendulous sheath is a certain indication of foreign blood.

Voice.—Is peculiar, quite unlike the bellow of home cattle; it is short, low, spasmodic, and something between a cough and guttural grunt.

Temper.—Very docile as regards handling and at work, bulls even being tolerant of Europeans and strangers.. This is undoubtedly the result of kindness and general good treatment.

Cows.

Are altogether of smaller stature and lighter build. The head is small and finer, with small and often irregular horns, in fact in a large number the horns are just evident. The neck is light, the hump slight, and dewlap small. The udder, when compared with that of the cows of milking breeds, is small and ill-developed.

Bulls.

They are usually of medium size, active and compact animals. Hump well developed and often shows a tendency to overhang."

The buffaloes are generally black in colour and are of a similar size and appearance as its Indian proto type. Everywhere in Burma good types of buffaloes are to be found but it is rapidly giving place to the bullock for draught purposes, except in special areas for working heavy land or timber.

	Oxen.				Buffaloes.		
	Bulls.	Bullocks.	Cows.	Young stock. (calves.)	Bulls. and bullocks.	Cows.	Young stock (Buffalo calves.)
Total for Burma 1917	...	2,401,316	1362,724	1258,615	389,076	434,749	359,290
Do. Do. 1916	...	2,053,166	1524,556	1170,2[illegible]0	380,387	412,941	293,062

The indigenous breed of cattle in Burma is considered admirably adopted for draught purposes and the Burmese are exceedingly zealous in keeping their herd pure and the Burmese Government at one time contemplated introduction of legislation for checking the import of exotic or cross-bred breeding-stock. They have now revised their policy. It has been decided to discontinue the system of

Draught Cattle.

installing a bull and six cows at each of the central farms and open instead two stock-breeding farms, one for the building up of a herd of pure Burmese cattle and another for experiments in crossing the local animals with outside breeds. (a)

Plough cattle.

Generally speaking, we find a deficiency of plough cattle in the district near the sea coast from Pegu to Myaungmya, and a large surplus in the breeding district of Upper Burma and in Arakan. Thus Myaungmya ought to have a stock have 1,10,000 plough cattle to plough the 6,60,000 acres under winter rice in that district, but the total number of bulls, bullocks and adult male and female buffaloes there is only about 66,000. The districts in which there is a deficiency are shown in the statement below :—

Districts.	Plough cattle required at 12 acres per yoke.	Actual number of bulls, bullocks, buffaloes, cow buffaloes.	Deficiency.
Pegu	137,415	136,506	909
Insein	82,679	70,517	12,162
Hanthawaddy	125,888	86,459	39,429
Pyapon	106,844	66,206	40,638
Myaungmya	110,146	66,129	44,017
Total ...	.....	.....	137,155

The number of plough cattle required is calculated from the area under winter rice during 1916-17, advance statistics for which have been kindly furnished by the Deputy Director of Land Records. Last year's stock census figures, when com-

(a) Review of Agricultural Operations in India 1923-24.

pared with the 1915-16 ploughed areas showed deficiencies of plough cattle in Thatou, Ma-ubin and Bassein in addition to the five districts mentioned above.*

Milk cattle.

The supply of milk is said to be sufficient for the existing demand in all towns except Akyab, Tavoy, Minbu, Nyaung-u and Yenangyaung. The price varies from just over annas three a viss—(3½ lbs.) in the Southern Shan States to annas ten per viss in Tavoy and Yenangyaung. The consumption in Rangoon is eqivalent to 0·09 lb. per head per day. In other cities of India the average consumption per head per day is about a quarter of a pound. In Mandalay the supply is equivalent to 0·04 lb. per head per day during the rains. The price in Rangoon is annas eight per viss and in Mandalay annas five per viss. The consumption of fresh milk among Burmans is increasing steadily and in some places rapidly. The consumption of fresh milk by Shans is increasing to a great extent in the Southern Shan States and slightly in the Northern Shan States There has for years been considerable consumption of tinned milk by Burmans The import of tinned milk in 1913-14 amo nted to 9,307,000 lbs. valued at Rs. 24 lakhs. The total population of Burma was about 12 millions in 1911. If the consumption of milk goes on increasing and ultimately becomes almost universal, it is possible that the average consumption per head per day for the whole country may reach the figure at which it now stands for Indian cities, namely, a quarter of a lb. per day. At present the average production of milk by a Burmese cow is not more than

*Since this was written, Mr. Arbuthnot, Commissioner of Settlements and Land Records, in a letter to the Chairman, has pointed out that according to some recent Settlement reports, 12 acres is a low estimate of the area tnat can be ploughed by a yoke of plough animals in the lower Delta districts. He suggests that in recently cleared land, where ploughing is light, the area that can be ploughed by a yoke is probably from 15 to 20 acres. We accept this view, but, even so, there will still be large deficiencies in Hanthawaddy, Myaungmya and Faypon, and it would therefore appear that there must be a serious shortage of cattle in these districts, or that the statistics are still very inaccurate.

about 4 lbs. per day; so that, to provide 12 million people with an average of a quarter of a lb. per head per day would require approximately 750,000 Burmese cows in milk. As probably not more than half of the cows would be in milk at once, a total stock of 1,500,000 Burmese cows would be required. This is, of course, on the assumption that the yield from Burmese cows remains the same as at present; but it is probable that, by selection within the breed, the milk-producing qualities of Burmese cows can be greatly improved without any serious deterioration in the quality of the draught cattle. Some Indian milch breeds yield as much as 30 lbs. per day in the districts to which they are indigenous, but give much less when exported to other countries. Thus, Hansi cows in their native districts yield from 20 to 30 lbs. per day, but the pure cows of the same breed which are kept at the Insein Jail yield on an average only about 9 lbs. per day. In Toungoo Jail however Indian cows, which were originally received from Insein Jail, yield 15 lbs. per day. In the Maymyo Cantonment dairy the average yield from an Indian cow is 3 viss (10½ lbs.) per day, of a cross-bred cow 2 viss and of a Burmese cow 1 viss. If an average of 15 lbs. per day could be obtained from a good breed of Indian cows, the number of such cows required to produce 3,000,000 lbs. of milk per day would be 300,000 assuming that ⅔rds of the cows are in milk at the same time.

Merits of Cross-breeding Discussed.

Attempts have recently been made in India to breed a "dual purpose animal." Mr. Joshi in his book on the Milk Problem in Indian cities says:—'The aim of breeding should be the production of a class of animal the female of which would be our best milker, while the male would be our most efficient draught animal." On the other hand, at the last meeting of the Board of Agriculture in 1916, Colonel Pease, Principal of the Punjab Veterinary College, Lahore, expressed the opinion based on 31 years' experience, that it was not possible to get any of the very fine

breeds of draught cattle in India to become also milch breeds without deterioration in draught cattle. It has been urged that good dual purpose animals have already been produced. This may be so, but so far as we know they have always been produced by crossing. (for example by mating an Ayrshire bull with a Montgomery cow), and crossing is a very unsatisfactory method of breeding, as it is undesirable to have continuous import of exotics for crossing purposes and it is impossible to get calculable results by breeding from the cross-bred dual purpose animals themselves. The milk of goats is said to be suitable for children, but the risk of Malta fever from the use of goat's milk is considerable and goats do so much harm to vegetation that breeeng them on a large scale in order that their milk might take the place of cow's milk would probably be disadvantageous to the country. The Burman buffalo cow is a poor milking animal and the introduction of a breed of milch buffaloes into Burma is open to the objection that no use should be made of the young male stock, there being not even a butcher's demand. There would also be serious risk of admixture with the pure Burman buffalo and consequent deterioration in the fine draught qualities of the latter. It might be possible to produce good milking qualities in the Burman buffalo, but its liability to disease and the difficulty of stall-feeding it make it unsuitable as a dairy animal. The introduction of a distinct breed of Indian milch cattle is open to the same objection as the introduction of a breed of milch buffaloes, namely, that the young male stock would be of little use for draught and would also probably make bad beef. We are of opinion that, for the present and so long as the demand for milk remains comparatively small, the best policy is to develop the milking qualities of the Burma cows by selection within the breed, care being taken that this is not done to such an extent as to diminish the qualities necessary for draught. Mr. Warth has recently been experimenting with the milk-producing qualities of Burmese cows at the Mandalay experimental dairy farm, and has found that the milk yield has steadily increased. He remarks that

this process must not be hurried by giving too much rich food, etc. It is impossible to say yet what milk yield may ultimately be expected At present the maximum reached is 1,600 lbs. for one lactation period. These good results, however, have been obtained with somewhat expensive feeding; and it was found that with fodder purchased at Mandalay prices and milk sold at the best price obtainable in the Sagaing Dairy area, there would not be any profit from stall-feeding the cows. The experiments, however, are still going on and we think that they should be continued. If the milk production of Burmese cows cannot be raised to a profitable amount, then experiments in crossing might be undertaken with a view to developing a local milch breed, which would be kept distinct from the draught breed. (a)

Co-operative dairies.

Co-operative dairies have been successful in most countries of Europe. In many places they receive subventions from Government. They have also been started recently in some of the provinces of India. The best method appears to be to form societies of milk sellers at a distance from the town dealing with a central depot in the town owned by the societies. Experience in Lucknow teaches that a Co-operative dairy should not be combined with a credit society, as it may become overloaded with the arrears of members who belonged to the original credit society, but have not come into or have deserted the dairy business. Capital should be provided by loans from the Central Bank or from shares which should be paid by deductions from the price of the milk sold. Milk-selling societies should make no loans to members. Milk-sellers outside Rangoon already combine to a certain extent in sending their milk to Rangoon, so that the introduction of other Co-operative methods may be quite practicable; but a serious difficulty will be the language of the milk-selling Indians, as there is not likely to be any one in the Co-operative Department able to talk or write that language for many years.

(a) Report of the Stock-breeding Committee Burma 1917.

The Stock-Breeding Committee considers the main lines of advance to be—

(1) the co-operative organization of cow-owners at a reasonable distance from the town supplied in areas notified under section 10 of the Bill, for the obtaining of credit, the supply of joint owned bulls, co-operative purchase of fodder and co-operative sale of milk;

(2) the improvement of transport arrangements to the town;

(3) control of the centres of distribution in the town;

(4) education of the people in the dangers of impure milk; and the supply of certificated pure milk at higher prices to those who demand it;

(5) Municipal financial assistance to producers.

Grazing.

Ground for grazing is, of course, a necessity in the dry zone. But there is less necessity for grazing grounds to be reserved there as the fallow land and waste or other grazing is everywhere sufficient. Grazing land in Burma consists almost entirely of—

(1) reserved grazing grounds,

(2) unclassed forests,

(3) fallows, and

(4) fields from which the crops have been reaped.

The forests of Burma are treated on a somewhat different system from the forests in other provinces of India. In Burma reservation has been extended, as a rule, only to forests bearing valuable timber, the exceptions being a few fuel reserves. In these there is hardly any grazing allowed. In other provinces there are large areas of reserved forest used

GSL

largely for grazing. Thus, in Bombay there are seven million acres of reserved forest out of which 5¾ million acres are open to cattle. There are only one million acres of unoccupied culturable waste land and five million acres not available for cultivation (water, roads, etc.) In Burma there are approximately 16 million acres of reserved forest and 63 million acres of unclassed forest and land not available for cultivation (roads, water, etc.), of which 23 million acres are classed as culturable. Grazing in unclassed forests, (*i.e.*, all land which is neither included in a reserved forest nor occupied,) is at present quite unregulated, and the area of such forest land is still very large in many districts. In our opinion the time has come for adopting a more effective policy of regulation and conservation of the unclassed forests used for grazing and fuel supply. This is specially necessary where the population is growing. We have sought to give effect to this policy in our draft bill by providing for the limitation of the number of cattle to be owned in notified villages. The reservation of such unclassed forests as village forests under the Forests Act or more elaborate rules under the sections of the Land Revenue Act (Lower Burma) and Land Revenue Regulation (Upper Burma) which provide for the reservation of grazing grounds are other methods by which such conservation can be attained. We understand that another Committee is considering the question of village forests and as the unclassed forests which provide grazing should also provide fuel, bamboos and house timber we refrain from further discussion of the subject as it seems to be one specially suitable for regulation under the Forest Act. (*a*)

Cattle-breeders are nearly all cultivators and no attempts at cattle ranching on a large scale in uncultivated areas have been made. Nor does Government offer any facilities for such an undertaking. In Madras grants of land may be given for cattle-breeding or dairying. Ordinary conditions of such

(A) Report of the Stock-Breeding Committee, Burma, 1917.

grants are that the land should be fenced and that the grantee should raise within twelve months such grass or fodder crops as the Director of Agriculture may advise. Conditions regarding the number of cows and bulls, the castration of young bulls, the separation of cows from the village bulls, etc., may also be added. Such grants are exempt from assessment to land revenue for five years. Thereafter they will be assessed at rates determined by the Collector. In the Central Provinces also the Forest Department is selecting areas where there is no effective demand for grass as breeding areas for capitalists who will keep cattle of a good type. In parts of Upper Burma there are large areas of unclassed forest (*indaing*) which appear to be suitable for ranching and dairying on a large scale; and we think that something should be done to encourage capitalists to establish such industries in these areas. That cattle-breeding is usually subsidiary to agriculture may be seen from the fact that at the last census there were only 1,000 persons in the whole province who gave cattle-breeding as their main occupation, and most of these were in Hanthawaddy and the Northern Shan States. Those in Hanthawaddy, (which then included Insein) were probably Indian milk-producers.

Cattle diseases.

The chief cattle diseases prevalent in Burma are rinderpest, foot-and-mouth disease, anthrax and charbon symptomatique. Tuberculosis, dysentery, distomatosis and hæmorrhagic septicaemia are also met with in some localities. Rinderpest and foot-and-mouth disease may be met with at all seasons and in all districts. The percentage of mortality from foot-and-mouth disease in this country is usually small, but the inconvenience and loss to owners is sometimes great, as ploughing operations may thus be brought to a standstill for want of oxen to carry on the work. The mortality from rinderpest, on the other hand, is very high. Preventive inoculation has been tried with satisfactory results in some districts, but has not been universally adopted. The total number of cattle inoculated in 1915-16 was 7,814. In

1912-13 the number inoculated amounted to 11,907. The decrease is probably due to the comparative immunity from rinderpest which the province has enjoyed during the last three years. Deaths from rinderpest amounted in 1912-13 to 20,525, in 1913-14 to 13,048, in 1914-15 to 5,698 and in 1915-16 to only 3,508.

Beef.

The demand for beef is fairly general all over Burma and in the more thickly populated districts slaughter-houses are situated at comparatively short distances from each other. Beef is eaten by all classes except Hindus, but Burman Buddhists have recently been dissuaded to some extent from eating beef by their religious leaders, with the result that they have taken more to the consumption of pork. This is due to the fact that the preaching referred chiefly to oxen and in aid of the argument pointed to the many services performed by oxen. The total number of bullocks, cows and calves slaughtered yearly in Burma proper, including the Shan States, is estimated at about 190,000. Of these about 50 per cent. are bullocks, 43 per cent. are cows and 7 per cent. are calves. Though this demand is considerable in extent and is almost equal in number to the annual demand for plough cattle, it is not of anything approaching the same importance, as there is very little effective demand for good beef and old, worn-out or barren animals which are useless for any other purpose generally find their way to the slaughter-house. The result is that, except perhaps in Rangoon, Maymyo and one or two other places where there is a large European population, beef is generally of a poor quality. We think, therefore, that the demand for good beef is of little importance and that there is no need to make any recommendations regarding the breeding of good beef-producing animals. It is a matter for congratulation that there is demand for poor beef, as this results in the most economical disposal of animals worthless for ploughing or breeding. The slaughter of calves is comparatively small. It is desirable that such slaughter should

be confined if possible to male animals of exotic or cross bred stock, which are likely to be of little use for draught purposes.

Indian dried beef is sold to a large extent in most of the districts in Burma, especially in Rangoon, Insein, the Lower Chindwin and Bhamo districts. We think that this practice ought to be discouraged. The following description of how this article is manufactured is taken from a Note on Cattle in Bihar and Orissa by G. Milne, written in 1914 :—

Dried meat.

"The third quality" (*i.e.*, of cattle) "is not allowed to be slaughtered for local use, but the butchers have permission to kill such animals for conversion into dried meat. This article is prepared in long narrow strips of flesh which is treated with salt or salt-petre and dried in the sun until as hard as wood and the colour of dark earth. It is kept in the slaughter house until a sufficient quantity has been accumulated for export by rail when it is consigned to Rangoon. The appalling feature of the situation is that in addition to the Mahomedans who kill in the slaughter house a number of Ghasi aborigines, of the most filthy habits, have their huts near by and outside Municipal limits. In these they slaughter, without supervision, any animal they may pick up regardless of condition or disease. It is even suspected that occasionally a dead animal is cut up and converted into "biltong." There is little doubt that this is not consumed locally by Ghasis but finds its way to Rangoon along with the scarcely superior article manufactured by the Mahomedan Kasais. Sambalpur town was the only place where I obtained information of this traffic, but there I was told that "biltong" was also exported from large towns in the Central Provinces. It is a trade the whole condion of which requires investigation."*

The Burma Committee have made the following recom-

*Note on Cattle in Bihar and Orissa, page 41.

Summary.

mendations. The use of cattle for draught purposes must be regarded as of primary importance, their use for milk as of secondary importance, and their use for beef as least important of all.

The first necessity as regards draught cattle is to keep the present excellent indigenous breed pure and thus to prevent it from deteriorating as the breed of ponies has deteriorated. For this bold measures are necessary, and we have therefore recommended legislation to prevent admixture with exotic blood in the draught cattle breeding areas. This is by far the most important problem to be faced. The second problem is the improvement of the breed within itself by the initiation of more scientific methods of breeding and by improvements in rearing and tending, especially in regard to the care of the cows in Upper Burma and the extension of the practice of stall-feeding in Lower Burma. The introduction of scientific methods of breeding may be brought about slowly, and should be preceded by definite experiments by the Agricultural Department to test the practical value of the methods which it is desired to introduce. There is nothing very urgent about such improvements because, if the indigenous breed is kept pure, the present promsicuous breeding can go on without risk of deterioration. Greater care will be taken of the cows and young stock when the breeders learn that it will pay them to do so by reason of the higher prices they will obtain for their produce. Something might also be done to encourage this by prizes at Agricultural Shows. The practice of stall feeding is extending rapidly in Lower Burma, and the process may be accelerated by throwing many of the grazing grounds open to cultivation. Finally the third great problem is the want of organization of the trade in cattle between the great breeding districts and the great cultivating districts. This is dependent in part of the backwardness of the country in communications; but other measures such as the formation of Co-

operative Cattle Purchase and Sale Societies and the encouragement of cattle markets, can also be adopted.

In regard to the milch cattle, our principal thesis is that these, for the present at least, are of much less importance in the economy of the country than draught cattle are and that no measures which would have a deleterious effect on the draught breed must be taken to improve the milk supply. Subject to this reservation, however, it is possible and desirable to do much to improve this supply and to encourage the dairying industry, and, though we have not found time to go fully into the subject and make detailed proposals, we have recommended various measures calculated to increase and improve the supply of milk, without at the same time endangering the qualities of the draught breed.

Finally, with regard to beef, we regard the demand for good beef as of so little importance in Burma that we make no recommendations for improvement.

Rev. Secy. Govt. of Burma.

F. Lewisohn, Esq., I.C.S. Additional Revenue Secretary to the Government of Burma informs that the quality of the cattle is not what it might be, and the milk production of the indigenous breeds is extremely poor. The question as to what steps should be taken to improve matters is at present engaging the attention of Government. The remedies which are most generally urged are the improvement of the breeds by scientific selection and the establishment of Model Dairy Farms.

Director of Agriculture Burma.

D. F. Chalmers, Esq., I.C.S., Director of Agriculture, Burma, suggests that the only remedy at present is the improvement of milch stock by founding a Government Dairy on the lines of the Telenkeri Dairy at Nagpur; but this has not yet been sanctioned by the Local Government.

In Burma the position of milk and ghee in the diet of the people is of minor importance. The Burman seldom drinks milk, and prefers it tinned. Ghee is never used in culinary processes. They prefer sessamum, earth nut or cotton seed oil.

Registrar Co-operative Societies.

C. W. Dunn, Esq., I.C.S., Registrar, Co-operative Societies, Burma reports that the state of cattle in Burma generally is not unsatisfactory and is believed to be on the whole better than in India. The prevention of recurrent cattle disease is more urgent than the improvement of the state of the animals. In Arakan the cattle are said to be underfed and stunted. Herds kept for breeding in the dry zone of Burma suffer from drought and lack of good pasture. In some localities herds kept by Indian herdsmen are complained of for consuming the pasture and spreading disease and there has been discussion regarding legislation to prevent this nuisance.

The milk supply is not yet a matter of national importance. Burmans now consume tinned milk but make little use of fresh milk, and cows are not generally milked except where Indians or Europeans are settled. The milk supplied by Indians to Indians and Europeans is notoriously adulterated. The milk supply in the large towns is certainly unsatisfactory.

Cattle.—Number, quality and methods of breeding are generally satisfactory. The matter has lately been dealt with by a committee on Stock-breeding. In some parts of Lower Burma oxen and buffaloes fed only on grass or straw lose condition by the end of the ploughing season and appear to require better feeding to make them fit for work after the harvest. Ground nut oil-cake and cotton oil-cake are exported and are not used generally for feeding cattle in Burma. Sessamum oil-cake is available generally only in Upper Burma where sessamum is largely grown.

Milk supply.—The milk supply in towns is unsatisfactory on account of adulteration. Burmese cows have not been bred

in the past for milking and their milk though rich in quality is small in quantity. Many Indian or half bred cows are used for supplying the towns and their milk production is probably similar to that of cows used for milking in the neighbourhood of towns in India.

The defects as regards breeding and feeding and the remedies applicable vary with the localities. The retention of oil-cake in the country is of importance for Lower Burma. The price owing to the export demand is high, and the people do not yet understand the use of cotton and ground nut cakes which are dangerous unless used with proper precautions. The extension of public grazing-grounds in Burma is not considered desirable. Upper Burma generally is fairly provided with fodder crops. In Lower Burma the introduction of fodder plants is important.

CHAPTER II.—ARAKAN DIVISION.

I—Akyab.

The number of cattle in the district during the years 1901-02 and 1913-14, the first years of the two last settlements, is shown in the statement below :—

	1901-02.	1913-14.
Plough-cattle—		
Oxen	50,446	1,05,575
Bull buffaloes	37,196	57,596
Cow "	26,747	50,218
Total plough-cattle ...	1,14,389	2,13 362
Other cattle—		
Cows	47,023	93,710
Young stock	83 221	92,842
Total other cattle. ...	1 30.244	1,86,552
Grand total cattle ...	2,44,633	3,99 914

Buffaloes for the most part, are bred in the district, but owing to the scarcity of good grazing cattle-breeding is not carried on systematically and the needs of the district, especially as regards oxen, are largely met by importations from Burma and Chittagong. The cattle bred

Akyab Gazetteer.

in the district are puny and weak and those imported from Chittagong are not much better. The cows in Akyab are a miserable, famished-looking lot; their offspring suffer the same privations and such as survive can hardly be expected to turn out well. Cattle from Burma are brought through the passes over the Yomas into the Kyaukpyu and Sandoway districts and thence by boat up to this district for sale. The Burma cattle are infinitely superior to the local bred animal when they arrive, but they are unfortunately starved into the same pitiable condition as those already in the district before long. Buffaloes are preferred to oxen in most tracts on account of the very much larger area they can plough, but they are not as extensively used as they might be because they are more expensive and require much more careful handling and tending. The average area of land ploughed per yoke of plough cattle during the years 1901-02 and 1913-14 was 11 and 7 acres restively; the former high figure is probably due to the underestimation of the number of cattle in the district. According to the statements of the cultivators about 1½ shins of land (9·60 acres) can be ploughed by an average pair of buffaloes and only ¾ of a (4·80 acres) by a pair of oxen.

There are no recognised cattle-breeding centres or fairs in the district. In the broken tracts, where some grazing is obtainable on the sandy *kondans* and in the upland tracts bordering on hill, more cattle-breeding is carried on than in the level tracts, which are more fully cultivated and are, as a rule, distant from grazing grounds. Such requirements as cannot be met from the local supply are made up from the cattle brought round for sale from the Chittagong border and from the Kyaukpyu and Sandoway districts. *(a)*

The area of reserved grazing grounds is roughly about 1,00,000 acres, which allows for two head of plough cattle and for one head of all cattle per acre reserved.

(a) Akyab Gazetteer by Mr. R. B Smart, 1917.

Some of the grazing grounds are not conveniently situated and unfortunately they are all very poor. The little grass that springs up is trodden under foot and destroyed by the large herds which wander over the grazing grounds. About 1,00,000 acres of occupied land are fallowed annually and it is not surprising that the bulk of this is to provide grazing for the cultivator's plough-cattle. Proposals have been been submitted to close some of the grazing grounds and to inaugurate a system of stall-feeding.

Akyab has a bad reputation for cattle disease and it has not been undeserved. According to the statistics nothing like the epidemic of rinder- pest which occured in 1901-02 has visited the district ever since, but this disease caused about 5,000 deaths in each of the years 1904-05 and 1908-09 and over 2,000 in 1906-07 and 1909-1910. Anthrax was fairly prevalent throughout the past 12 years, but it was not nearly so destructive as rinderpest. From 30 to 50 per cent of the deaths are generally placed under the head "other causes," and from the figures, for 1913-14, which were analysed in detail, it was discovered that 36 per cent of the deaths were due to starvation. It is not surprising therefore that when even a mild epidemic appears large numbers of cattle succumb to it.

2.—Arakan District.

Arakan Gazetteer.

Low-land cattle and a few buffaloes are bred principally by the tribes that they may be used for sacrificial purposes solely. The hill-cattle (Burmese) "Taung Nwa" or as they are called "Mithun" or Gayal, are bred principally by the Kamis and other hill-tribes. These animals, the bulls of which are valued at from Rs. 80 to Rs. 100 each, are rarely found in Chaungtha or Arakanese villages. The origin of these fine animals has not been clearly traced. They are said to be the offspring some generations back of the common cow and "*Bos gaurus*" or Indian bison, but the ques-

tion of its breed seems to be still an open one. Were the people not to slaughter their hill cattle for sacrificial purposes in certain portions of the Hill Tracts as soon as they reach a mature age there is no doubt that a solitary bull bison, by interbreeding with the cows, would in time considerably improve the breed. Unfortunately no sooner does a hill bull or cow begin to reach maturity than it is considered ready to be sacrificed, in fact, the larger the bull or cow killed, the higher is the owner held in the estimation of those invited to the feast. The result, so far as the quality, size and breeding of the animals is concerned, is, as can be imagined, that improvement is considerably retarded. Gaur or bison, again, are becoming scarce, and until quite recently they were everywhere being systematically and ruthlessly hunted and shot down regardless of sex or size and the fact that they rarely enter a cultivation. Parasites or ticks infest all the cattle in Northern Arakan and do a great deal of harm to young animals many of whom, especially young goats and calves, succumb to their sufferings.

3.—Kyaukpyu.

The Deputy Commissioner Kyaukpyu informs that there are only few milkmen in the district and they are all natives of India.

Arakanese cattle breeders and cultivators own cattle but they do not milk their cattle—very comparatively few do.

The natives look after their cattle well enough and the health of cattle and the milk supply is generally satisfactory. At the headquarters of the district which is a Municipality the sale of milk is controlled by a byelaw. (Municipal and Local Department No. 167, dated Rangoon the 19th December 1906.) Every milkman is required to take out a license which is issued by the Civil Surgeon. Outside the Municipal limits there are only few milk sellers and

Dy Commr. Kyaukpyu.

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they are chiefly at the headquarters of the townships—where milk sellers are not required to take out licenses. I think however that it would be more satisfactory if all those who sell milk are required to take out licenses.

The Government should be moved to issue an order under the Village Act to make sale of milk without license illegal within town limits,

The Byelaw in force in the Municipality does dot contain provision to prevent cows which are not in fit condition from being used for milking. I intend to represent this matter to the Municipal President.

I enclose herewith extract from the Byelaw which concerns the sale of milk. (a)

(a) Bye-laws in respect of the sale of milk.

1. For the purpose of these bye-laws milk does not include condensed milk sterilized milk or other milk ordinarily sold as a special preparation.

2. No milk to or from which any substance has been added or abstracted shall be sold or offered for sale.

Provided that milk from from which cream has been taken may be sold if the fact is stated.

3. All vessels in which milk is sold or transported shall be kept perfectly clean, and shall be provided with a well fitting cover which shall ordinarily be kept closed.

4. No person shall sell milk within the Municipality without a license, which shall be issued free of charge by the Civil Surgeon.

The license shall be current for twelve calendar months from the date of issue and may be renewed for each subsequent year. It shall

4.—Sandoway.

Sandoway Gazetteer.

At the time of the annexation the stock consisted entirely of buffaloes. There were few cows and bullocks and the latter were used only as pack animals. Immigrants from India appear to have taught cultivators to use the cheaper bullock, and even the cow, for ploughing. As late as 1853 there were 16,354 buffaloes to only 2,332 cows and bullocks, twenty years late the numbers were 23,036 and 7,329 respectively, and in 1883 they were 25,324 buffaloes to 12,061 cows and bullocks. But after that people learnt that buffaloes costs more to feed, require more tending, and are more liable to contract cattle disease. They sold off their buffaloes in greater proportion than their bullocks and paid more attention to raising a stock of the latter, for in 1900 there were 16,828 buffaloes to 13,662 cows and bullocks. This tendency continues and now the tables are turned, for in 1910 there were 24,451 cows and bullocks to 21,874 buffaloes. No systematic cattle-breeding is practised. There is more than a sufficiency of cattle for agricultural requirements and every year numbers are driven down the Gwa road into Bassein for sale. This trade in cattle has continued unbrokenly from Burmese times.

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be subject to the condition that bye-laws 1 to 6 are complied with, and may be cancelled by the Civil Surgeon for any breach of these bye-laws.

5. Every vendor of milk and every person employed by him for the sale or delivery of such milk shall wear a visible distinctive badge when selling milk or in charge of any vessels ordinarily used for containing milk intended for sale.

Badges shall be issued at cost price by the Civil Surgeon and shall be produced and returned to the Civil Surgeon whenever that officer so directs.

6. No person shall sell the milk obtained from milch animals kept by him for profit. Unless the place where such milch animals are kept has been entered on the license granted under bye-law 4 and the following conditions are complied with at such place, namely :—

Within the district the average prices are 20 rupees for a cow 30 to 40 for a bullock and 50 to 60 for a buffalo. Cattle disease is comparatively rare, it is said that this is due to the owners supplying drinking water to their cattle from wells during the hot weather, instead of allowing them to drink from stagnant pools.

The stock is not stall-fed nor are any fodder crops raised. There are 51 reserved grazing grounds measuring 3,737 acres, but most of them are not very suitable for grazing, being covered with large trees under which little grass can grow. Fortunately near most villages there is abundance of grass of abandoned taungyas and on the lower hills; it is only in the older kwins and in the coast lands, that any difficulty is experienced in obtaining grazing for cattle. In former areas cultivators have often to let fields lie fallow in order to graze cattle and in both tracts paddy straw is stored for fodder.

(*a*) The premises shall be kept clean, well ventilated and drained, and all filth and rubbish shall be removed daily.

(*b*) The floor of the cow-sheds shall be made up of broken bricks or stones or other similar materials well rammed.

(*c*) Not less than 30 square feet of floor space shall be provided for each animal.

(*d*) The height of the cow-sheds shall not be less than six feet from floor to the post plate or wall plate.

(*e*) All weaned calves shall be kept separate.

(*f*) All cases of eruptive disease of the udder shall be reported to the Civil Surgeon, and the diseased animals shall be at once removed if the Civil Surgeon so directs.

(*g*) The water supplied to the animals shall be clean and pure.

(*h*) All vessels used for the reception of milk shall be kept perfectly clean.

CHAPTER III.—PEGU DIVISION.

1.—Rangoon.

Rangoon Municipality.

C. C. Cameron, Esq., Secretary, Rangoon Municipality, forwards certain extracts from the annual reports and proceedings of this Municipality on the question of the milk-supply of Rangoon which will be found useful.

Extract from the Annual Report of the Rangoon Municipality for the year 1912-13.

Milk-supply in Rangoon Municipality.

19 *Milk-supply.*—The important question of devising further measures to improve the regulation of the milk-supply was exhaustively considered by a Special Sub-Committee appointed for the purpose. As regards milk produced in the town itself, the existing powers of the Committee to deal with it are sufficient, but by far the greater portion of the milk consumed in Rangoon is imported by rail from districts situated outside the Municipality, while so ne of it is imported by road and water from places outside Municipal limits. The real difficulty lies in ensuring that the milk so imported is not contaminated or watered before it is received in Rangoon. The Committee unanimously adopted the following conclusions and definite proposals for legislation were submitted to Government in January 1913 with the object of empowering the Committee to carry out the measures proposed :—

(1) To license and inspect the premises of milk importers from the suburbs.

(2) To prevent import of milk except from licensed premises.

(3) To establish a depot for the receipt and issue of all imported milk.

(4) To prevent watering of milk before arrival in Rangoon.

(5) To enforce the use of locked vans for the transit of milk from the milk farms to the depot in Rangoon.

(6) To require each licensed dealer to report to the Veterinary Officer any case of serious cattle disease on his farm.

(7) To take samples of milk at the depot for analysis on payment of a fixed price.

To these proposals Government replied asking to be furnished with information as to the methods of supervision of the milk-supply in other Indian Municipalities, such as Bombay and Calcutta, and pointed out that in neither the Calcutta nor Bombay Municipal Acts were there any provisions for regulating or inspecting places outside the limits of the Municipality where milk is produced and asked that some further justification should be given in proposing such a measure for Rangoon. A reply was sent to Government after the close of the year to which this report relates but it may be as well to state here that there are wide differences in the circumstances of milk-supply between Rangoon and Bombay, Calcutta and the other large Indian towns. In Rangoon as much as 80 per cent of the milk-supply is produced outside the limits of the town and consequently very wide powers of inspection and regulation are needed which elsewhere would be excessive and unnecessary. The Committee proposals for legislation are now under the consideration of Government.

Extract from the Annual Report of the Rangoon Municipality for the year 1913-14.

25 *Milk-supply.*—As mentioned in paragraph 19 of last year's report, the question of the measures to be taken to improve the regulation of the milk-supply in order to secure much needed improvement in the quality of the milk sold in Rangoon was the subject of correspondence between the Committee and the Local Government who were asked to pass certain amending legislation in order to give the Committee the necessary powers to carry into effect the measures which they proposed to take. Government replied to the effect that they were advised that the Committee already possessed ample powers under the existing provi-

sions of the Burma Municipal Act to take action the for better control of the milk-supply. It appeared to the Committee from this reply that the position had not been entirely apprehended by the Legal Adviser to Government, and the Committee were again advised that the power to inspect milk-farms situated outside Municipal limits—from which 80 per cent of the milk consumed in Rangoon is imported, the enforcement of sanitary measures at such farms, the prevention of contamination or watering of milk before it is despatched to Rangoon and the regulation of the transport of milk to Rangoon which are the first essentials of their scheme could not be directly and conveniently exercised without the conferment upon the Committee of additional powers by legislation. The Committee were further advised that the existing powers are insufficient even for the inspection and testing of milk in course of transport within the Municipality and for the seizure of milk found on such inspection to be either tainted or open to suspicion. In view of the opinion expressed by their Legal Advisers, the Committee again addressed the Local Government urging the necessity for legislation upon the lines previously proposed by them. To this last letter Government replied towards the close of the year asking to be informed exactly in what way the Commitee propose to give practical effect to the powers which will be conferred upon them in the event of the Burma Municipal Act being amended on the lines suggested. Briefly stated the scheme of the Committee is to take all reasonable measures to ensure that milk shall not be drawn from diseased cows, that the milk from the moment it is drawn to the time of its receipt at the depot in Rangoon shall not be contaminated or watered, and that if retail dealers desire to sell watered milk they will be permitted under license to do so, one of the conditions of the license being that the milk shall be watered at the depot only with pure water up to a prescribed limit. It must be recognised that in the interests of the poorer classes the sale of cheap but wholesome watered milk must be allowed, and it may be remarked here that the percentage of fat in local milk is greater than that of the English cows, so that a fair amount of water may be added without bringing the percentage of fat below that allowed in England.

Extract from the Annual Report of the Rangoon Municipality for the year 1914-15.

25 As requested by the Local Government a report was submitted explaining the way in which the Committee proposed to give practical

effect to the powers which would be conferred upon it in the event of the Burma Municipal Act being amended on the lines suggested by their Legal Advisers. The last letter received from the Local Government indicates that the Lieutenant-Governor is advised that the Municipality has already sufficient powers to carry out the greater portion of its programme, namely, that which applies to action within the Municipality, and also to control to a certain extent the production of milk outside the Municipality. On further consideration the Committee has decided to make a beginning with so much of the scheme as it is possible to introduce under the existing powers contained in the Burma Municipal Act, and draft bye-laws have accordingly been prepared and published and copies are being circulated in the vernacular to cattle-keepers and vendors of milk for any objections or suggestions they may wish to make. Briefly, the measures which it is proposed to take are (a) the prescription of bye-laws regulating the sanitary condition of dairies and places where milch animals are kept for profit, one of the bye-laws being that every owner of milch cattle kept for sale of their milk, and every occupier of a milch cattle stable where cattle are so kept, shall admit at all times the Health Officer or Veterinary Officer or other Officer appointed by the Committee for the purpose, to inspect the premises occupied by them and the cattle therein for the purpose of carrying out the provisions of the bye-laws; (b) the establishment of a depot where all imported milk shall be tested, (c) the prescription of bye-laws regulating the sale of milk within the limits of the Municipality. For the purpose of these bye-laws standards are prescribed for milk that will be deemed to be "pure milk" and "watered milk" all vendors of milk must be licensed to sell pure or watered milk as the case may be, and all watered milk shall be kept only in vessels labelled as containing watered milk. As regards imported milk: the license provides that the licensee shall not sell or expose for sale milk which has been obtained from a dairy situated outside Municipal limits unless such milk has passed through the Municipal depot and various other conditions to ensure the same control over dairies situated outside Municipal limits as in the case of dairies situated within Municipal limits. Experience will show whether the above measures have been successful in attaining the object in view, namely, a much needed improvement in the quality of the milk sold in Rangoon. If this attempt does not succeed, the Committee will be justified in pressing for larger powers to enable it to introduce the wider measures contemplated. This would

be prohibition of import from any but licensed dairies, prohibition of import of watered milk, and introduction of sealed cans.

Extract from the Annual Report of the Rangoon Municipality for the year 1915-16.

48. *Bye-laws for control of milk-supply.*—The revised draft bye-laws referred to in paragraph 25 of last year's report for regulating the sanitary condition of dairies and places where milch animals are kept for profit were recast at the suggestion of the Sanitary Commissioner mainly with a view to the omission of all specific dimensions with regard to the sanitary requirements of cattle sheds. In some cases the provisions of the bye-laws did not go far enough to satisfy a sanitary expert, and in the second place it was considered desirable to introduce greater elasticity in order to facilitate the working of the new regulations until actual experience had furnished fuller information for the prescription of definite requirements. The bye-laws in their amended form, and also the revised bye-laws for regulating the sale of milk, have been sanctioned by the Local Government since the close of the year of report. These bye-laws mark very important advance in the direction of enabling the Municipality to exercise a really effective control over the conditions under which milk is produced for sale in Rangoon and when put into operation it is anticipated that a decided improvement will result in the milk sold for consumption in the town.

Extract from the Annual Report of the Rangoon Municipality for the year 1916-17.

45. *Bye-laws for control of milk-supply.* The revised bye-laws for regulating the sanitary condition of dairies and places where milch animals are kept for profit and for regulating the sale of milk, were passed last August. The introduction and enforcement of the new bye-laws had however to be deferred, as under present conditions the organization of the measures necessary in the matter of staff, laboratory equipment, milk cans and a depot to give practical effect to the new scheme is not possible.

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THE CONDITION OF CATTLE IN INDIA.

Extract from the minutes of the Proceedings of a Special Meeting of the Rangoon Municipal Committee held on the 19th June 1919.

Dr. Murray asked the following questions.

(4) Why does the Municipal Executive fail to enforce the bye-laws dealing with the sale and distribution of milk?

The President replied as follows :—

4. The existing bye-laws for the sale and distribution of milk involve for their complete enforcement an expensive and complicated machinery. All milk which is produced in dairies outside Municipal limits must pass through a milk depot in locked and sealed cans, each bearing a mark to indicate the dairy from which it came. No milk is allowed to be sold unless the dairy where it is produced is inspected and certified to be satisfactory. Nearly the whole of the milk used in Rangoon is produced beyond Municipal limits. To enforce these bye-laws therefore there must be provided a milk depot to which all milk arriving in Rangoon from places beyond Municipal limits may be taken for preliminary inspection before distribution to retailers. This building must be on a railway siding in order to deal with the large quantity of milk which comes in by rail.

Enquiries failed to find any suitable building and the cost of putting up a special shed for the purpose was prohibitive. The following staffs would also be necessary (1) an inspecting staff for the milk depot, (2) a preventive staff to force all milk brought into Rangoon by road to be taken to the depot. (3) an inspecting staff to visit all the cowsheds along the railway line from which milk is sent into Rangoon. Finally it would be necessary to provide large quantities of the locked and sealed cans in which milk is required to be transported. The new bye-laws were put up to me early in 1917. It was evident at a glance that it was impossible to provide funds for their enforcement at least during the war. As for their eventual result I reached one conclusion that whether they would improve the quality of the milk sold was doubtful; that they would increase its price was certain.

The above are the reasons why I ordered the enforcement at the new bye-laws to be delayed.

2.—Pegu.

Pegu Gazetteer.

In many parts of the plains the grazing for bullocks is poor. Bullocks have greatly increased in proportion to buffaloes. Only about a sixth of the cattle in 1879 were bullocks. In 1898 about two-fifths were bullocks. In Nyauaglabin subdivision in 1902-03, the number of bullocks and buffaloes was the same; there are now nearly five bullocks to two buffaloes. Some buffaloes and a few bullocks are bred in the district, but most come from Upper Burma and the Shan States. Upper Burma cattle are fatter and better and cost more.

There are a few Jhansi and other Indian cattle in the district, but the overwhelming majority are of pure Burmese breed.

The area reserved for grazing in 1899- 1900 was 57,313 acres, and in 1915 is 70,915 acres although 10308 acres of grazing reserve were recently acquired for the Pegu Sittaug Canal Reservoir, and 71 acres excluded for other reasons such as extension of villages

The proposal of Captain Parrot for declaring all the uncultivated strips of land along streams as reserves was not adopted. About 1905-06 the district authorities notified certain kwius as closed to further extensions, thus reserving such uncultivated strips as remain. This list of quiries has since been added to from time to time. (a)

(a) Pegu District Gazetteer by A. J. Page, I.C.S. [1917.]

CHAPTER IV.—IRRAWADDY DIVISION.

1.—Bassein.

Bassein Gazetteer.

In 1869-70 in the district at it was then constituted the number of cattle was 33,746 and of buffaloes 78,108: by 1876-77 these had increased to 65,475 and 93,753 respectively. So long as there were large areas of jungle and waste, the buffalo continued to preponderate and in swampy lowlying areas buffaloes were used almost exclusively for cultivation. . . . Cattle disease however seems to have caused great havoc. There were serious epidemics in 1854, 1867 and 1878. In his settlement operations in 1883-84 Mr. Bridges found that 22 per cent of the cattle had died within four years, while the comparative mortality was 50 per cent for buffaloes and 15 for bullocks. Again in 1888-89 Mr. Mathews found that at Zayathla cultivators in consequence of losses by disease were replacing their buffaloes with the more hardy and prolific bullocks. During the last fifteen years buffaloes in the Ngaputaw township had decreased greatly while cattle had increased a little. In the rest of the district buffaloes had increased by fifty per cent and this notwithstanding severe epidemics. The principal diseases are rinderpest and anthrax and the death-rate is heaviest in the Bassein subdivision among Arakanese cattle. (a)

The natural increase of stock is entirely insufficient to supply the requirements of the district. Large numbers of cattle are imported every year from the Arakan coast and from Upper Burma. The price of an Arakanese bullock is from Rs. 50 to Rs. 60 and for an Upper Burma bullock Rs. 70 to Rs. 90 but exceptionally good bullocks sometimes fetch

(a) Bassein Gazetteer by Mr H. P. Hewett, I.C.S., and Mr. J. Clague, I.C.S. [1916]

as much as Rs. 150. Arakanese cattle predominate in the Bassein subdivision, the Upper Burma breed, which is bigger and stronger but requires more food and attention in Kyaupyaw.

The Hon'ble Dr. San, C. Po. M. D., of Bassein writes that in the town of Bassein with inhabitants about 40,000 the supply of milk and even beef is absolutely inadequate. His plan is to start a dairy farm (there being none at present) to supply the need of the town in this direction.

Bassein Councillor.

There are no dairy farm or cattle breeding concerns in this locality. The quality of cattle is very inferior, the quantity is far below the demand, and same can be said of the supply of milk. As for breeding, there is no pretention whatever in that line. There are enough of waste lands, but as for proper fodder there is absolutely nil.

2.—Henzada

Henzada Gazetteer.

As in most districts the proportion of buffaloes to bullocks has decreased very greatly, roughly from four-ninths to an eighth in the last 13 years. . Buffaloes are used in the flooded tracts where the water is too deep for bullocks and also near the hills where the perennial streams affords them water. The average number of acres a yoke of plough cattle plough in the district is about 7·5 acres.

There is a good deal of breeding carried on by the cultivators especially near the hills and in other localities where waste land is plentiful. Indians breed cattle and sell milk near the towns. Many cattle are imported from Upper Burma by road and river and a few are brought from Arakan, but the latter are not so good. There used to be Government cattle markets at Henzada, Lemyethna, Kwingank and other towns last cen-

(a) Henzada Gazetteer by Mr. W. S. Morrison, I.C.S. [915.]

tury, but they have gradually been abolished as unnecessary and the cattle-dealer takes his animals from village to village selling them as he goes. There are no cattle fairs.

It is impossible to fix the average price of a plough-bullock or buffalo. The price per head of the former may be as low as Rs. 25 and as high as Rs. 120; that of the latter hardly falls below Rs. 40 and seldom exceeds Rs. 125. A yoke of bullocks for the ploughing season is hired for 30, 40, 50 or 60 baskets of unhusked rice payable at harvest, but usually at 40 baskets and a yoke of buffaloes usually for 50 or 60 baskets. Cattle are very seldom hired for money or grain for threshing; if so, the fee is about five baskets a head for the threshing season. A cultivator sometimes gets the loan of cattle for threshing free by looking after them in the rains after the ploughing season is over.

The common diseases are anthrax, rinderpest, foot-and-mouth disease. In the years 1890-91, 5004 head died of rinderpest alone, in 1891-92. In 1895-96 many cattle died of rinderpest, in 1901-02 rinderpest and anthrax were prevalent in parts of the district and in 1904-05 there was a very severe outbreak of rinderpest.

Plough-bullocks are stall-fed with straw and cut grass when the crops are on the ground, but at other times are set free to graze among the stubble and in the grazing ground. The cows and calves and the buffaloes are left to feed for themselves in the grazing ground and waste lands of the village. Very occasionally are cattle sent to other localities, *e.g.*, the islands of the Irrawaddy, to be herded. Sessamum refuse costing usually Rs. 1-8 per 10 viss and, less commonly, rice-bran at about eight annas a basket, are often given to plough cattle when they are working hard as in the ploughing and carting seasons.

In consequence of early provision of grazing grounds on the recommendation of the Settlement Officer and Revision

Settlement Officer, the reserved area is now very large, about 69,000 acres, and in most of the villages sufficient. Some of this area is not suitable for grazing, however and should be thrown open to cultivation.

Dr. I. Charaw, L.R.C.P. & S., D.P.H., L.M. Henzada states that in his opinion the state of cattle and of milk supply in this town is not quite satisfactory owing to deficiency in the number of cattle of good quality and breeding, deficiency of pasture and fodder and consequent poor yield of milk in quantity and quality.

Civil Surgeon Henzada.

The defects can only be remedied if the owners of dairies are brought under the control of local authorities by legislation and helped in their improvements by having model dairies of their own.

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CHAPTER V.—TENASSERIM DIVISION.

1.—Toungoo.

Toungoo Gazetteer.

The average occupied area worked by each yoke of plough cattle is 11 acres. Oxen are not bred to an extent sufficient to supply local requirements. Among the Karens there is still a considerable amount of buffaloe breeding, especially in the Shwegy'n subdivision, but the numbers on the whole are falling off. In fully occupied areas the use of oxen is much more economical; buffaloes require extensive grazing and wallowing-grounds, are very subject to disease and are not useful for carting. Oxen are imported from Upper Burma; they are driven along the roads and the drovers sell them as they go, there being no recognised cattle-fairs. Both oxen and buffaloes are imported from the Shan States and Karenni and occasionally from Siam. Large numbers cross the eastern hills annually into the district, but some of them no doubt find their way into other parts of Lower Burma. The price of an ordinary pair of plough bullocks average Rs. 120, a pair of buffaloes of the sort used by cultivators costs about Rs. 110. Hiring is common: the rate for a pair of bullocks for the ploughing season varies from 50 to 70 baskets of unhusked rice, buffaloes are ten baskets more. Plough cattle are well looked after and are not often seen in bad condition. In the rains they are usually given grass cut from waste ground or field embankments; artificial foods, such as oil-cakes are very seldom supplied Buffaloes are never hand fed and are not kept in places where grazing in the rains is not available. Cattle other than those used for ploughing are less well looked after and have usually to forage for themselves, so that they often do not get enough to eat. Cattle

disease when it occurs seems generally to come from the Shan States. There have been no serious epidemics for some years. (a)

Grazing-grounds—Considerable grazing reserves have been made, and there are also large areas of jungle, producing fodder, which it is not necessary to reserve as there is small danger of its being taken up for cultivation. The reservations amount to a little more than an acre per head of plough cattle on the average; but much of the land is unsuitable for grazing, and it is unevenly distributed over the cultivated area, so that in some parts there is considerable difficulty in feeding cattle in the rains when the country is water-logged and grass has to be cut and brought from some distance. With care and expense however it is nearly always possible to keep cattle healthy, and the problem of grazing is not acute enough to justify the extensive reservation of land suitable for growing rice.

Dy. Commr. Toungoo.

A. R. Morris, Esq., I.C.S., Deputy Commissioner, Toungoo, reports that Toungoo district is not a cattle breeding district and most of the cattle are imported from the districts further north. Their condition is on the whole quite satisfactory and I do not consider any action necessary at present. The Burmans do not use milk as a rule, and the supply is ample for the Europeans and Indians resident in the district.

2.—Salween.

Salween.

Cattle-disease occurs yearly though not to any serious extent. There is no cattle or pony-breeding and although elephants, buffaloes and bullocks are largely used they are all animals that have been imported from elsewhere, chiefly from Northern Siam. All overland transport is carried on by means of elephants and packbullocks.

(a) Toungoo District Gazetteer by R. A. Smyth. [1914.]

3.—Amherst.

Amherst Gazetteer.

The number of agricultural stock in the district in 1910-11 was returned as 99,336 cattle, 54,841 buffaloes, figures which represent a fair average for the last twenty years. The number of agriculturists to utilise them was returned at the last census (1911) as 2,58,280. In 1852-56 there were only 5,297 cattle and 36,501 buffaloes in the district as then constituted. In his settlement report of 1868 Captain Horace Browne commented on the fact that cattle were being (gradually) substituted for buffaloes, as has every subsequent Settlement Officer. At the present time instead of there being nearly seven times as many buffaloes as cattle there are nearly twice as many cattle as buffaloes, and the process of substitution still continues. The reason for it undoubtedly is that the buffalo is more prone to disease than the bullock, far more difficult to cure of even the smallest ailment, not adapted for work other than agricultural, except timber hauling, cannot work as long hours as the bullock, and does not last as long. Both cattle and buffaloes are bred in the district, but large numbers are also imported, the former from the Shan States the latter from Tavoy. There is ample grazing for agricultural stock. Grass is always procurable, and it is almost entirely upon grass that the average village animal supports life. In the more densely populated parts of the district ample grazing grounds have been reserved for the use of village cattle. Although most villagers graze their own cattle in the local jungle or grazing ground, many of those living between the Taungnyo range and the sea send their cattle over to villages on the east of the hills to be grazed in the dry season, at a fee of from eight annas to one rupee per head per month. The system is not free from objection owing to its tendency to spread epidemic disease, about which as about the general care of their stock the people are lamentably casual,

with the result that cattle disease is, and always has been, perennial in the district. *(a)*

It is on record that in 1836 an epidemic destroyed 12,000 buffaloes in Tenasserim a large proportion of which no doubt belonged to Amherst district In 1876 between January 1st and August 30th no fewer than 12,562 head, comprising 11,290 buffaloes and 1272 cattle died of disease within the district as then constituted. There has been no recurrence of such an outbreak as that of 1876 and the rules for the report of outbreak of disease and for the segregation of diseased stock have undoubtedly done much to improve matters. The evil has, however, been by no means eradicated. In 1908 and 1909, 7400 head died in Yelamaing township and in 1910 some 2500 head in the Tagundaing circle of Kya-in township. Much of the disease is probably imported from the Shan States by the droves of cattle which come down from there defiling grazing grounds and watering places en-route, just when the local cattle are at their weakest after the labours and exposure of the wet season. The chief diseases are foot-and-mouth disease and a kind of dysentry, which is believed to be a form of rinderpest. From the latter buffaloes never recover, although cattle occasionally do.

4.—Tavoy.

Quah Cheng Guan, M.B.E., Municipal Commissioner, Tavoy informs that

(1) Both state of cattle and milk supply are unsatisfactory.

(2) The cattle kept by the Burmans here seem to be alright, but unfortunately these people do not as a rule (at least in Tavoy) sell the milk or their cattle for slaughtering purposes. It is the Indians here that have this monopoly and they use it to their fullest advantage.

Tavoy Municipality.

(a) Amherst Gazetteer by P. E. Jamieson I.C.S. [1913.]

Their cattle are generally very lean which in itself shows want of proper care and treatment. The question of the milk and meat supply in a large town like this deserves severe criticism in that neither is fit for consumption though we are compelled to take them or do without.

(3) It seems to me that the only remedy is to get the Government to adopt stricter measures in the passing of milk for sale and cattle for slaughtering purposes.

GSL

CHAPTER VI.—MAGWE DIVISION.

1—Thayetmyo.

Most of the cattle in the district are actually used in agriculture and not bred for sale. At the census of 1901 there were over 1,72,000 agriculturists, and roughly there are about three head of cattle to each household consisting of 5 members. But in some places the average runs higher. We find Minhla township with between five and six head of cattle per household while for the township of Sinbaungwe the figure is nearly nine head per household. In the the northern part of the district cattle-breeding for sale is most largely carried on. One village in the Sinbaungwe tractTaukma had as many as 2,000 head of cattle to 80 families in 1904.

Thayetmyo Gazetteer.

There is so much waste land in all parts that no grazing grounds have been notified. The owners of cattle can always let them feed in the jungle while there is any grass, and in the driest weather the land is so burnt up that a grazing ground would be useless. Cattle are hand-fed on the straw of paddy and on dried grass. Green fodder is also grown sometimes, and formerly a certain amuunt of jowar was grown in Sinbaungwe as fodder. Jowar growing, has been almost abandoned now. Oilcake is sold from the mills at Allanmyo and is used to some extent.

There was a serious attack of cattle disease in 1904, in which year a Veterinary Assistant was appointed for the district. There are now three. The Burmans co-operate well in efforts to keep disease down, closing the roads between infected and uninfected areas. But they are unwilling to destroy the hides of cattle which have died of such disease from financial cosiderations.

2.—Pakokku.

Agricultural stock is adequate as the following table taken from the latest returns will show :—

Pakokku Gazetteer.

Bulls and bullocks 98,840, cows 75,100, calves 62.915, buffaloes-male 9,676, female 10 704 and calves 15002. Buffaloes are mainly confined to the three western townships of the district. A few are found in Pauk and the riverine villages, but the greater part of the district is quite unsuitable for these animals. East of the Pondaung range plough and draught cattle are stall-fed mainly with chopped jowar stalks. Cows and young stock live on what they can get while grazing, which for at least six months of the year is very little. (a)

3.—Magwe.

Commissioner Magwe Division.

Lt. Col. D.J.C. Macnabb, C.S.I., I.A. Commissioner, Magwe Division says that the question of the amelioration of the state of cattle and of the milk supply of Burma, has recently been considered by a special Committee appointed by the Local Government and its recommendations will be found embodied in the Report of the Burma Stock Breeding Committee which is now under the consideration of Government.

(a) Pakokku Gazetteer by Major F. C. Owens, I.A., 1918 p 44.

GSL

CHAPTER VII.—MANDALAY DIVISION.

1.—Mandalay.

The Secretary, Bar Association, Mandalay, writes :—

Mandalay Bar.

(1) Our answer to the first question (*i.e.*, if the number of cattle is sufficient) is in the negative.

(2) The quantity of the cattle is not satisfactory. There are no proper grazing grounds. The breed and the condition of the cattle are not good. Milk and milk products are usually adulterated, and in towns the conditions are not suitable for keeping cows in private houses. Besides the pure Burma bred cows do not yield much milk.

(3) We would suggest that a serious attempt should be made to improve the breed of cattle. For this purpose it is necessary that every village should have really first class bulls for breeding purposes. The generality of the people are so poor that they cannot be expected to get the best bulls themselves. Government and public bodies should come to their assistance. Almost every place where breeding is possible good bulls for service should be kept at public expense, and either no charge should be made for such services or only a nominal sum should be charged. Besides, exhibitions at frequent intervals should be held and prizes distributed to deserving cattle owners and breeders. We would also suggest that in an agricultural country like this, better knowledge of keeping and breeding cattle should be disseminated and cheap books on the subject published. Hospitals for the sick animals should also be provided at public expense in as many places as possible. All the Municipalities and other public bodies having control over slaughter houses should be required to use great care and prevent slaughter of prime cows and calves.

CSL

Mandalay Municipality.

The Health Officer, Mandalay Municipality, reports that the cows in Mandalay are remarkably undersized compared with the cows in India. They generally are very poorly fed and most of them are only skin and bones. The supply of milk is also unsatisfactory, that is diluted with water to as much as three parts of water to only one of milk.

There is an increasing consumption of milk and its products as butter. The supply not keeping up with the demand there has been a continuous rise in prices. I do not think there has been a corresponding increase in the number of cows.

The Mandalay cows give much less milk than Indian cows, the average being about one to two viss per cow per day in case of Burmese cows. Indian cows in Mandalay give at most two and a half viss per day.

The cows are badly housed and the biers are never properly cleaned and the cows never washed. There is no special pasture ground set apart for them in Mandalay, and fodder during the hot weather is obtained with great difficulty, with the result that the animals are a mere bag of bones during the hot weather.

Burmese cows I have seen are small, I should say about half the size of an Indian cow and the importation of a few Brahmini bulls and a definite attempt to improve the stock would repay in the production of a bigger animal which would give more milk and of course be more profitable.

Although the cows are small I must say that the Burmese bullocks specially in villages are fine big and strong animals The reason I am told is that a Burman as a rule allows a bull calf to drink its mother's milk considering it a sin to rob it of its proper nourishment. The result is a fine healthy and strong animal. The unfortunate cow-calf however is not so

much valued in the eyes of a Burman for I might add that the milk trade is mostly in the hands of Indians.

The remedies I propose are: firstly a proper pasturage ground irrigated from the canals so that the animals can graze even during the hot weather when fodder is scarce. Secondly improving the breed by importing some of the Brahmini bulls that are found wandering ownerless in the Indian Bazaars.

A greater kindness on the part of the milkman towards the cow and a better knowledge that such a kindness in the long run will be profitable to him financially by producing more healthy and strong cows giving more milk is necessary.

I am not a Hindu but I think that in Mandalay at least the cow is sadly neglected, badly fed, badly housed and badly treated all round and something ought to be done to end this.

This view is entirely endorsed by the President of the Mandalay Municipality.

2.—Bhamo.

Bhamo Gazetteer.

For the last few years an annual show of agricultural stock and produce has been held in March at Bhamo. Liberal prizes are offered and the coincidence of a Buddhist festival brings together people from many parts of the district. The exhibits have been of very unequal quality. The buffaloes are, as a rule, magnificent, but the people take little pains to effect improvements, and it is hoped that the establishment of an agricultural department will stimulate their efforts in this direction. *(a)*

Dy. Commr. Bhamo.

Lieutenant Colonel F. C. Owens, I.A., Deputy Commissioner, Bhamo, reports that the Bhamo district is a very out of the way one inhabited mainly by Shan-Burmans, Chinese Shans, and Kachins, none of whom

(a) Bhamo Gazetteer by G. W. Dawson, I.C.S. [1912] p. 39.

keep cattle for milking purposes. The only people who do so are natives of India, and they are only settled near Bhamo and Shwegu towns and a few of the bigger villages.

The cattle kept are in excellent condition as grazing facilities are good all the year round.

3.—Myitkyina.

Myitkyina Gazetteer.

Buffaloes and oxen are of the usual variety common in Burma. According to a census taken in 1910, the number of oxen and buffaloes in the district (excluding the Kachin Hill Tracts) is as follows :— (a)

Townships	Bulls and bullocks.	Cows.	Male buffaloes.	Female buffaloes.	Calves.	Buffalo calves.	Total.
Myitkyina	739	1,979	562	2,104	1,434	2,246	9,064
Moganng	446	861	947	1,799	557	1,432	6,042
Kamaing	130	428	188	843	271	659	2,579
The District	1,315	3,268	1,697	4,746	2,262	4,347	17,685

Dy. Commr. Myitkyina.

Major S. Bazett, I.A., Deputy Commissioner, Myitkyina, writes to say that the cattle in this district are very undersized and give very little milk; the native cow-keepers only milk the cows once a day as a rule and a cow gives on an average about ½ to ¾ viss a day; some of the best cows milked twice a day give 1½ to 2 viss of milk, but they are few.

They are Burmese cattle and as cows are not milked by Burmans but only by Europeans and Indians they have not developed their full milking capacity.

What it wants is the introduction of a good kind of Indian bull of a milking breed to cross with the local cows;

(a) Myitkyina Gazetteer Mr. W. A. Hertz, C.S.I. [1912] p. 17.

I myself have tried the experiment with a half Montgomery bull and found the cross a good one. If only a few good bulls could be introduced into the district it would improve the stamp of milch-cow to an extraordinary decree; the difficulty is the expense of buying good Indian cattle in Burma and also the expense of getting them all the way up here from Rangoon.

The grazing is excellent all the year round, in fact I have never seen such grazing grounds elsewhere in the plains of India or Burma, as it is an ideal district for experiments in cross-breeding. I believe that the mithun has been crossed with the ordinary cow with good results but have not myself seen the result of the cross. If I can get a bull mithun I am going to try the experiment myself; but I understand that the mithun does not do well in the plains.

If one or two good Indian bulls could be supplied I would be only too glad to share the expense of them and would also look after them and get the people to use them; but I cannot personally undertake the whole expense of purchasing them and getting them here; it is a subject that I am very interested in.

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CSL

CHAPTER VIII.—SAGAING DIVISION.

1.—Upper Chindwin.

Upper Chindwin Gazetteer.

The buffalo is the only animal used for ploughing by the natives. White buffaloes are very common in the north in some villages even exceeding the ordinary kind. The white buffalo is not a separate breed, white calves are often borne by black cows. As breeding is left entirely to chance the paternity cannot be traced. (a)

Great numbers of kine are owned by Indians in the neighbourhood of Kindat, Kalemyo and Homalin. Their owners are unwilling to incur any expense in looking after them, and until stringent measures were taken recently to stop the practice, allowed them, except when used for milk, to run wild and feed on the crops. A large area of land near Kindat has gone out of cultivation from this cause.

2.—Lower Chindwin.

Lower Chindwin Gazetteer.

Before annexation years of mis-government had encouraged cattle theft and restricted grazing, and the stock of cattle was small. It has increased more than four-fold in the last twenty years.

Year.	Total number of cattle.	Population (by census except for 1906-07.)	Average per soul.
1890-91	99,589	233,316	·42
1900-01	228,066	276,383	·82
1906-07	258,257	303,167	·85

(a) Upper Chindwin Gazetteer by G. E. R. Grant Brown, I.C.S., 1913.

The figure recorded for 1906-07 differs by a small amount only from the head-men's figure reported to the Deputy Commissioner, and as the enumeration by the settlement was conducted on different lines, may be accepted as substantially correct. The district has been free from devastating cattle-disease for a decade and, although it cannot be expected that serious outbreaks will not recur, there is support in the statistics for the conclusion that the precautionary measures enforced in the villages have been accompanied by success. There are three Burmese Veterinary Assistants on the staff of the district office; their chief duty lies in the presentation and treatment of outbreaks of cattle-disease.

There are few parts of the district where the conditions required by the water-loving buffalo prevail, and the number of buffaloes 11,328, is small. The stock of cattle was enumerated as follows in 1906-07:—

Plough-cattle:	Buffaloes	6,211
	Bulls and bullocks	85,498
Other than plough-cattle:	Buffaloes	4,357
	Bulls, bullocks and cows ...	162,191
	TOTAL ...	258,257

Plough cattle.

The stock of plough cattle divided into the matured acreage of that year—4,35,533 acres—gave an average per pair of plough cattle of 9·48 acres. In addition to the area of matured crop the cattle are called upon to plough the area which has been sown but on which crops have failed to mature—this may be estimated at 10 per cent. of the matured area—and about 11,000 acres of land which is twice cropped. Correcting the figure of average area accordingly, it may be estimated that each pair of plough cattle is called upon to plough about eleven acres, an area

which it can easily manage. As a matter of fact, the district exports plough cattle.

Grazing & Breeding.

No care is paid to the breeding of cattle. The young stock—bulls and cows—graze together until, at the age of four or five, the bulls undergo the operation of castration. Practically all bulls are castrated, since they would not otherwise be docile in the plough.

There are few places in the district where the plough cattle do not require to be stall-fed at some period of the year and, when grazing is not available or the animals are in hard work, they are stall-fed with chopped millet-stalk, rice-straw, millet bran, the sliced fruit of the tari palm, and oil-cake. Usually all the cattle are kept out as long as the grazing in the neighbourhood of the village lasts. After that, the plough cattle are stall-fed, besides being grazed. In addition to the species of fodder already noticed, many kinds of bean-bines are fed to the plough-cattle. The stall-feeding available from the produce of the holding, when insufficient is supplemented by purchase, invariably of millet stalk and frequently of sesamum oil-cake. Special fodder crops are very little grown, but in the silt tract, maize is mixed thinly with red beam, and cut green fodder, and occasional fodder crop of millet, sown thickly and left unthinned in order to grow to stalk, is met with.

The ploug-bullocks are generally good, sturdy beasts, and in the silt tract south of Momjwa where a proper plough is used and a strong animal is required, are exceptionally well-made. No use is made of the milk of the cow, whether in its simple form, or as butter or clarified butter, and no care is bestowed on the cows. They, with the young stock, remain in the byre, open standing or lying knee-deep in slush, until the family have finished the morning meal, when they are driven out to pasture. Cows are grazed only. They are not stalled nor stall-fed, except in the inundated tract. They are usually weedy in build, and it is surprising that the plough-bullocks

bred from these are as strong as they are. Material upon which to base an opinion whether the breed has improved or not since annexation is lacking, but as there has been no change in the methods of breeding and tending, there has probably been none in the build of the animals. The few professional graziers are natives of India. Some have settled in the villages along the Mu. They sell their young stock, which they do not stall-feed, and their herds have not, up to the present, acquired the notoriety for disease which usually accompanies the Indian grazier.

Cultivation has extended into the waste and with the increase in stock and the pushing out of the forest reserves, grazing difficulties are arising. Fortunately the face of the country is so diverse that there is usually grazing available at distances which are not prohibitive. There is no breeding in this tract (south of Monyera), few cows are kept, and such as are must be stall-fed. On the west of the Chindwin, the black-soil plain is under close cultivation, and there is little grazing available, between July and December. Herds are driven east to the uplands south of Saliugiy or south across the south Yama to the slopes of the Myaing hill range in Pakokku district. The grazing fee in this region is one basket of red millet for each head of cattle for the grazing season.

There are no reserved grazing-grounds in the district, but the jungles, all the year round, and the cultivation, when crops are off the ground, are open to any one's cattle.

CHAPTER IX.—MEKITILA DIVISION.

1.—Yamethin.

Lieut.-Colonel F. Bigg-Wither, I.A., Deputy Commissioner, Yamethin, writes:—

Dy. Commissioner Yamethin.

As regards (a) Burman cattle, their state is on the whole quite satisfactory and while plough cattle get more attention and better housing than cows, this is being remedied and on the whole cows are never milked.

As regards (b) Indian cattle, their state is most unsatisfactory and a disgrace to civilization and so is the milk supply. Natives of India neglect their cattle in every way and breed entirely for quantity and not quality and copiously water the milk they sell. And the enormous herds they so soon accumulate, ill kept, ill fed, unhoused are a positive danger to the other cattle in the district. There is moreover not enough grazing for them—there is only just enough for our very fine indigenous cattle. These Indian owners should be taxed heavily if they wish to keep large numbers and legislation should be enacted to make them keep their cattle properly. They should be compelled to acquire grazing grounds at the market value of the land.

2.—Myingyan.

President Bar Association.

P. Samson, Esq., Advocate & President Bar Association Myingyan reports that there is a cattle-breeding Committee appointed at Rangoon by the Local Government. This Committee do not seem to take any interest in the milk-supply of Burma.

In this town the milk-supply is entirely in the hands of north Indians (Hindustanies), so also is every town of Burma. The milk is very poor and insufficient to meet the needs of the town. Price now is very dear *i.e.* eight annas per three pounds. Cattle is not of good quality. Each cow does not give more than half a viss which is 3·60 lbs. Fodder is not obtainable. Fodder has also become very dear. Fodder is millet stalks and oil-cake *i.e*, till-seed oil-cake. A handful of dry-millet-plant is called a bundle. Hundred such bundles cost Rs. 6. Til-seed oil-cake is sold @ 4 annas a viss of 3·60 lbs. now. People generally do not grow enough food stuff and fodder for cattle. They take to commercial products such as beans, pulses and cotton. There is not enough pasture lands. Even rice is now selling at famine rates *e.i.* Rs. 15 to 16 per bag of 225 lbs. People are in very miserable state. No Government official takes any note of the high rate of food stuffs. Any representation made to Government officials is not appreciated.

Land-holding and village system require thorough hauling up. My suggestion to the Cattle Breeding Committee went to the waste-paper basket.

Unless land-holding system is properly arranged along with village system no good can be expected. Lands should be nationalised. Each family should have at least 10 acres and should work on commercial basis and should not be liable to partition. I entirely approve of Mr. Keating's system propounded by him last year in Bombay.

There are sufficient number of cattle in Burma; but they are of poor quality. Food-stuffs for men and fodder for animals are scarce.

Table I—C. P. cattle.

District.	CATTLE STATISTICS.				
	Bulls and bullocks.	Cows.	He-buffaloes.	She-buffaloes.	Young stock.
1	2	3	4	5	6
VINDHYAN DIVISION					
Saugor ...	154,668	151,732	4,528	80,149	129,062
Damoh ...	115,228	106,530	3,608	41,682	98,206
Total ...	269,896	258,268	8,136	121,831	209,358
MIDDLE NERBUDDA VALLEY DIVISION.					
Jubbulpur ...	188,989	122,129	7,109	49,170	164,038
Hoshangabad ...	139,167	90,490	6,304	34,863	128,096
Narsinghpur ...	73,618	50,362	3,226	24,174	97,158
Total ...	401,774	262,981	16,729	108,207	389,892
Nimar ...	125,960	85,565	3,743	39,980	69,252
SATPURA DIVISION.					
Mandla ...	135,722	159,361	8,452	36,212	74,491
Seoni ...	139,847	126,697	12,605	32,749	71,056
Chindwara Tahsil	126,501	121,958	3,823	27,418	104,542
Betul ...	136,609	88,407	4,007	19,180	105,867
Baihar Tahsil ...	29,857	47,332	6,779	3,976	25,511
Total ..	568,564	541,355	35,666	819,545	381,467
COTTON COUNTRY DIVISION.					
Behar ...	696,798	517,019	27,233	326,288	28,1890
Nagpur ...	230,548	143,785	6,602	38,738	75,702
Wardha ...	149,101	101,422	4,800	32,390	62,124
Sausar Tahsil ...	51,127	38,345	1,058	8,711	24,341
Warora ,, ...	58,312	57,148	1,482	9,[illegible]39	13,946
Chanda ,, ...	38,926	46,444	3,757	8,690	15,556
Total ..	1,224,812	904,163	44,932	334,222	473,[illegible]66
RICE COUNTRY DIVISION.					
Bhandara ...	192,138	144,858	32,283	25,933	81,164
Rest of Chanda ...	107,474	158,344	17,415	59,507	143,014
Balaghat Tahsil ...	62,576	42,467	19,047	5,789	18,511
Drug ...	201,081	175,581	62,532	17,299	161,078
Raipur ...	348,340	324,010	94,489	29,909	303,246
Bilaspur ...	276,921	269,904	89,329	21,856	280,526
Total ...	1,183,530	1,115,174	315,095	160,383	987,636

GRAZING STATISTICS.						
Private area available for grazing (columns 3 and 4 of Table II.)		Reserved forest open to grazing.			Grass reserved for hay.	
Total area	Area per head.	Area.	Area per head of cattle in district.	Area per head of cattle grazed in 1906-07.	Total area.	Area per head.
7	8	9	10	11	12	13
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1,030,031	1·76	440,460	·76	2·4	73,193	13
526,008	1·44	488,474	1·24	2·22	19,005	·06
1,556,039	1·64	928,934	1·00	2·31	92,198	·09
850,222	1·03	182,728	·33	2·17	19,063	·04
731,663	1·84	501,821	1·27	5·32	59,169	·15
416,822	1·66	151,71[illegible]	·66	3·69	23,423	·09
1,998,707	1·69	836,[illegible]	·70	3·67	101,655	·08
559,661	1·72	1,044,034	3·22	2·84	26,954	·08
1,025,304	2·47	1,007,186	2·43	·99	121	·00
709,690	2·85	395,197	1·04	1·84	4,790	·01
839,880	2·19	138,026	3·6	2·48	1,668	·00
847,412	2·39	627,734	1·77	5·05	19,29	·05
348,715	3·07	285,115	2·51	4·86	193	·00
3,771,001	2·29	2,453,258	1·40	3·10	26,065	·02
790,051	·45	1,587,024	·90	1·56	296	·00
506,797	1·02	287,851	·34	1·70	19,797	·04
228,126	·55				9,692	·03
135,940	1·10	276,053	2·23	2·48	190	·00
262,458	1·87	501,165	2·00	1·75	4,844	·03
268,923	2·37				120	·00
2,192,301	·74	1,252,093	0·42	0·84	34,939	·01
1,100,895	2·31	275,758	·58	4·63	6,058	·01
1,274,738	2·62	3,003,509	6·30	13·50	650	·00
293,445	1·98	190,077	2·28	4·82	2,439	·02
664,030	1·08	2,164,733	1·97	17·05	9,330	·01
1,709,757	1·55				7,500	·01
1,714,942	1·83	1,255,781	1·34	31·97	780	·00
6,757,8[illegible]6	1·85	6,949,858	1·85	13·77	27,007	·01

THE CONDITION OF CATTLE IN INDIA.

Table II—C. P. Lands.

Name of District.	Total Area.	Occupied fallows and unoccupied scrub-jungle, grass and groves	Tree forest privately owned.	Land privately owned, but not available for cultivation, village-sites, water, hill and rock.	Government Forest.
1	2	3	4	5	6
VINDHYAN DIVISION.	Acres.	Acres.	Acres.	Acres.	Acres.
Saugor ...	2,523,184	802,846	227,185	140,047	483,340
Damoh ...	1,800,029	371,873	154,135	229,225	507,034
Total ...	4,323,213	1,174,719	381,320	369,272	990,374
MIDDLE NERBUDDA VALLEY DIVISION.					
Jubbulpur ...	2,501,731	718,432	131,790	37,739	221,048
Hoshangabad...	2,364,088	457,829	273,834	131,742	609,341
Narsingpur ...	1,265,661	283,386	133,436	91,471	159,392
Total ...	6,131,480	1,459,647	539,060	594,052	989,781
Nimar ...	2,730,945	420,193	139,468	135,682	1,247,554
SATPURA DIVISION.					
Mandla ...	3,238,988	813,892	211,412	331,948	1,187,666
Seoni ...	2,147,515	444,372	265,318	141,015	527,677
Chhindwara Tahsil.	987,356	433,821	*406,059	492,589	153,813
Betul ...	2,466,715	731,345	116,067	184,022	761,494
Baihar Tahsil...	1,221,776	198,715	*150,000	208,867	373,819
Total ...	10,062,350	2,622,145	1,148,856	1,358,941	3,004,469
COTTON COUNTRY DIVISION.					
Berar ...	11,370,303	790,051	Nil.	550,112	2,232,144
Nagpur ...	2,467,979	393,216	113,581	220,493	340,599
Wardha ...	1,538,659	209,296	18,830	160,951	117,492
Sausar Tahsil ...	1,974,712	95,946	*40,000	92,604	307,627
Warora " ...	1,733,563	62,458	*200,000	38,825	651,165
Chanda " ...		118,923	*150,000	45,065	
Total ...	10,085,210	1,669,800	522,411	1,088,047	3,649,027
RICE COUNTRY DIVISION.					
Bhandara ...	2,526,985	504,694	596,201	254,174	341,038
Rest of Chanda	5,286,719	491,888	782,850	212,855	3,321,829
Balaghat Tahsil	814,517	178,058	115,387	142,946	249,213
Drug ...	2,441,295	570,191	93,848	163,697	296,393
Raipur ...	6,219,574	1,107,946	601,811	258,271	2,317,053
Bilaspur ...	4,858,806	793,504	921,438	257,675	1,299,301
Feudatory States	...	...	...	...	...
Total ...	22,177,896	3,646,281	3,111,533	1,289,618	7,824,827

PART. VII.—CENTRAL PROVINCES.

CHAPTER I—GENERAL.

Area, Population Agriculture.

The Central Provinces and Berar with an area of 130,991 square miles and a population of about 16 millions, may roughly be divided into 3 tracts of upland and 2 intervening ones of plain country. The Vindhyan plateau in the north-west and the Satpura plateau on the east have the rich wheat-growing country of the Nerbudda valley intervening them. The black cotton soil of Nagpur plain and the fertile soil of Berar produce almost the whole of the cotton in the Province. Further east Chattisgarh in the Mahanadi basin is a far-reaching rice-growing tract. Berar is settled on the Bombay ryotwari system while in C. P. proper the land tenure is chiefly on the zemindari or great landlord system ranging from great feudatory chiefships which are on this basis to holdings of smaller dimensions. 38 p c or about 44,000 sq. miles of the C. P. is forest; in Berar the forest area is 3,941 sq. miles. Excluding forests and wastes, 57 to 60 p. c. of the total land is occupied by cultivation.

C. P. comprises 5 Divisions and 24 Districts. The names are given below.

Divisions & Districts.

I. Nagpur Division—*5 Districts*—(1) Nagpur, (2) Bhandara, (3) Wardha, (4) Chanda and (5) Balaha.

II Jubbulpur Division—*5 Districts*—(1) Jubbulpur, (2) Saugor, (3) Damoh, (4) Seoni and (5) Mandla.

III. Narbudda Division—*5 Districts*—(1) Hoshangabad, (2) Nimar, (3) Narasinghpur, (4) Betul and (5) Chhindwara.

IV. Chhatisgarh Division—*3 Districts*—(1) Raipur, (2) Bilaspur and (3) Drug.

V. Berar Division—4 *Districts*—(1) Amraoti, (2) Yeotmal, (3) Akola and (4) Buldana.

C. P. is a comparatively important cattle-breeding province. The principal breeds of cattle are (1) the *Galao* breed usually yielding 2 to 3 seers of milk per day and deriving its name from *Gaoli*, the professional milkman, (2) *Umardha* breed, the indigenous breed of East Berar and (3) *Khamgaon* breed of West Berar—bullocks of these 2 breeds, especially of the latter are by far the largest and strongest in Berar.

Principal breeds of cattle.

(4) The *Khargone* breed found in the Khargone district of Holkar State, north of the Nurbudda and (5) *Nimari* breed found in the Nimar district are not good milkers but are only suitable for draught purposes, (6) the *Chattisgarhi* cattle are pure milkers hardly yielding one seer of milk per day; the bullocks however are better, being docile, active and capable of being easily trained. But by far the best cattle of the Province—especially milch-cattle come from the (7) Maivi breed raised in Malwa. There are several breeds of buffaloes of which the most important are (1) the Nagpuri, (2) Malvi or Nerbudi and (3) Saugor breeds.

Cattle-breeding by Govt.

In the Central Provinces, there are nine cattle-breeding and two dairy farms. The former were originally intended to form centres of supply from which pure bred bulls could be obtained, each herd being representative of the breed most favoured in the tract in which the farm was situated; while on the latter the local Gaolao cows were crossed with Ayrshire and Sahiwal bulls. The Sahiwal-Gaolao cross has been found such an improvement on the local breeds both as regards milk and draught, that it has been decided to grade up all the herds by the use of pedigree Sahiwal bulls as soon as these become available. On one farm, however, a pure Malvi herd is being maintained and on another a pure Gaolao herd with the object of supplying pure bred bulls of these breeds which are greatly in demand for draught purposes. Three hundred and fourteen animals, including 46 bulls, were issued from these farms during the year 1923-24.

Some statistics relating to cattle and grazing compiled from the Note on Cattle Survey in C. P. are given in Table I and II before.

Sanitary Commissioner.

Major T. G. N. Stokes, M.B., I.M.S., Sanitary Commissioner, Central Provinces, furnishes the following information in connection with the milk supply, etc., in these Provinces:

(1) The milk supply is not very satisfactory in towns.

(2) The number of cattle (unkown) probably suffices, the quality is poor. The inherent dishonesty of the indigenous milkman is chiefly responsible for the bad quality of milk.

(3) Remedies—

1. Co-operative Dairies } Exist in
2. " Breeding Farms } Nagpur.
3. Municipal milk shops under reliable supervision.
4. Legislation dealing with adulteration.
5. Education and the creation of a demand for unadulterated milk.

Director of Agriculture.

Mr. D. Clouston, C.I.E., M.A., B.Sc., Director of Agriculture, Central Provinces, writes from Nagpur under date June 11th, 1919 to say that the state of cattle and of the milk supply in our Provinces is not altogether satisfactory. The want of a good supply of milk is perhaps felt to a less extent, however, than in other Provinces where the urban population is larger in proportion to the number of milch cattle maintained. The Department of Agriculture in these Provinces has opened two dairies—one on the Nagpur College Farm and one at Telinkheri near Nagpur. The objects in view are (1) to evolve better milch strains of cows and buffaloes by selection and crossing, (2) to encourage the local *gaolis* to form Co-operative Milk Societies, and (3) to improve their herds by better breeding and better feeding. A third dairy has been started in the town of Amraoti by private individuals guided by the Department of Agriculture.

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I notice that the All India Cow Conference Association, or at least the branches of it in those Provinces, give it as their opinion that the poor condition of the cattle is due to the want of a sufficient area of pasture land. This view to me appears to be quite erroneous; for the best draught and milch cattle found in these Provinces are bred in the cotton tract which includes the four Berar districts, and Nimar and Wardha in the Central Provinces, where grazing areas are conspicuous by their absence. The superiority of the cattle there, is very largely due to the fact that they are stall-fed on *Juar Karbi* and cotton seed. The cattle of the districts in the north of the Provinces where there is much grazing land are much inferior to those of the cotton tract; because stall-feeding is not commonly practised in the north. The people of these districts rely to such an extent on grazing that they leave their juar stalks to wither in the fields and remove the heads only.

In Chhatisgarh, too, the people have large grazing areas and neglect stall-feeding; their cattle in consequence are extraordinarily weak. In Chattisgarh and in the north of the Provinces, moreover, the cost of rearing cattle is so very small that far more are kept than are required for cultivation, but their quality is poor. I hold, therefore, that in these Provinces at least large grazing areas handicap the improvement of our cattle to a greater extent than any other factor. No attention, moreover, has been paid to selection in breeding. The cows come into calf to small undersized bulls which are left in the village herds till they are of four or five years of age, because they are not considerd strong enough for draught purposes till that age. The good bull are castrated before they are old enough to propagate their kind. In this connection please see my survey of cattle-breeding in Chattisgarh.

To improve this condition of affairs the Department of Agriculture has opened a large number of Government and private cattle-breeding farms on which the cattle kept are be-

ing improved by better breeding and better feeding. From these institutions good stud bulls are being supplied to villages, and the people are being induced to castrate inferior bulls, to reduce the number of their cattle, and to feed them better. With this end in view we are encouraging the cultivation of fodder crops to be used in stall-feeding.

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CHAPTER II.—NAGPUR DIVISION.

1—Nagpur.

Dr. J. F. Lobo, L.M. & S., L.M. (Dub.), P.D.T., D.T.M., (Liv), Health Officer, Nagpur Municipality, informs that

(1) Both the state of cattle and of milk supply in Nagpur is in my opinion very unsatisfactory.

Nagpur Municipality.

(2) The number of cattle is very small owing to the high prices of fodder and want of sufficient pasture lands. The quality of the a imals as well as milk production are not satisfactory.

(3) The remedies I suggest are *(a)* Reserve of pasture land and the supply of grass at moderate rates.

(*b*) Arrangement for good breeding within the easy reach of town Gaolies.

(*c*) Periodical exhibition and distribution of prizes who keep good amimals.

(*d*) Prevention of slaughter of milch for food.

M. C. Deshpande.

Mr. M. C. Deshpande writes from Nagpur to say that in his opinion, the state of cattle and milk supply is not satisfactory. If a dairy be opened somewhere, then the milk supply would be satisfactory.

The people do not possess cattle in sufficient number as they have not enough of grazing grounds. If they are given concessions of free grazing, the quality of cattle and consequently that of milk will improve.

The Secretary Municipal Committee, Bhandara, notes the following points.

1. In my opinion the state of cattle and of milk in my locality is not satisfactory.

Bandara Municipality.

2. The quality of cattle is very inferior, good breed is wanting and pasture land is nil Fodder is sufficient but good milk is not available. The present price in the town is As. 4 per pailee or 1¼ seer for cow milk and As. 3 for buffalo. This milk is mixed with water.

3. For the town a dairy combined with reserve goshala in the interior of the district will remove the present difficulty of the town.

2.—Bhandara.

Bhandara Gazetteer.

Cattle are largely bred in the district and the local cattle are generally used for cultivation. Some cattle are imported. A good pair of local bullocks will cost about Rs. 60. Imported ones are about double that, and they sometimes run as high as Rs. 200. Grazing is inadequate and fodder is not always sufficient.

Buffaloes are usually imported from Saugor, Damoh and Mandala, though there is a little local breeding. The females are kept for their milk and ghee while the males are used for any form of extra heavy work.

Anthrax is the commonest disease of cattle, then foot and-mouth disease and then Rinderpest. Inoculation has been tried with some success. But as there is only one Veterinary Assistant in the district and the distances from headquarters are considerable, it is not always easy for him to get to the site of an outbreak in time to do much good. *(a)*

(a) Chanda Gazetteer by R. V. Russell, I.C.S. [1918] pp 99-101.

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Cattle are sold in weekly markets in many places. The largest and best is at Amgaon. Cattle are brought to it from the surrounding country--probably 5,000 cattle come here every week. Butchers also buy cattle from this place and "the pious Hindu is not above selling his worn-out and useless cattle to butchers." Cattle are exported to Nagpur and Kampter.

Statistics of stock— The average numbers of stock in the district during the four years 1901-05 were as follows :—Bulls and bullocks 162,000; cows 125,000; cow-buffaloes 24,000. This gives a pair of bulls and bullocks to every 12 acres in cultivation and 69 cows to a village. The number of bulls and bullocks is smaller by 20,000 than in 1897-98. During the two years 1898-1900 the number of bulls and bullocks decreased by 20,000 and those of cows and cow-buffaloes showed a smaller following-off. Since 1901-02 there has been a further decline in the numbers of bulls and bullocks, perhaps owing to the sale of worn-out and useless animals to the butchers.

3.—Wardha.

Wardha has the best breed of cattle in the Province known as Gaoloo. These are bred in the north by colonies of Gaolies. These animals are well built and specially adapted for fast work but they are not very hardy and require some care and attention in breeding. Their price varies from Rs. 100 to Rs. 300 a pair. There is another breed, the Nagpuri. They are somewhat lacking in spirit and staying power and the cows of this breed are not good milkers. The price of a pair of bullocks is from Rs. 50 to Rs. 100. Breeding is carried on all over the district from selected bulls. A good bull costs from Rs. 100 to Rs. 300 and the district is said to contain 40 well-known bulls besides many others. Many imported cattle are used in Wardha. Bullocks of the Berar breed are considered to be stronger than the Wardha animals. Tha Mahut cattle cost from Rs. 200 to Rs. 400 a pair for the best animals.

Wardha Gazetteer.

In 1904-05 there were 138,000 bulls and bullocks in the district giving a pair to every 15 acres in cultivation.

Cows are kept for breeding and their manure. Cow's milk is not usually made into ghee and milk of most cows is given to their calves. The best cows of the Gaolas breed in Arvi will give 14 lbs. of milk if properly fed and looked after. Cows of the Nagpuri breed give about 6 lbs. of milk. The price of a cow varies from Rs. 15 to Rs. 50. In 1903-04 there were 77,000 cows in the district giving on an average more than 80 to a village and less than one to each household. (a)

Cattle are fed on juar-stalks, cotton-seed, straw and arhar. The staple food is karbi (juar-stalks) which is fed to them for six or eight months of the year. Animals other than plough-bullocks are sent to the Government forests of the District and to Berar, while the herds kept for breeding in Arvi are taken Chhindwara, Mandla or the Baihar tahsil in April and return in August. "Very limited area available for grazing."

Buffaloes are bred in the district. Many buffaloes are kept by the Gaolis for the manufacture of ghee. Cow-buffaloes are valued for their milk (from which ghee is made) and their manure. The price of a she-buffalo varies from Rs. 30 to Rs. 100. The male-calves are frequently allowed to die of neglect. In 1903-04 the number of cow-buffaloes was 31,000. In 1904-05 it had decreased to 28,000. There were only some 5,000 male-buffaloes.

The ordinary cattle diseases are anthrax, foot-and-mouth disease, rinderpest and pleuro-pneumonia. Segregation is rarely practised owing to the difficulties it presents.

The district has no regular cattle fairs but some animals are brought for sale to the annual fair held at Ghoradond. Two important weekly cattle-markets are held at Samudrapur and

(a) Wardha Gazetteer by R. V. Russell, I.C.S. [1906] pp 118.

at Deoli. About 4,000 heads of cattle are sold annually on an average at Deoli. There are many other weekly markets. The sales at Wardha average 1,300 head annually and those at Arvi 3,500 head, there is a large market held at Evan in Yeotmal District.

4.—Chanda

The breed of cattle found in the district is small and poor. Breeding for sale is carried on extensively in jungly parts but breeding is unscientific. Mahakali (cattle) fair is held annually at Chanda.

Chanda Gazetteer.

Tow groups (1) the Maburpatti group sold in large numbers at the annual cattle fair at Wan in Berar; (2) the Telangpatti group. The former are good-sized and strongly built animals, a pair of good bullocks of this breed will cost Rs. 100 to Rs. 200, and a good cow from Rs 40 to Rs. 50 The latter bullocks are of much smaller build. The best cattle of this species come from the Ghatkul pargana. The cost of a pair of good bullocks ranges from Rs. 60 to Rs. 125, while a cow costs from Rs. 10 to Rs. 30. (a)

Plough-cattle are as a rule well-fed and tended; in the rice tracts there is excellent grazing and cattle are well fed the whole year round; in the open tracts also with one exception there seems no lack of good fodder.

Many tenants keep a large stock of cows for the sale of milk and manure. Cows are also kept for breeding purposes. Ploughing with cows is prevalent.

In the Wainganga valley and the zemindaris, milch buffaloes are very extensively kept for the sake of ghee. In many tracts buffaloes are freely used in cultivation. A male-buffalo costs Rs. 15 or Rs. 16 and a she-buffalo Rs. 30 to Rs. 50. In

(a) Chanda Gazetteer by L. F. Begbie and A. E. Nelson [1909] p 135.

Sironcha, a particularly fine breed of buffaloes is produced which is exported to Nellore in Madras.

The most important cattle markets of the district are held at Warora, Madheri, Chimur, Jambulghata, Bhandak, Nawargaon, Gangalwadi, Chanda Rajgarh, Dabha, Kungadha, Talodhi and Nandgaon. Cattle come on from the big Wan fair to the annual Mahakali fair at Chanda. In the Sironcha tahsil a few cattle come to the weekly bazar at Asaralli. The total number of agricultural stock during 1906-1907 as returned is shown below :—

Bulls and bullocks	2,04,712
Cows	2,61,936
Male-buffaloes	22,654
She-buffaloes	77,692
Young stock	1,72,534

The number of actual plough cattle is 192,265.

The ordinary cattle diseases are anthrax, foot-and-mouth disease, rinderpest and hæmorrhagic septicaemia. Hæmorrhagic septicaemia occurs principally during the rains, the Christmas rains being frequently followed by an outbreak.

The Tahsildar, Warora reports that in this tract milk-supply is generally from she-buffaloes, which, however, give a very small quantity of milk as compared to those in other tracts. This is accounted for by the condition in which the cattle are kept. They are generally found emaciated and weak.

Tahsildar Warora.

The number of cattle is ordinarily sufficient but their quality and breeding are not satisfactory. Pasture and fodder also require closest attention. The fodder generally given to cattle in this part is not substantial and is much wanting in nutritious powers. This tells upon the quality of milk.

These drawbacks are mostly accounted for by want of sufficient and proper knowledge of the people on the subject and staunch adherence to old ways and want of earnestness to adopt new and improved methods.

Want of sufficient and adequate fodder. The measures proposed by many to remedy these drawbacks are :—

(1) To facilitate good and sufficient supply of fodder at low-prices by maintaining shops of these things at important centres.

(2) Diffusion of technical education and instructions on the subject by issuing pamphlets of instructions or in some other ways that may be more feasible.

5.—Balaghat.

Balaghat Gazetteer.

The plateau of Raigarh has always been a favourite ground (grazing) with the cattle of the Nagpur district, thousands of which come here in the month of February. There is no local breed of cattle. Buffaloes are mostly supplied from Saugor. Many cattle come from Saugor, Bhandara and Seoni. The chief cattle marts of the district are Waraseoni, Lalbarra, Katangi, Hirsi and Mohgaon in Baihar. Voluntary cattle registration is in force in all of them, and is generally popular. The local cattle may be divided into 3 classes, (1) the wealthy malguzars large cattle used in falling tonga. They are active, handsome and docile animals, costing not less than Rs. 120 per pair, (2) the middle sized animal occasionally used in the plough, costing from Rs. 50 to Rs. 100 per pair, (3) the miscellaneous small animals that do most of the plough work of the district. They cost about Rs 20 to Rs. 40 per pair. (a)

Buffaloes are used for rice-cultivation, especially for pulling the khirri or rice sled. There is a moderate trade in ghee

(a) Balaghat Gazetteer by C. E Low, I.C.S [1907] pp 181-82.

produced by the she-buffaloes that graze in the forests. Male-buffaloes cost Rs. 10 to Rs. 20 each, and female buffaloes Rs. 30 to Rs. 60. Cows cost from Rs. 10 to Rs. 40 each. Below is a statement of the number of cattle in the district in 1899-1900 and in 1904-05 :—

	1899-00.	1904-05.
Bulls and bullocks	86,924	85,096
Cows	89,414	62,636
He-buffaloes	14,772	21,101
She-buffaloes	9,566	9,677
Calves	41,551	45,243

The Raigarh plateau, with its low temperature, running streams and green grass, is probably the most likely spot in the Central Provinces for horse or cattle-breeding.

Balaghat Municipality.

Kanhaiya Lall Esq., B.A., LL.B., Vice-President, Municipal Committee, Balaghat, writes that the state of cattle and of milk-supply in this locality is most unsatisfactory.

As regards all the points, number, quality, breeding, pasture, fodder and milk production the whole remedy for all these defects lies in one panacean, namely, the improvement in fodder by setting apart a large pasture. There is hardly any pasture worth the name in this Municipal town or in the surrounding villages near about. The Government inspite of representations on the subject from the public does not seem to be at all moved in the matter. The increase of death rate and bad quality and ill-breeding are due to this one cause. People can hardly get supply of pure milk and in sufficient quantity. And this is one great cause which

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is principally responsible for the gradual degeneration of the Indians and especially the Hindus both physically and mentally. So far as this town is concerned it is unfortunate in every respect. Balaghat town is surrounded by agricultural fields to the north, south and east. In the west there is a jungle running along Wainyanga river and had this been made available for cattle of the town it would have been a boon but all this has been made reserved forest to which all the rules of a Government reserved area apply. A small spot has been reserved for grazing and for this the number of cattle is fixed at 100 milch cows and there also more importance is paid to the cows of agriculturists. One can well see what this means, 100 cows for a town like Balaghat! No body can keep any appreciable number of cattle for purposes of milk, thus it is next to impossible to get pure milk and whatever can be had is sold at 4 seers a rupee.

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CHAPTER III.—JUBBULPUR DIVISION.

1—Jubbulpur.

The following table shows the number of cattle in the district in 1906-07 :—

Bulls and bullocks	188,989
Cows	122,129
Bull-buffaloes	7,199
Cows ,, ...	49 170
Calves	164,638

Many of the agricultural cattle are bred in the Murwara Tahsil, parts of which have long been used as grazing and breeding grounds. The cattle are of an inferior stamp. Cattle markets (weekly) are held at Majboli, Panagar and Shahpura. Grazing is scanty in most parts.

Jubbulpur Gazetteer.

The buffalo is fed more properly than the cow. The buffalo gives not less than 3 seers of milk a day. A cow when not taken care of yields about a seer daily but when cared for properly gives much more milk.

Large quantities of ghee are exported to Calcutta. Introduction of fodder crops, silos, and discrimination in breeding, the protection of cattle against disease by means of inoculation, and the adoption of clean and business-like methods of dairy-farming might well transform many of the precarious kharif villages in the district into estates of great economic security. The price of a bullock ranges from Rs. 25 to Rs. 40; very bad or very good animals may sell within a wider range. A cow

will cost from Rs. 8 to Rs. 20; and a buffalo from Rs. 40 to Rs. 60. (a)

Jubbulpur Jagirdar.

The Hon'ble Mr. B. Raghubir Sinha, Jagirdar, Jubbulpur, informs that the state of cattle and the supply of milk is quite inadequate and unsatisfactory in these Provinces.

This is due to the fact that the cattle, owing to the insufficient supply of fodder, are too weak and the production of milk is also very small. The quality of cattle is also deteriorated. The Government may be asked to arrange with Forest Department to collect fodder at depots and to sell the same to cattle keepers at cost price or at least at reduced price. A certain area of pasture land may be allotted in each village free from revenue or rent.

2.—Damoh.

Damoh Gazetteer.

Most of the cattle are bred locally, and some are imported from outside. They are small animals of no quality but they are suited to the stony and rocky ground. Breeding is indiscriminate. The price of an indigenous pair of local plough-cattle is Rs. 25 in the hilly tracts and Rs. 50 in the haveli when they are fit for work. Gwalior or Sankha bullocks may cost from Rs. 100 to Rs. 200 a pair. The working life of a pair of local bullocks is seven or eight years and those of the imported breeds two or three years more.

No food is usually given to cattle except grass and wheat chaff and rice straw in the hot weather. The bulk of the cattle go to Government forest.

Cows are kept for milk and cow's milk is drunk. It is not rich enough for the manufacture of ghee. An ordinary cow only

(a) Jubbulpur Gazetteer A. E. Nelson, I.C.S. 1909 pp 178-181.

gives one or two pounds of milk a day and costs from Rs. 5 to Rs. 15 while the best ones go up to Rs. 25. In 1903-04 there were 103,000 bulls and bullocks and 98,000 cows in the district. This gave a pair of bullocks to every 11 acres in cultivation. (a)

Buffaloes are not used for cultivation. She-buffaloes are valued for their milk from which ghee is made. The male calves are said to be very delicate and difficult to rear but this is probably because no attention is paid to them. Barren cows are used as pack animals. A she-buffalo may cost from Rs. 15 to Rs. 60. The best ones give six to eight lbs. of milk when they are fed on oilcake.

The common diseases are rinderpest, foot-and-mouth disease, anthrax and pleuro-pneumonia.

A Veterinary dispensary has recently been opened by the District Council at Damoh.

Damo Municipality.

The President, Damoh Municipality, writes to say that the condition of cattle and milk-supply are not satisfactory, and this is partly due to quality of cattle and breeding but mostly due to in-sufficiency of pasture and fodder.

The remedies he suggests are :—

(i) Quality of cattle and breeding can be improved by affording facilities in getting bulls. *e.g.*, in each village or town one good bull should be supplied for a herd of 50 head of cattle of cows and its price be recovered by easy instalments from the head-man of the village or town who in turn will recover the same in proportion to the number of cattle from the owners. An advance for this purpose may be made either by the Government or by co-operative society.

(a) Damoh Gazetteer by R. V. Russell, I.C.S. [1906] p 98.

(ii) Pasture should be freely allowed in the forest area belonging to the Government or to land-holders, or where there is no forest area close by, the land reserved for pasture should be free of rent.

(iii) Fodder land reserved for cutting grass or raising crops to be used as fodder should be free of rent. In this locality oil seeds and cakes are generally given to cows and she-buffaloes for milk production. The export of oil-seeds occasions shortage of oil-cakes.

(iv) Proper investigation should be made into the diseases of the cattle and their remedies.

3.—Seoni.

Seoni Gazetteer

The best cattle are bred in the Kurai and Khawasa tracts below the Satpura plateau. These are of the Gaolo breed of Wardah and the herds are in charge of professional Gaolis, the village of Patna contains a large number of stock. Special bulls are kept for breeding and changed every three or four years. The stock reared on the plateau are poor animals of mixed breed. On the plateau bulls are not usually set apart for breeding. Bullocks are castrated in the second or third year. The working life of a pair of bullocks is said to be ten years. The price of a pair of Gaolo bullocks is about Rs. 150 and of Goudi bullocks about Rs. 50. (a)

Herds from the Kurai tract go to the forests of Mandla and Balaghat (for the hot weather) but elsewhere the cattle only go to the nearest Government forest. Favourable grazing rates have been introduced which have resulted in an increased resort to the forests for grazing purposes. As a rule even

(a) Seoni Gazetteer by R. V. Russell, I.C.S. [1907].

plough bullocks only get wheat and rice straw when grazing is not available while in the busy season they are given 2 lbs. of tiura per head daily if the cultivator can afford it.

Buffaloes are principally bred in the Kanhiwara circle by Gaolis and Kirars who keep large herds for the purpose of manufacturing ghee. They are more useful than cattle in cultivation (in the mud and slush of the fields). They are of little value in the dry weather. The price of a male buffalo is about Rs. 20 and of a cow from Rs. 50 to Rs. 80. In 1904-05 there were 11,090 male and 30,000 cow-buffaloes in the district

Insufficient sustenance makes poor cattle readily succumb to diseases. Foot-and-mouth disease (khuri) and rinderpest (mata) are the commonest ailments of cattle. The former is only fatal when occuring in a virulent form.

A veterinary dispensary has been established at Seoni for three years and about 1,200 animals were treated at it in 1904-1905.

A large cattle fair is held annually at Chhapra, to which many old and worn-out animals are brought for sale to butchers. A weekly cattle market is held at Barghat. Cultivators from the north of the district often go to the Pindari market in Mandala to purchase cattle, and also to Chindwara. The young stock of the Gaolo breed from Kurai and Khawasha are taken to Kampte for sale.

4.—Mandla.

The agricultural stock is numerous but poor.

The total no. of plough-cattle recorded in 1910 was 101,081, while the total number of cattle in the district was 4,026,51. The no. of ploughs are about 46,000.

Mandla Gazetteer.

The cattle of the eastern parts of Dindori are known as Ramgarhis. They are reputed for extra power and endurance and a private cattle farm for the

preservation of a pure stock of this breed has been establised by the Court of Wards near Mandla. In Raigarh Bichchea also there is a distinct breed of cattle and they have a wide sale. No cattle are imported. (a)

There is no lack of fodder throughout the district and if only the breeding was properly looked after, they would do well.

Buffaloes are rarely used for cultivation, but the cows are kept for the manufacture of ghee and for breeding, the calves being sold into Chhatisgarh.

(a) Mandla Gazetteer by F. R. R. Rudman, I.C.S., 1912 pp 125-27.

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CHAPTER IV.—NERBUDDA DIVISION.

1—Hoshangabad.

Hosangabad Gazetteer.

The bullock is practically the only animal used for agricultural purposes. Every village has its herd of cows, kept for breeding. In 1892-93, there were 185,000 plough-cattle while the total cropped area was 1,063,000 acres giving an average of nearly 23 acres for every plough.

In 1902-03 there were only 93,000 plough-cattle for a cropped area of 884,000 acres, the average thus being 38 acres to the plough. Recent years have witnessed an improvement but in 1905-06 there were still only 122,000 cattle for a cropped area of 885,000 so that the average was 29 acres to a plough. (a)

The cattle are generally small and of an inferior kind. The stock has probably degenerated partly from in-breeding and partly owing to the contraction of the grazing area. The cattle most prized are the Malwa breed (Central Indian States). These "best workers for deep black soil" are purchased in large numbers at the cattle fairs of Sankha, Rajgarh and Narsingarh in Central India. The best type of Central India cattle is the Sankha which comes from the fine grazing grounds of the Kala-Sindh tract. The price of bullocks has risen excessively since the thirty year's settlement. Now-a-days a pair of local bullocks fit for agriculture will fetch from Rs. 50 to Rs. 60 while the ordinary price of imported cattle ranges from Rs. 60 to Rs. 100 a pair. A pair of good trotting bullocks from Sankha or Singaji may sell for as much as Rs. 250.

(a) Hoshangabad Gazetteer by G. L. Corbett and R. V. Russell, I.C.S. [1908] pp 144

Private grazing grounds are still maintained by many tenants in Harda; most of the tenants use the common grazing grounds of the village. Cows and calves rely almost entirely on grazing for their food. The buffalo is primarily the milch animal of the district. Milch buffaloes are highly valued. A she-buffalo, giving 5 seers of milk a day, will fetch as much as Rs. 50. The average number of she-buffaloes in the district during the ten years from 1895-96 to 1905-06 was 34000, which is about one to every three houses.

Rinderpest is not common. Foot-and-mouth disease frequently attacks cattle in the hot weather. It is a contagious fever. Malignant sore-throat is now identified as hæmorrhagic septicæmia. There are now three Veterinary dispensaries in the district at Hoshangabad, Harda and Panchmari and the theory and practice of scientific treatment of diseases is becoming more generally understood.

The most important cattle market is the weekly bazar at Itarsi. There are also good weekly markets at Babai, Rahatgaon and Sobhapur. Malvi cattle from Bhopal can be bought at Sandia on the Nerbudda. Cattle are also brought for sale to the weekly markets at Bankheri, Semri-Harchand and Shobpur. There is an annual show at Bandarabhan fair, when prizes are given to the owners of the best cattle.

2.—Nimar.

Nimar Gazetteer.

Bullocks of the Nimari breed are spirited and hardy. The cows are not good milkers, 6 lbs. being about the maximum yield. These cattle are principally bred in Punasa tract and in the Harsud tahsil. The animals bred in Holkar's territory to the north of the Nerbudda are called Khargaon bullocks. They are larger and finer than the Nimar animals and resemble Guzrati cattle. Bulls are kept for breeding and the young bullocks are separated from the herd. They are castrated at three or four years of age. The

pure Nimari breed is rapidly dying out, hardly any animals belonging to it having been brought to Singaji fair in 1907. (a)

The price of a pair of Nimari cattle ranges from Rs. 50 to Rs. 200 and even more. Khargaon bullocks range from Rs. 100 to Rs. 300 a pair. A pair of bullocks fetches the best price between the ages of four and six. They give from ten to twelve years work on an average, and at the most fifteen.

Staple food for bullocks and cows consists of the stalks of juar known as karbi. They are generally kept in good condition throughout the year. Large amount of cattle fodder is raised by the intermixture of grazing grounds with cultivated area.

Buffaloes are valued for their ghee and the manure they yield. The male-calves are sent into Khandesh for cultivation. The price of a male-calf is from Rs. 20 to Rs. 25, while a milch buffalo is usually valued at Rs. 10 for every 2 lbs. of milk which she gives. In 1905-06 there were 42,000 cow buffaloes in the district giving an average of 40 to each village.

Losses of plough-cattle during the famine were serious. In 1896-97 before the famine of 1897, the district contained 133,000 bulls and bullocks according to the returns. The numbers declined to 93,000 in 1900-01, while the average for the four years ending 1905-06 was 106,000. This gives a pair to every 16 acres of cultivated area, but a considerable proportion of calves and immature animals are included in the statistics. The number of cows has not declined in the same manner, the average for the last four years is 80,000 or about 75 to a village. The numbers were about the same before the famines. There are 35,000 cow-buffaloes.

The local terms for the commoner kinds of cattle diseases are Bhaoria etc., for anthrax, Rala and Kheri for foot-and-mouth

(a) Nimar Gazetteer by R. V. Russel, I.C.S. 1908 pp 110-115.

disease and Mata for rinderpest. Other diseases are Kolua, a kind of rheumatism, Undri, a disease in the tail, and Paharkhera, one which affects the horns, producing a discharge of blood. The district has two Veterinary dispensaries at Khandwa and Burhanpur at which nearly 5,000 animals were treated during 1905-06.

A large cattle fair is held annually in the district at Singaji between Bir and Harsud. Khargaon and Nimari cattle are brought for sale, and also animals from Hoshangabad, Bhopal, Khandesh and Berar. Weekly cattle markets are held at Khandwa and Shahpur, and a few head are also brought for sale at Pandhana and Mundi.

3—Narsinghpur.

Narsinghpur Gazetteer.

The local supply is insufficent for the requirements of agriculture and cattle are mostly imported from Saugor. The Sirmangni breed of Seoni and the Harrai breed of Chhindwara are well-known. The Narsinghpur cattle have no particular reputation. They are fairly large animals and have the strength requisite for cultivation. Bulls are not usually kept for breeding. Breeding is indiscriminate. A breeding-bull was kept by Government with good results but the measure has been abandoned. The price of a pair of bullocks at the age when they are fit for cultivation is about Rs. 60 to Rs. 70 while those of fairly good quality cost up to Rs. 100. Prices have gone up considerably in the last ten years. Bullocks are castrated when 3 or 4 years old and their working life is 7 or 4 years from the time of their training for cultivation. A cow costs from Rs. 5 to Rs. 20 and gives from two to four pounds of milk a day if she is well fed. Cow's milk is usually drunk probably because it is not rich enough for the manufacture of ghee or melted butter. Cattle are fed on grass and the chaff and straw of all kinds of grain. Oil-cake and cotton-seed are given to milch cows for enhancing

their supply of milk. Grazing is very scarce in the open country of the haveli where cultivation is close, though forests are accessible close at hand. Many cultivators keep up birs or hay-fields for their cattle. In 1903-04 the district contained 71,648 bulls and bullocks or a pair for every 17 acres cropped. The number of cows was 54,000 giving 56 to a village on an average. The people consider that the numbers of cattle have been greatly reduced by privation during the famine years and also by the cattle slaughtering industry which has lately sprung up. (a)

Buffalo-cows are kept for the production of ghee. A cow-buffalo gives from 4 to 8 pounds of milk a day according to the quality of the food she receives and costs from Rs. 20 to Rs. 60. A buffalo in calf gives milk for a year and is then dry for another year, the interval for a cow being 8 or 9 months. The number of cow-buffaloes in 1903-04 was 23,000. The keep of buffaloes is expensive on account of the high price of fodder grass and the scarcity of grazing, especially in the Gadarwara tahsil.

4.—Betul.

Betul Gazetteer.

Cattle are bred in the north and in the south-west (Khamla plateau). Local breeds are small hardy animals with hard feet quite fit for the stony soils. The Khamla cattle are larger than those bred in the north. Many well-to-do tenants breed their own cattle. Generally no attempt is made at systematic breeding. Demand for bullocks is so great that every animal is castrated and sold at the age of three. Local supply is quite insufficient. Many cattle are imported from Shohagpur tahsil, Bhopal, Deogarh (Chindwara) and the Pachmari hills. An average pair of bullocks can plough one bakhar, two acres. The average working life of bullocks is 7, 8, or even ten years.

(a) Narsinghpur Gazetteer by R. V. Russell, I.C.S. [1906] pp. 112-.

Prices for bullocks vary enormously. The poorest cattle can generally be had for Rs. 20 to Rs. 30 a pair while fancy prices are paid for imported bullocks. Roughly a pair of plough-bullocks would cost about Rs. 50 and a pair fit for well work Rs. 80. Imported cattle fetch as much as Rs. 250 a pair and even more. *(a)*

Cattle get nothing but karbi (juar stalks) and chaff besides what they can pick up for themselves. Grazing is poor in villages. Many die during the rains from bowel disease by eating the juicy grass. Gaolis keep large herds for breeding purposes and give their cattle only grass and leaves. Cows are kept for breeding purposes and for milk. Milk is used for home consumption and not made into ghee.

The average number of plough-cattle for the three years ending 1904-05 was 115,000. There are 108,000 head for 648,000 acres under crop an average of 12 acres per pair of bullocks. The average at the last settlement was 19 acres and the number of cattle 84,000, so recent years show much improvement in the supply of plough-cattle. There was a great loss of plough-cattle in the last famine.

Buffaloes are hardly ever used for agicultural purposes. Buffalo milk is used in manufacturing ghee. Cow-buffaloes give up to 16 lbs. of milk a day. They fetch up to Rs. 80 each. Young bulls are exported to Balaghat and Berar. The number of cow-buffaloes in 1904-05 was 21,000.

There are no regular cattle-fairs, but some are sold at the Malajpur and Bairam fairs. Important cattle markets are held weekly at Kherli, Birul and Bitul.

5.—Chhindwara.

Chhindwara Gazetteer.

The Gaolao breed of cattle, the best in the Province is reared in the Khamarpani pargana to the south-east of the district. Considerable herds of cattle

(a) Betul Gazetteer by R. V. Russell I.C.S., [1907] pp 129-32.

are kept by Gaolis and Raghuvansis. The Khamarpani cattle are well-built and specially adapted for fast work. Bulls are carefully selected and fed liberally until they are two or three years old. Bulls for breeding cost about Rs. 150 a piece. A cattle breeding farm has been opened at Jaitpur by the Court of Wards for the production of Gaolao cattle. Cattle are also bred on the Kanhan river. A good many cattle are also brought from the Hoshangabad district and from Garhakota in Saugor and are sold in the Chhindwara market. (a)

The price of an average pair of cattle is said to have risen from Rs. 30 at the settlement of 1863-64 to Rs. 60 in 1892-93. An ordinary pair now costs Rs. 80 and many cultivators in the Sausar tahsil pay Rs. 150 to Rs. 200 for a pair of Khamarpani bullocks. In 1904-05 there were 160,000 bulls and bullocks in the district or a pair for every 14 acres of land in cultivation.

The poor man feeds his cattle on the village pasture and when that becomes scanty, on such of the stalks and chaff from his fields as are available. The oxen are speedily wornout. The cultivators leave all the milk for the calves. The cows give only from one to three seers at most. Cows of the professional Gaolis give up to six seers.

Buffaloes are bred only to a small extent and are not used for cultivation. Cow-buffaloes are valued for milk and manure but the young ones are allowed to die of neglect. A good cow-buffalo costs from Rs. 50 to Rs. 80. In 1904-05 the district had 36,000 cow-buffaloes.

Weekly cattle-markets are held at Chhindwara, Berdi, Pandhurna, Ramkona, Pipla, Ambara and Talgaon.

The principal cattle diseases are rinderpest, foot-and-mouth disease, Hæmorrhagic Septicæmia, Tympanitis, black-quarter and anthrax. The most unhealthy season is the beginning of the rains. A Veterinary Dispensary has been opened at Chhindwara.

(a) Chhindwara Gazetteer by R. V. Russell, I.C.S. [1907] p 112.

CHAPTER V.—CHHATTISGARH DIVISION.

1.—Raipur.

Raipur Gazetteer.

Very backward state of cultivation is due to want of strong cattle. The Chhattisgarhi bullock is the smallest and the weakest. Price of bullocks ranges from Rs. 20 to Rs. 60 a pair. The number of bullocks and bulls in the district in 1908 was 366,122 or one pair for about 12 acres. The cost of keeping them is almost nil. Better bullocks are imported from the Feudatory states, Kanker and Bastar but bad treatment here degenerates them. Breeding is promiscuous and unsatisfactory. The average cow does not yield more than a pound. Milk is ordinarily drunk or made into ghee. Ghee is not exported.

Stall-feeding is little practised. Want of adequate pasture is the cause of the miserable condition of cattle. Want of fodder is keenly felt. (a)

Buffaloes are mostly imported from Saugor, Damoh, Mandla and Rewa, as there is no local breed, and little is done except by Rewats to propagate the species.

A young buffalo costs Rs. 15, a good one Rs. 20 and a she-buffalo Rs. 30. In 1907-08 the district contained 137,000 buffaloes of which 108,000 were male-buffaloes.

Condition of cattle of a tract depends largely on the crops grown in it. Cotton-cake is a highly nutritions cattle-food. The straw of wheat and juari "is a fairly wholesome food for animals." A diet of rice-straw is, in itself, sufficient to account for the liability to disease of the cattle.

(a) Raipur Gazetteer by A. E. Nelson, I.C.S. [1909] pp 164.

The common diseases are mata (rinderpest) chhai and ghatasrap (anthrax) and Khuri (foot-and-mouth disease). Rinderpest is the most fatal disease and most prevalent in this and the Bilaspur district.

There are four Veterinary Dispensaries in the district, one at the headquarters, maintained by the Municipality and two at Dhantari and Baloda Bazar maintained by the District Council. The fourth dispensary is maintained by the Court of Wards at Saraipali in the Phuljhar Zemidari.

There is no regular cattle fair. Some are brought for sale to the annual fair held at Rajim. The important cattle-markets are those of Baronda in Mahasamund tahsil, Baloda Bazar and Saraipali.

Raipur Municipality.

The Chairman, Municipal Committee, Raipur says that the condition of cattle and milk supply in the locality is unsatisfactory. Want of pasture-lands is considered to be the primary cause and the remedy suggested is that there should be lands set apart for free pasturage.

2.—Bilaspur.

Bilaspur Gazetteer.

The agricultural cattle of this district as shown in the returns for 1905-06 amounted to 919,214 head of which 618,964 were owned in the Khalsa and 300,250 in the zemindaris. The average area of waste suitable for grazing per head of cattle in the Khalsa was in 1905-06, 0·76 of an acre as compared with 3·77 acres in the zemindaris (apart from the large unsurveyed area which exists in the latter tract). To this circumstance coupled with the persistent refusal of the people to grow crops that are useful for fodder, are due the stunted growth and miserable stamina of the Chhattisgarh cattle which are a by-word throughout the Province. Pasture is quite inadequate. Stall-feeding is unknown. Demand of heavy labour after a period of starvation

during the hot weather causes heavy mortality apart from the ravages of the various forms of disease (principally rinderpest and anthrax) which annually sweep off thousands of cattle in Chattisgarh. Infected animals are never segregated and epidemics are frequent. (a)

At the present revision of settlement the experiment is being tried of reserving for grazing, by a clause in the administration paper of each village, an irreducible minimum of waste. This is not an innovation—it is a reversion to the custom by which, a definite share of the village lands was set apart for "Lakshmi" at each periodical redistribution. Improvement can be expected from the spread of enlightenment and the setting apart of some portion of cultivable land for the growth of fodder crops. The value of the cattle of the district is not great. The average price of a pair of oxen is about Rs. 25 and a pair of buffaloes about Rs. 40. The bulls, bullocks and cows of the district are mostly bred locally but there is a large import trade in buffaloes which are brought annually from the Saugor district and the Rewah State and sold at the important cattle-markets of Gondkhami (Mungeli tahsil), Ganiari and Bilaspur (Bilaspur) and Bammdih (Janjgir) at which thousands of locally bred buffaloes are sold.

State of cattle and of milk-supply in this locality which can be taken to include not only this district but also two other districts of Raipur and Drug—all the three forming a division known as Chhattisgarh—is quite unsatisfactory. Unfortunately the state of cattle is unsatisfactory in all respects, namely as regards number of cattle, quality of cattle, breeding, pasture, fodder and milk production. The tenantry in this part is very ignorant and poor. That is one of the root causes of the deterioration of cattle in these parts The fodder is such that it contains very little nourishment. The people do not know how to arrange for or

Bilaspur Bar.

(a) Bilaspur Gazetteer by A. E. Nelson, [1910].

to produce good fodder. The pasture lands are being encroached upon. In the current settlement some lands have been exclusively reserved for village pasture, but the area is insufficient and no efforts are made to grow good fodder over the land. There are good many forest areas in these parts. But the Government is not as liberal as it ought to be in helping the agriculturists by allowing their cattle to be grazed in the Government forests. The following remedies are suggested :

(1) Opening of breeding farms in large numbers both by the Government and private bodies. Cattle from these farms should be supplied on cheap rates to the bigger landholders who should undertake to open breeding farms in their village or group of villages. The tenants should get cattle as cheaply as possible.

(2) The farms should be not only for demonstration purposes but should be run on business principles. Co-operative Society can do much in this direction.

(3) Efforts should be made to demonstrate cultivation of nutritious and cheap fodder.

(4) Government should be requested to allow cattle to graze at cheaper rates in Government forests.

(5) Best kind of milch cattle (cows and she-buffaloes) should be brought and dairies should be opened. Milch cattle in these parts are absolutely useless for the purpose.

On account of the poverty of the people it is necessary that as far as possible, cheaper methods should be followed. So long as the economic condition of the tenantry does not improve it will be hopeless to induce them to do better things.

Buffaloes are much used for agricultural purposes in these parts. A cheap supply of good quality of buffaloes will remove their want to a great extent.

3.—Drug.

Drug Gazetteer.

The cattle of the district are of the mixed Chhattisgarhi breed. They are small and underfed they seem to have deteriorated. No special care is taken in breeding. A certain amount of cattle breeding and importing of young animals is carried on at Arjunda and other villages in in the neighbourhood of Ravitarai and Utai for sale at the weekly markets of Arjunda, Ravitarai and Utai. Many animals from Chhattisgarh are taken annually to Amgaon market in Bhandara district where they are sold for slaughter.

Most villages have a pasture ground but in many the soil is barren bhata which is responsible for the miserable condition of the cattle.

In 1906-07 there were 201,081 bulls and bullocks giving a pair to every 14 acres of land in cultivation. Besides there were 175,581 cows which are kept for breeding. A cow costs from Rs. 5 to Rs. 20 and ordinarily gives half a pound or one pound of milk a day. The practice of yoking cows to the plough is not uncommon in the jungly portions.

There is a large stock of buffaloes and they are valued more than bullocks for agricultural purposes. Most of them are imported from the north and the only local breeding is done by the Rawats (milkmen). The imported buffaloes are not to live long. The price of a pair of buffaloes varies between Rs. 60 and Rs. 100 according to size. The number of male-buffaloes in 1906-07 was 63,532 and of cow-buffaloes 17,299. The price of a cow-buffalo is about Rs. 50. If stall-fed she gives from 4 to 5 lbs. of milk a day. Comparatively little ghee is produced and none is exported. (a)

The common cattle diseases are rinderpest, foot-and-mouth disease, anthrax, black quarter and hæmorrhagic septicæmia.

(a) Drug Gazetteer by A. E. Nelson, I.C.S. [1910] p 87.

Segregation of affected cattle is seldom practised. A Veterinary dispensary has been maintained by the District Council at Drug since 1906 and to it are attached two Hospital Assistants one of whom is peripatetic.

There are no regular cattle fairs but cattle are brought for sale at the Gandai Nerbudda kund fair. The important markets are Ranitarai, Arjunda and Utai. There are many other cattle markets.

CHAPTER VI.—BERAR DIVISION.

1.—Amraoti.

Commissioner Berar Division.

The Ho'ble Mr. B. P. Standen, C.I.E., Commissioner, Berar writes :—It has always appeared to me that it is the refusal to use cattle for food, which is the principal reason of the miserably small produce of the land in India.

In Europe the farmer enriches the land with the manure obtained not from his work and milch cattle, but from those kept for slaughter. Work and milch cattle can never supply the necessary amount of manure and if it does not pay the farmer to keep cattle for slaughter aud feed them well, he will never be able to manure his land sufficiently. His underfed land will continue to give him the wretched returns it now does, so that he will never be in a position to devote either land or money in sufficient quantities to the maintence of a good stock of well nourished cattle.

This seems to me to be the basic factor in the situation and it follows that in my opinion the most important step which a Society like yours can take is to discourage the view that the slaughter of cattle for food is deleterious to the maintenance of a good class of cattle in sufficient numbers. Any measures that can be taken in present condition must be merely palliative. So long as Indian land yields about one-third the quantity of farm produce which it should and would if properly manured, Indians cannot afford to reserve for the support of cattle the area necessary to feed them properly all the year round. All that we can do is to make the existing stocks of good stuffs yield the optimum (?) result by breeding from the

best strains and taking any steps possible to ensure that useless animals get as small a share of the fodders available as possible.*

Amraoti Gazetteer.

Speaking at the time of the Mutiny Captain Meadows Taylor says, "the Province of Berar contains the finest draught cattle in India." It is impossible to say to what particular herd he referred, for army transport and battery purposes, bullocks of the Khamgaon breed were employed not so many years ago. There are three fairly distinct breeds of cattle :—(1) the Umarda or Gaoravi breed, (2) the Khamgaon breed and (3) the Ghat or Pahari breed. The Umarda cattle are considered the most suitable for the plains but the Ghat cattle do better in the hilly tracts.

(1) The Umarda breed—The animal is well-proportioned, active and keen-spirited. The breed is very hardy and a pair will trot from 30 to 40 miles a day. Cattle of this breed are common in Amraoti, Ellichpur, Daryapur and Chandur taluks. A pair of Umarda bullocks will fetch from Rs. 125 to Rs. 200.

(2) Khamgaon breed—Seen mostly in Daryapur taluk where the soil is deep and heavy to work. It is the largest and strongest of the Berar breeds, and is therefore well suited for heavy work on black cotton soil. He is round in the barrel and altogether a strong, massive animal. For that reason he used to be much in favour in the army for transport or battery purposes. The Kunbi cultivator, who prefers the smaller but hardier breeds, speaks derisively of Khamgaon cattle as "the

*This is a typical official view frequently put forward to support the monstrous theory that the continuance of indiscriminate cattle-slaughter *in India* is decidedly for the benefit of the country. To any one who is not aware of the official position of the correspondent, the argument will appear to be a case of special pleading advanced by a beef-eater anxious to ensure his future supply of beef. A little consideration will show that no cattle are useless, the manure value of its dung and urine is sufficient to pay for its food and board, and the very grounds upon which he supports indiscriminate slaughter really point just the other way.

breed which cannot stand fatigue." As a strong draught animal he is particularly well suited for areas where the soil is heavy to work. A pair of Khamgaon bullocks costs from Rs. 150 to Rs. 250.

(3) Melghat and other breeds—The smallest breed of the district is the Melghat or Pahari breed. The Melghat bullock is a hardy, active animal particularly well suited for the conditions of that hilly tract. A pair of these bullocks will fetch from Rs. 80 to Rs. 150. In addition to these, cattle of many other breeds are imported into Berar. (a)

Want of pasture has compelled the cultivator to reduce the number of his cattle and to provide a daily supply of fodder to his bullocks. In 1870 there were in the district 12 bullocks, 12 cows and 4 buffaloes for every hundred acres of cultivated land as compared with 9 bullocks, 5 cows and 2 buffaloes, respectively at the present time. Here as in other parts of Berar the demand for working bullocks exceeds the local supply and foreign breeders are finding a ready sale for their bullocks at good price in Berar markets. Cows are kept for breeding and rarely for milk. They are poor milkers. The price of a cow varies from Rs. 10 to Rs. 40. The ryot finds it difficult to rear cattle. The feeding is very poor and deteriorates the breed. The principal breeding ground of the district is Melghat. There is some grazing in the jungle here, though water is scarce in the dry weather. The calves except in rare cases, get all the milk. No serious attempt is made to improve the breed, the cow gets only dry and unnutritious grass to eat. The chief markets for Melghat cattle are Ellichpur, Bairam and Dharni.

Want of sufficient grazing land is one of the greatest difficulties of the cultivator.

There are two breeds of buffaloes in the district, the Gaoravi or Nagpuri breed and the Malwa breed. Buffaloes

(a) Amraoti Gazetteer by S. V. Fitzgerald and A. E. Nelson. [1911] pp 481-83

are kept by Gaolis for the production of milk and ghee. Herds of from 60 to 80 are kept in the Satpuras. In towns where they are kept for milk, they are fed on juari stalks and cotton seed—one cow buffalo being allowed from two to three seers of cotton seed daily. Male-buffaloes are but little used for draught purposes, and the bull calves are therefore neglected and many of them die before coming to maturity. The price of a good cow buffalo is Rs. 75.

Epidemics among cattle are very common, and no care is taken to segregate diseased animals.

2.—Yeotmal.

Yeotmal Gazetteer.

According to the latest report, that of 1906-07, the district contains 160,000 bulls and bullocks. There are no distinct breeds among these cattle. Berar bullocks are said as a rule to be better than those from outside the Province. The large fair at Wun in March is especially a cattle-fair. The value of a bullock ranges from Rs. 25 to Rs. 400. The class ordinarily used for field work cost from Rs. 70 to Rs. 100 a pair. Bullocks begin to do full work in their sixth year and their strength declines from about their tenth year. In some villages Hindus sell them directly or indirectly to butchers. (a)

For six months the staple fodder is juari stalks, karbi. Plough cattle are stall-fed for four or five months. The food given them is mostly grown by their owner, but its market value would be about Rs. 20 a month. It is considered that one pair of bullocks should be kept for five tifans, that is, for eighteen or twenty acres.

As a rule cows are kept for breeding only, and all their milk goes to their calves; but cow's milk is thought

(a) Yeotmal Gazetteer by C. Brown and R. V. Russell, [1908] pp 112-17.

good for children and invalids and is sometimes drunk by well-to-do people or made up into ghee. Generally people of the higher castes drink buffaloe's milk. A good cow costs from Rs. 20 to Rs. 30.

She-buffaloes are kept for milk. He-buffaloes are used for ploughing but generally thought useless except for breeding. They generally die from neglect. The returns show 108,000 she-buffaloes, but only 6,000 male-buffaloes. A cow buffalo gives from 1 seer to 9 seers a day. About 3 seers a day are ordinarily given. The price of a cow-buffalo varies greatly, but is often from Rs. 60 to Rs. 80.

3—Akola.

Akola Gazetteer.

Different breeds of cattle are recognised to a varying extent; much thought is not as a rule given to questions of breeding. Old men say that cattle used to be much larger than they are now, and that they were carefully bred and well-fed. The price of cattle has risen very much. A pair of ordinary bullocks for field work costs Rs. 100 though poor people buy old animals for perhaps Rs. 20 each. In a village of some little wealth there would be a few pairs worth from Rs. 250 to Rs. 400 a pair. Thoroughly good animals would do 50 miles or more between sunrise and sunset. A bullock is castrated at about three years of age. They begin to work a bullock at three-and-a-half or 4 years and it takes from two to four months to break in; special trainers are not employed. A bullock reaches its full strength and highest value in its fifth year, and retains its power for five or seven years. After that it generally goes to a poor man and presently reaches the butcher. *(a)*

No other animal approaches the bullock in importance. A cow's milk is generally devoted entirely to her calf, but

(a) Akola Gazetteer by C. Brown, I.C.S., [1910] pp 181-185.

well-to-do people use it to some extent for themselves and their children. They would then give her sarki and dhep, cotton seed and oil-cake and a good cow ought to yield 2 or 2½ seers of milk twice a day; but if people did not give this special food the yield would not be more than half as much. The price of a cow varies from Rs. 25 to Rs. 50. A she-buffalo costs from Rs. 35 to Rs. 125. If her price is as much as Rs. 100 she should give from 12 to 15 seers a day, the two milkings together. A male-buffalo (or a barren female) is very occasionally yoked in a cart, sometimes along with a bullock, but is generally regarded as useless and allowed to die of starvation and neglect.

4.—Buldana

Buldana Gazetteer.

There were 176,353 bulls and bullocks, 91,086 cows, 10,396 male-buffaloes, 43,178 cow-buffaloes and 85,556 young animals in the district in 1907-08. To 100 acres of cultivated land there were 10 bullocks and bulls, 5 cows, 3 buffaloes as compared with 13, 6 and 3 respectively in 1870.

There is only one distinct type of cattle in the district, the Khamgaon breed. This breed has all along been famous as draught animal. It is found in Khamgaon Malkapur and Jalgaon taluks and is the largest and strongest of the Berar breeds. A pair of Khamgaon bullocks costs from Rs. 150 to 250. There are still good cattle all over Berar. At present an average pair can still be purchased for Rs. 120. The ryot feeds his working bullocks well but neglects his cows and young stock. Breeding is promiscuous. Brahmani bulls are kept no longer. (a)

The maximum yield of a good gow is said to be about 2 seers a day. The price of a cow varies from Rs. 10

(a) Buldana Gazetteer by A. E. Nelson. I.C.S., [1910] p 213.

to Rs. 40. Grazing is very limited. For the whole year the feeding is very poor.

The buffaloes of the district are of the Nagpuri breed which are large animals. Properly fed a good milch buffalo of the Nagpuri breed gives about 8 seers of milk daily, but the average does not exceed half that amount. The price of a good milch buffalo is about Rs 75.

There are five veterinary hospitals in the district, one for each taluk, with one veterinary assistant and a dresser attached to each. The usual epidemics among cattle are very common and as no care is taken to segregate diseased animals at the first appearance of an outbreak, infection spreads.

There being no grazing areas in the villages worthy of mention, no attention is paid to the cultivation of the best fodder grasses.

Buldana Taluk Board.

The Buldana Taluka Board says that the state of cattle and of milk-supply in the locality is unsatisfactory regarding number of cattle, quality of cattle, breeding, pastures, fodder and milk-production, and makes the following suggestions: (*a*) absolute stoppage of cow-killing; (*b*) extension of pastures and lightening of grazing-charges; (*c*) special arrangement for breeding superior cattle; (*d*) annual conferences and exhibition of cattle; (*e*) Institutions on the lines of "Gorakshani" and Government should be asked to help them (*f*) Honorary or paid workers to educate the people.

PART. VIII.—MADRAS.

CHAPTER I—GENERAL.

The Madras Presidency excluding the Indian States, has an area of 141,075 sq. miles and a population of 41,402,000 of whom 89 p. c. are Hindus, 6 p. c. Mahomedans and the rest Christians and Animists. Agriculturists form about 68 p. c. of the population and rice and millets are the principal crops cultivated. Weaving is the principal industry. Difficulty of coal-supply has stood in the way of very large industrial development as in other provinces like Bengal. The presidedcy consists of two main natural divisions, one the central plateau varying in height from 1,000 to 3,000 ft. above the sea level and bounded on the south by the Nilgiri hills and on the east and west by the Ghauts, and the other being the two low level stretches of land on the eastern and western coasts along the sea. In the central table land and on the eastern coast the rainfall is small and the heat in summer excessive, but in the western coast, especially when the Ghauts are not very high, there is heavy rainfall which often comes to 150 inches.

Area Population & Agriculture.

Unlike other provinces, Madras has got no Divisions and Divisional Commissioners. It is sub-divided into 25 districts, the names of which are given below :—

1. Anantpur 2. North Arcot (Chittoor) 3. South Arcot (Cuddalore) 4. Bellary 5. South Canara (Mangalore) 6. Chingleput 7. Chitoor 8. Coimbatore 9. Cuddapah 10. Ganjam 11. Godavari (Cocanada) 12. Guntur 13. Kistna (Masulipatam) 14. Kurnool 15. Madras City 16. Madura 17. Malabar (Calicut) 18. Nellore 19. Nilgiri (Ootacamand) 20. Ramnad 81. Salem 22. Tanjore 23. Tinnevelly (Palamcotta) 24. Trichinopoly 25. Vizagapatam.

Besides the above districts there are 5 Native Principalities under Government—*viz*: 1. Cochin 2. Travancore 3. Pudukotai 4. Sandur 5. Banganapalle.

The principal teaching institution is the Imperial Institute of Bangalore opened from January 1924, which teaches only 20 students in Animal Husbandry and Dairying. There are two agricultural middle schools with a course of instruction extending over two years in MADRAS; the school at Taliparamba has 31 students and the school at Anakápalli has 11 in residence. Both these schools have now worked for two years, and at the first examination held, all the 19 students who had completed the course received a certificate. It is too early to say whether a demand will arise for the type of education imparted.

Agricultural Education.

The total number of agricultural credit societies rose to 8,103 an increase of 1,003 over the figure of the preceding year. The working capital increased from Rs. 265 lakhs to Rs. 314 lakhs. Seventy-seven non-credit societies with a working capital of Rs. 4,24,012 were engaged in the sale or purchase and sale of agricultural requisites and products. Of these, 47 earned a profit while 30 incurred loss. The South Kanara Garden Planters' Co-operative Wholesale Society and the Nadavars' Co-operative Society did good work during the year. The former effected the joint sale of members' produce such as paddy, arecanuts, etc., to the value of Rs. 4,52,808. A campaign against the *mahali* disease was carried out successfully by Co-operative Societies in Malabar under the guidance of the Agricultural Department. Twenty-five societies under the Pattambi and Kumaranallur Unions jointly purchased 250 sprayers and sprayed about 1,23,000 arecanut trees. (*a*)

Co-operative Movement.

There are no Co-operative Milk Societies in the Madras Presidency.

(a) Review of Agricultural Operations in India 1924-25.

Cattle-breeding by Govt.

In MADRAS, the main lines of work aim at the production of a number of good types of Ongole, Kangayam and cross-bred bulls. At Chintaladevi, pure herds of the two local breeds are maintained, while at Coimbatore, bulls of such milking strains as Sindhi, Sahiwal, and Ayrshire are used on different types of cows. Since the introduction of cross breds on the college dairy herd in 1921, the average yield per cow per day has increased from 8-2 lb. to 14-7 lb. A buffalo-breeding station has been opened during the year at Guntur.

Three Holstein bulls are in service at the Rayenkere dairy farm in MYSORE the local Hallikar and Sindhi cows being used as the foundation stock. The herds of Amrit Mahal cattle numbering 9,000 head, which have hitherto been used solely for the supply of transport bullocks have, in the year under report, been transferred to the control of the Agricultural Department.

Two cattle-breeding farms are maintained in the TRAVANCORE STATE, and 34 calves of the Sindhi breed were sold during the year. Grants were made to 18 private persons for maintaining stud bulls for the benefit of the public.

The milch stock of the cattle farm started at BARODA to build up pedigree herds of Gir cows and Jufferabadi buffaloes comprises 40 cows and 30 buffaloes.

Fodder growing.

Being attracted by the operations of the Commissariat Department in Northern India in the matter of grass growing to supply military requirements the Madras Government also instituted inquiries into the conditions of grass-growing by private stock-owners in Coimbatore district and of fodder growing in general and attempts are being made to introduce improvement. The principal fodders are paddy straw, *cholum* straw, *ragi* straw, *cumbu* straw and *varagu* straw and the principal grasses are *hariali* and *kolei-kattei*.

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CHAPTER II.—MADRAS CITY.

Allan Carruth Esq. N.D.A., N.D.D., etc., Dy. Director of Agriculture, Livestock, Madras, encloses the following Government order regarding improvement of dairy business in Madras City.

GOVERNMENT OF MADRAS—REVENUE (SPECIAL) DEPARTMENT.

G.O. No. 410, 7th March 1919.

Agricultural Department.

READ—the following papers:—

Letter—from G. A. D. STUART, Esq., I.C.S., Director of Agriculture, Madras.

To—The Secretary to Government, Revenue (Special) Department.

Dated—the 23rd January 1919.

No.—R.O.C. 5323-Gl. of 1918.

I have the honour to submit proposals for the improvement of the dairy business of Madras town.

2 A reference is solicited to Bulletin No. 73 of the department—'A Survey of the Madras Dairy Trade' by Mr. A. Carruth the Deputy Director of Agriculture for Livestock—for a description of the existing state of affairs, and to the paper on the 'Dairy Trade and its Improvement' by the same officer which will be found on pages 198 to 207 of the Journal of the Madras Agricultural Students' Union for August 1918 for proposals as to how this state of things can be remedied.

3. It will be seen that that Mr. Carruth has shown conclusively that the business of dairying cannot be carried on profitably in Madras with the local cow if pure milk is sold. The industry is a bankrupt one and the existing evils, e.g., adulteration, insanitary conditions, etc. all follow from this. It is useless to expect any improvement until the industry can be

Government Proposal for Improving Milk supply in Madras City.

put on an economic basis. And the only way to do this is to find a cow that will produce enough milk to pay for its keep and for some profit to the dairyman. There are no signs of any really good milking strains even in the Ongole breed, which is our best local one. Therefore the solution of the problem must be sought in cross-breeding.

4. I do not think that there is any escape from this conclusion. One is confirmed in it by the fact that the Madras milkmen have already sought to solve the problem on these lines. A large number of the milch cattle in Madras are already cross-bred—but this introduction of foreign blood has taken place in a haphazard manner, and there has been no attempt to breed out a good milking strain—vide Part VII, page 32 of 'A Survey of the Madras Dairy Trade.' Again the Military have gone in largely for cross-breeding at all Military Dairy Farms.

5. Mr. Carruth selects the Ayrshire breed as the most suitable for crossing with Madras cows and I think that his conclusion must be accepted. The Military Farms Department have imported large numbers of bulls of this breed—I know that at least 30 have been imported in each of the last two years, possibly more.

6. Owing to the heavy losses of cross-bred cattle which we experienced at Coimbatore last year, I have hesitated to recommend any scheme which involved cross-breeding. However, as explained in my letter No. R. O. C. 2776—5635-Gl., dated 11th December 1918, I am satisfied that in the method of simultaneous inoculation, as worked out in recent years on the Military dairy farms, we have a sure means of combating rinderpest. We must always expect a certain percentage of loss but this risk must be accepted because cross-breeding is the only way in which we can hope to bring about any permanent improvement in the milking capacity of Indian cattle.

7. I therefore submit the following definite scheme which has been worked out by Mr. Carruth:—

(a) Ayrshire bulls of a good milking strain to be purchased by Government.

(b) These bulls to be kept at suitable centres in Madras town for the service of the milch cattle of professional milkmen.

(c) An upper subordinate of this department to be stationed in Madras to look after the bulls and to get into touch with the milkmen.

(*d*) In return for the charging of a specially low service fee, the Government to have the option of purchasing the calves at a fixed price.

(*e*) These calves to be used to stock a Government Dairy Farm not too far from Madras where cross-breeding would be carried on with a view to the production of a stable dairy breed.

(*f*) Attempts to be made to start a co-operative society among the Madras milkmen, both for credit purposes, and to encourage them to go in for systematic breeding co-operative purchase of cattle food, and possibly co-operative sale of milk.

8. The first step to be taken is the purchase of the bulls. Eight bulls will be required altogether if the scheme succeeds. For the present I recommend that four bulls should be purchased this year. They should arrive at Madras in November next. Mr. Carruth estimates that the bulls will cost £130 each. They should be sent first to the cattle-testing station of the Board of Agriculture and Fisheries, Pirbright, Surrey (vide leflet No. 290 of the Board), for being inoculated against piroplasmosis and tested for tuberculosis. On arrival in this country they should be inoculated against rinderpest by the simultaneous method. Allowing for all charges the four bulls will cost Rs. 12,000 landed at Madras.

The total cost of this part of the scheme may be estimated as follows:—

	Rs.
A. Capital cost.	
(1) Cost of four bulls landed at Madras	12,000
(2) Cost of four bull sheds	4,000
	16,000
B. Recurring.	
Feeding charges, 150×4	600
Attendants, 15×12×4	720
Contigencies	200
	1,520

These charges would be doubled when eight bulls are kept.

9. It is not easy to estimate the cost of establishing a dairy and breeding farm. The cost of buildings on the Chintaladevi cattle farm is proving much higher than was originally anticipated. Judging by these, the initial cost of such a farm would not be less than two lakhs, while the annual recurring cost would be about Rs. 20,000, but this should of course be largely recouped by sale of milk and stock.

10. If this scheme is generally approved of, I request sanction for the purchase of four Ayrshire bulls this year. A lump provision of Rs. 14,000 has been made in the budget for 1919-20 under 26-A (a) Agriculture III (3) Experimental Farms and Cultivation.

Order—No. 410, Revenue (Special), dated 7th March 1919.

Miscellaneous.

The Government generally approve the proposals of the Director of Agriculture for the improvement of the dairy business in the Madras City and sanction the purchase during 1919 of four Ayrshire bulls. The Director is requested to consider and report on the question of the locality for the proposed dairy farm and to submit in due course plans and estimates for the buildings required in that connexion.

2. The attention of the Registrar of Co-operative Societies is invited to paragraph 7 (*f*) of the Director's letter and he is requested to consider and report, in consultation with the Agricultural Department, on the feasibility of starting co-operative dairy societies for credit purposes among the milkmen in the City as well as in other parts of the Presidency.

A. Y. G. CAMPBELL,
Acting Secretary to Government.

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CHAPTER III.—MADRAS PRESIDENCY.

All available information regarding the condition of cattle in the whole of the Madras Presidency district, by district, is given below.

1.—Anantapur.

Anantapur Gazetteer.

Indigenous cattle are very mediocre. No trouble is taken to improve the breed. Poor fodder. Imported Mysore and Nellore breeds are the only good cattle. The former are chiefly met with in the southern taluks They are bought at the cattle fairs in Mysore or purchased as calves from itinerant cattle-traders. In the north of the district the Nellore cattle are commonest. They are brought from drovers at very high rates. Cattle disease is very prevalent and causes the ryot enormous loss

The buffaloes are of the usual variety. They are used for ploughing, packwork and drawing carts. Cattle are bred for sale in considerable numbers at Pamudurti, the retail trade being chiefly in the hands of the Lambadis. (a)

Anantapur Municipality

Khan Sahib K. Imam-ud-din Sahib Bahadur, Chairman, Municipal Council, Anantapur, writes that the condition of cattle within the Anantapur Municipality is not satisfactory both as regards milk-supply and as regards pasture and fodder. He suggests that supply of hay by Government at cheap rates may be introduced so as to be within the reach of all.

2.—North Arcot (Chittoor.)

Tirupati Municipality

The Chairman, Municipal Council Tirupati writes to say that the state of cattle and the milk-supply in this locality is far from being satisfactory. The

(a) Anantapur Gazetteer by W. Francis, I.C.S. (1905) p 12.

milch cattle are not properly fed and cleanliness in the distribution of milk and its products is not observed. The milkman very often allows his cows to eat offal and other vegetable refuse that may be found on the street side and in the drains. The buffaloe cows are often let loose to feed on filth and night-soil. Milch cattle are invariably drenched with impure water such as rice washings etc. shortly before the animals are milked in the hope and belief to get more milk out of the cows. The cattle yards are dirty and stinky and the posteriors of the cows are soiled with dung and urine. The udders and teats are not properly washed nor the receptacle into which milk is drawn cleaned properly. No care is taken to keep off flies, dirt and dust from the milk or its products, milk is seldom filtered or strained before distribution or conversion to other dairy products such as curds, butter, ghee. Milk drawn on the previous night is generally supplied to coffee clubs and hotels and to families accustomed to take early morning coffee. Most of the diseases prevailing in the town are attributable to this cause. Milk is generally adulterated with impure water and sold to poor people in small quantities. These people nurse the children with such milk. This practice partly accounts for the ever increasing infantile mortality. Unless proper care is taken milk very often gets sour or spoiled. Unscrupulous milk vendors convert such milk into butter milk which is largely diluted with water and disposed of without the fraud being detected. Milk is drawn from animals suffering from foot-and-mouth and other diseases and freely sold to the public without let or hindrance. The milkman does not care to take even the elementary hygienic precautions before marketing dairy products. This neglect very often forms a powerful vehicle for carrying the germs of various kinds of diseases into the human system. Dairy produce is obtained not only from cows and she-buffaloes but to a greater extent from goats and sheep. To sell milk as milk is considered to be more profitable than its conversion into other products. As goats and sheep are reared by shepherds in

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villages farther removed from the towns their milk is seldom sold in towns. Goats' milk is far more wholesome than the milk of the bovine species. The motto of the shepherds has been and still is that cleanliness in dairying is next to Godliness All sanitary precautions are invariably taken as a matter of course by the shepherdesses even without understanding the why and the wherefore. The goats graze on fresh leaves and the sheep on pastures green. Both drink of the crystal stream or of the limpid pool. They are penned on vast fields instead of being tethered in narrow compass without freedom of motion. In this part of the country the cow and the buffalo-cow are reared for obtaining draught and milch cattle and for manurial purposes. Sheep and goats are reared more for manurial purposes than for meat. In these days of rapid advancement of civilization and meat-eating they are freely slaughtered to the detriment of the agricultural prosperity of the country. In towns especially cows and buffalo-cows are reared solely for dairy purposes and the calves are neglected. The calf is not allowed its does. It is allowed to approach the dam and at its mere sight there is free flow of milk into the udder. The whole milk is drawn off and then the calf is allowed to suck the teats to lead the milk into the udder a second time. Milk almost to the last drop is drawn off and then the calf is starved. The function of the calf is usurped by the milkman. He manupulates the teats instead of allowing the calf to suck. You will find the calves are high in bones and are hardly able to support their very weight. They need a push from the milkman to keep pace with their mother. Their mouths are muzzled as they stagger with their mothers. The saddest of all the cruelties of the milkman is the deception practised on the cow that has lost its calf. A mock calf resembling the dead one is placed before the cow. The mere sight of the false calf stimulates the mamary glands to secrete milk. Out of affection for the calf the milk is let into the udder by the which the milkman gets more milk by drawing away even the little quantity that would go to the calf

A Group of Typical Madras Buffaloes. (By the courtesy of the Govt. of Madras)

Bhoodeb Publishing Boseu, Calcutta.

if alive. Thus it is plain that the milkman looks to the increase in the yield of milk only and leaves the und rfed-sickly calves to shift for themselves This is why economists pronounce the dairy trade to be a barren field for profitable investment There are a few good breeds of cattle here and there in this presidency such as the dwarf purganoors of the Chittoor district. They were once reputed to be deep milkers. They generally thrive on poor feed. The medium sized Kangyans of the Coimbatore district possess excellent strains for dairy and draught purposes. The Nellores of the Nellore and the Guntur districts under proper care and feeding develope into huge draught animals and into good milkers.

In the ceded District and the Vizag breeds of buffaloes and cows both these qualities are combined. There has been deterioration in the good qualities of these strains

(1) for want of sufficient areas of grass and pasture lands for natural grazing.

(2) On account of under-feeding of these animals for want of fodder. As the proverb goes it is grass that makes the cow and the want of it the skelton.

(3) Indiscriminate crossing of heifers and cows by bulls of inferior faculty, characters and qualities. Unless prompt steps are taken to open cattle breeding farms in places at convenient distances from towns where plenty of pastures and fodder can be made available and the breeding of these cattle are entrusted to the hands of cattle breeding experts these strains will die out sooner or later.

In these cattle breeding farms Dairies may be opened on approved modern scientific principles under the management of properly trained dairymen. From these Dairy depots "Clean milk" and other dairy products may be supplied to the towns.

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Chairman, Municipal Council, Gudiyattam, states that the state of cattle and of milk-supply in this town is fairly satisfactory.

Gudiyattam Municipality.

The Civil Assistant Surgeon in-charge of the Municipal Hospital, is of opinion that the state of cattle and of milk-supply in the town of Tirupattur is satisfactory. Cows are available at a cheap rate and good cow's milk is sold at annas 3 per measure.

Civil Asst. Surgeon Tirupattur.

3.—South Arcot (Cuddalore.)

The Hon'ble Diwan Bahadur, A. Subbarayalu Reddi Garu, B.A., B.L. President, District Board, South Arcot, (Cuddalore), informs that the state of cattle and of milk-supply in this district are not satisfactory. He encloses a copy of report received from the Veterinary Assistant in charge of the Veterinary Hospital, Cuddalore, on the subject, which is quoted below.

The condition of cattle in these parts is not satisfactory. Generally speaking the animals are not properly looked after as their number is very large and consequently they are not advantageously maintained, considering their usefulness. For instance, every ryot in a village owns a herd of cattle for his agricultural domestic and manuring purposes. For want of proper care and nourishment they become poor in quality in successive generations and become predisposed to many contageous diseases and even worse—they form the reservoir for all cattle diseases. When any virulent disease visits the locality, valuable and special breeds of cattle are also being carried away. So, attention has to be particularly paid with regard to the qualitative rearing of cattle.

Cuddalore Dist. Board.

As regards breeding, it is a known fact that promiscuous breeding is in vogue in these parts. This is the chief cause, among many others, which contribute to the degeneration of

the quality of cattle. Though there is an increase in number, they are not practically useful either for agricultural purposes, or for milk production, qualitatively and quantatively. In ancient days (Vedic times) the people of a village used to dedicate Brahmini bulls to temples to be utilised only for breeding purposes by any of the villages. The villagers treated such bulls kindly, considering them sacred and allowing them full freedom of grazing. The Government, to some extent, have kept stud bulls in certain centres, few and far between, and the cattle shows and fairs for the improvement of the breed of cattle have not impressed the masses to any appreciable extent. It is therefore suggested that steps may be taken for the compulsory castration of stunted and puny bulls and for the introduction of fresh good breed bulls from various other places. In order to revive the old good system of dedicating breed bulls to temples it is also suggested that such temple trustees and other bodies concerned and interested in the matter should be made to take up the management of maintaining breed bulls as an onerous duty.

Pasture lands are not common in these parts. If there are any, their area is also diminishing. Protection, preservation and increase of area of pasture lands is therefore an urgent necessity. When forests are disafforested, cattle may be safely allowed to graze in them free of cost. Special concessions may be caused to be granted by Railway Companies to carry the cattle from towns to the grazing sites and back, if there are no such sites in towns. The common pasture grounds should be free for grazing at certain hours of the day in busy towns and cities. The mass should be educated about the disadvantages of communal grazing. It has been shown that 12 cows can be kept intensively on 20 acres of land. Allowing an employment of one man for their care, with an average milk yield of 600 gallons per cow per annum, the distribution of such a plot of ground is as follows :—

7 acres for green fodder of intensive system. 6½ acres for hay etc. 6½ acres for growing corn. Therefore, it seems

quite possible that a man of moderate means can manage to live under the best circumstances without the least economic loss, and at the same time derive the whole benefit of maintaining cattle.

Growing fodder crops with the special idea of feeding animals has not been practised by farmers. No land-holder seems to have any attraction for storing up any special fodder. For growing green fodder in the fields, special fodder crops may be raised by setting apart of lands for tonic plants such as cholam, guinea grass, silver beet etc. Many lessons in this direction may be learnt by the people from model Dairy Farms.

In these parts the highest yield of milk recorded is one to 1¼ Madras measure per day. An average cow in this district gives about three-quarters of a Madras measure per diem. As the people are ignorant about the principles of feeding and preserving cows, they should be educated in this respect also. The chief points about which they may be so educated are, proper time of matching, cycle of Aestrum and menstruation in females, best and worst points of selection of dairy cows, selection of suitable sire for the female, prevention of entrance of diseases into the dairy farm etc.

To promote the condition of cattle the following are some of the chief points to be considered :—

(1) Introduction of primary education, (2) Diffusion of agricultural and technical education among the agricultural masses, (3) Founding of agricultural and technical lectures to be delivered in agricultural centres, (4) Publication and free distribution of such leaflets among the agricultural people, (5) Re-organization, and re-modelling of agricultural depots on modern western lines. (6) Penalising cattle poisoning by a high penalty, (7) Easy Veterinary aid and free distribution of Veterinary leaflets among actual farmers and (8) Introduction of tested and certified milk-sale system in towns and municipalities.

4.—Bellary.

Bellary Gazetteer.

The stock raised within the district are generally of a very mediocre stamp. No scientific and careful breeding. Good bulls are seldom obtained. Agriculture also suffers from want of bulls. The only good animals are those imported from Mysore and Nellore. The former are sold in large numbers at the annual fairs at Mailar and Kuruvatti in the south-western corner of the district. The ryots buy Nellore cattle from drovers at very high prices. The cattle of Gudekota are very active and enduring.

Buffaloes—A very large breed which comes from near Raichur in the Nizam's dominions is much used for pack work. They are brought for sale once a year. The drovers keep the breeding in their own hands and bring only gelded animals. (a)

Bellary Municipality.

The Vice-Chairman, Municipal Council, Bellary, reports as follows :—

1. The state of cattle and of milk-supply in this Municipality is most unsatisfactory.

2. It is defective in all respects.

3. There should be sufficient number of dairies opened in different quarters of the town and the cattle bred and fed under the supervision of the Municipal authorities.

Hospet Municipality.

M. R. Ry. Devan Bahadur T. Kothanda Ram Naidu Garu, Chairman Municipal Council, Hospet, informs that the state of cattle and of milk-supply in these parts is not satisfactory. The number of cattle is good but their quality is bad. No care is bestowed on breeding. There are no Government Stallions. Owners of cows and she-buffaloes allow them to be covered by chance bulls and buffaloes. Good breeds are not imported because they do not

(a) Bellary Gazetteer by W. Francis, I.C.S. [1916] pp 22.

thrive well for want of good and sufficient pasture. The milk production is poor. No attempt has been made to start dairy farms, for the simple reason that they will not pay their way. The remedies suggested are (1) Throwing open some at least of the reserved forests for free grazing, (2) encouraging agriculturists to grow fodder crops by assigning them rent-free lands for a limited period and (3) the provision by Government at convenient centres of stallion bulls and buffaloes which should be allowed to serve free of cost. When these remedies are applied and prove successful the question of establishing dairy farms will come to the fore.

Chairman, Municipal Council, Adoni, informs that the state of cattle and of milk-supply in this locality is not good, the reason for the same are inter-alia as follows :—

1. The heads of cattle are inadequate, so much so that they are imported from outside, as the local quality is not good and their breeding is not being scientifically done, their offspring are not good.

2. There is no pasture; not even one inch of waste ground is reserved for the same. The other lands are either useless Vanka (Stream), porambode (waste) or hills or forest reserve, where cattle are not allowed for grazing.

Adoni Municipality.

3. Fodder is not sufficient, so much so that the cattle would be exterminated if there be more than one year of water (rain) scarcity consecutively.

4. Milk production is proportionately scanty.

5. *Sanitary habits*:—One most disgraceful and most insanitary practice prevailing or acquired by the cows and she-buffaloes in these parts is that they feed or are allowed to feed upon even human excreta (night soil). This bad practice had all along been prevailing in villages and it has in fact extended now to towns as well.

Suggestions :—More facilities for importing cattle should be given by way of loans on cheap interest repayable by reasonable instalments, and lessening railway fare for their transit, thus encouraging cattle shows and lectures. I would however strongly urge that instructions regarding breeding of cattle etc., should be given to the owners thereof and farms on due sanitary principles should be opened in all central places. The Government should however be addressed to open reserves for grazing purposes and set apart pasture or common lands for each and every village.

5.—South Canara (Mangalore.)

Mangalore Municipality.

The Municipal Chairman, Mangalore, says that the state of cattle and of milk-supply in this town is fairly satisfactory.

6.—Chingleput.

Collector, Chingleput.

A. McG. C. Tampoe Esq., I.C.S., Acting Collector of Chingleput district, gives the following opinion based on a knowledge, as a lay man, of the condition of cattle in (1) North Ceylon, and (2) Kistna (3) Guntur (4) Godavari (5) Tinnevelly (6) North Arcot and (7) Chittoor districts of the Madras Presidency :—

I presume that the selective breeding of cattle is only in place where the animals are reared for breeding, meat or milk and their use as manure or fuel suppliers is a secondary and very subsidiary consideration. But in southern India and north Ceylon, the first thing that strikes an observer when he sees cattle going out of a village in a morning to the grazing ground is their very modest qualifications for breeding purposes, or the supply of milk or offspring of good strain. Most of the animals can with justice be described as mere rabble—they are small and ill—for men. One often wonders whether

they are economically worth even their keep, modest as the cost of this must be in the case of animals of such appearance. And if some permanent interest leads such an observer to make any local enquiry, it has been my constant experience to find that beyond manure and fuel, such cattle yield practically nothing.

What is then likely to be the attitude of the owner towards his animals under such conditions. I do not include in this description such persons as keep these animals as a mere hobby. These are so rare as to be insignificant in a general survey. The cow has a certain market value and yields a certain return. When the latter is the irreducible minimum, the sole object of the owner is to keep the market price unaffected as far as possible. To improve its condition and to maintain it in that improved condition for any length of time is a loss to the owner.

With the rapid extension of cultivation, especially in the delta tracts, grazing is becoming more and more restricted and with the rise of prices, grain and hay are expensive items of food to purchase for cattle. The condition of cattle is not improving in consequence and I can foresee a dangerous deterioration in their health—dangerous to the extent of causing widespread outbreak of infectious diseases among them.

The whole is a question of intelligent adaptation to environment. The cattle breeders of Ongole in the Guntur district, the home of one of the most famous breeds of cattle in India, know as much about selective breeding as any breeders in the world. They have found it profitable and yet their next door neighbours have taken no practical interest in the matter. And unless a man realises that it is practically profitable for him to keep *good cattle in good condition* he will never follow it. The first element cannot be secured without selective breeding and the second without a determined crusade against the habit of keeping an indefinite number of practically use-

less cattle in every village On the grazing and fodder available in those parts of south India and north Ceylon that I know, if really good class cattle were kept, the number of cows could be reduced by about 60% and yet the economic return be undiminished in total value.

The methods of breeders of horses among the Arabs, the breeders of cattle and dogs in England and of horses in the United Kingdom may well be studied by some Central Indian Society. They may then examine the methods practised in such parts of India as produce good cattle and horses, and by a careful comparison, methods might be envolved which can be made the subject of common knowledge in the rural tracts. I do not think it would be of much use to increase grazing grounds or make more fodder available as I feel certain the first result of that would be to increase the number of cattle so as to wipe out the margin of sustenance once more. I have never known a ryot say that he has more cattle than he can keep. The number of his bullocks is no doubt limited by agricultural or allied needs, but his cows propagate, increase and multiply as far as they can. It is a matter of chance as to what bull they are covered by, and a matter of ill luck if it does not calve at regular periods, determined with as scanty a margin as possible with reference to condition of the mother or the health of the progeny.

Conjeeveram Municipality.

The Vice-Chairman, Municipal Council, Conjeeveram, says that the state of cattle and of milk-supply in this town is far from being satisfactory. It cannot be said that the cattle available are not sufficient. But their condition is very poor for want of pastures and fodder due (1) to eccentric and disappointing seasons, a temporary but now-a-days often recurring cause and (2) to absence of reserved lands even just outside the crowded Municipal area. There is no remedy to the first, and it is for the Revenue Department to see to what extent it is possible to supply the second.

7.—Chittoor.

Unfortunately no information is available regarding this district, although the district and other authorities were duly approached for it.

8.—Coimbatore.

Coimbatore District Board.

P. Macqueen Esq, I.C.S., President, District Board, Coimbatore, furnishes the following information: The state of cattle and of milk supply in this District cannot generally be said to be satisfactory except in a few villages, where it is unsatisfactory in all respects, *viz.*, as regards number of cattle, breeding, pasture, fodder and milk production. He suggests the following remedies:

(*a*). *Number of cattle.*—The number of cattle is not proportionate to the population and consumption of milk required. Hence fresh import from other parts is quite necessary.

(*b*). *Quality of cattle.*—The several breeds of cattle in these parts are "Country, Kangayam, Half Breed and a few Nellore Cattle." The average yield of a Country cow during lactation is about 5 lbs. daily and that of Half Breeds from 8 to 10 lbs. Kangayam cows having male calves are not generally milked and they are allowed to suckle their calves. The bulls of this breed are strong and active but the cows are weak and poor milk yielders. Nothing can be complained of about the few Nellore cattle imported by the Agricultural College at Coimbatore. But it should be noted that the import is very small and that the milk yield is sufficient only for the professors and students of the College.

The quality can be improved if milk-yielding English cows and bulls are brought in from outside, breeding centres opened in several parts of the country, judicious crossing

allowed on a nominal fee and if ryots and people educated through magic lantern lectures about the importance of breeding good quality of cattle.

Breeding.—The importance of breeding is not at all attended to in these parts. This is due to the absence of any scientific breeding with a view to increase the milking capacity of dairy cattle by selection and judicious crossing. The apathy of the former with regard to this important branch of his concern arising chiefly out of ignorance and illiteracy, is exceedingly great and this mainly accounts for the comparatively poor specimens of milch-cattle met with here. The improvement cannot be expected unless and until the Government take up the question in their hands. A bureau of livestock should be formed and it should advice the owners of animals on the profitable methods of cattle breeding and also arrange to secure bulls on what may be called Premium system by which an annual grant of money is given to the owner of a superior bull on condition that the cows in the neighbourhood are served at a nominal fee. The bull should be selected and certified after periodical inspection by the above bureau, as suited to the locality. It is a sort of bonus to encourage farmers to bestow more attention to their own interests and in a country like India where most of the farmers are only small holders of cattle, it is bound to work admirably.

Side by side with this bureau must start breeding centres in important localities to undertake the investigation of the inheritance of the important dairy characters of cows by crossing with imported bulls.

Cattle shows are of an educative value and their effects are immediate. Hence such shows should be arranged in different parts of the country and the best breeders and best animals must be awarded prizes and certificates.

Pasture and fodder.—This forms an important item in cattle breeding and rearing and any amount of attention and

care bestowed on it would not be too much. The chief fodder used by ryots here consists of stalks of cholam, paddy, ragi and cambu. Practically all these crops are grown for a double purpose—the grain for the farmer and the stalk for his cattle. Only in some places cholam is grown as a fodder crop and stalked carefully for use in the hot weather. Consequently there is an insufficiency of fodder for cattle which is felt much especially by the small holders of cattle during the summer. This could be made good, if at least, there is an abundance, or rather sufficiency of pasturage. But it is not so. The steady and continued encroachment on grazing grounds for the cultivation of food crops and cotton and the rigorous grazing rules of the Forest Department at least the ryots feel so only add to the insufficiency of fodder.

The improvement lies in (1) giving advice to the ryots on the economic feeding of milch cattle and demonstrating the people the advantage of growing fodder crops. Commissions must be appointed to go into the question of grazing grounds for the various localities and where necessary, influence the Government and local bodies to secure the required grazing area for the locality.

Milk supply—It is a matter within the common knowledge of every body that the milk marketted in almost all places, especially in towns, is of a spurious and inferior character and that it is adulterated and contaminated in all possible ways. That is because, dairying as a business concern, is practically unknown in these parts and the supply of milk to the people lies chiefly in the hands of the illiterate milk-men who are quite ignorant of elementary principles of sanitation and hygiene.

India is mainly an agricultural country and cattle form the chief wealth of population. Yet, while in other countries the development of the industry especially of milk selling, has within the last decade been almost phenomenal, in India it has

not only not improved, but also has gone a step backward. It is because more than 90 per cent. of the population are steeped in ignorance and illiteracy. The ordinary ryot does not know even the elementary principle of sanitation and unless and until, education in the broadest sense of the term is given him, he cannot be expected to understand and appreciate any of the measures that may be suggested for improving the milk question. For the proper solution of the milk question, both the consumer and the producer must be educated—the former to the dangers and risks of taking in contaminated milk and the latter to the advantage of supplying clean and wholesome milk. This will create a good demand for clean unadulterated milk and when such a demand becomes definite and persistent, the milk-man can be made to realise that he must improve in his methods. This can best be done by public lectures aided by magic lanterns, distribution of leaf-lets broadcast in the local vernaculars containing the best methods of producing and distributing milk. The milk-man must also be taught that if his business is at all to be a profitable concern, the milk should be produced economically, i.e., he must have a maximum yield of milk with a minimum of outlay. A cow of a very superior quality consumes the same quantity of feed as one of an inferior quality; but while the latter pays only for its upkeep, the former brings in a profit also.

Other Remidies.

No care is being taken nowadays regarding the *housing and tending of milch cattle*: In big cities and towns what is called a byre is nothing but a dilapidated, dingy and dirty hole in which the animal is thrust in to live. The space is very limited and consequently the feed the animal gets becomes soiled with the excreta and urine which owing to bad flooring, gets collected in small stinking pools all round, forming a good nidus for the breeding of mosquitoes The animal itself can be seen wallowing in mire and filth with a thick paste of urine and dung about its thighs and udder. Ventila-

tion, drainage and cleanliness are things quite unknown and in a such vitiated atmosphere both man and beast live together. The housing and tending of cattle being so very primitive and unhygienic the animals are prone to various diseases, contagious and non-contagious, and owing to lack of timely veterinary aid, scores of animals die annually from preventible causes.

The only satisfactory remedy in which the above difficulty can be avoided is by the organisation of Co-operative Societies, which should urge that milk cattle should be kept outside the town, that the Municipality or Corporation should provide with stables outside the town on a suitable site having water supply and grazing facilities. The Societies should grant loans for purchasing animals and food stuffs and see that milking is done in the presence of the Secretary of the Society, that the ordinary simple sanitary rules as regards washing the udders of animals, the hands of milkers, and the utensils used in drawing, storing, transporting and distributing milk are observed and that the marketting of milk is taken away from individual producers and entrusted to the managing committee of the Society.

Corporations, Municipal Councils and local bodies must be given ample powers to exercise a sanitary and legal control over the milk production and distribution of milk. Distribution might be by motor vans.

Milk shops on approved sanitary principles should be constructed in all important towns and cities and all the licensed milk-vendors should be asked to sell milk only in those shops. The milk in these shops must be periodically tested and examined.

9.—Cuddapah.

Livestock has increased with the spread of cultivation; the indigenous cattle of the district are generally of poor quality, being undersized, ill-fed and ill-

Cuddapah Gazetteer.

cared for. Common pasturing causes mongrel breeding and spread of disease. No system of fodder growing. Around Cuddapah and on the black cotton plains the cattle are almost all of the Nellore breed, tall, bulky, clumsy and highly useful animals. They are imported by drovers from Nellore. The best animals weigh up to 1,500 lb. and are excellent milkers. The other imported strain is the Mysore breed which is no where found pure. Good results have been obtained by intermixing this breed with the common indigenous kind. Cattle disease, which is prevalent in various forms often causes immense loss to the ryots.

Buffaloes are of the usual variety. They are occasionally used for heavy ploughing and frequently for slow heavy draught. Hundreds are sacrificed every year at shrines. (a)

10—Ganjam.

C. B. Cotterell, Esq., C.I.E., I.C.S., Collector of *Ganjam*, writes :—

(1) The state of cattle and milk-supply is unsatisfactory.

Collector of Ganjam.

(2) The local breed of cattle is generally of a poor quality. No land is set apart for growth of fodder and in the hot season the cattle have to find their living as best they can to a large extent in the jungles. There is little common pasture land and no breeding centres or attention to breeding. The chief defect is the indifference of the people in the matter of breeding for special purposes. He can offer no practical suggestion.

Rajapur.

S. N. K. Bijurkor, Esq., B.A., Chairman, Notified Area Committee, *Rajapur*, writes that the state of cattle and milk-supply is satisfactory.

(a) Cuddapah Gazetteer by C. F. Brackenbury, I.C.S., [1915] p 21.

M. R. Ry. Rao Bahadur, S. V. Narasinha Rao Garu, B.A., Chairman, Municipal Council, *Kurnool*, writes :—

Chairman Kurnool Municipality.

The state of cattle and of milk-supply in the Municipality is fairly satisfactory. Fodder is however sold at an exorbitant price at present.

11.—Godavari (Cocanada.)

The Manager, Polavaram Estate, Godaveri districts informs that the state of cattle is not satisfactory. Milk-supply is not at all adequate nor is the quality of milk procurable good. There are very few good milkers. The best milker gives two seers in the morning and two seers in the evening. But cattle of such quality can be counted on fingers. The average quantity of milk that is drawn from cows or cow-buffaloes is only ¾ of a seer.

Polavaram Estate.

The unsatisfactory condition is mainly caused by complete neglect in breeding and feeding the cattle. Even the cattle kept by rich ryots show complete want of care on the part of the owner. They are not kept in clean stalls nor are they washed clean even once in a fortnight. The rich ryot of this locality feeds his draught bulls fat for show but bestows no attention on his plough-cattle. The milkers are taken care of in a slight degree while they milk.

I happened to have a look into the cattle sheds of some leading ryots but they were unapproachable owing to mud and mire and vermine and mosquitoes. Agency tracts are notorious for their swarming mosquitoes which breed malaria but it does not seem to enter into the head of the ryots that they could improve their own health and that of the cattle by keeping the cattle sheds clean. Although there is extensive forest all round I was often grieved to find ryots importing cattle from other districts because the local breed has deteriorated. Cattle are imported from other districts only to be used for work but not

for improving the local breed. Cattle born in the country itself are small in stature.

Pasture ground is very scanty. No attempt is made to keep the ground green in autumn or summer. During the rainy season the cattle have green grass to eat but in all other times they have to eat only dried-up fodder, except for ten or fifteen days after harvesting of wet crops when they find some green grass in the harvested fields. Fodder is generally found in plenty but it does not tend much to improve the milking.

Improved method of agriculture, when introduced extensively, may tend to improve the condition of cattle to a large extent. The farmer then appreciates the manuring value of the dung and urine of cattle and in constructing scientific stalls will keep the animals clean which will considerably increase the quantity of milk and the breed itself may improve considerably because a calf fed on adequate quantity of milk is sure to grow strong and stout. In the meantime the following are the remedies proposed.

1. Increased vigilance in prevention of killing cattle for food and for hides for it is good fat animals that are killed.

2. Castration or gelding of inferior kind of studs.

3. Selection of the studs to be maintained for purposes of breeding.

4. Regular maintenance of pasture grounds. Care must be taken to see them watered now and then.

5. Introduction of the system of growing crops in fields by rotation. I mean every ryot must try to leave a portion of his holdings fallow in one year and grow crop in it the next year.

6. Introduction of the system of cutting fodder into small pieces to prevent waste.

7. Insistence upon maintenance of cattle sheds neat and clean.

8. Either recovering the cattle grounds or obtaining by grant from Government cattle grounds which are to be found in every village. They appear in all village accounts as Mandabayallu under communial lands of the villages. They are now brought under cultivation and have to be restored to their originial use.

9. Maintenance of adequate supply of water in all communial tanks for use of cattle during summer

10. Digging of tanks in forest or jungle here and there for the use of cattle which go there for grazing.

11. Extension of the veterinary establishment. There must be at least one veterinary officer for every 50 square miles. When ryots realise that great help is rendered by Government for preservation of the cattle they begin to take greater interest and naturally bestow greater care and attention on their cattle.

12.—Guntur.

Guntur District Board.

The President, District Board, Guntur informs that the condition of cattle and milk supply in Repalli, Bapatla and Ongole taluks is reported to be satisfactory but the number of milch cows is fastly reducing on account of their being picked by the experts and exported out of India. In the rest of the taluks in this district the condition is unsatisfactory for want of proper care, stabling, good fodder supply and of provision of sufficient grazing lands. Further, cows are not properly cared for except she-buffaloes which give milk and ghee more than the cows do. There is a suggestion for starting dairy farms which may improve the condition of cows to a great extent.

Tenali Municipality.

The Chairman, Municipal Council, Tenali informs that the condition of cattle and the supply of milk are both very unsatisfactory. The mortality of

cattle owing to diseases and want of proper care and proper feeding, is considerable. The quality is very poor especially in the deltaic tracts. Breeding is not attended to properly, but is left to nature. The breeding of buffaloes is most neglected, there being no breeding he-buffaloes especially set apart for the purpose. The efforts made by the Goverment to introduce breeding bulls are not sufficient and attractive. Pasture is not sufficient in deltaic villages. No sufficient facility in dry villages adjoining Goverment forests. No special cultivation of fodder crops or improved methods. The fodder in the deltaic villages consists in straw and hemp stalks, neither of which is strength giving. The milk yield is very poor and price is prohibitive; it is not available in sufficient quantity even for children. The poverty and ignorance of the ryot and want of sympathy on the part of the subordinates of the Goverment are the main causes. Agricultural methods must improve. Useful knowledge must spread by means of education and co-operative principles. Goverment must prohibit cow-killing and encourage ryots in their efforts.

Ongole Municipality.

Ongole Municipality informs that the state of cattle or milk supply is not as satisfactory as local conditions may require. Ongole is the centre of a large breeding area containing a breed possessing a world wide reputation for its excellence of quality. The bulls of this tract are splendid draught animals and stand comparison with some of the best breeds of the world. The milch cattle however are not so famed for milk-yielding capacity and are of the average type. This breed has been maintaining its reputation for some centuries in the past and is largely confined to a tract comprising three or four taluks in this district and two taluks in the neighbouring district of Nelore. About a dozen years ago, cattle sows were started here for their educative value. Instead of this object being completely fulfilled, a market has been created for these animals on account of the advertisement created by these Shows. As this advertisement

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extended even to Europe and America and as their qualities began to be more and more appreciated, an abnormal demand, particularly from the East Indies and South America came into being with the result that the stock is now almost threatened with extinction.

They have also deteriorated in quality. This is the opinion of experts competent to judge and pronounce an opinion in the matter.

The purity of the breed is also affected. At the Shows held in recent years, the presence of mongrels was observed to a slight extent.

The deterioration in quality, the depletion in number and the importation of alien blood are matters well established beyond doubt and widely deplored.

The ancient and religious custom of dedicating Brahmani bulls is falling out of vogue and in recent years there have been very few dedications as compared with conditions prevailing a dozen years ago. The European buyers are ignorant of prices of Indian cattle and have offered phenomenal prices for them. Six years ago prices rose upto between 300 and 400% of the usual amount. Since then there has been further rise. For this reason, the ryots in these parts who are very poor part with their best young bulls which otherwise would serve them as their breeding stock or future Brahmani bulls. Thus the temptation to get a high price is irresistible, and the desire to dedicate, after foregoing a large profit upon religious considerations which are fast losing their hold upon the people in the present day civilization, is losing its force. The same reason accounts for the dedication of bulls of inferior quality in recent years in some cases. This has naturally affected the quality of the breed and it is commonly admitted that the present day Brahmani bulls in these parts are inferior to those seen a dozen years ago.

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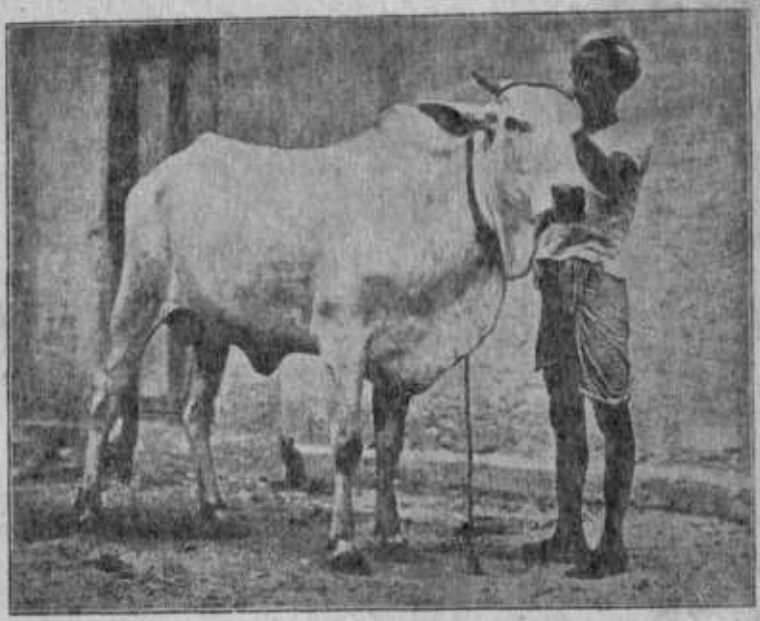

Ongole Cow (Madras). (By the courtesy of the Govt. of Madras).

Bhoodeb Publishing House.

As this is an essentially breeding centre there has been a large drain upon its milch cattle also. Madras city is almost dependent upon this tract for its supply of milch animals. It has been computed that about 1,500 cows are annually exported to Madras from here. This accounts for the insufficiency of milk-supply in this area. A large amount of trade in ghee takes place constantly with stations in this tract. This is an additional reason for insufficient milk-supply.

Much improvement is necessary in the direction of extending pasturage for cattle. More and more of Government Poramboke lands are drawn upon for occupation by the villagers. In the attempt to provide accommodation for the growing population, the needs of the cattle are ignored. There is less land now-a-days available for pasturage for cattle. Added to this, as a result of the complex economic conditions prevailing over the world with an ever-increasing demand for industrial products *e.g.*, indigo, cotton, jute, tobacco, etc., the Indian growers have taken to producing more and more of industrial crops and less and less of fodder crops. This has been the case even at the cost of food crops of late. Less pasture lands and less fodder have therefore affected the condition of the local cattle.

To prevent depletion, legislation restricting foreign exports is immediately needed. Indigenous cattle-dealing has also to be regulated by the same means.

Degeneration in quality and admixture of alien blood can be obtained only by cattle breeding farms established in the centre of the breeding area. For this tract, at least half a dozen farms in different centres will be necessary, and financed by the Government so that the cattle requirements of the whole tract may be brought under control and the needs of the Madras City and other places for milk and meat properly regulated. This is what seems to be done by progressive Governments like the Dutch Government at Java where cattle are supplied for agricultural purposes to ryots by the Govern-

ment on a system of loaning. The system of fenced pastures does not prevail in these parts and may with great advantage be introduced here. The ryot must be encouraged to set apart a sixth of his cultivable land by the Government reducing assessment thereon.

The Government must be induced to purchase annually a large number of breeding bulls; and the management of the same entrusted to local bodies including informal panchayats.

Narasarowpet Municipality.

Chairman, Municipal Council, Narasarowpet, writes that the state of the cattle in this Revenue Sub-division of the Guntur District comprising the three up-land taluks of Narasarowpet, Palnad and Vinukonde is fairly satisfactory. The breed is good and there is also a fairly large area of grazing-ground. The Municipal town of Narasarowpet is the chief place of this Sub-division. This Sub-division borders that of Ongole which is famous for good cattle annually exhibited at the Ongole cattle show.

The milk-supply is not satisfactory; the cows generally do not yield much quantity; the milk production of a very inferior kind of cows in the Deltaic tracts of the Kistna district is much greater than that of this Division. I attribute this defect chiefly to the excessive heat of these Taluks which has I believe corresponding effect on the milk production.

13.—Kistna.

Collector, Kistna.

H. A. Watson, Esq., I.C.S., Collector, Kistna district, writes to state that the condition of cattle and the supply of milk are generally satisfactory in this district except in Bezwada, Gannavaram, Tanuku, Bhimavaram and Ellore Taluks. Copies of reports received from the Revenue Officers of these taluks are given below.

Tehsildar Bezwada.

The Tehsildar of Bezwada taluk reports that the milk that is generally available here does not seem to be of the standard strength which seems to me to be

mostly due to weak breeding among cattle. Many of the cows in these parts are of stunted growth, and consequently give very poor milk both in quantity and quality. As regards remedies he proposes the extension of good grazing-grounds, and attempts also have to be made for improving the breed of the cattle.

Tehsildar Gannavaram.

The Tehsildar, Gannavaram taluk, states that the state of cattle and of milk-supply in this taluk is anything but satisfactory in all the respects. The main cause of it is want of decent pasture grounds. In all the deltaic portions of the taluk there are no grazing-grounds, while those in the uplands are very poor as the soil is either gravelly or sandy for the most part. Want of proper nourishment tells on the breed, the yeaning capacity of the animals, their quality and milk production. Conserving grazing grounds in the delta seems to be the first requirement to improve the quality of the animals and the milk-supply.

Tehsildar, Tanuku.

The Tehsildar. Tanuku, informs that there are cattle sufficient for local requirements, but the cows and buffaloes here are not so strong as those in the upland tracts and the milk too given by the cattle is not so rich in quality as the upland milk. The defect consists merely in the want of sufficient pasture-lands. Also the breed has been deteriorating in course of time and unless special breeding arrangements are made (care being taken at the same time to provide sufficiently strong food for cattle) there is no hope of improving the condition of cattle here. In other respects, the condition of cattle is generally fair in this taluk.

Dy. Collector Bhimavaram.

The Deputy Collector, Bhimavaram remarks that both the state of cattle and milk-supply in this division cannot be deemed satisfactory. Large numbers of cattle are maintained by ryots in these parts but only some of them are used for tilling the soil, drawing carts or giving milk. The remaining cattle serve no better purpose than

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supplying manure to the fields. The result is that the ryot owns more cattle than he can efficiently maintain and that most cattle are underfed. Both bullocks and buffaloes are used for ploughing purposes, the latter being more extensively used than the former, on account of their being better fitted for work in the wet fields during the rains. The indigenous types of these cattle are very inferior and the ryots are compelled to get the plough-cattle required by them from the upland tracts of the Godavari, Kistna and Guntur districts. Very little attention is paid to breeding, superior cattle being allowed to mix freely with inferior ones and the natural result is very poor production. This being a delta taluk, all available land is under wet cultivation and there is little or no land set apart for pasturage. Ryots are therefore obliged to send away some of their cattle to the uplands immediately after the cultivation season. As regards fodder, there is sufficient quantity of hay available for local consumption but sun-hemp and other kinds of fodder are quite inadequate. Milch-cattle no doubt may receive a fair amount of attention from the owners but most of the cattle are of inferior type and their yield is poor. Superior milch cattle of Ongole type are owned by a few rich people here and there. These evils are so much ingrained in the habits of the people by long standing custom and practice that it is very difficult to do away with them at one stroke. They can only be got rid of gradually as education spreads among the agricultural population. Cattle shows were instituted by Government with a view to enlighten the agricultural population on the subject of rearing and breeding cattle but the desired object could not be secured. The best means of imparting instruction in these matters is, in my opinion, the opening of agricultural demonstration farms in all important places where up-to-date methods of rearing and breeding of cattle also have to be demonstrated. It will no doubt entail large expenditure on Government but the results, I believe, will justify the expenditure.

Tehsildar, Ellore.

The Tehsildar, Ellore, reports that the state of the cattle depends upon the soil and the availability or otherwise of pasture and fodder and the yield of milk generally depends upon the size and strength of the cattle and the quality of pasture and fodder they eat. This taluk is partly deltaic and partly upland. In the delta tracts, wet cultivation extends to the very doors and in fact there is little or no waste reserved for pasture. In the upland tracts there are few scattered patches of waste reserved for pasture. Even in these tracts, there is irrigation under minor irrigation banks and out of the dry lands, some lands are raised partly with dry and partly with garden crops. Thus there is very little land available for pasture ground. This small area does not admit of nor is it adequate to maintain large breed of cattle except those that are necessary for the yoke and domestic consumption of milk. Even the lands bordering Kollair lake which were waste till recently, have, to a most extent, been brought under wet cultivation, there is no pasture ground in the Kollair bordering villages. The only pasture in the delta villages during the rainy season is the grass that grows on the fields bunds. As for fodder, hay, sun-hemp (which will be available only for a very few months in the hot weather) bran and boosa are the only articles available in the delta. Thus it will be observed that it is not possible for an ordinary ryot—not to speak of rich ryots—to maintain good breed of cattle. She-buffaloes and cows are specially maintained for the quantity and quality of milk respectively.

In the upland tracts where there are large blocks of waste lands which were formerly used for grazing purposes, major portions have been brought under dry cultivation. Besides many of such blocks are being constituted as reserves and as such, the ryot population of the adjoining villages, have been driven to the necessity of disposing of some of their cattle which would otherwise have been useful to them for manuring their field, keeping only those that are necessary for ploughing

and milk. The soil in many cases is rocky or sandy and as such, even grass will not grow unless the soil is enriched by good manure. The grass that grows in these parts does not give good nourishment to the cattle. There are very few she-buffaloes in these parts. The cows available are of short stature known as *puriavulu* yielding proportionately less milk. The only fodder available is chaff of horsegram, horsegram and cholum which are grown to a certain extent in uplands while the interior is full of scrub jungle. Thus there is very little pasture land even in the upland tracts.

The quantities of milk are quite inadequate. The only remedy to have plenty of cattle, is to reserve waste lands lying near the villages as cattle stand poramboke for pasture and to leave the reserves for the free grazing of cattle.

Revenue Officer, Bezwada

The Revenue Divisional Officer, Bezwada, reports that the state of cattle and milk-supply is not satisfactory more especially in Bezwada town. There is a sufficient number of cattle but the quality is poor. There are very few good milkers. The delta is woefully lacking in pasture grounds and the sheds where cattle are accomodated are generally very insanitary especially in the rainy season. Better breeds of cattle will have to be imported from Nellore district. The provision of pasture grounds in the delta is out of the question but something may be done to improve the condition of the sheds. Too many cattle of poor quality are kept by some ryots. A much smaller number of better quality will do very well.

District Board Kistna.

H. A. Watson, Esq., I.C.S., President, District Board, Kistna, informs that the supply of milk in this district is fairly sufficient for the local requirements within the district. But the state of cattle cannot be said to be quite satisfactory. There is a sufficient number of cattle in this district but the quality is poor. Cattle owners in these parts do not take any pains over breeding and all cattle, good and bad, are allowed to run together. In the deltaic taluks all the land is under wet cultivation and [illegible]

tically no pasture land, which however is probably a blessing as it tends to foster stall feeding and to prevent promiscuous interbreeding. The ryots send their cattle to the upland taluks immediately after the cultivation season is over. There is sufficient quantity of hay available for local consumption but sunhemp and other kinds of fodder are not grown in any quantity. Milch cattle will ordinarily receive a fair amount of attention from owners but most of the cattle are of inferior type and their yield is poor. The ryots do not take any interest to secure adequate accommodation for their cattle and the cattle-sheds are very insanitary almost everywhere in the district and at all seasons but especially in the rainy season. This state of things might be mitigated to some extent by imparting instruction to the ryot population in these matters and by opening agricultural demonstration farms at important centres where up-to-date methods of rearing and breeding of cattle should be demonstrated.

Masulipatam Municipality.

John William Maiden, Esq., Chairman, Municipal Council, Masulipatam states that the state of cattle and supply of milk are satisfactory. The question of breeding bulls requires improvement as strong and decent bulls are not kept apart for purposes of breeding.

Cattle slaughter in Masulipatam.

Slaughter for Civil Population.						
		1913.	1914.	1915.	1916.	1917.
Cows	...	...	210	129	159	176	150
Calves	...	...	220	210	222	192	200

14.—Kurnool.

No information is available regarding the condition of cattle in this district either from official or non-official sources.

15.—Madras City.

The Health Officer, Corporation of Madras, writes to say that the state of cattle and milk-supply in the city are very unsatisfactory. This is due to (a) insufficient number of cattle in the city, (b) the continued deterioration of their race, from

Madras Corporation.

insanitary housing conditions and insufficient grazing-grounds, (c) systematic attempt to underfeed the young ones, some of these die young while others are unfit for propagation of the species, (d) want of proper grazing ground, (e) dearness of fodder and (f) inferior quality of milk.

The Corporation has not taken up the matter fully. It has, however, built a model cattle-yard with impervious flooring, tiled roofing and plenty of ventilation to accommodate about 300 animals. But it has been found difficult to ask the milkmen to transfer their cattle from their filthy yards to this place. Only those who are living in the immediate neighbourhood of the model yard have taken advantage of the institution.

The Local Government has, however, just sanctioned a proposal of the Deputy Director of Agriculture (Live Stock) to improve the local stock by cross-breeding with Ayrshire bulls to be imported from England.

Srinivasa Iyengar

S. Srinivasa Iyengar, writes from Mylapore, Madras to say that the state of cattle and of milk-supply throughout the Presidency of Madras, whether in towns or in villages, is generally very unsatisfactory—so unsatisfactory as to cause grave anxiety for the future.

There can be no doubt that the number of cattle is altogether insufficient for the increased population and for the changed life and habits of the people. The universal consumption of coffee and tea several times in the course of a day, the multiplication of hotels, restaurants, "coffee-clubs," railway refreshment rooms &c., the institution of clubs and the adoption of western habits, and the great increase in social functions, require a vastly increased supply apart from the vital needs of the children and of the sick. The frightful adulteration of ghee is the best proof of the enormous diversion of milk from its more ancient uses. Good curds and buttermilk are becoming difficult to procure.

The quality of cattle has deteriorated and insufficient attention is paid to breeding. Pasture is nil in many places and in almost all places altogether inadequate.

Calves are starved by the milkman who cares for sale of the milk only. Fodder is provided for cows in towns, of one sort or of another; but in the village it is generally insufficiently

given. I doubt, however, whether fodder can in all cases be an effective substitute for pastures. Certainly the first thing to do is to undertake breeding only select breeds by the State, by the Rajahs and Zamindars and great landholders and landowners, by the philanthropic mercantile community, and by organizations which are on sound business basis. The State and landowners must provide practically free grazing grounds near the large towns and cities as well as in villages. There should be established in appropriate places hot weather pastures for the cattle of the said country surrounding such pastures so that cattle unable to find pasture in their own villages may find it miles away at least for a fee.

The Archbishop of Madras writes:—

Archbishop of Madras.

There can be no second opinion on the subject that the condition of cattle and milk-supply in Madras is in many ways deplorable, and the first remedy, without which all others are useless, is to give more abundant and more wholesome fodder to the cattle. "Feed the brute" is the only right policy.

Messrs Spencer & Co., Ltd., the well-known firm of Madras reply as follows:—

Spencer & Co.

The state of cattle and of milk supply in this locality is most unsatisfactory. I do not know anything about the number of cattle, but the milk-supply is unsatisfactory in all respects. The question of the milk-supply of this city has from time to time received consideration and investigation, and I believe I am correct in stating that it was taken up by a Committee, at which our late Governor Lord Pentland took the Chair, only a few months ago. What decisions were arrived at I do not happen to know, but I am afraid nothing satisfactory. The drawback in Madras is the fact that at certain times of the year pasture is not available—fodder is always expensive, and consequently although the production and sale of milk has been tried on more than one occasion as a business proposition, it has invariably failed. The trade is almost entirely in the hands of Indian cow keepers. The cattle as a rule are emaciated, and the milk in consequence is invariably thin and poor, and, unfortunately, is not improved by admixture of water, not always clean. Many European residents get over the difficulty by keeping their own cows and feeding them on the premises, for as you know most of the houses in Madras have large compounds. This is a very expen-

sive way of getting milk, but it is the only way in which a sufficient supply can be obtained and of good quality.

I might supplement these remarks by saying that one of the drawbacks against running milk as a business proposition is that the purveying of milk by itself does not pay. If a dairy in ordinary circumstances in South India does pay, it is on the butter produced, not on the milk. I remember a case a short time ago on the hills, where circumstances were much more favourable than on the plains, where a dairyman did, I believe, manage to keep his head above water for sometime. It was by turning all the milk produced by his own cattle into butter and buying milk from many other sources available for distribution amongst his customers, but even then circumstances were ultimately too much for him.

16.—Madura.

The indigenous cattle are small and of no special value and the Kappiliyans alone take some trouble to improve the breed. In some places ploughing is done with cows. Animals are imported as well.

The chief cattle-market is held at Madura on the occasion of the Chittrai festival at the temple there. 30,000 head have been counted there and it is perhaps the largest in the southern districts.

Madura Gazetteer.

The number of plough bullocks is insufficient. Here and there cholam is grown for fodder and in some places grass is cultivated on dry lands, but otherwise no special steps are taken to provide cattle-food. Rinderpest is not uncommon and caused great loss in Peryakulam taluk in 1899.

The Kappiliyans of Kambam possess a herd of about 150 cattle of a distinctive breed (small and active with great trotting powers). These are never milked but are kept only for breeding purposes. These cattle are regarded as "the sacred herd." They have recently raised Rs. 11,000 and have spent this sum in building roomy quarters for them. (a)

Collector Madura.

H. T. Reilly, Esq., I.C.S., Collector of Madura informs that the state of cattle is poor and of milk-supply very poor for the following reasons *viz.*, (a) too

(a) Madura Gazetteer by W. Francis, I.C.S. [1914] p. 20.

many cattle useless bulls and heifers, (*b*) cattle of extremely poor quality. (*c*) no proper breeding arrangements, (*d*) Pasture not sufficient, (*e*) fodder of poor quality and insufficient and (*f*) milk production entirely haphazard The remedies suggested are improvement of breeding arrangements by segregation of bull sires and selection of best milkers, elimination of all useless animals and introduction of stall-feeding.

Palni Municipality.

The Chairman Municipal Council, Palni, states that as the town is very near the hills the state of cattle and of milk-supply is generally satisfactory.

Periyakulam Municipality.

The Reverend Father J. Marie Louis, S.J., Vice-Chairman, Municipal Council, Periyakulam, gives the following information: Periyakulam is a small town with a population of 18,750 as per census of 1911 and is situated at the foot of the southern slopes of the Pulney Hills. The number of milch cattle in the town (cows she-buffaloes and sheep) is sufficient; but the state of milk-supply and of the supply of other dairy produce (butter ghee &c) is extremely unsatisfactory.

The chief reasons for this unsatisfactory state are (1) the low quality of the cattle, (2) the want of adequate pasture lands and (3) the grinding poverty of the majority of the cattle-owing people. To ensure a good condition of the cattle, the sheds in which they are housed, should be sufficiently roomy and airy and also well flagged and drained. The Municipal bye-laws also require these essentials. But the poverty of the people stands in the way of effecting any reform in the condition of the cattle sheds. As a result of this poverty cattle are also underfed. Only some attention is shown when they yield milk.

Remedial measures.

(*a*) The first and most essential measure so far as this town is concerned should be that directed towards the improvement of the breed of cows. In view of improving the breed of horses and ponies, Government have established remunerative stations at various places and selected stallions stationed there

for breeding purposes. Formerly in this country people dedicated bulls to temples and the temple bulls satisfied this requisite. Good temple bulls have now become rare in most places and Government have to be moved to establish breeding centres for cows and station there sufficient number of select bulls.

(*b*) With the improvement of the breed, the pasturage in villages should also be extended. For some years it has been the practice with the Forest Department to steadily extend the forest reserves taking in all Government unoccupied lands. Although the reservation of forests is necessary in the interests of the ryots themselves, facilities for cattle grazing should at the same time be recognized as a paramount necessity and definitely marked areas thrown open in rotation for cattle grazing. It would be better also that Government mark off certain portions of unoccupied lands surrounding the villages as definitely available for pasturage and cultivation of fodder crops in preference to food-grains.

(*c*) Every Municipality or Union Panchayet should maintain a model dairy with the help, if necessary, of Government subsidy. These dairies will serve as an object lesson to cattle owners and convince them more than any amount of wordy lectures that money spent in improving cattle sheds and in properly feeding the cattle will not be ill-spent but will lead to their own prosperity and put money in their pockets. The milk of these dairies should be set apart primarily for children and diverted to other uses after meeting this want.

(*d*) The adulteration of milk, ghee and other dairy produce has all along been an unchecked evil. The Madras Government have recently passed a food adulteration Act for checking this evil and I am not now in a position to say how far its provisions will secure the desired ends.

(*e*) The Hill station of Kodaikanal is near this town and food supplies for that station are to a considerable extent availed of from here. For some years dealers in butter &c., for the hills have set up skimming machines here and extract from the milk all the butter. The milk thus deprived of its essential constitutents is again sold to the towns people in the same condition or as butter milk. Deprived of its important constituents the skimmed milk has been positively harmful. The food-adulteration Act recently passed may lend power to prevent this.

17—Malabar (Calicut)

The wet climate of Malabar is unsuited to cattle. Buffaloes thrive and do all field work but the indigenous breed of cattle is miserably weak and undersized. The climate, lack of selection in breeding and want of proper feeding all make for deterioration. Fodder crops are never grown. Bullocks and buffaloes in hard work are fed on paddy straw, the rest go out to graze near the hills and the jungles. Draught cattle of good quality are imported from Coimbatore and Mysore and command good prices at the great annual fair at Kizhur in Kurumbranad taluk and in the important weekly market at Vaniamkulam. These gelded animals do not improve the stock. Arrangements should be made to import bulls from Mysore for service in Malabar. The success of the experiment depends largely on fodder. "Thousands of tons of poonac (cocoanut oil-cake), which the district can ill spare, are exported annually to Hamburg to feed German cattle. (a)

Malabar Gazetteer.

The condition of cattle and milk-supply is not satisfactory. As regards quality, breeding, pasture and fodder, State aid should be invoked to provide every village with one or more pasture grounds proportioned to the number of cattle in it. Charitable societies like the Society for Preventing Cruelty to Animals should be formed with power to seize and carry away underfed, neglected and starved cattle and to feed and maintain them at the cost of the owner until healthy conditions are restored. The State or Charitable Societies should maintain several good breeding bulls at convenient centres preferably near public grounds where people may get their cows crossed. The levy of a fee for this would not be unreasonable.

Calicut Municipality.

(a) Malabar Gazetteer by C. A. Innes. I. C. S., 1915. p. 21.

CSL

The Revenue Divisional Officer, Calicut informs that the state of cattle and of milk supply in this locality is far from satisfactory. In the first place the number of cattle is insufficient and their quality not good. They are of small size and are not capable of producing sufficient supply of milk. Of course the cattle owners do not take any interest in cattle breeding nor have they any idea of it. They let loose the cattle in the morning for grazing till evening and when they return they are shut up in the pens. Pasture is available for 8 months and fodder throughout the year.

Revenue Officer C licut.

The milk produced is barely sufficient to meet the local demand and it is difficult to get undiluted milk even if good price is offered. The following as remedial measures are suggested on. (1) People should be educated in up to date methods of breeding. (2) Facility may be given to import good Nellore cows. (3) Holding of cattle shows and giving prizes to the best cattle owners. (4) Good strong bulls may be kept in every village to facilitate cattle breeding. (2). Dairy farms may be established at convenient centres and cattle of superior quality reared therein.

G. V. James Esq. I. M. S. Civil Surgeon Tellichery gives the following information.

State of cattle :—Very poor.

Milk supply :—Bad—because the seller of milk always brings only drawn milk to the house of the purchaser and never the cows themselves to be milked in the presence of the purchaser. Invariably this means, purchased milk is at least ½ water. The number of cattle is very insufficient. People do not breed cattle as it does not give them gain. Excepting a few well-to-do families in towns others do not use milk as an important article of food, consequently trade in milk

has been neglected. The type of cattle seen in this district is a poor emaciated and stunted variety. Pasture is insufficient always, as vacant spaces in the possession of Jenmies and their tenants are always utilised for agricultural purposes—either paddy fields or gardens—consequently, one scarcely finds any real pasture grounds in many places.

Civil Surgeon Tellichery

Remedies :—Breed should be improved by importing into this district high class cows from Nellore, Coimbatore etc and further their consequent breeding should be done on scientific basis. Fit animals only should be selected for breeding purposes. A departmental agricultural farm may be established in some part of this large district and thus manifest demonstration made to the ignorant folk, how care and action on approved principles of farming will tend to increase the prosperity of the cattle-owner.

Another point is—Public grazing grounds ought to be provided.

18—Nellore

This district consists of two distinct zones, (I) a wet zone near the coast, and (II) extensive uplands interspersed with forests and hills. In the coast region increased facilities afforded for irrigation have led to a corresponding increase in the cultivated area with the result that sufficient extent of grazing grounds is not available. In the hilly regions there is sufficient pasture available and the state of the cattle can be said to be fair. But on the whole the conditions obtaining in the district are not satisfactory, because pasture is so scanty in the dry season, no hay is grown in the wet season and the straw available is conserved to a

Collector Nellore

large measure for keeping the bullocks and plough-cattle alive. Except in important villages and towns, there is very little demand for milk and so the owners do not generally care to milch their cows but leave all the milk for the calves, the breeding of which is what they mainly look to.

Breeding of cattle is not conducted on proper scientific lines. The people are not aware of the proper lines on which stall feeding should be adopted.

The existing defects can only be remedied by educating the owners in modern methods of feeding and breeding. This can be done by the establishment of more model farms and by sending out experts to villages to disseminate knowledge gained by scientific and improved methods of breeding and to demonstrate practically their advantages in important centres.

An agricultural farm has recently been established in this district at Chintaldevi of Kavali Taluk and it is hoped that this will in course of time do something practical to improve matters.

19—Nilgiri (*Ootacamund*)

Ootacamund Municipality

The state of cattle and milk supply in Ootacamund is, on the whole, fairly satisfactory.

Mr Ram Chandra Row

Hon'ble Mr. Ram Chandra Row writes: There is no denying that the state of cattle and of milk supply is very unsatisfactory in several parts of the Madras Presidency, and probably matters require improvement in all directions.

G. W. Wells Esq. I. C. S. Chairman, Coonoor Municipality, says that the condition of cattle and quality of milk supplied are not at all satisfactory.

The above unsatisfactory condition is due to the poor breed of cattle kept, to the calves not being

properly cared for, to the want of sufficient pasture on these hills due to the fact that most of the land which could be utilized as grazing grounds is reserved forest land even in the town itself and to the indifferent housing and feeding of the cattle. The question of remedial measures is one of some magnitude and requires careful discussion but the following suggestions are offered :—(a) Strict insistence on the provision of proper cattle sheds with proper sanitary arrangements. (b) The removal of all restriction to the grazing of cattle in reserved forests in the town or rather the disafforestation of such areas and their conversion into public grazing grounds (c) The control of the price of cattle fodder. (d) To improve the breed of future cattle the Government might maintain a few English or Australian bulls at stud.

Coonoor Municipality.

20—Ramnad

The Chairman Delegate, Municipal Office, Srivilliputtur is of opinion that the state of cattle and the supply of milk is not satisfactory in this locality.

The pasture land and fodder are insufficient and consequently the production of milk is not satisfactory in quantity as well as in quality.

To remedy these defects, the Government should set apart lands in two or three localities for grazing cows and for the purpose of growing fodder and also cattle may be allowed freely in the reserved forests for grazing and lastly to give a stimulus to owners of cows cattle show may be held once a year during some festival occasion and prizes may be distributed for well cared for cows and calves.

Srivilliputtur Municipality

The state of cattle and of milk-supply in

this taluk is not satisfactory. The cultivable lands in these parts are all dry and are of black cotton soil. Only dry crops are grown on them. The general crop grown in these days almost all over the dry lands and even on wet lands is cotton—mostly American Cotton. Further the ryots do not care to grow fodder crops such as Cholam etc on their ands as they were doing in the past since the cotton has been found more profitable than others and thus fodder and pasturage have become scarce. As a result of this, the state of cattle is much neglected and the supply of milk is very little and adulteration is very largely resorted to, to meet the demands of the public as even the poorest men are now accustomed to take coffee, tea or other drinks unlike in the past. The American Cotton seeds which are now used to feed the cattle in the place of Tinnevelly Cotton seeds do not help in the production of milk. The ryots may also be instructed and encouraged to grow cholam fodder and Tinnevelly cotton. Cholam fodder and Tinnevelly Cotton seeds only will do well to improve considerably the condition of cattle and the supply of milk. As for the increase of pasturage I am unable to suggest anything since there are not wet lands in these parts, nor Government waste and poramboke lands to be reserved for such pasturage.

Virudapatti Municipality

21—Salem.

E. A. Davis I. C. S., Collector of Salem states that in this country the most important use to which cattle are put is for draught (ploughing etc) and milk is merely a secondary consideration, save in a few large towns. In consequence milking strains do not receive and cannot be expected to receive much attention and breeding is practically entirely for draught cattle save in few isolated area in this Presidency

Collector Salem

(which is almost entirely agricultural). No change in this practice can be expected for economic reasons; and this being so, the working cattle are maintained usually in fair condition and the stock receives little attention.

The Chairman, Municipal Council, Salem writes as follows:—The milk supply and the state of cattle are very unsatisfactory. Especially now fodder is dear and even scarce. Pasture is out of the question in towns and in the villages the stringent rules of exclusion by the Forest Department make feeding of cattle deficient. Milk production is not sufficient for the above reason. The number of cattle cannot be said to be low. But the quality is rather poor. Breeding is attempted in some centres; but that is only for commercial purposes. I would ask that Government should be asked to keep good breeding bulls in some centres and get a census of the available supply of fodder for distribution. Animal shows should be organised to encourage cattle breeding and Dairy farms should be opened here and there.

22—Tanjore.

Agricultural Cattle—Two main classes of cattle, (1) the ordinary indigenous animals (2) those imported from Coimbatore (called Alambadis). The former are small and weedy but useful plough cattle, the latter are employed for draught purposes. The well-known Nellore and Mysore cattle are imported in smaller numbers These are bought at the large fairs at Tiruvannamalai (South Arcot), Ariyalur and Samaya puram (Trichinopoly) and Kumbakomam and Tiruvalur in this District. Country bullocks are purchased at the local fairs. No pains taken to improve the quality of this breed except at Tanjore and Tiruvaduturai. Some breeding Nellore bulls are

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kept at Tanjore and at Tiruvadutarai some breeding bulls and cows are kept.

The buffaloes are the only indigenous breed which are bought at local fairs or imported from Trichinopoly. They are generally used for ploughing.

Grazing ground is scarce, all the cattle are more or less stall-fed though in the season when they are not used for ploughing hundreds of them are driven to the South Arcot forests to graze. (a)

Tanjore is not a pastoral country. There are a few professional milk-sellers but ordinarily milk is sold by ryots. Cattle are exported to a small extent to the Straits Settlements but this is not because the District has naturally any surplus but because its ports are convenient for the trade.

Kumbakonam Municipality

Chairman Municipal Council Kumbakonam writes to say that the state of cattle and of milk supply is not quite satisfactory. Though the number of cattle has not much gone down, the quality is deteriorating This is due to indifferent breeding, poor pasture, and scarcity of fodder. The extra-ordinary craving for drinks such as coffee & tea is also mostly responsible for this state of things. (a) The establishment of adequately controlled dairies with sufficient pasture grounds; (b) the education of the masses compelling attention to (1) the evil effects of the beverages, and the steady undermining of the health due to the adulterated milk and unnecessary stimulants, by popular vernacular lectures, magic lantern exhibitions &c. and (2) the gratitude due to cows which provide best nourishment may somewhat remedy the evil effects.

(a) Tanjore Gazetter by F. R. Hemingway, I C. S. 1915.

The Municipal Council, Tiruvalur informs that the condition of cattle and milk supply are not satisfactory in all respects. Pasture is scanty. All Government lands should be reserved for pasture. Fodder is insufficient. Fodder cultivation should be encouraged by making it free of assessment. Breeding requires improvement. The Government should maintain breeding bulls in important places.

Tiruvalur Municipality.

The state of cattle and of milk supply in this place is not altogether satisfactory. The number of good milk cows in the town is very low. The quality of the available cattle is not good. No facilities exist for breeding good cattle. There is no pasture at all in the town worth the name. Milk production is very poor. The following remedies are suggestd for curing the evils :—

Negapatam Municipality

1. Importing a pretty large number of good cattle into the town.
2. Setting up a few breeding houses in the town.
3. Setting apart a large area of dry land for pasture.
4. Erecting dairies in various places of the town to be licensed by the local authorities.
5. Milk should be distributed from the dairies under proper supervision. Sale of milk from other places should be penalised by statute.

The milk supply is not satisfactory. The demand is larger, while the supply is less. Hence adulteration has been very common and resorted to by all the milkdealers

The state of cattle is not satisfactory in any respect as there are no good pasture grounds for the cattle to graze nor any facility for a good breed being maintained. The town itself is low-lying and suited only for wet cultivation.

Mayavaram Municipality.

i. Dairies should be maintained and proper control exercised over the milk supply.

ii. The number of coffee clubs should also be restricted.

iii. Large open pasture grounds should be set apart.

iv. The sanitary conditions of the cowsheds require regular supervision.

v. Veterinary Surgeons may be employed to see to the cattle being maintained in a healthy condition.

23—Tinnevelly (Palamcotta)

The district is not noted for any special breed of cattle. The ordinary village herds, though little cared for, are distinctly superior to those of the neighbouring districts. The cattle of the ryots of the black-cotton country are amongst some of the best in the Presidency. They are all imported and are mostly of the Kangayan breed. In the cotton country cattle are well looked after except during the season which follows sowing, when pasture is plentiful and work is scarce. They are fed daily with cotton-seed and some times with horse-gram as well.

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Buffaloes are of the ordinary type and are used as plough animals in the wet fields. In the production of ghi, butter and curd the milk of the she-buffalo is generally prefered for its richness to that of cows.

Cattle markets—Important cattle-fairs are held twice a year at Kalugremalai and annually at Sivalapperi, Mathulapuram and Pasarautanai at Alvartirnagari and Tiruchendur and at Sankaranai narkoil. At Singikalam, Melakallur and Madathupatti a large trade in cattle is conducted at the ordinary weekly markets.

A. R. Cox Esq I. C. S., Prest., Dist. Board, Tinnevelly states that the Presidents of the Taluk Boards and the District Medical and Sanitary Officer were consulted in the matter and the following is a summary of their opinions: The state of cattle and of milk supply in this District is not at all satisfactory. The number of cattle is not sufficient and even those that are available are of an inferior quality. If the inferior animals are weeded out, the number remaining will be quite inadequate. Breeding bulls are not maintained but only ordinary bulls mostly of a very poor type: hence the quality naturally deteriorates. The quality of the milk available is very poor evidently due to the want of proper fodder and pasture. Milk is generally adulterated with water, sometimes impure water and very often cream is removed from it and starch or sugar added to make up for loss of thickness. To avoid this in towns it is suggested that milk stalls under supervision of the sanitary authorities may be opened and milk ven-

Tinnevelly District Board

dors compelled to sell milk nowhere but there. The cows when dry i.e., when they cease to give milk are generally sold at very low prices on account of the difficulty in getting fodder: they are sometimes exported to butchers in Ceylon, this may be put a stop to by preventing the export of cows to Ceylon. The remedies are the proper system of (1) breeding and (2) feeding. Proper stud-bulls of good milking strain should be provided at the rate of one for every 60 cows. All bulls and bull calves unfit for stud purposes should be compulsorily castrated and all proper stud bulls should be selected by veterinary officers and branded with suitable marks. Co-operative cattle breeding and dairy associations should be formed and cattle shows held. More grazing grounds may, it is suggested, be opened at or near each village or group of villages and closed forest compartments thrown open more than at present in all places especially in the villages adjoining reserved forests. Possessors of large and good herds may be allowed separate forest areas and charged acreage fees. The growth of fodder crops may be encouraged by abate of assessment and reduced freight by by rail for the transport of fodder, cotton-seeds and oil-cakes used as cattle food.

Palamcottah Municipality

The state of cattle and of the supply of milk in this Municipality is in the Chairman's opinion satisfactory.

24.—Trichinopoly.

The state of cattle and the milk supply in this town is not satisfactory. This unsatisfactory state is due to

the deterioration in the cattle themselves. The quality of cattle available in this part of the town is capable of improvement by careful and scientific breeding. Want of pasture is the chief reason which contributes towards the unsatisfactory condition of milk supply. Above all nothing short of a well organized dairy farm under proper supervision would improve the quality of milk supply. To improve the condition of the cattle, Government should render all help to throw open more of the forest areas for grazing purposes. To maintain the cattle in healthy condition, malnutrition and milking to the last drop, depriving the calf of its mother's milk should be penalised. Government dairy farms should be opened to supply the town with pure and unadultereated milk Good bulls for crossing should be available so that the breed may be improved gradually. Encouragement should be afforded to private individuals securing better breed of cattle until such time as the people take genuine interest in the matter. Adulteration of milk should be detected and exemplarily punished.

Trichinopoly Municipality

In the Municipality the condition of cattle is not good. The milk supply is poor. The quantity of cattle is greatly reduced compared to what it was when the demands of a cantonment were also met. The number of cattle as stated above is greatly less. Not even the supply of the town is met from the cattle inside the town. Milk is being brought in from villages even as far as 12 miles outside the Municipality. On the East supply comes

District Health Association

from villages up to Kiliyur 11 miles distant, on the South-East up to Asur 12 miles distant, on the South up to Kolattur 12 miles distant, on the West by rail and by road up to Kuttalai 15 miles distant, on the North-West up to Manachanallur and Gunasekaram 14 miles distant, on the North-East up to Lalgudi 12 miles distant. The quality of cattle is poor. The contributory causes are (a) want of pasture (b) bad housing, in many cases no housing (c) absence of facilities for washing (d) denial of healthy drinking water (e) absence of facilities for airing. Cattle are in most cases stalled on the roadside or in narrow angles of houses and rarely get a walk. There were in the old days vacant places called Patties for each of the localities in the Town in which the cattle would gather and be taken for wash and gather again after grazing. These Patties have since been absorbed by the Municipalities for various purposes. The Hospital ground, the Jubilee garden behind the Clock Tower, the Straw depot in the west Boulevard Road the Timber depot the building sites newly sold by the Municipality near Subramaniam Koil in Varaganeri and another place there now made by the Municipality into a Palla Street are all old Patties which were serving the cattle of the Town. The water supply for the cattle is that from the Uyyakkondan channel. The Municipal pipe water supply is hardly sufficient for the inhabitants and very rarely serves the cattle. The cattle troughs have their taps screwed down and are generally serving as places for the accumulation of filth. The Uyyakkondan which

served the cattle has been made unwholesome by the Municipality discharging sewage into it and by factories discharging their sullage into it. Further the sloping pavement originally built in various places for the comfort of the cattle have been demolished and steep steps have been built which make it highly dangerous for cattle to descend and ascend. It is represented that during the months that the Uyyakkondan is dry, the cow-herds have to buy their water.

Pasture and Fodder :—The parade grounds, Ponmalai Mayithan of 500 acres near the jail now taken up by the Railway for workshop purposes would if thrown open for pasture meet the requirements. There is a large area a mile away from the Thiruvarambur Toll Gate on the Tanjore Road which may be converted into free pasture ground. At present the right of pasture is sold by auction with the result that a few cattle owners combine and reserve the ground for their own cattle or demand excessive charges from others. The practice of using fodder crops other than hay and grass is not much in vogue.

Remedies :—The cow-herds do not agree that a central cow depot in which the cow-herds will be given ample stall space for their cattle will be acceptable. The fear of poisoning at the instance of tanners is so keen and real that they fear to trust their cattle away from their eyes. The pasturage can be restored and water supply and facilities for washing can be given. Some Municipal Regulation prescribing the minimum stalling requisite for keeping cattle will, though at first

very unpopular, in the long run, conduce to a healthy breed of cattle and wholesome supply of milk. Grass and fodder farms may with advantage be started in the neighbourhood with the help of the Government and the municipality. The question of breeding is a difficult one as there is a popular leaning in favour of small sized, small eating but rich milk producing cattle. It is doubtful if such a breed of cattle exists. But the object of cattle keepers is at present to get maxium milk with minimum expense and not to bread fine, well grown cattle regardless of expense. The small cattle owners are unable to realise that well kept costly cattle prove in the long run more economical.

Kanur Municipality

The Vice-Chairman, Municipal Council, Karur, does not consider the state of cattle and milk supply in this municipality to be satisfactory. Apart from the fact that the milk is frequently found adulterated with water, the quantity of milk is gradually deteriorating. The price of fodder is abnormal and it is a problem for owners of cows as to how to maintain them. Breeding requires very much more attention than that is usually given to it at present. Pastures near towns are not available and the maintenance of cows has now become costly. The question is of imperial importance and cannot in my humble opinion be dealt with by legislation. A separate Government Department the "veterinary department" should take up the question seriously and breeding bulls kept ready at model dairy farms which should be opened all over the country. Local bodies ought not to be

entrusted with maintenance of any of these farms but it may be advantageous if subscriptions are levied from them for the benefit which the municipalities are expected to obtain. My chief reason as to why such a department should be maintained from Provincial or Imperial funds, is that the question affects all parts of the country and a central department created for the purpose will be more effective than any other controlling authority having multifarious duties and responsibilities.

25—Vizagapatam.

No special local variety of cattle. No judicious breeding.

At the two shows which the Dist. Agricultural Assen. has held up the class of the exhibits was exceedingly high but the majority of the Prize winners appear to have possessed a strain of the Nellore blood. Ordinary plough and milch cattle are locally bred, some are imported from Godavari. Two of the most important cattle fairs on the plains are those at Kottavalas and Alamanda and at Tummapala.

Vizagapatam Gazetteer

The Vizagapatam buffaloes are remarkable animals of great size, bone and power. Two varieties (1) the indigenous ones and (2) those that come from the Ganjam district (largely bought at the fairs of Santakaviti and Sitarampuram in Palconda Taluk.) Both varieties are very useful as plough cattle and draught cattle.

Following points pertaining to the cow maintenance question are submitted by the Proprietor of the Viziarami-

puram Estate Bobbili for consideration : (I) Tilling lands in India is mainly done by cattle unlike as in other counetries, where ploughing is chiefly done by horses and other like animals,

(2) Forbidding people from killing cows for flesh and skin in every village in India.

Vizianampuram Estate Bobbili

(3) As all the pasture lands of each village have been converted into cultivable ones cattle owners drive their cattle to hill sides and woods where wild animals on one side and wild people such as Pydis, Jatapur Doras and Kodus etc on the other side devour these poor cattle simply for their flesh and thus a great deterioration has been caused in the cow population. As there would be only one or two persons in charge of the whole herd, and as police protection would be far way from distant hill sides and woods and here and there scattered in small villages and as there would be no sufficient evidence to prove the offence of these wild people, arrangements empowering the local authorities to watch and punish the wild people of each village in close touch are to be contrived at.

(4) Each village should be instructed to have pasture lands in close touch to and immediate vicinity of the village sufficient to feed its whole cattle.

(5) Bulls of good breed should be brought from Mysore, Ongole and other places famous for cattle for growing up a good breed here and the generation thus brought forward would be exc ellent and healthy and give milk in large quantities.

(6) Cattle shows should be punctually held in every big village duly presided over by a patronizing owner and cattle keepers should be occasionally fined and punished by the Show Chairman if their cattle stand below the mark of strength and excellence.

(7) Cattle poisoners and thieves should be brought to trial without much ado as it would be much difficult to group up evidence against them in forest and hills where they generally roam for their prey.

Difficulties pointed above are the only hinderances that are doing much harm in the growth of cattle population and unless the measures quoted aginst each or some other arrangements are taken up in hand to put a stop to this growing deterioration of cattle there appears to be no hope for the revivification of cattle in India as in old times.

Anakapalle Municipality

The Chairman, Municipal Council Anakapalle submitted for the consideration of the Government that the cattle in municipal areas generally have not had any facilities to leave their sheds at any time to roam about freely in the open air and spacious grounds. They are always stuck up to their posts when out of work—a work which is always exhaustive. A provision of open grounds to roam about a few hours a day would be no more small relief to them This is a feature deemed in villages, highly conducive for the healthy conditions of cattle and yet hardly possible in the Municipalities. This disadvantage is particularly felt in this municipality. Along with the attempts to prevent and cure diseases among the

cattle, it will be a great boon if pasture grounds are provided for cattle, both for grazing and for moving about for a few hours in a day within the municipal limits or in their close vicinity. This is, I venture to submit, a preliminary and necessary step, if Municipal Councils are to take any concern in the matter of amelioration of the condition of the cattle.

The state of cattle is not satisfactory in respect of their quality for the following reasons:—Little care is taken about their breeding and there is want of incentive in this direction. In the District there is not sufficient pasture land worth the name. The tendency during recent years to bring under plough large areas of waste land might make matters worse. There is also dearth of fodder on account of failure of rains last year. As regards the number of cattle there are no grounds for anxiety at present. Increasing slaughter and want of sufficient protection against ravages of epidemics are matters which demand urgent attention. Conditions regarding quality and quantity of milk are unsatisfactory. Dearth of fodder, increasing cost of maintenance of cows tending to the dry cows, however good, being flung into the hands of the butcher are causes working towards deterioration of cows and buffaloes both in their physical condition and in their milk giving capacity.

Vizianagram Municipality

I would suggest the following remedies to cure the present evils:—(1) Providing pasture lands on a sufficiently large scale; throwing open forest reserves for cattle grazing more liberally. (2) Provision for breeding

good bulls in sufficiently large numbers at least one bull for every village, or group of two or three villages as the case may be, consigned to the care of the Village Munsiff or a Government officer with an allowance for its maintenance and subject to the inspection or supervision of a travelling veterinary Assistant. (3) Importation of calves of good breeding and their distribution among various villages or groups of villages to be reared as breeding bulls. Opening more itinerant Veterinary Agents or Hospitals. Popular education on a larger scale as regards cattle diseases and their prevention, introducing if necessary a branch in the Elementary Education, i. e., in the Elementary Schools, and wider circulation of pamphlets.

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CHAPTER IV.—CONCLUDING REMARKS.

The condition of cattle is unsatisfactory and deteriorating every day. The Presidency may be divided into three parts for the purposes of surveying to conditions of cattle. Coimbatore, Salem, North Arcot, Mysore and Nellore may form the picked up group.

2. Ganjam, Vizagapatam, Godavary, Kistna, Madras, Chingleput, South Arcot, Trichinopoly, Deltaic portion of the Tanjore Districts, Madura and Tinnevelly may be grouped as the main portion of the Presidency.

3. The backward locality for the purposes of cattle apprising may include Bellary, Anantapur, Cuddapah and also Coorg, Malabar, Cochin, Travancore, the eastern coast of Tanjore, Ramnad and South Canara.

Hon'ble Mr. K. V. Ranga Swamy Ayyangar.

The cattle in No 1 group is very good. In these Districts there are plenty of fodder growing areas and there is no scope for the depletion of stock on account of military or Mussulman appetite. The dry land fodder-cholam stalk gives more nourishment to the cattle than straw grown on wet fields. The bulls and cows fetch much price. The cattle farm pays the keepers more than agricultural income. The people pay more attention to the welfare of their cattle, that being their main income.

In No. 2. the main portion of the Presidency, the cattle is not bad. The fodder consists mainly of paddy

straw. The important food of the people of these tracts being curd, diluted curd, milk and ghee or butter. People have necessarily to keep cattle. Further for ploughing and cart drawing country bulls are largely used. But the milk-vendors here do not much care for the improvement of the cattle as the people in group 1. They squeeze more mllk and leave little for the kine. Often the kine dies. People in these tracts keep cattle only for the milk and so the breed is deteriorating on account of the starvation of kine. Had there been sufficient forests the calf will be kept without starvation at least after the period of yielding of its mother but the wet field straw alone does not suffice. In pre-British periods there were forests adjoining the rivers that spread over these districts and the cattle were good. But after the reservation of the forests the stock is deteriorating.

Group 3. The cattle here are very bad. The yield of milk is very insufficient. In the first three districts of this group, there are very few rains and there are no rivers to give sufficient supply of fodders. In the last six districts of this backward group during 3 months of the monsoon the rains are so abundant that the cattle could not come out for grazing. Every inch of spot is also cultivated with jack, cocoanut and areckanut which are quite useless for the cattle. They are puny 3 feet in height and yield very small quantities. The people are not addicted to the produce of the cattle. Very rich Brahmins, there are, here, who do not own cows. Even the rotten diluted curd are to be brought from a distance with great difficulty in Malabar. All

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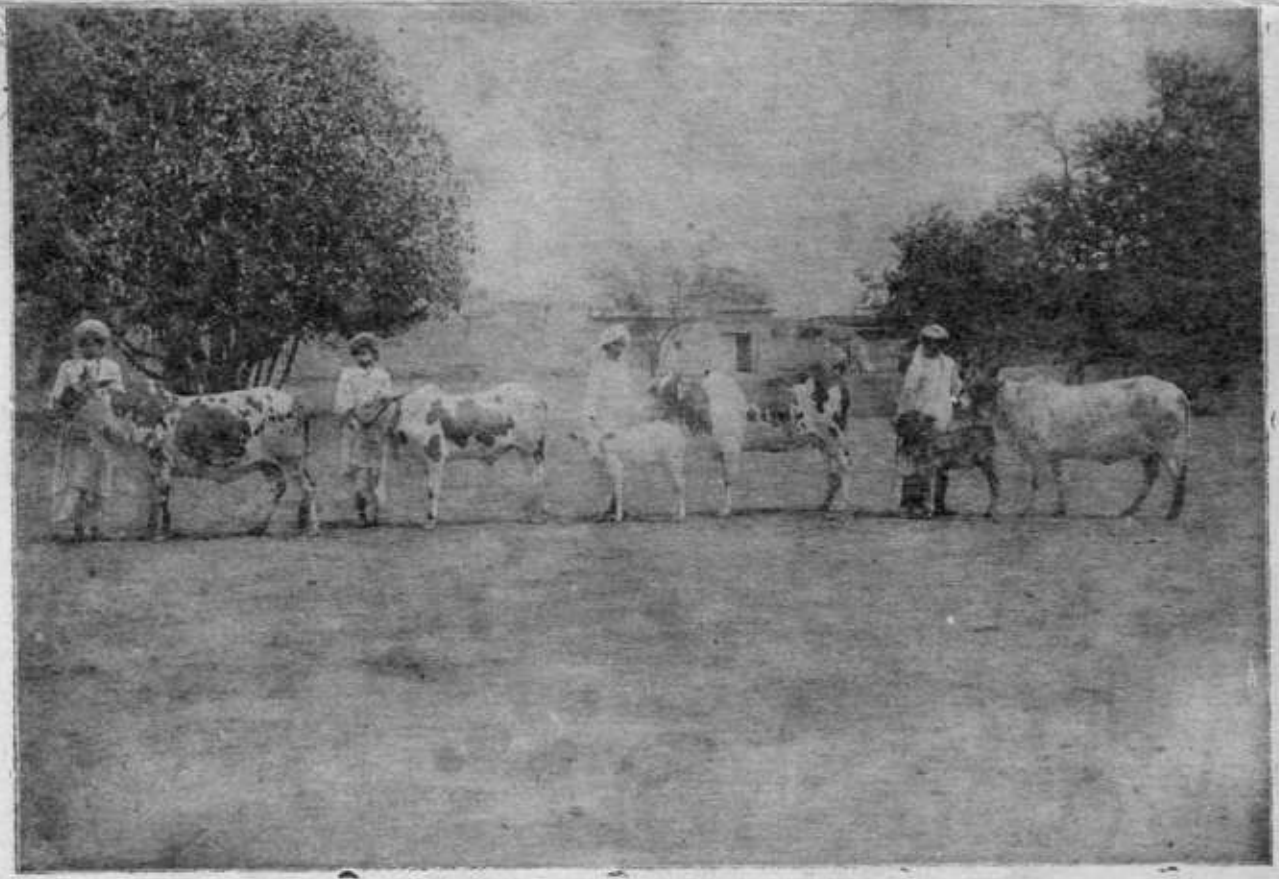
on account of the dearness of the fodder. The freight of fodder should be considerably cheapened. Even two annas per mile per truck will be too much. It is high time that straw presses should be introduced. The Travancore Durbar owns a Railway and it can well introduce reduced freights to fodder. The Malabar people neglect cattle and cows and live on coarse food. It is also unfortunate that now-a-days coffee and tea-houses are formed with a vengeance which consumes even the small milk available and leave the children sustain on mother's milk alone which apparently seems to be not insufficient as in the case in the so called civilised countries. Here the number of cattle, quality of cattle, breeding, pasture and fodder every item of these is unsatisfactory. Instead of the western Ghats being devastated by foreign planters they would have well utilized it as grazing grounds when in the country itself there is not an inch of space available for fodder growth.

On the whole, nowhere can the Madras Presidency men find such pure milk and such robust breed of cattle as are found in Muttra or other parts of the United Provinces. The main facts that contribute to the improvements of the cattle are provisions of good fodder-supply, fine varieties of breeding bulls and stopping the depletion of Stock by its being the victims to the voratious appetite of the military. The low castes who supply hides and bones to merchants in many localities poison the cattle for the sake of its hide and bones. Some Bill should be introduced to give deterrent punishment to these offenders. Would our Government give us all the facilities or would they play upon the ignorant Bentinals of some sections of Indians to widen the supposed differences.



Typical Punjab Cows. [By the courtesy of the Govt. of Punjab.

Bhoodeb Publishing House, Calcutta.

PART. IX.—PUNJAB

and N. W. F. Province.

CHAPTER I—GENERAL.

The Punjab or the land of 5 rivers *viz.*, the Jhelum, Chenab, Ravi, Beas and Sutlej, with its feudatories embraces an area of 136,330 sq. miles and has a population of 2,4187,750 [1911 census]. A greater part of the province consists of one vast alluvial plain stretching from the Jumna in the east to the Suleman Range on the west. It may be divided into 5 natural divisions *viz* : (1) the Himalyan tract with scanty population living scattered in tiny mountain hamlets ; (2) the salt range tract comprising the districts of Attock, Rawalpindi, Jhelum and part of Shahpur ; (3) skirting the base of hills including the Sewalik range runs the narrow submontane tracts having plenty of rainfall and being traversed by hilly streams. This is by far the most fertile and thickly populated area in the whole province ; (4) the eastern plains comprising the cities of Lahore and Amritsar have moderate rainfall and fair cultivation, while (5) in the western plains the rainfall is so scanty that cultivation is possible only with the help of artificial irrigation (canals). Of the population half is roughly Mahomedan, three-eighths are Hindus and one-eighth Sikh. Agriculture is the staple industry of the province, affording the main means of subsistence to 56 p. c. of the population. About one-sixth of the total area in British districts is Government property, the remaining five-sixths belong to private owners. The principal crops grown are wheat [average annual production worth £20 millions], gram [£5 millions], barley, rice, millets, maize, oil-seeds, cotton and sugarcane. The country being preponder-

rea. Population & Agriculture.

antly agricultural a considerable portion of the wealth of the people lies in its live-stock (a) Large profits are derived from cattle and dairy trades. Production of hides and skins is also an important industry.

Punjab has 6 divisions and 29 districts, besides a few Indian States.

II. Delhi—Imperial Enclave under a Chief Commissioner.

I. Ambulla Division—*(6 districts)* (1) Hissar, (2) Rohtak, (3) Gurgaon, (4) Karnal, (5) Ambulla and (6) Simla.

III. Jullundur Division—*(5 districts)* (1) Kangra, (2) Hoshiarpur, (3) Jullundur, (4) Ludhiana and (5) Firozepor.

IV. Lahore Division—*(6 districts)* (1) Lahore, (2) Amritasar, (3) Gurdaspur, (4) Sialkot, (5) Gujranwala and (6) Sheikhpura.

V. Rawalpindi Division—*(6 districts)* (1) Guzrat, (2). Shahpur. (3) Jhelum, (4) Rawalpindi, (5) Attock and (6) Mianwali.

VI. Multan Division—*(6 districts)* (1) Montgomery, *(2)* Dera Ghazi Khan, *(3)* Muzaffargarh, (4) Multan, (5) Jhang and (6) Lyallpur.

Indian States—Phulkian States and Simla Hill States.

Grouping of districts.

The districts may be grouped roughly according to their similarities as regards cattle breeding. The first three districts are the great Hariana breeding tracts then comes Karnal where in parts there are breeding tracts and where there are more high class cow buffaloes than anywhere else. Next comes a congested highly cultivated tract comprising six districts where the cows are poorly bred, where cattle breeding and rearing are not profi-

(a) Indian Year Book by Sir Stanley Reed.

table, and where the calves are often sold off young to dealers from other districts. The fourth group—Ludhiana, Ferozepore, Lahore and Amritsar—are generally highly cultivated, but contain tracts where there is good grazing; and large numbers of excellent cattle are bred in them and far fewer bullocks are purchased from outside than in the preceding group. In these two groups milch buffaloes are usually more numerous than cows. The fifth group embraces Chenab and Jhelum colonies where fodder is always abundant, and many good bullocks are reared, but the rivalry of wealth spurs men on to import numbers of fine bullocks from Hariana and from the Dhanni-Potwar tract. The sixth group comprises the Dhanni-Potwar tract, and also many villages where breeding is altogether neglected. The seventh tract is one where cattle breeding is of little account, there are no bulls, and bullocks are imported from the south-west. Then comes the Dera Ghazi Khan district which has some good local breeds, but cares more for horse breeding than cattle breeding; and finally the famed, but alas doomed, home of the Montgomery cow. Kangra and Simla are special hill tracts. *(b)*

Cattle breeding in Punjab.

In the Punjab, cattle-breeding operations continue to be in charge of the Veterinary Department whose definite policy is to preserve and improve the local breeds by a process of selection from among the best specimens available. By the very thorough application of this principle the famous Hissar breed has been established, the progeny of which are very popular throughout the canal-irrigated tracts of the province. During the year 1924-25, 226 bulls were purchased from the farm by the District Boards for stud purposes. With a view to meeting the growing demand for bulls of this breed, three additional farms have been started in the Lower Bari Doab Colony by private cattle owners who have been given grants

(b) Punjab Cattle Census Report 1914

of Government land. As regards pedigree Hisar stock, there are now about 1,400 cows in regular breeding on the Hissar farm, and over 1,700 pedigreed Hissar bulls at work in the province. The grading up of the Dhanni and Montgomery breeds has also been taken in hand. In the Dhanni tract, which comprises the districts of Attock, Jhelum and Rawalpindi, owners of approved bulls are subsidized on condition that the services of their bulls are made available for the villagers' cattle. There were 91 such bulls on the roll at the end of last year, and 7,157 cows were served by them. A similar scheme for the Hariana tract has been handicapped for want of funds, but through the enthusiasm of the District Boards of Rohtak and Gurgaon a satisfactory beginning has been made and 110 bulls have already been distributed.

The three cattle-breeding and the two dairy farms given on lease by Government for the preservation and improvement of the Montgomery breed are full of promise, the young stock on these farms already number 1,000 approximately. Small parcels of land have also been granted to the Junglis and Sayads of the original home of the Sahiwal breed on condition that they maintain two approved cows per square of 25 acres. Many of the cows collected by these men are unusually good specimens of the Sahiwal breed. Authentic milk records are being maintained at all these farms, and it is proposed to introduce the system at Hissar too, where hitherto cows have not been milked regularly.

In the North-West Frontier Province, 45 bulls belonging to local bodies were at stud during the year.

Cow buffaloes.

Every district but Kangra and Simla, shows a very notable increase of cow-buffaloes rising to 37 per cent in Jhang and Shahpur, 28 per cent in Karnal, 26 per cent. in Lahore and 25 per cent. in Montogomery and Lyallpur. The general reasons for the increase

Red and White Punjab Bullocks (Dhanni Breed) [By the courtesy of the Govt. of Punjab.

Bhoodeb Publishing House, Calcutta.

Light grey Bullocks at work in the Karah (Punjab) [By the courtesy of the Govt. of Punjab.

Bhoodeb Publishing House, Calcutta.

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are the extension of canal irrigation, which means easy stall feeding, and contraction of grazing grounds, which drives people to keeping animal which do well with stall feeding, and the rise in the price of ghee. The she buffalo increases in value as the price of ghee rises. If the cultivator is so poor that he must decide between keeping a cow or a buffalo he chooses the buffalo because it gives more milk and ghee and because its calf has not to share in the milk—especially if it is a male—and can be slaughtered or sold. Whether the cultivator really profits by keeping a buffallo instead of a cow and getting his milk and ghee cheap and having to buy his bullocks very dear is a moot question. The districts in which cow buffaloes are most numerous are Karnal, Sialkot, Lahore, Amritsar, Ferozepore, Lyalpur and Gurjanwala, and these are also the districts in which they form the largest fraction of the cattle population. These are some of the districts in which there is most stall feeding because either canal irrigation is general or there are large towns to be supplied with milk and ghee or because there are no grazing grounds and stall feeding is unavoidable.

Cows.

The cow is generally, except in the south-west, valued as the mother of bullocks rather than as a milker. The increase is general, and is fortunately greatest in the Hariana tract and Karnal and also in Dera Ghazi Khan where the Dajil breed is prospering. The only districts in which cows are markedly less than in 1909 are Hoshiarpur, Gujrat and Lyallpur—all districts in which there is lack of grazing. Probably the tale of cows by districts is always considerably distorted in February owing to the common practice of sending cows long distances to graze in the river beds or khadirs. So far the increase of cows is satisfactory, but a longer look back shews that in Rohtak, Gurgaon, throughout the highly cultivated groups and also in Gujranwala there are fewer cows, and in Hissar there are no more cows now, than in the

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years about 1895-96 and 1896-97. This is serious as it means that in these districts which include the chief breeding districts fewer bullocks are being bred than twenty years ago.

Bulls and bullocks.

The end of all Punjab cattle-breeding is the plough bullock, and they (with bulls) have increased from—4,233,133 in 1909 to 4,579,061 in 1914. There is no district except Hissar and Kangra which does not shew an increase. Hissar has apparently drained herself of bullocks—doubtless driven thereto by the succession of poor years with scanty grazing and dear gram as much as tempted by the high prices which bullocks now secure, and has now only 4 bullocks to every 100 acres of cultivation which are not enough to cultivate the land.

The increase in the past five years is a matter for thankfulness, but here again a more distant view suggests that all is not well and that in some districts there is a scarcity of bullocks. In Hissar, Rohtak, Gurgaon, Ambala, Gurdaspur, Sialkot, Guzrat, Amritsar and Ludhiana there are fewer bullocks than there were in one or other of the years at the close of the last century. Nor have the bullocks been displaced by the cheaper buffalo, for in all these districts except Gurdaspur male-buffaloes too have decreased.

These figures show that in 1914 there are as many plough-cattle to 100 acres cultivated or sown as there were in 1894-95 only because there has been a reduction in the cultivated area. If the area sown were again to rise to what it was in 1908-09, we should have only 9 pairs to every 100 acres or a pair less than in 1894-95.

Nor is it enough that the existing number of bullocks or the bullock power of the last century should be maintained undiminished. If there is to be any progress in agriculture, and if the land is to be forced to yield more than it now yields, the bullock power must be rapidly increased. Not only more bullocks, but more powerful bullocks are necessary.

If this is to be achieved even more must be done than is now being done (*a*) to increase the number of bulls fit for breeding good plough cattle; (*b*) to maintain existing grazing grounds in good condition and to save them from extinction.

Male-buffaloes.

Male-buffaloes have decreased in the last 5 years from 634,576 to 562,60 or by 11 per cent. The decrease is almost universal. Probably several causes are contributing to this reversal of the movement shewn in previous censuses towards the displacement of bullocks by male-buffaloes, The buffalo is being found, owing to its sluggish nature and its inability to endure heat, to be a beast fit only for the poorest ploughman or carter. The general well-being of the cultivators during the last few years has enabled them to replace their buffaloes by bullocks, which means a rise in the social scale. And thirdly the rising prices of hides, meat, bones, blood and fat are daily bringing the value of a dead buffalo nearer to its live value. The number of male-buffalo calves which are slaughtered or are deliberately driven to death by neglect must be enormous.

Export of dried meat.

Information is very scrappy, but there seem to be towns where 150 young buffaloes are slaughtered a day. The meat is partly eaten locally, partly dried and exported to Rangoon by Bombay merchants who have their local agents; the bones are sold at 8 annas or one rupee the maund, the fat is sent to Pind Dadan Khan and elsewhere but whether for making soap or adulterating ghee is not stated and the blood is boiled, dried and then sold. In one town the meat which is dried is said to fetch only 8 annas a maund, it "is often of sick animals and is totally unfit for consumption." Elsewhere it is stated that the Burma trade does not pay. Paying, and still more if not directly paying, this an industry which would seem to require licensing and strict supervision,

if the scandals of Chicago are not to be repeated in the Punjab. *(c)*

Young stock.

Young stock, *i.e.* animals under 2 years of age, have increased to 4,041,250—far more than ever before. There are noticeable decreases in Lyallpur, Rawalpindi and Montgomery, which perhaps indicate in the first and last districts how the junglis, being perforce converted from herdsmen into cultivators, are paying less attention to their indigenous herds, and in Rawalpindi show how hard hit the cattle were by the scarcity of 1911 and 1912.

Year by year as grazing grounds are curtailed and the cost of fodder rises, the average quality of the young stock is improved by the sale of the inferior animals to the butchers.

Hide trade.

The trade returns shew a total export of 788,470 cwt. of hides from the Punjab during the last 5 years. The weight of a hide varies from about 3 lbs. for a buffalo calf to 36 lbs. for a buffalo. If an average of 6 hides to 1 cwt. be taken, then the hides of 4,730,820 animals have been exported in 5 years. There have also been 452,963 cwt.* of hides moved by the rail from one part of the Punjab to another during the last 5 years these represent 2,717,616 head of cattle. There is of course in addition a very large local conversion of hides into leather for country shoes and for well buckets, and these hides do not come on to the rail at all. Of their numbers nothing is known. It may be safely said that ten million hides have been disposed of in 5 years. These would represent a mortality such as might be expected.

Hides	
4,730,820	Export.
2,717,616	Intra Punjab rail borne.
7,448,436	
2,551,564	Estimated local consumption.
10,000,000	
14,259,360	Total stock of 1909.
12,000,000	Estimate of calves born in last 5 years.
26,259,360	
25,379,083	Total stock in 1914.
19,760,277	Difference—*i.e.*, deaths *plus* exports of living cattle.

(c) Punjab Cattle Census Report by W. S. Hamilton [1914]

Year.	Bulls and bullocks.	Cows.	Male-buffaloes.	Cow-buffaloes.	Young stock.	Ploughs.	Carts.
	No.	No.	No.	No.	No.	No.	No.
1904	3,363,381	2,461,342	476,689	1,545,883	2,964,521	...	...
1909	4,233,133	3,368,589	634,376	2,233,273	3,789,789	2,153,234	281,788
1914	4,579,061	3,669,089	562,601	2,627,082	4,041,250	2,313,511	294,992

The total statistics for the province at various times have been as follows :—

	1894-95.	1897-98.	1903-04.	1908-09.	1913-14.
Total cultivated area ...	23,913,636	24,486,841	27,346,861	28,494,342	27,736,701
Total area of crops sown ...	21,830,623	22,644,233	28,376,491	29,298,247	27,328,403
Total bullocks and buffaloes	4,351,374	4,356,699	4,671,000	4,867,709	5,141,662
Bullocks and buffaloes per 100 acres cultivated ...	18	18	17	17	19
Bullocks and buffaloes per 100 acres sown	20	19	17	17	19

STATEMENT *shewing the number of*

Name of district.	1	2	3
	AREA FIGURES FOR 1912-13.		
	Total cultivated area.	Area available for cultivation excluding forests.	Bullocks.
I—Hissar	2,640,051	523,772	99,676
I—Rohtak	1,152,470	183,862	149,086
I—Gurgaon	1,070,293	153,944	140,559
II—Karnal	1,111,015	612,799	215,465
III—Ambala	749,195	124,465	177,053
III—Hoshiarpur ...	716,408	249,483	206,262
III—Jullundur	679,638	86,059	191,801
III—Gurdaspur ...	819,292	122,082	165,537
III—Sialkot	910,502	206,899	139,711
III—Gujrat	879,389	281,357	155,438
V—Ludhiana	729,121	87,741	128,794
V—Ferozepore ...	2,217,996	224,081	230,597
V—Lahore	1,156,248	351,869	186,782
V—Amritsar	751,340	114,445	127,475
V—Lyallpur	1,460,455	473,335	214,459
V—Jhang	781,367	1,127,393	150,881
V—Gujranwala ...	1,391,036	866,807	174,923
V—Shahpur	1,259,111	1,050,480	204,110
VI—Jhelum	742,951	128,056	104,777
VI—Attock	1,074,446	237,969	101,257
VI—Rawalpindi ...	598,380	83,406	98,135
VII—Mianwali ...	658,213	2,163,778	122,521
VII—Multan	1,109,916	2,291,072	261,810
VII—Muzaffargarh ...	749,175	2,376,084	214,918
VIII—Dera Ghazi Khan ...	1,071,773	1,431,297	158,168
IX—Montgomery ...	659,878	1,573,607	164,498
X—Simla	9,962	21,810	7,046
X—Kangra ...	587,080	268,133	287,322
Total ...	27,736,701	17,416,085	4,579,061

cattle, area cultivated and area waste.

4	5	6	7 (a)	7 (b)	8
CENSUS FIGURES FOR 1914.					
Cows.	Buffaloes and young stock.	Total.	Number of bullocks per 100 acres cultivated.	Number of bullocks plus male-buffaloes to 100 acres cultivated.	Total stock per 100 acres waste.
170 754	289 701	560 131	4	4	107
139 344	309,079	597,509	13	13	325
153,469	266,945	560,973	13	13	364
194,192	415,097	824 754	19	19	135
114,563	244,151	535,767	24	24	430
126,905	294,677	627,844	29	32	252
80 241	226,811	498,853	28	32	580
171,685	351,591	688,813	20	29	564
119,344	368,496	627 551	15	21	303
100,473	276 528	532 439	18	21	189
66,752	183 222	378 768	18	18	432
112,581	368,941	712 119	10	11	318
109 739	368,433	664 954	16	21	189
84 438	335,888	547 801	17	23	479
125 310	427,738	767,507	15	16	162
133,733	244,[illegible]51	528,868	19	21	47
151,056	477,[illegible]80	803,859	13	19	93
179 115	311,676	694 901	16	18	66
102,439	111,528	318,744	14	14	249
126,345	109 726	337,328	9	9	142
97,861	104,021	300 017	16	16	360
99 817	82,420	304 758	19	19	14
194 339	216,537	672,686	24	24	29
169 533	174 210	558,661	29	29	24
161,172	138,094	457,434	15	15	32
136 226	194 979	495,703	25	27	32
8,197	7 232	22 475	71	71	103
239,466	331,078	857,866	49	51	320
3,669,089	7,230 933	15 479 083	17	19	89

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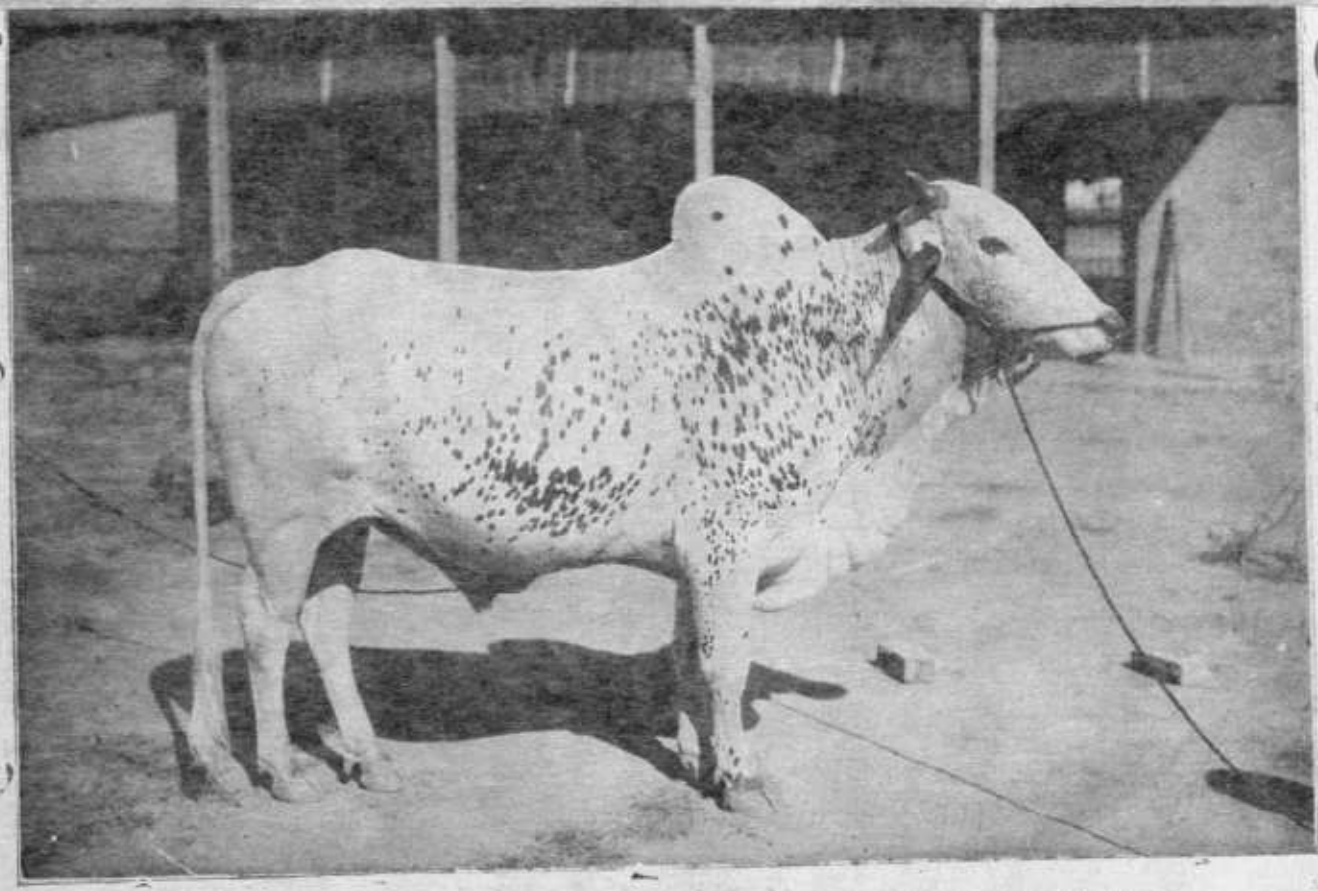
CHAPTER II.—DELHI.

Delhi Gazetteer.

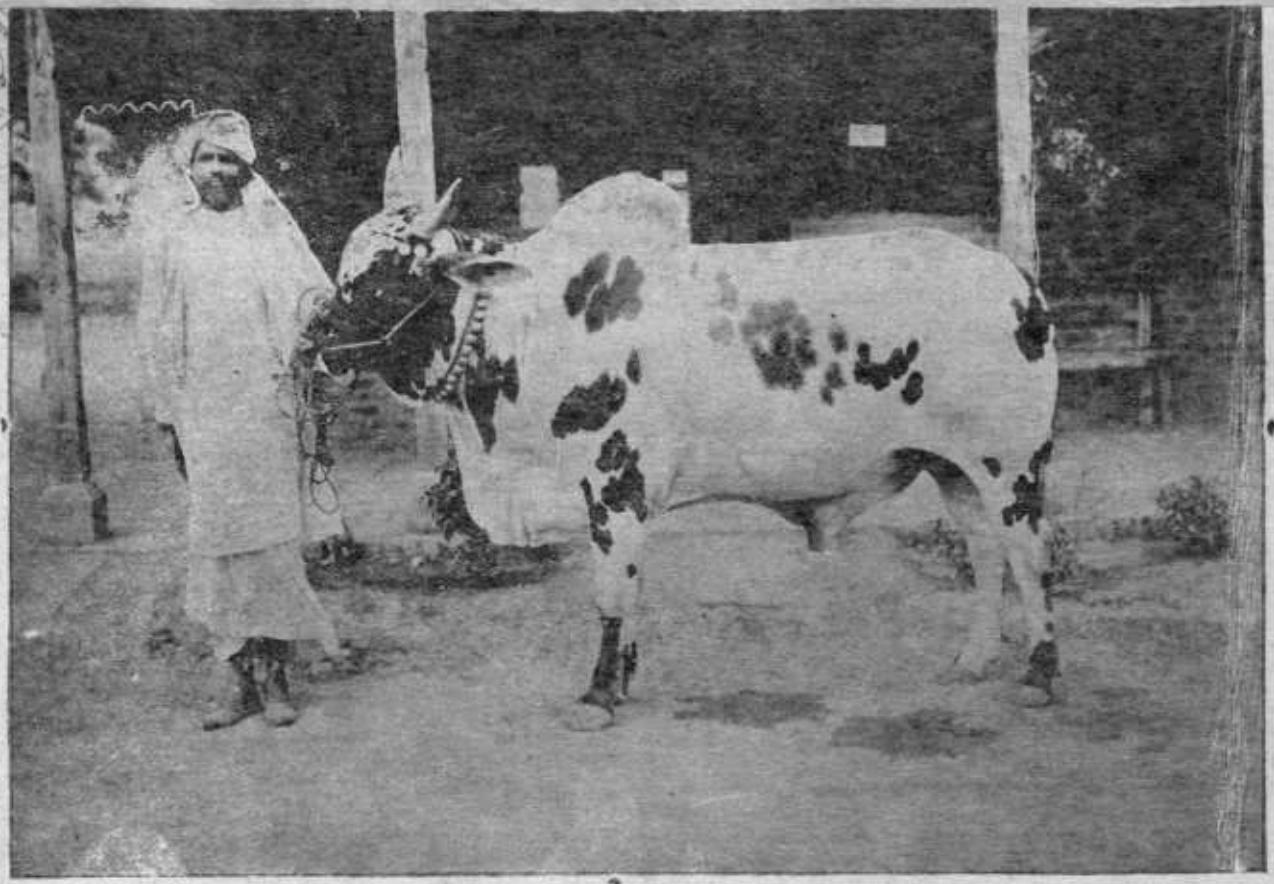
Cattle are kept by agriculturists for their own use but Gujars and Ahirs regard them as the main source of their livelihood. The demand for pasture land near the city is very great. Flocks are usually owned by butchers who hand the animals over to Gujars and menials on a share profit system.

Prices—Buffalo, male Rs. 27, buflalo, female Rs. 65, ox Rs. 60, cow 45. Breeding—There are 9 Hissar bulls in the district, 1 in Sonepat, 3 in Delhi and 5 in Bullabgarh. The breeding of oxen and cows is however chiefly managed by the "Brahmani" bulls. Diseases—Rinderpest generally appears among cattle. The death-rate is as high as 90 per cent. of the seizures. Foot-and-mouth disease also appears twice annually There are Vety. Hospitals at Sonepat, Delhi and Ballabgarh. Fairs—no cattle fairs but prizes are given at the annual show for plough and milch cattle. Pinjrapole—There is in the city a home for old, diseased and maimed cattle and other animals maintained by a Hindu Syndicate.



Nagra (Bhanni) Bull. [By the courtesy Govt of Punjab.other

Bhoodeb Publishing House, Calcutta.



Black & White Punjab Bullock (Dhanni Breed). [By the courtesy of the Govt. of Punjab.

Bhoodeb Publishing House, Calcutta.

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CHAPTER III.—AMBALLA DIVISION.

1.—Hissar.

Hissar Gazetteer.

Hariana has always been famous for its cattle. Decrease of the grazing are due to the spread of cultivation. The Nali of Fatehabad is proportionately the richest part (of the district) in cattle. Cattle disease of some kind is always present. The most fatal diseases are sitla or rinderpest, foot-and-mouth disease, Goliki sat or anthrax and Galghuta or malignant sore throat. Little care is taken to guard against contagion by segregating diseased animals.

There are Vety. Assistants and Hospitals at the head-quarters of each tahsil. There is one itinerating Vet. Asst. who tours through the whole district. A good pair of plough bullocks will fetch Rs. 200. The average price is Rs. 125 and the lowest about Rs. 50.

Buffaloes are seldom worked in ploughs or for draught. A good buffalo cow will cost from Rs. 30 to Rs. 150 but inferior animals may be had for Rs. 50.

Cattle-breeding is on the wane. The zamindars are cattle-breeders. Pasturage has decreased. Cattle-fairs are held in the district twice a year at Sirsa and Hissar and once a year at Fatehabad and Bhiwani. The management of the fairs is in the hands of the District Board.

In every village that has a good breeding bull it is considered as the common village property. The District Board also distributes a certain number of bulls every year.

The cattle-farm.—The Hissar Government Cattle Farm was instituted in 1815. There are five farms, the Home, the Sali,

and the Chaoni, the Madianwala and the Kherwan. A large area of grazing land has been made over to the Local Government for the use of the town cattle. The area within the limits of the Farm is some 40,000 acres—which is the property of the Government. The greatest part of 4000 acres of cultivable land is regularly cultivated by the Farm authorities. Of recent years the Farm has grown sufficient fodder.

The objects of the Farm now are to breed bullocks of superior size for Ordnance purposes and distribute generally high class bulls for breeding purposes.

Most of the bulls and cows kept belong to the Hariana breed. There are also a few Gujrati and Nagor cows which are crossed with Hariana bulls. The bulls produced are of the finest quality. The best are kept by the Farm and the rest are sent to different districts.

Present stength.	Herd bulls	24	
	Supernumerary bulls for distribution to districts etc. ...	140	
	Cows	1,253	The heifer calves are reserved at the Farm for breeding purposes.
	Plough-bullocks	267	
	Ordnance bullocks for service ...	129	
	Young male stock	924	
	Young female stock	971	
	Cultivation bullocks ...	267	

R. Branford, Esq., M.R.C.V.S., Superintendent Government Cattle Farm, Hissar writes :—

Hissar Govt. Cattle-farm.

Cattle-breeding in this Province is directed by the Civil Veterinary Department. Cattle in this district are of high quality, and there is a large export trade in cattle for both milk and draft, and buffaloes for milk except

at times of fodder scarcity, cattle are generally in good condition and are well looked after.

As milkers the cattle are good for India, very much better than most places. Methods of disposal of milk, handling etc. are of course as everywhere in India very unsatisfactory. It is to be hoped spread of education and knowledge of sanitation etc. will eventually effect some improvement. As regards the cattle themselves, the trial Veterinary Department does as much for them as its limited staff allows.

Kasur Municipality.

Sheikh M. A. Rahman, Secretary Municipal Committee, *Kasur* writes that pure milk cannot be had at reasonable prices. The number of cattle is insufficient. There is no pasture. Fodder is scarce and sells at abnormal rates. He suggests that cow-killing should be discouraged and fodder controlled.

Kamalia Municipality.

The Secretary, Municipal Committee, Kamalia writes :—

(1) The state of cattle and milk-supply in this locality is not satisfactory.

(2) Want of water is badly felt in this place—the canals and the river are far away. Want of fodder is greatly reducing the number of cattle. The local cattle are of very good quality and breeding is satisfactory but still on account of the above mentioned causes pure milk is scarcely available.

(3) Rakh Ranjit Singh, the general pasture land of this locality, should be supplied with canal water and left open for public use. The people will gladly pay the taxes levied on them. There should also be proper supply of fodder.

Jalalpur Pattan.

The President, Municipal Committee, Jalalpur Pattan writes that the unsatisfactory state of milk-supply in his locality is due to the low number of cattle. He suggests that excepting the urgent demands of the Government, cow-killing should be forbidden.

2.—Rohtak.

Rohtak Gazetteer.

The cattle are famous, the breed is fine in shape and size. The oxen of the villagers round Beri and Jahazgarh have a special reputation. Since the confiscation of the Jhajjor estate breeding has been indiscriminate and the breed has detriorated. The true Nagori breed of bulls is becoming scarce and a pair of good Nagori cows cost from Rs. 300 to Rs. 350.

If well looked after a cow will bear five or six calves and live eighteen years. The average yield of milk is about five seers a day. The bulls of the country side are not all good. Old and inferior bulls are allowed to mix freely with cows. The District Board has kept nine Hissar bulls for the good of the neighbourhood. Buffallo bulls are not common; most of the male calves are sold to dealers. The Rohtak buffaloes are fine animals and owing to the presence of the tanks are found in large numbers. Those of the villages round Butanah and Nidanah are famous for their breed.

The price of cattle has increased considerably in the last 30 years. Now-a-days a workable young bullock costs anything from Rs. 40 to Rs. 200 and Rs. 65 or Rs. 75 is perhaps the normal price of an ordinary animal. Rs. 30-45 may be taken as the avarage price of a cow. A buffalo-cow costs Rs. 80 to Rs. 100.

A good skin of a cow or ox is worth about Rs. 9 unprepared and Rs. 10 to Rs. 15 when tanned and the skin of a buffalo Rs. 7 and Rs. 14; poor skins are worth much less. Cattle poisioning for the sake of the skins is happily rare.

The cattle of the district are in some respects ill cared for. They are left to stand in filthy enclosures ankle deep in half liquid manure. They are chiefly stall fed, chopped on

jowar stalks being the principal fodder. Best fed and best tended is the buffalo. Something might be done if the dub grass that grows so abundantly were cut and stored.

Cattle-fairs—Two great fairs for the sale of cattle take place at Jahazgarh, the average annual number of bullocks, cows and buffaloes sold in the seven years 1900-01 to 1906-07 being close on 33,000 while perhaps twice that number are exhibited. Prizes are given and fees are levied. Cattle fairs are held at Dujana too.

The Secretary, Municipality, Rohtak writes :—

Rohtak Municipality.

(1) The condition of cattle on this side is satisfactory but there is great dearth of good milk.

(2) Export of milch cattle in large numbers from this district to Calcutta, Rangoon etc. Dearth of fodder on account of frequent draughts. There is no grazing ground.

(3) If export of cattle be stopped and suitable pasture for cattle be provided, the dearth of milk will be removed.

The Secretary, Municipal Committee, Gohana, Rohtak District writes :—

(1) The state of cattle and milk-supply is not satisfactory.

(2) The number of cattle is sufficient and their quality good. But there is no breeding arrangement. There is no pasture. The scarcity of fodder and lack of water in the summer season have led to the abnormal rise in the price of milk. Milk is for the most part adulterated. Scarcity of fodder has much to do with the increased slaughter of cattle.

Gohana Municipality.

(3) Slaughter of milch cows and buffaloes should be discouraged. Proper arrangements for pasture and fodder should be made by the District Board or the Government. Dairy Farms should be started by Municipalities. Breeding of strong and healthy cattle should be encouraged in every way.

S. D. O. Sonepat.

The Sub-Divisional Officer, Sonepat, Rohtak Punjab writes: that the state of milk supply is not satisfactory there. The chief cause of the high price of milk, according to him, is the rise in the price of food grains. The prices of food grains and other necessaries of life have gone abnormally high now-a-days. Rapid increase of population and love of luxury have also contributed to raise the price of milk. He suggests that adulteration of milk should be checked by Municipal legislation etc.

3.—Gurgaon.

Gurgaon Gazetteer.

It is a home breeding and an exporting tract. The local breed of cattle is desi, but it is a fine breed. Breeding is from local bulls supplemented by bulls from the Hissar Cattle Farm. At present there are 23 Hissar bulls in the district. On the whole grazing is very inadequate. Cattle are stall-fed. Large amount of fodder is grown. A weekly fair is held at Nuh where chiefly old and useless animals are sold to butchers. The price of a bullock ranges from Rs. 50 to Rs. 120, and of a cow from Rs. 20 to Rs. 60. Like cows she-buffaloes are kept for dairy purposes. Male buffaloes are generally kept by well-to-do zamindars or shopkeepers. In 1908-09 there were 65,442 against 67,425 in 1903-04. Their price is now from Rs. 40 to Rs 100. Contagious disease is very prevalent and loss is considerable In 1909, 3018 animals died. Most fatal is rinderpest. Other epidemic diseases are foot and mouth disease, haemorrhagic septicaemia and black quarter. Much progress has been made in the treatment of diseases. Now there are 5 Vety. Assistants. There is an itinerating Vety. Assistant.

Deputy Commissioner Gurgaon.

H. K. Trevaskis Esq, I.C.S. Deputy Commissioner of Gurgaon, writes that the state of cattle and of milk supply is satisfactory in that locality.

4.—Simla.

The cattle of the District are of the small mountain breed.

Simla Gazetteer.

The average prices are roughly as follows:—milch cows Rs 15, bullocks Rs. 20 and buffaloes Rs. 60 per head. Rinderpest and foot and mouth disease sometimes break out. Grass is the principal food of agricultural stock. It is plentiful as each village has its grazing ground. In times of scarcity it is supplemented by loppings. There are only two dairies in the district both at Simla, *viz*, the Simla Dairy and the Grange Farm.

The Chairman District Board, Dehra Dun, writes :—

Dehra Dun Municipality.

There is room for much improvement both in the breed of cattle and in the milk supply. The number of cattle is very large and there are large grazing-grounds in the forests. The trouble is that more attention is paid to quantity than to quality. The cattle are very small and bad milkers. During the last 10 years two excellent stud bulls have been bought by the District Board but they are too big and heavy for the small local cows. What is really wanted is an improvement in the breed.

The Secretary, Municipal Comittee, Ambala city writes :—

Ambala Municipality.

The state of cattle and milk supply is not satisfactory. The number of cattle has considerably fallen off during the last 30 years. The quality of cattle is ordinary. There are no good bulls and breeding is promiscuous. There are no pasture grounds in the Municipality. Fodder is generally imported from other places. Cows generally give 3 seers and buffaloes 5 or 6 seers of milk daily on an average. Remedies suggested are:—Legal prohibition of slaughter of milch cows and buffaloes. Supply of good bulls. Establishment of dairies with good cows. Provision of pasture in towns by Municipalities.

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CHAPTER IV.—JULLUNDUR DIVISION.

1.—Kangra.

The rinderpest disaster of 1890-91 was the occasion of the visit (first) of a Veterinary Assistant. In 1906 a temporary dispensary was started but it was not until 1914 that a regular hospital was established. In 1916 there were 2,372 outdoor patients treated at Kulu, besides 696 on tour; 602 of the latter were for contagious diseases. Breeding experiments have had little success as yet. Foot-and-mouth disease, rinderpest, haemorrhagic septicaemia are the principal diseases. The cattle of Kulu and Saraj are small and hardy animals. The cows give very little milk, from ½ to 1½ seers daily, and are mainly for manuring and breeding purposes. The milk not required for curds is made into ghee and sold usually at one seer per rupee. Bad housing has undoubtedly something to do with the occurrence of epidemics. No systematic breeding of cattle. Cross- breeding has been introduced with little success.

Kangra Gazetteer.

The price of a hill-bullock is from Rs. 15 to Rs. 25, cows fetching from Rs. 10 to Rs. 20. But much more is paid for the Suket cattle which cost up to Rs. 40 each. There is no cattle-fair. A large number of cattle is imported annually from Saraj and Suket and Mandi into the Upper Beas valley. Difficulty of feeding animals occurs in the winter and spring when there is often a great scarcity of fodder. The cultivated area is too small to allow of much in the way of fodder crops. In the Upper Parvati Valley hay is difficult to make. Buffaloes are not kept by the Kulu people except to a very limited

extent in the neighbourhood of Bajaura and in the lower parts of Outer Saraj.

The Deputy Commissioner and President, *Kangra* District Board writes :—This district may be divided into (A) *Kangra* proper, consisting of five Tahsils in the Kangra Valley, and (B) *Kulu*, consisting of (1) Kulu and Saraj (2) Lahaul and (3) Spiti.

Dy. Commr. Kangra.

In *Kangra* proper the indigenous breed of cattle, is small but strong. Small bulls are a necessity for these hill tracts. The cows give rich milk but seldom more than 2½ seers daily.

In *Kulu* and *Saraj* the cattle are small and hardy animals, the cows only give from ½ to 1½ seers of milk daily and are kept mainly for manuring the land and breeding. Too many bulls are allowed in each herd and little care is taken in breeding.

In *Lahaul* the cattle are a cross between the Tibetan Yak and the Kulu cattle. The bullocks are excellent and the cows give 1 to 4 seer of rich milk. Care is taken in breeding and the animals are most suitable for this place.

In *Spiti* the cattle are either Yaks imported from Tibet or half breeds from Lahaul. There is little local breeding.

Larger bulls are used in the level regions. Twenty bulls have been supplied by the District Board from Hissar, Montgomery and other places. There is little selection by the people when letting loose bulls. Action has lately been taken to prosecute persons selling watered milk as pure milk but the rate is now 3 annas per seer. On the whole in Kangra proper the cattle are suitable for the tract and there is ample grazing for them. Pack bullocks are largely used for trade transport and are well looked after. Very few cattle are slaughtered for food as the population is almost entirely Hindu.

2.—Hoshiarpur.

Hoshiarpur Gazetteer.

There has been an increase in the number of cattle. Grazing grounds are sufficient in the hilly tracts but scanty on the plains. The cattle are not celebrated. They are mostly small and weak especially in the hills. A cow costs Rs. 20 to Rs. 30, and a bullock Rs. 80. There are no cattle-fairs in the district; cattle are purchased at Jullundar and Amritsar fairs. A male-buffalo will fetch Rs. 150 and a female Rs. 50. Bullocks seldom get any grain but pick up what they can in grazing. Milch buffaloes are very profitable and are better fed. Many agriculturists now keep carts for hire and p'y them on the public roads.

3.—Jullundur.

Jullundur Gazetteer.

Enormous expense in buying plough-cattle. About 9,000 bullocks have to be bought from the outside every year. A yoke of bullocks fit to work at a rope-and-bucket well costs from Rs 70 to Rs 100, while for the Persian-wheel, Rs. 50 will buy a sufficiently good pair. Buffaloes are largely used in agricultural work but considered very inferior to bullocks. An average male-buffalo fit for work costs about Rs. 20 to Rs. 25. The number of male-buffaloes is far below that of cow-buffaloes. Milch cattle are in no way remarkable. Scanty pasturage. An ordinary cow gives about 2½ seers and a buffalo 5 seers per day. Bullocks are far in excess of cows. There was in 1898 a Hissar bull at each of the following places:—Jullundur, Kartarpur, Larokar, Nakodar, Shakot, Birh, Bilgat, Rahon and Raipur. Cattle are subject to numerous diseases. Rora is ordinary foot-and-mouth disease. Andi is dysentery. Galghotu is a very deadly disease. Ogu seems to be some sort of paralysis. There are three Vety. Assts. in the district. There is a cattle fair of little importance. Prizes are given.

4.—Ludhiana.

Absence of grazing-ground is keenly felt. It is consequently not adapted for cattle-breeding. Bullocks are universally used for agricultural work. The bullocks are either bred in the villages, or imported from the cattle-breeding tracts to the south (Hansi, etc.) being brought up in droves by dealers who go from village to village. It is probable that between three-fourths and a half of those in Samrala are imported. In Jagraon there is some grazing. The home-bred cattle are said to be better than the imported for the former are stall-fed all their lives. A bullock costs from Rs. 20 to 25, if two years old, and Rs. 40 to 60 if of full working age. Where people keep carts, the quality of the draught cattle is superior. Many fine bullocks are seen in these parts. The cattle are of a very much inferior stamp. They cost Rs. 15 to 20 each. The number of milch cattle is not more than sufficient to supply local wants. There appears to be one cow to every five or six of the population. The whole supply of ghee is not more than sufficient for the consumption of the better classes in the villages and in the towns. Cows cost about Rs. 20 each in Samrala or Ludhiana tahsils but in Jagraon Rs. 35 is paid for a better stamp of animal. The buffaloes cost Rs. 50 in the two former tahsils and Rs. 75 in Jagraon.

Ludhiana Gazetteer.

Only two true epidemic diseases amongst cattle can be identified, of which the first appears to be either anthrax fever or malignant sore throat. Vern deadly in its effects. Recoveries are rare. No attempt ever made to prevent the spread of disease by isolation, burying carcases, etc. Foot-and-mouth disease is common. It is never very deadly. The ordinary ailments are ogu appears to be epilepsy or paralysis. A cattle fair is held at Ludhiana about the end of March. Cattle to the value of about Rs. 50,000 or 60,000 change hands. Prizes amounting to nearly Rs. 1,000 are generally given.

District Funds. The fair is attended by people from the adjacent districts, the Phulkian states and Kotla on their way to the Amritsar fair. The Vet. Hospital and dispensary was opened in 1896. The District Board have a scheme (1904) for building a suitable house for the Hospital.

Radha Krishna (Ratan) Honorary Secretary Gaurakshini Sabha, Ludhiana writes:—

(1) The state of cattle and milk supply is quite unsatisfactory here.

Ludhiana Gowshala.

(2) The number of good cattle is very limited. There is no good breeding system. The Brahmini bulls are deteriorating. There is no pasture and fodder is very scarce and dear. Flesh-eating tendency is ever on the increase.

(3) Cattle of good breed should be brought from Hissar and other places. Good Brahmini bulls should be supplied Government should be requested to provide pasture grounds in every district. Concessions should be made to fodder. growers. Use of leather should be discouraged. Dairies should be started.

5—Ferozepur.

Ferozepur Gazetteer.

A considerable deterioration of the breed has taken place. The breed is active and hardy but not so strong. The best cattle are found in the Rohi and in Abohar. Importations take place, the local supply is inadequate to meet the demand. Excellent work is done by the District Board under the guidance of the Civil Vety. Dept. by the provision of herd bulls of superior quality to improve the local stock. There are now about 60 of these bulls. They are supplied by the Govt. Cattle Farm, Hissar at the rate of Rs. 200 per head. The bulls cost the District

Board nothing for their keep. Breeding operations are unscientific. Heavy carting work of the district demands many good bulls. The prices are increasing every day. There are two district breeds of buffaloes. The most important is the Sutlej breed, a large number of which is raised annually at Bet. It is perhaps the finest breed in the Punjab notable for its size and massiveness. The average milk yield of the breed is from to 10 to 12 seers a day in the full flush of the milking period, 15 or even 20 seers in exceptional cases.

Great demand for female buffaloes. Very high prices. A good Sutlej buffalo costs from Rs. 200 to Rs. 300. The female buffalo is the chief source of milk. She requires little attention and gives an excellent return for her outkeep. Large number of buffaloes, still export of ghi is very limited. The male buffaloes are giving place to the large draught bullocks of the Hissar breed. Buffalo-breeding satisfactory. Three well-established fairs and shows are held at Jalalabad, Muktesar and Abohar. Large sums of money are offered as prizes in these fairs. A large number of small fairs have been started in the District. Rinderpest is the most important disease and causes the heaviest mortality. The District has been free from the disease for the last two years. The next disease in importance is Haemorrhagic Septicaemia. It is more prevalent in the district than rinderpest. Blackquarter is met with in Bet but it is of much less frequent occurrence. Foot-and-mouth disease is most wide spread and though not very fatal causes much loss by making cattle useless for sometime.

Much valuable work is done by the Veterinary by the treatment of other non-contagious diseases. There are seven Vety. Assistants and a Vety. Inspector. This department is

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doing excellent work, The people now appreciate the value of their services. Some hospitals have been opened by private individuals

Sucha Singh, L. Ag., Secy. Ag. Association Ferozepore writes :—

(1) The state of cattle and milk supply is not satisfactory in my circle.

Agricultural Association Ferozepur.

(2) There is absolutely no pasture land. Food grains being very dear people cannot afford to keep cattle—their number is gradually decreasing. The poor quality of cattle is due to bad housing and want of pasture. There are no breeding arrangements. Dry animals have to be sold to butchers to make room for the milking ones.

(3) Suggested remedies : Goshala and societies for keeping dry animals on moderate charges should be started. Good breeding bulls should be kept in every village and breeding should be performed on scientific lines. Government should encourage and help people in this respect. Lands adjacent to canal banks should be irrigated and used as pasture. Fodder should be distributed properly in different places. The present Gowshala system is very defective. They should be run on business lines.

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CHAPTER V.—LAHORE DIVISION.

1.—Lahore.

Grazing grounds have contracted till no land worth for grazing purpose is now left. The district, as a whole, is well-off for live-stock, there being seven horned cattle per plough and the increase under all heads since 1868-69 has been remarkable. In the low lands light cattle suffice. In the uplands heavy animals are wanted. The only surviving indigenous cattle are the light class, large number of whom are bred by the small holders of the Ravi Valley. The district as a whole is not a cattle breeding area. The local Maujha breed of cattle has died out and superior stock is purchased from dealers. Stock-raising and keeping is more popular. The most marked tendency of recent years has been to substitute buffaloes of both sexes for bulls and bullocks. The she-buffalo is a good milker. Milk and ghi have a fine market and the price of both have appreciated. The she-buffalo does very well on stall breeding. Well-to-do zamindars keep many she-buffaloes. The male buffalo is inefficient for plough and well purposes.

Lahore Gazetteer.

In the canal irrigated tracts devotion to the buffalo is increasing but in tracts like the Ravi river the farmers think it more economical to keep a cow and breed bullocks than to put up with buffaloes and buy from dealers. The decrease in the number of ploughs in the district is not so difficult to reconcile with the increase in cultivated area as would at first appear. The fact is that not only has canal irrigation lightened the ploughman's labour but a better class of animal is generally used. The number of carts has nearly quadrupled since 1868-69. The breeds of cattle met with in

the Lahore district are the Hissari Montgomery, Dajal and mixed breeds. These are purchased from dealers. The average price (which at a rough estimate stands per head for good cattle as follows, *viz.*, bullocks fit for heavy draught work Rs. 150, cows Rs. 80, male buffaloes Rs. 60, female buffaloes Rs. 150) has about doubled in the last 20 years.

There are at present 6 District Board bulls in the district 15 of which have been sold to Zamindars at half price. These bulls are purchased from the Hissar Farm. The bulls roam about the fields and cost the District Board nothing. The stock got by these bulls is a great improvement on the local breed. The bulls are very popular. The Civil veterinary Department gives lectures to villagers on breeding and the care of young stock. Cattle-fairs are held annually at Kabua Nau, Kasur and Pattoke and prizes awarded. Cattle diseases are very prevalent in the district. Patwaris report outbreaks of contagious diseases such as Rinderpest, Haemorrhagic Septicaemia, foot and mouth disease, etc. and the outbreaks are attended by the Vety Assistant. The mortality from Rinderpest and Haemorrhagic septicaemia has considerably decreased since inoculations have been performed by the Civil Veterinary department. Foot and mouth disease occurs every year but it causes pedal deformities and depreciates the value of the animal. The people do nothing to prevent the spread of contagious diseases, but it is to be hoped that as the Civil Veterinary Department is lecturing on hygiene matters will improve. Within recent years considerable progress has been made in the treatment of all diseases on modern scientific lines.

In 1902 there were only two qualified Vety. Assistants in the district but now there are four; three of these are in charge of the Vet. Hospitals and one is doing itinerating work. The work of the Civil. Vety. Department is now becoming well known and the Zamindars are beginning to realise the

advantage of scientific treatment. The department does not only deal with contagious and non-contagious diseases but is doing a great deal in preventing cruelty. The cruel indigenous method of castration is being stopped as the department is doing this work now on scientific lines.

Punjab veterinary college was established in 1882. The demand for the services of graduates was immediate and considerable. The college has improved in every way by and by. In 1913 a new college on the most modern lines was built on the Tapp Rd. to give the best possible training to be obtained in India. There are now 5 European, 3 Indian professors and 11 Assistant Professors. Accommodation is provided for 220 students in the ordinary course and 20 in the Post Graduate cuorse.

Mahatab Rai pleader, Vice President, Gaushala, Chunian District Lahore writes :—

(1) The state of cattle and milk supply is not all satisfactory.

Lahore Goshala.

(2) There is no good-breeding bull. Fodder is very scarce. Cattle are consequently of a very bad quality. The prices of milk have gone very high during the last 4 or 5 years and moreover the quality of milk is not good.

(3) Government should be requested to set apart sufficient pasture-grounds in each town and village. Slaughter of milch cattle should be stopped by Government legislation. The prices of fodder should be fixed by Government and import of fodder should be discouraged.

2.—Amritsar.

The majority are imported from outside. Very limited amount of grazing. Most are stall-fed. There are the

Amritsar Gazetteer.

Baisakhi and Diwali fairs. There are itinerant cattle-dealers. Large increase in the price of livestock of all classes. People prefer the cheaper buffalo to the more efficient bullock. Buffaloes are largely coming into use. Except for the buffaloes, most of the cattle bred in the district are of poor stamp but the stock is generally sufficient for agricultural purposes except in some places. There is no great trade in ghi. In the city large herds of cattle (milch cattle) are kept by Gujars, the upkeep of his cattle in times of scarcity is a source of constant anxiety to the cultivator. There are no special breed of cattle. Prices of stock have risen enormously during the last twenty years.

PRICES IN RUPEES.

Animals.			Last settlement.	Present day.
Bullock	...	...	40	125
Cow	...	...	25	100
Male-buffalo	...	...	20	40
Female-buffalo	...	...	50	150

Miles Irving Esqr. I. C. S. Deputy Commissioner, Amritsar writes :—

(1) The state of cattle and milk supply is satisfactory in Amritsar city but not in the mufassal towns and villages of the district.

Deputy Commissioner Amritsar.

(2) There is no appreciable decrease in the number of cattle but animals are generally weak and under sized. Fodder is scarce and pasture not available. Cattle are generally stallfed for the most part of the year. The high advance in the price of fodder on account of scarcity is interfering a good deal with milk production. He has no opinion to offer as to remedies for the unsatisfactory features.

3—Gurudaspur.

Gurudaspur is essentially an agricultural rather than a pastoral district. It has never been favorable to cattle-breeding. Only in a few scattered tracts there are large grazing areas.

Enumeration.	Bulls and bullocks.	Cows.	Male buffaloes.	Cow. buffaloes.	Young. stock.
1899	165,774	158,478	75,948	63,011	197,822
1904	174,563	166,917	64,843	67,105	177,157
1909	156,597	163,604	70,628	76 742	158,600

Gurdaspur Gazetteer.

There is a clearly defined tendency for the milch-buffalo to increase and for the male and young stock to decrease. The zamindars keep a large stock of milch-cattle. The prices of agricultural produce continue high. There are at present 27 Hissar and 6 Jhelum bulls, maintained by the District Board for the benefit of the public. In most parts natural fodder is inadequate to supply the demand and cattle-owners have perforce to rely on fodder-crops.

Kind of animals.	Price in Rupees ten years ago.	Present price in Rupees.
Bullock ...	15 to 80	35 to 150
Cow	15 to 50	25 to 100
He-buffalo ...	30 to 80	30 to 150
She-buffalo ...	10 to 35	25 to 75

As a regular industry, dairying is practically unknown in this district but everywhere the zamindar, who can afford to do so, keeps a cow or buffalo or both for providing the milk and ghi necessary for home consumption. The total number of milch cattle in 1909 was 240346 only, and population numbers 886711.

Allowing for the different classes of cows and for the varying quantity of milk given at different seasons we may take the average yield as 2 seers a day. This will give 1½ chattacks of ghi, valued at 1 anna 6 pies. The average yield of milk of a cow-buffalo may be taken at 4 seers a day, giving 4½ chattacks of ghi, valued at 4 annas and 6 pies, while her daily food (when she is in milk) may be taken to cost 4 annas. Prices of milk and ghi have risen and adulteration is practised more and more with the lapse of time. There are at present 49 Dist. Board bulls which were purchased from the Hissar Farm after careful selection. These animals cost the Dist. Board nothing beyond their "nominal purchase price." A cattle fair is held during the Dushera. The income derived therefrom is Rs. 1400. Rs. 500 from District Board funds are awarded in prizes. Contagious diseases are very prevalent. Patwaris report outbreaks and infected animals are attended to by the Vety. assistants. Rinderpest and haemorrhagic septicaemia formerly caused heavy mortality. Mortality has considerably decreased with the practice of inoculations. The people do very little to check the spread of contagious diseases. Scientific treatment of diseases has attained much progress during recent years. There are six Vet. Assistants now. Five do hospital work while one does itinerating work.

4.--Sialkot.

The Secretary, Pasrur Municipality, District Sialkot writes:—

1. The state of cattle and milk-supply in this Municipality is not satisfactory at all.

2. The number of cattle is low and is ever decreasing. No system of good breeding. The quality of cattle is inferior. There is no pasture and fodder is scarce.

Sialkot Municipality.

3. Killing of cattle for meat and hide-trade should be stopped as far as possible, pasture lands should be set apart in every town and village by the Government in addition to free use of grass along canal and public roads and railway lines. Fodder should be supplied at reduced rates by Local or District Boards. Concessions in railway freight should be made in times of drought.

5.—Gujranwalla.

Name of District.		Bulls and bullocks.	Cows.	He-buffaloes.	She buffaloes.	Young stock.
Jhang	...	202,441	140,783	34,235	108 042	210463
Guzranwala	...	20,051	19,265	6,437	18,101	32,220
Lahore	...	781	505	224	396	522

The cattle are varied and numerous. Almost every type is to be found but the Hariana breed is most affected by the colonists.

Gujranwalla Gazetteer.

Good cattle belonging to zamindars are seldom sold. Large numbers are brought by colonists at fairs. The cow-buffaloes used for breeding are splendid animals with large milk producing powers. Amount of milk average from 4 to 6 seers (inferior animals) from 12 to 13 seers (medium animals) and from 15 to 30 seers (in the best.) For the purpose of dealing with cattle breeding the Vety. Dept. employs an itinerating Vety. Assistant for each tahsil.

A Vety. Hospital has been started at Lyallpur.

The Colony cattle fair is held annually at Shahkot. The Government made a grant of Rs. 650 for prizes. The fair is popular.

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CHAPTER VI.—RAWALPINDI DIVISION.

1.—Guzrat.

There are numerous and mixed types of cattle on account of many strains having been brought in by colonists and traders.

Gujrat Gazetteer.

Agriculture and irrigation.—The original breeds appear to have been the Bar and the Thal breeds. Some of the cows of the Bar breed are said to give up to 8 seers of milk. Cows sometimes fetch up to Rs. 100, bullocks rarely more than Rs. 80. The cows of the Thall breed give up to 3 seers of milk, cows fetch up to Rs. 40 bullocks up to Rs. 25. This breed is still numerous though the Bar breed has become scarce.

In the Sun *ilaqua* the cattle are almost all of Dhanni type, strong, fast and hardy. The cows are poor milkers. The bullocks sometimes sell up to Rs. 170, cows rarely more than Rs. 50.

The effect of the district Board bulls is now becoming very noticeable. Hissari bulls are usually supplied but in some places Dhannis are supplied.

Hissari cross bullocks fetch up to Rs. 180 and Dhanni crosses up to Rs. 150.

No very important cattle-fair anywhere. Good deal of buying and selling done at the Sargodha and Shahpur horse-fairs. Considerable numbers of young stock are sold to itinerant cattle dealers who take them to Rawalpindi or Peshwar.

Buffaloes—There has been an extraordinary increase in the number of cow-buffaloes. They are chiefly found in the cis-Jhelum part of the District.

No well-defined breed; strains from many localities have been mixed together by the colonists. Generally the buffaloes are of moderate size and good shape.

Females sometimes sell for as much as Rs. 230 but males seldom sell for more than Rs. 80.

Large income is derived annually by cattle-owners from the sale of ghi The price per maund has risen from Rs. 8 to over Rs. 40. While good cows giving 8 seers of milk or more can sometimes be procured the average cow of the district probably does not give more than 1½ seers of milk per day for six or nine months of the year. A very good buffalo-cow will give as much as 13 seers of milk a day, but the average buffalo-cow of the district probably does not give more than 3 seers a day for eleven months. A large quantity of ghi is annually exported to Peshwar, Rawalpindi, Amritsar, Dera Ismail Khan and Karachi. Cow hides sometimes sell for as much as Rs. 35 per maund, and buffalo-hides for Rs. 25.

Diseases—Large numbers of cattle are carried off annually by disease. The people are very careless. Outbreaks of rinderpest and foot-and-mouth disease are of annual recurrence. Sick and healthy animals are found standing together and shut up in the same cow-house.

The common diseases are the following :—

Rinderpest, foot and mouth disease, anthrax gloss, anthrax or malignant throat, spleen, apoplexy, rheumatism, colic, hoose or husk chronic indigestion, lympanitis, pleuropneumonia contagiosa, prolapsus uteri red water, tetanus, and mange.

Veterinary Administration :—

The Civil Veterinary Department consists of one Veterinary Inspector and five Vety. Assistants, one being an itineratic man who works in the whole district and one man

in charge of the Vety. Hospitals at Shahpur, Bara, Sahiwal and Khushab.

The work of this Department consists of the management and supervision of Vet. Hospitals, arrangement for the checking and prevention of contagious disease inoculation supervision of cattle-breeding—bulls are provided by the District Board—assistance in the general management of cattle-fairs, collection and tabulation of statistics regarding contagious disease and mortality.

2.—Shahpur.

The agricultural stock has been carefully enumerated at times and the following statement gives the results of the more important enumerations :—

	Year.	Cows, bullocks and buffaloes of all ages.	Yokes of plough-bullocks.
	1869 ...	154,163	33,535
	1890 ...	380,794	53,546
Shahpur Gazetteer.	1900 ...	469,784	68,418
	1910 ...	628,441	85,426
	1914 ...	694,901	102,055

The details of the horned cattle in the 1914 census were as follows :—

Bulls and bullocks	204,110
Cows	179,115
Male buffaloes	20,513
Cow buffaloes	120,511
Young stock	170,652

Bullocks and cows have each increased in number by about 50 p. c. since second settlement while buffaloes and young stock have more than doubled.

At the last settlement Mr. Wilson calculated that the livestock of the district were worth 85 lacs of rupees.

A similar calculation now gives the following result :—

Animals.	Average value.	Total value.
	Rs.	Rs.
Bulls and bullocks	40	8,164,400
Cows	40	7,164,600
Male buffaloes	40	8,20,520
Cow buffaloes	80	9,640,880
Young stock	15	2,559,780

Of course in years of scarcity like the present, prices drop below these averages and animals change hands for little more than the value of their hides and bones. But in a good year it would be impossible to replace the existing live-stock for less than 3 crores of rupees.

3.—Rawalpindi.

The breeds of horned cattle of the district are not good. Hill cattle are hardy but small. Those in the plains are inferior to those of many other parts of the Punjab. Little care is taken in breeding them. Round the village of Jaffi there is a famous breed of cattle. The breed is however dying out. Great panis are taken in cattle breeding and high prices are still obtained. In the neighbourhood of the city the demand for milk has stimulated the keeping of milch kine. They are stall fed and the milk is carried in

Rawalpindi Gazetteer

twice a day. The profits in the milk trade are considerable. The similar trade with Murree sanitarium is very profitable. With these exceptions and few animals kept as pack animals cattle are not kept for profit. There is no trade in cattle or in ghee Barely enough cattle are kept to supply the people with milk and to work the plough. In the hills more grass is used and less of other kinds of fodder. The price of plough cattle varies greatly. A plough bullock may cost from Rs. 25 up to Rs. 100. This has risen much of late years. Cattle used for carts rarely cost less than Rs. 40 each or Rs. 80 per pair.

The cows of the district are not good milk givers. Breeding Hissar bulls have been introduced with little success for they are too big for the indigenous breed. Cows for milk are freely imported from other districts. The hill cattle give very little milk. A cow in the Murree hills of indigenous breed giving as much as one seer of milk a day is a rarity.

Cows drop from 4 to 7 calves and cost from Rs. 5 to Rs. 40. Cows when not in milk are frequenty used for ploughing.

Cattle diseases are at times very prevalent and are often very fatal. Eleven different diseases are reported to be known. The most fatal are:—

Gari or ghotu, a swelling of the glands and Mokhur, the foot-and-mouth disease.

The buffaloes are of inferior breed.

Cow buffaloes give more milk than cows from 2 seers up to twelve seers per diem and drop from five to eight calves. Milk buffaloes give from Rs. 15 upwards; even Rs. 100 will be given for a very good one. The male costs much less from Rs. 12 to Rs. 40.

4.—Attock.

Breed of cattle is not peculiar. The Tallagong breed, however is very fine. The breed is quite a distinctive one. The

breeding is however haphazard. The introduction of Hissar bulls has met with little success. The Zamindars look after their cattle very well. In favorable seasons the grazing is sufficient and the grass is of good quality. Cows are treated with little consideration, being often made to drag the plough.

Attock Gazetteer

The Tallagong breed is very fine. Bullocks in large numbers are exported. The estimated annual sales of stock from Talagong are 300 head, the average price being about Rs. 40 per head the cattle of the rest of the district are very poor. They are very poor milkers. Cattle diseases are very prevalent and fatal. Eleven different diseases are reported. The most fatal are:—Gari, a swelling of the glands. It is infectious. Tak or taku, Wah, a kind of dysentery. Wah is also used for rinderpest. Dhakh a disease of the mouth.

The buffaloes are of inferior breed. Cow buffaloes give more milk than cows, from two seers up to twelve seers per diem. Milk buffaloes are more carefully looked after when in milk than other kinds. Milk buffaloes cost from Rs. 15 upwards, even Rs. 100 will be given for a very good one. The male costs from Rs. 12 to Rs. 40.

Plough-cattle—The number of cattle per plough is 1·6 in Attock Tahsil, ·9 in Fateh Jang, and 1·1 in both Pindigheb and Tallagan Tahsils. Perhaps plough cattle have slightly decreased in both Attock and Tallagong.

Prices of cattle :—

Male buffaloes	...	...	from Rs.	20 to	45,	average Rs.	30
Female buffaloes	...	...	"	" 30	" 90,	"	45
Bullocks	...	...	"	" 15	" 50,	"	25
Cows ...	...	...	"	" 12	" 40,	"	18
Young stock	...	...	"	"		"	10

Fairs—In 1907 a cattle fair was started at Tallagong. Rs. 760 were distributed in prizes. One of the main objects of the show was to encourage the breeding of the Dhanni cattle, which have their home in Tallagong and Chakwal Tahsils.

Ajit Khan Capt, Cuttu, writes about the *Attock* district :—

(1) The state of cattle and milk supply is not satisfactory.

(2) For want of pasture and sufficient fodder a large number of cattle cannot be kept.

(3) Government ought to set apart large tract of pasture lands and encourage cattle-breeding on a large scale.

Ajit Khan.

5—Miwanwali.

The district contains wide grazing-grounds. With the exception of buffaloes and camels, the stock bred is generally poor and small. To estimate the real number of stock in the tract is difficult. In the Thal the number of horned cattle is in most years small. The district exports no cattle, but imports plough bullocks. The country is not well suited for cattle breeding. The breeding stock has improved but little and the zamindars take no trouble to put their cows to good bulls.

Miwanwali Gazetteer.

The average price at which bullocks are bought is (taking good and bad together) Rs. 20.

Recently the District Board has given some attention to cattle breeding. The number of District Board bulls has been improved and some bulls of Dhanni breed have been introduced. The number of District Board bulls now maintained in the district is 21.

The Thal cow is small and a poor milker, an average cow gives two seers of milk a day for seven months in the year. The annual production of ghee, after allowing for expenditure of milk on domestic uses, would be 12 or 13 seers. The average value of a cow in the Thal is about Rs. 15 to Rs. 20.

Most of the buffaloes of the district are to be found in the river villages of the Indus Valley. There is no grazing for buffaloes in the Thal. Wherever there is suitable grazing for them it is profitable. A buffalo calves at four years old, after which, if breeding regularly she calves every second year. She gives milk for a year more or less after calving and calves generally five or six times successively before she ceases. An ordinary Kachchi buffalo, when in milk, gives about four seers a day. The amount is most plentiful during the rainy season and early autumn when fodder is abundant. The yield of ghee is about a seer to every sixteen seers of milk. Buffaloes are very little used in agriculture. The young bulls are bought up by dealers from the Central Punjab. The bulk of the male calves are made away with soon after birth, to save the milk. Foot-and-mouth disease, itch, dysentery, convulsions, ulcearated throat, fatal catarrh—these diseases attack horned cattle which are in addition subject to mihru, a maggot producing fester, and pipanu, a swelling of the intestines. The most fatal disease is cowpox, known as sitla, chuchak etc. The remedy usually adopted is to take the affected animals to a shrine. There are three Veterinary Dispensaries one in each tahsil, with a Veterinary Assistant in charge of each. These are fairly well patronised. A small cattle market is held weekly at Isa Khel. No other cattle fairs of importance are held in the district.

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CHAPTER VII.—MULTAN DIVISION.

1.—Montgomery.

The Extra Asst. Director of Agriculture Punjab, Montgomery writes :—

In the Lower Bari Doab Colony, Montgomery the grants for catt'e-beeding are as under—Montogomery cattle-breeding grants...3 Hissar...3. The loss of grazing areas by colony have been compensated by the above grants. These farms will serve a useful purpose in keeping the breeds pure and of good quality true to type. State of cattle in the abovementioned farms is satisfactory, of course they do not supply milk but a grant of 20 rectangles (a rectangle = 25 acres) has also been given near Montgomery for the supply of milk butter etc., and the lessee has gone to England to learn up to-do-date methods and this will help to some extent, but in no way adequate and enough for the near districts.

Director of Agriculture Montgomery.

To keep the breed pure and true to type and leave a good supply of milk, ghee etc., there should be more grants as cattle breeding and dairying combined as are already at Montgomery and these should spread in different places in the colony and to be near the stations. These should be worked on up-to-date methods under the management of a trained and efficient man.

Q Q. Henriques Esq. I.C.S., Deputy Commissioner and Chairman District Board, Montgomery writes that the state of cattle and milk supply in that district is satisfactory.

Deputy Commissioner Montgomery.

2.—Muzaffargarh.

Cattle are not exported from the District. Bullocks are brought every year from Sangarh, Bhag Nari and the Bhawalpur State. The local animals belong to one of the three breeds. The purely local breed is inferior.

The prices are:—

	Rs.		Rs.	Average. Rs.
Bullocks	... 20	to	200	50
Cow	... 20	,,	60	40
Buffalo	... 30	,,	120	70

Muzaffargarh Gazetteer.

No scarcity of grass. There is excellent grazing for cattle.

Hissar bulls are kept for breeding in these places in charge of leading zamindars:—

Name of place.	Number kept.
Muzaffargarh	2
Thatha Koreshi	2
Jatoi	...
Thatha Gurmani	...

They are not appreciated and are being replaced by bulls from Dera Ghazi Khan.

Fairs.—Cattle-fairs are held with success and prizes are given away.

Diseases.—The more common diseases are Cow-pox, Foot-and-mouth disease and malignant sore-throat. There are three Vety. Dispensaries. There is a senior Vety. Asst. who tours through the district.

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CHAPTER VIII.—PUNJAB STATES.

1.—Chamba State.

Chamba.

In Pangi, Lahul and in the village of Kugti in Brahmaur ploughing is done by churs (a kind of hill bullock) and not by deshi bullocks. One or two jut-churs are kept for breeding in each village. In Pangi its price ranges from Rs. 20 to Rs. 25 and in Zanskar from Rs. 14 to Rs. 15. Cross-breeding is practised with success. Brahmaur land-holders only keep a few animals which they feed indoors. Church land-holders have generally acquired some lands on the high mountains for pasture. Owing to the lack of fodder the Bhattiyat people keep few animals but those living in the higher hills and having plenty of fodder keep as many as they choose.

2.—Bilaspur State.

Bilaspur.

The State possesses an indigenous breed of cattle which differs considerably from the ordinary hill kind. The animals are slightly larger. The cows give from two to three seers of milk, and the price of a full grown animal of either sex is from Rs. 10 to Rs. 25. Buffaloes are numerous and of a good stamp. There is one to every two of the population. Pasture is sufficient. Disease is rare.

3.—Bashahr State.

Bashahar.

Cattle are of the usual small hill breed, no buffaloes in Bashahar. Cows fetch from Rs. 10 to Rs. 12 and bullocks Rs. 15 to Rs. 20. A few yaks are found in villages bordering on Tibet. Yak's milk and ghee are used.

Hybrids between a yak and cow are much used. Ample grazing grounds for all kinds of cattle. Cattle disease is pretty rife in the state and has at different periods caused heavy loss.

4.—Nalagarh State.

Nalagarh.

Cattle are plentiful and of a good kind Agriculturists of neighbouring states often come here to buy bullocks. The Gujars do a certain amount of trade in milk and ghee. A Hissar bull was purchased by the State in 1907. The average prices are buffalo-cow Rs. 70, bullock Rs. 50, cow Rs. 25. Grazing is generally sufficient.

5.—Keonthal State

Keonthal.

The people have plenty of cattle. In 1901 it was estimated that there was one plough to every 21 bighas of cultivated land as against 39 bighas in other neighbouring states. In some parts a good profit is made by the sale of milk and ghee. In the Upper Parganas, there is wide spread superstition against milk drinking. The breed of cattle in the Junga tahsil is different to the ordinary hill kind, the animals being considerably larger. There is ample pasturage.

6.—Baghal State

Baghal.

Cattle are of the ordinary hill breed and are plentiful. There is an average of one milch animal to every two of the population. There is ample pasturage.

7.—Baghat State.

Baghat.

Cattle are plentiful, especially cows and buffaloes. There is ample grazing. Plough-cattle are of the ordinary hill breed and sell for from Rs. 25 to Rs. 40

a pair, cows fetch from Rs. 10 to Rs. 15; female buffaloes from Rs. 40 to Rs. 70.

8.—Jubbal.

Jubbal.

Cattle are of the ordinary hill breed, but are of an excellent stamp. There is, as a rule, ample grazing and fodder for all stock. Rinderpest and foot-and-mouth diseases are the most common affections of cattle. But the most fatal is Phutki which kills the animal within four or five years.

9.—Rawin.

Rawin.

Cattle are not numerous for a hill country, where the prices of all classes of stock are low. The Thakur and the Jagirdars have a few buffaloes, but the common people have none.

10.—Kumharsain.

Kumharsain.

Cattle are of the usual hill breed, small and strong. Bullocks are not worked till they are five years old, and work well for six or seven years or longer if they are well looked after. The milk of cows and buffaloes is made into ghee and sold.

Prices of live-stock average as follows :—

Cow	...	...	...	From	Rs. 8	to Rs.	12
Heifer	...	...	...	"	" 5	to "	9
Bullock	...	...	...	"	" 10	to "	18
Buffalo-cow		...	...	"	" 32	to "	70
Male-buffalo		...	...	"	" 12	to "	25

11.—Phulkian.

No accurate figures available. Not much public grazing land. In some villages big land-owners have taken to cattle-

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breeding and in the jangal tract fair stock is raisen. Though the people of the Jangal and Bangar use home-bred cattle for agricultural purposes still large purchases are made from outside. The Mohindargarh district is noted for bullocks and goats; bulls for breeding are imported. There are two big cattle fairs where 20,000 bullocks are sold every year. The draught and plough-bullocks cost from Rs. 30 to 80 each. In the Jangal and Mohindargarh district they generally cost from Rs. 50 to Rs. 80 and even Rs. 100. Milch cows are generally kept by Dogars and Guzars. In villages and cities buffaloes and cows are kept for milk. The cultivators make the milk into ghee before selling it. The Bangar was formerly noted for its cattle. The best cows cost from Rs. 40 to Rs. 60 and buffaloes from Rs. 80 to Rs. 100. Ordinary cows only cost from Rs. 15 to Rs. 25 and buffaloes from Rs. 50 to Rs. 60. The prevalent diseases among cattle are (1) waba or mari an epidemic disease. (2) Galgotu is a swelling in the throat—very fatal. Foot and-mouth disease, paralysis, diarrhoea and choking are other common diseases.

Phulkian States.

12.—Jind.

Agricultural work is mainly done by oxen. Male-buffaloes are occasionally yoked in carts in the jangal tract. In the stiff soil of the Bangar in Jind tahsil strong plough-cattle costing at least Rs 40 or Rs. 50 each are needed and where the wells are deep an ox capable of doing a full day's work will cost over Rs. 60. In the ilaqas of Saugrur, Bazidpur and Kularan, where the wells are not very deep nor the soil stiff oxen costing Rs. 30 each suffice for the work. An ox begins to work when aged 4 and works for 10 or 12 years.

Jind.

13.—Nabha.

Disease carries off large number of cattle. When cattle fall ill the owners resort to charms instead of regular treatment. Some of the common diseases

Nabha

are these :—Gal ghotua—swellings in the throat. Rora or kheri—Foot-and-mouth disease. Sondhi—The disease is speedily fatal. Lakwa is a form of paralysis. And many other diseases.

Place.		Date.	Animals sold.	Value in rupees.
Nabha	...	Katic 2nd	11,000	22,000 to 23,000
Amloh	...	Asanj 28th to 9th Katic	11,000	
Phul	...	Phagun 1st to 12th	1,050	42,023
Jaito	..	Phagun 19th to 30th	11,383	500,000
Mahasar	...	Chet Badi 1st to 15th	.....	300,000
Ditto	...	Asanj Badi 1st to 15th		

The above table shows the principal cattle fairs in the state. Bullocks are mostly sold. As many as 30,000 people attend the fair at Jaito. Rewards are given. The two fairs in Nizamat Amloh, at Nabha and Amloh itself are each attended by about 5,000 people. The two fairs at Mahasar in Nizamat Bawal are very ancient institutions. Bullocks in large numbers are sold, some Rs. 300,000 changing hands early at the two fairs. About 1,000 people attend each fair.

14.—Mandi.

There are some grazing and waste lands included within the boundaries of each village. The grazing land is left for cattle while all the waste belongs to the State. The cattle are generally very small in size but fairly strong. A pair of ordinary plough oxen may be purchased for Rs. 20. A cow generally gives two seers pucca of milk and can be had for Rs. 16. A buffalo gives up to 6 seers (pucca) of milk and the best are sold for Rs 50 each. They are kept principally by Guzars and their milk is used to make ghee which is exported to Simla and the Kangra district Buffaloes are not employed either in field labour or in haulage.

Mandi.

15—Suket.

Suket breed of cattle is one of the best met with in the Himalayas. These cattle are found in the State and are much prized on account of their superior size and weight, as also for their milking powers. In Kullu, where large numbers are to be seen, they differ from other Himalayan breeds in general conformation. Some of the cows are really handsome and good milkers. Cows yield from 1½ seers to 4 seers (pucca) of milk a day, this is of good quality yielding 1½ ounces of ghee per seer. The price varies from Rs. 10 to Rs. 20 according to the age and yield of milk. Oxen vary in price from Rs. 10 to Rs 14 in the hill tracts where the breed is small, and from Rs. 30 to Rs. 50 in the Balh where they are larger. Buffaloes yield 3 to 6 seers of (pucca) milk and sell for Rs. 60 or Rs 70; males are little used except for sugarcane pressing and hence are usually sold, the price obtained is Rs 15 or Rs. 20. The waste belongs to the State but the people are allowed to graze their cattle over it and there is no scarcity of fodder. Every year the Nalwara cattle fair is held at the capital, about 5,000 or 6,000 animals are brought and of these 1500 to 2000 change hands.

Suket.

16.—Kalsia.

Cattle are of indifferent quality. It is noticeable that all, save poor men's cattle *i.e.*, sheep and goats, seem to be on the decrease. The reason of this is scantiness of village wastes.

Kalsia.

17—Dujana.

Cattle are of the same breed and description as in the neighbouring Rohtak District. Bullocks are used, as a rule, for ploughing, but in some of the sandy villages of the Nahas Tahsils, camels are employed. Three

Dujana.

cattle-fairs are held in the year at Dujana, at Nahar and at Balhu, and at these cattle of all sorts change hands.

18.—Faridkot.

Faridkot.

Buffaloes are never used for agricultural purposes. The females are kept for their milk and the males are sold while young.

There are three Hissar bulls and two bull-buffaloes. Breeding operations during the last ten years have resulted in the production of 740 cattle and 543 buffaloes. The common cattle diseases in the State are rinderpest, anthrax and foot-and-mouth disease. The zamindar usually treats his own cattle. There are two Vety. Assistants. In 1901 an epidemic took place which was fatal to horses as well as to cattle. There are two annual cattle-fairs in the State, at Faridkot and Kot Kapura. The Faridkot fair was instituted in 1898. Cattle are brought from Bikaneer. About 5,000 people attend the fair which is held at the Dushera. The Kot Kapura fair was first held in 1902 when it was largely attended. The attendance was 3,000.

19.—Sirmur.

Sirmur.

The cattle of the hills are very small; cows give on an average from one to two seers of milk a day but a trans-giri cow is milked thrice daily and can give on an average five seers a day. Well-to-do or industrious people keep buffaloes but not in the house, separate sheds being built for them and the men in charge near a river or tank. The man in charge milks the buffaloes and prepares the ghee. Besides the land-holders the Jammuwal Gujars keep a very large number of buffaloes, usually fine stock. Some of their camps are very well off and own as a many as hundred and fifty head of cattle. Their only occupation is breeding buffaloes and trading in ghee. The only crop grown for fodder in the higher hills is phaphra. Cattle graze readily on the leaves of bihul and other trees so much so that in the hills no fodder crop is grown and even the wheat-straw is thrown away.

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CHAPTER IX.—N. W. F. PROVINCE.

1.—Hazara District.

Cattle, sheep and goats are a very important feature in the economy of the district. They supply manure for the fields meat and milch produce for sale or home consumption, hair for ropes, wool for clothing, hides for export. Except for a number of strong and sturdy animals that are bred in the Haripur plain to draw the carts that ply on the Kashmir road, the bullocks are small sized, though hardy. The cows which occasionally are also yoked to the plough are the same and are indifferent milkers. The buffalo cows are a good breed and yield milk largely. All the cattle display a wonderful agility and sure footedness on the steep hill-slopes. A cattle-fair was inaugurated in 1906 and will, it is hoped, became a permanent institution. (a)

Hazara Gazetteer.

2.—Bannu.

The most remarkable feature in connection with the figures of live-stock returned for the district at different periods is the apparent decrease in the number of plough-cattle during the last 30 years—and this despite a large increase in the area annually under cultivation. The explanation of these figures is to be found in the fact that the enumeration of 1904 was made in February, while in the sandy tracts of the district the plough are, as often as not, sold after the rabi sowing to dealers from Isa Khel who take them away to the Indus and bring them back in the autumn to sell again to the Marwats and Wazirs Owing to the expense of watering the cattle it pays the people better to sell them than to keep

Bannu Gazetteer.

(a) Hazara District Gazetteer by H. D. Watson, 1907.

them 8 or 9 months out of work. For the same reason, and owing also to the absence of green fodder, the unirrigated tracts are ill-adapted for cattle-breeding. Thus the district is not self sufficing in the matter of live-stock and every year the import of cattle largely exceeds the export. No special breed finds particular favour amongst the zamindars of Bannu, and the cattle with the exception of the buffaloes are as a rule poor and small. Hissar bulls were at one time introduced but the experiment was not a success. Generally speaking Bannu is not a cattle breeding district and most of the stock comes from Muzaffargarh Multan and Minwali. The Wazir cattle dealers even go as far a field as Amritsar.

The average prices of stock in ordinary years are as follows.

Plough-bullock ...	... From Rs. 30 in Marwat to Rs. 50 in Bannu.
Cow	... About the same.
Buffalo bull ...	... From Rs. 16 in Marwat to Rs. 20 in Bannu proper.
Buffalo-cow ...	... From Rs. 40 in Marwat to Rs. 60 in Bannu proper.

Veterinary—There is one Veterinary hospital in the district of Bannu in charge of a Veterinary Assistant. The district is also visited by an itinerating Veterinary Inspector. Glanders, rinderpest and black quarter are all known in Bannu. But as yet statistics as to cattle disease are very scanty.

A horse and cattle-fair is held on alternated years at Bannu and Dera Ismail Khan and is steadily rising in popularity.

Secretary Najibabad Municipality writes :—

Najibabad Municipality.

The cattle are in abundance here milk product is also plentiful. There are good many pastures in the adjacent villages. But milk is still very dear. The reason is that a large quantity of milk is used in the dairies for taking out butter which is exported outside.

PART X.—UNITED PROVINCES.

CHAPTER I.—GENERAL.

Area, Population and Agriculture.

The United Provinces of Agra and Oudh with an area of 1,12,346 sq. miles including Indian States and population of 48,014,080 comprises 10 Divisions 48 districts and 3 Indian States, the names of which will be found below. The principal industry is agriculture which supports no less than 72 per cent. of the population. The soils of U. P. falls into 3 main groups *viz*—(1) the valley soils of the Himalayas, (2) the Central Indian alluvium and (3) the main alluvium. The chief characteristic of the Central Indian alluvium is the black soil with a lighter variant, with light loams and gravel interspersed here and there. The main alluvium consists of sand, clay and loam, the loam being the most productive. Whilst the Himalayan soils are of local origin and vary with the nature of the rock from which they have been formed. The greater part of the province is highly cultivated, the rainfall varies from 25 to 60 inches. The soil generally yields excellent crops of rice, millet, maize, linseed, cotton, wheat, sugarcane, pulses, barley and poppy. The principal scourges are malaria and plague, which hamper the agriculturist severely. Land is held mostly in *ryotwari tenure* in Bundelkhund and Kumaon, on *zemindari tenure* in Agra and *taluqdari tenure* in Oudh. The province is poor in minerals. Gold, copper, iron, coal and limestone are found. Chikan and embroidery of Lucknow, lacquered brass work of Benares and Moradabad and porcelain of Ghazipur, paper, leather-work and fire-works of Lucknow and cotton and woolen mills of Cawnpore, Hardoi and Hathras and the famous carpets of Mirzpur and locks of Aligarh, are the noted industries.

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The population is mainly Hindu, forming about 85 p.c., while Mahomedans number 14 p. c. and Aryas, Sikhs, Jains and Christians comprising the rest.

The Divisions and Districts of the United Provinces are as follows:—

I. Meerut Division—*(5 districts)* (1) Dehra Dun, (2) Saharanpur, (3) Muzaffarnagar, (4) Meerut and (5) Bulandshahr.

II. Agra Division—*(5 districts)* (1) Aligarh, (2) Muttra, (3) Agra, (4) Mainpuri and (5) Etah.

III. Rohilkhand Division—*(6 districts)* (1) Bareilly, (2) Bijnor, (3) Budaun, (4) Moradabad, (5) Shahjahanpur aud (6) Pilibhit.

Divisions and Districts.

IV. Allahabad Division—*(5 districts)* (1) Farukhabad (Fatehgarh), (2) Etawah, (3) Cawnpore, (4) Fatehpur and (5) Allahabad.

V. Jhansi Division—*(4 districts)* (1) Jhansi, (2) Jalaun, (3) Hamirpur and (4) Banda.

VI. Benares Division—*(5 districts)* (1) Benares, (2) Mirzapur, (3) Jaunpur, (4) Ghazipur and (5) Ballia.

VII. Gorakhpur Division—*(3 districts)* (1) Gorakhpur, (2) Basti and (3) Azamgarh.

VIII. Kumaon Division—*(3 districts)* (1) Naini Tal, (2) Almora and (3) Garhwal (Br.)

IX. Lucknow Division—*(6 districts)* (1) Lucknow, (2) Unao, (3) Rae Bareli, (4) Sitapur, (5) Hardoi and (6) Kheri [Lakhimpur].

X. Fyzabad Division—*(6 districts)* (1) Fyzabad, (2) Gonda, (3) Bahreich, (4) Sultanpur, (5) Partabgarh and (6) Bara Banki.

Indian States—(1) Tehri, (2) Rampur and (3) Benares.

There are two cattle-breeding farms in U. P.; the breeds under improvement are the Hissar imported from the Punjab and the local Mewati. Both are essentially draught breeds, but preliminary work is being undertaken with a view to evolving from them by selection, a dual purpose type which will serve both for draught and milk-production. An experiment is also being made in the direction of acclimatising the Sahiwal breed in the Terai districts. The resources of the two farms are not sufficient to meet the demand for bulls and numbers of yearlings are brought from outside and reared for sale. 302 selected bulls raised on Govt. cattle farms are now at stud in the province.

Cattle-breeding by Govt.

Statement showing the results of the census in respect of animals detailed below in comparison with those of preceding census :—

Year.	Bullocks.	Cows.	Male buffaloes.	Cow. buffaloes.	Young. stock.
1904	1,08,73,676	68,95,390	8,56,557	33,92,814	93,34,066
1909	1,00,98,167	62,30,263	6,68,040	34,46,311	89,25,758
1915	1,02,56,855	634,5,836	8,26,848	36,65 721	92,80,783

It would appear from the marked decrease in the number of cows and young stock, that many of these animals had to be sacrificed to support the working cattle which are the first necessity for cultivation.

For the most part cows are valued merely as potential mothers of plough bullocks, but in the towns they form an important factor in the milk supply. In town areas there does not appear to be much increase in their numbers. This is mainly attributable to the utter disregard of the first principles

of breeding. Cows of good breed are imported in large numbers from the Punjab: they are mated with Brahmani bulls of non-milking strains, and the progeny, being necessarily discarded for milking purposes, find their way into the hands of the butchers, or are sold for small sums to the breeders from the submontane districts.

For the purposes of ghee production the cow buffalo is the more useful animal. It was noted at least census that the cow buffalo, alone of all classes of cattle, shows a marked increase and that this fact pointed to an advance in the organization of the ghee industry. The industry flourishes in the ravine tracts on the borders of the big rivers of the west of the provinces, where agriculture is often subordinate to it. Even in an unfavourable year, such as 1913-14, over a crore's worth of ghee was exported from the provinces. The percentage of increase has been the same as at the census of 1914, *viz.* 6 per cent., and the number of these animals in the provinces is now greater than at anytime for which records exist. The fodder supply being strictly limited, this growth of numbers is not without bearing on the relative increases in other classes of cattle. The rise is common to all parts of the provinces, except Bundelkhand, where, as might be anticipated, there is a heavy decline, and certain districts of Rohilkhand, where no equally obvious reasons were at work.

Some mention may be made at this point of the figures of the hide trade. No statistics are available of internal consumption, which, looking to the demand for leathern buckets, &c, must be very large It is necessary therefore to fall back on the statistics of exports. These show a large and practically continuous increase (from 284,805 maunds in 1909, to 387,979 in 1914), and it is notorious that the price of leather has risen considerably. In 1913-14 the price of leather well buckets rose an unprecedented height; as much as Rs. 16 and even Rs. 18 being paid for the large size in use in the western districts. The hide and the Burma meat trade, which has lately come

into prominence, must have offered strong inducements to the cultivators to get rid of their old and less valued cattle at profitable prices.

The number of ploughs having increased by 3 per cent. the working cattle per 100 ploughs stand at the same figure as at last census, *viz.*, 225. The figures relating to the number of ploughs, which of course must depend on the available cattle, are mainly of value as showing whether there are sufficient cattle to properly till the land. Owing to fluctuations in cultivation the figures of any one particular year are apt to be misleading—for instance those of 1913-14 being low on account of the failure of the rains would indicate an unduly small plough duty. Taking the figures accepted as normal for statistical purposes, the cultivated area per plough compares as 7·08 acres with 7·29 acres in 1909. No definite conclusions as to local shortage or otherwise can be drawn from these figures.

Plough-cattle insufficient.

The cultivators of the Agra division appear to breed only a small proportion of their cattle, *viz.* 17 per cent. and to buy the bulk from outside; in fact they import from the Punjab and Native States more than half the number of cattle they raise themselves. Stall feeding has not made the same progress in this as in the Meerut division; and, though well supplied with canal irrigation, the area under fodder crops remains relatively small. There may be some connection between this and the great extension of the area under cotton in the districts of this division; the well-to-do cotton grower finding it more economical to buy his cattle than to breed them. It is however, clearly a part of the provinces where cattle breeding needs encouragement. The Meerut division has long been ahead of others in the raising of fodder crops—the area under which in 1912-13 amounted to 5 lakhs of acres. There is a good deal of home breeding, and the class of cattle are gener-

ally superior to those of the rest of the provinces. In Oudh, Bundelkhand and the Gorakhpur divisions the majority of the working cattle are bred in the villages. In Rohilkhand and the Allahabad division, about half are so bred and the rest bought from outside. Such a summary necessarily leaves out of account the circumstances of individual districts. For instance, in the Lucknow division there appears to be little breeding carried on in Lucknow district itself; but the returns of this district are more than counter-balanced by those of the submontane districts where home breeding is general. The figures are mainly interesting as showing that, except in the Agra division and a few individual districts, such as Bulandshahr, Cawnpore, Farrukhabad and Lucknow, the cultivators of the provinces still on the whole rely on home breeding for their supply of working cattle.

Summary.

But they also indicate that, except in the submontane areas, this supply must generally be supplemented by drafts from the breeding districts. As already mentioned, the numbers imported from outside are relatively small; and any diminution in the supply from these districts would be attended by serious consequences. The supply depends largly on the maintenance of the present grazing grounds, any serious restriction of which would be felt, in a greater or lesser degree, over the rest of the provinces. This applies almost as much to the Nepal grazing grounds as to the ground within our borders. It has been frequently pointed out that stall feeding is not practicable with the typical submontane cattle which are accustomed to roam in large herds and breed best in semi-wild condition. From this point of view the rising price of cattle is not without its compensation. Cattle breeding is now a very profitable business, and graziers can afford to and do pay much higher fees than formerly. This should tend to lessen the inducements to submontane landlords to bring inferior land under cultivation.

The Hon'ble Mr. E. A. H. Blunt, O.B.E., I.C.S. Secretary to Government, United Provinces reports that there appears a general concensus of opinion that milk at present prices is beyond the reach of the mass of the town population and this points to a deficiency in the supply. As regards the rural population the supply is supplemented by that of goats' milk, some breeds of goats being very fine milkers.

Rev. Secy, U. P. Govt.

The most distinctive races of cattle in these provinces viz., the submontane breeds are well-known draught animals, but the cows are poor milkers. The total head of cattle and buffaloes combined (including young of both animals) amounts to ·854 per cultivated acre and ·627 to cultivated area plus culturable waste and current fallows. There is thus no deficiency in actual numbers and any shortage in milk supply must be mainly attributable to low production.

Taking the figures at which milk is sold in the Sadr Bazar, Lucknow, in comparison with those of ten years ago, it appears that the price has risen by about 20 per cent.

Hon'ble Mr. Halley.

He is not in favour of Municipalities competing with gowalas in producing and selling milk. The municipality would thus be shouldering the burden of supplying milk to the whole town population—a burden it is not qualified to undertake, nor the finances of most municipalities to support. He is also not in favour of acquisition of pasturage near large towns on the ground of expense and the undesirability of converting cropped land, probably supporting a dense population, to pasturage. The number of cattle that pasture land in Upper India can support is relatively small, and at certain seasons of the year it barely affords sustenance. The gwala's cows and buffaloes are now wholly or partially stall fed while in milk, and such grazing grounds would at most afford a sup-

plementary form of subsistence; such a reserve would be of great value for dry cattle and would be useful as an exercise ground; but for good cattle while in milk some form of fodder is essential and from this point of view a much smaller area under fodder crops would serve the purpose better.

For the most part the rate at which the gwalas sell appears to be a strictly competitive rate and the margin of profit affords them little more than a bare livelihood. There is, therefore, very little reason to suppose that the municipality, a body that in no country is remarkable for economical management, could run a dairy farm at a profit in competition with the gwalas. If any doubt is entertained on this matter, let a comparison be made between the prices at which the milk is sold by the European run dairies in India or with the prices in England—a country with far superior facilities for milk raising. The average price at which it is sold in that country is equivalent to about 3 to 4 seers the rupee. It seems, therefore, the soundest policy to ascertain how far private industry can be assisted and developed rather than to enter into competition with it.

The mortality among the gwala's herds is heavy and, either owing to the unsuitability of the bulls or the neglect of the calves, the second generation of imported cattle shows a great falling off in quality. There is thus a constant drain on the principal breeding centres without any appreciable return, and this tends to keep up the price of cattle. Mr. Keventer, whose knowledge of the dairying practice in these provinces is unique, laid stress at the Lucknow Cattle Conference on the great desirability of some provision being made near large towns for dry cattle.

A further difficulty under which the gwalas labour is the high price of fodder, which often has to be imported from a considerable distance.

It may therefore be said that so far as the gwalas are concerned the main difficulties in the way of the development of the milk industry for supplying large towns consists of (i) the small capital of the greater number of these men and the absence of any form of association among them; (ii) the want of proper accommodation in or near large towns; (iii) the poverty of most of the breeds of cattle of these provinces as milkers; (iv) absence of grazing ground for dry cattle; (v) the scarcity and high cost of fodder.

The feasibility of extending co-operation among the scattered groups of gwalas supplying milk to the large towns is a matter for the Registrar, Co-operative Credit Societies; where such societies can be formed with his approval, they certainly seem to deserve municipal support and encouragement. The municipal byres should be located outside the limits of the town, provided that efficient regulations were enforceable for the importation of uncontaminated milk into the town. The Khairgarh, Parihar, and Ponwar enjoy an excellent reputation as sturdy enduring plough or transport cattle, but the cows give little milk. Mr. Oliver, the Superintendent, Civil Veterinary Department, in his Note on the Cattle of these provinces, estimates the average yield as from one to two seers per diem. The great bulk of the cattle of the provinces are of a non-descript character, the result of mixing of a variety of breeds; but, generally speaking, the cows are poor milkers. In this matter the Agricultural department can do a good deal to assist by breeding bulls of the best milking strains at their farms and keeping buffalo bulls for disposal.

There appears no reason why municipalities generally should not follow in the footsteps of District Boards and provide suitable bulls for gwalas supplying milk to the towns. The care and management of such animals would be greatly simplified if the gwalas were associated in societies, and they could be handed over for maintenance to the society.

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It would not be difficult to obtain pasturage of a poor quality, but sufficient when supplemented by some fodder crops, within reasonable distance of many large towns to maintain a certain number. There is, for instance, near Cawnpore some usar land which at certain periods of the year affords a little grazing and could be utilized for the purpose. Under such a scheme a certain number of bulls and he-buffaloes should be kept whose services would be available for the herds. The dry cattle could be maintained on such a farm at no great expense At certain seasons of the year fodder is difficult to procure and there is a sympathetic rise in the price of milk. The remedy suggested is growing of fodder crops in waste or poor land conveniently situated treated with town sullage. The management of one or more of such sullage farms should be undertaken by the Agricultural department, which can give a demonstration of various forms of fodder crops. These can be disposed of at easy rates to the gwalas supplying the town with milk.*

As regards the fixed breeds which should be maintained and fostered, or introduced to improve other less favoured stock, I would mention the following.

Mr. Oliver Supdt. C. V. Dept. U. P.

(a) *Kheri breeds.*—These are most suitable for Oudh and perhaps as far east as Benares and Gorakhpur. They are excellent workers and not fastidious in their food, but they give some trouble in breaking to work. They are relatively poor milkers. The Kherigarh, Parihar, and Manjhra Singhai strains are the best.

(b) *Pilibhit.*—The Panwar breed, found chiefly in Puranpur tahsil, is an excellent breed of small cattle, and is suitable for

*Bulletin No. 29. Agricultural Series. The Improvement of the Milk Supply in the Towns of the United Provinces of Agra and Oudh. By the Hon'ble Mr. H. R. C. Hailey, I.C.S., Director of Land Records and Agriculture, United Provinces.

certain of large areas of Rohilkhand. The cattle are good workers, but are not distinguished as milkers.

(c) The *Kenwaria* strain is the most suitable for the greater part of Bundelkhand. These cattle too are good workers but relatively poor milkers.

(d) *Mewat* (Kosi).—This strain apparently is most suited to the Agra division. The cattle are of medium size, good workers and though not famous as milkers, give much more milk than most of the cows found in the province. They require usually more careful feeding than is possible in south Oudh.

It may be said that there is some difficulty in finding a breed that will give both more milk and better working stock than the existing cattle. When the breeding of dairying cattle alone is intended the introduction of bulls from the Hissar or other good milking strains seems advisable, but for general purposes great care will have to be exercised. It would be unwise to indiscriminately introduce such an animal into the herds of already excellent breeds, which are of a different shape, size and character without due forethought, as the result would most likely be the production of an inferior if larger animal, with nothing to recommend it.

Of the cattle recommended as bulls, where it is intended to breed dairy cattle and in certain tracts where the introduction of this blood has been proved to be successful the following breeds are recommended.

(e) *Hansi* (Hariana).—These cattle are most suited to the districts of the Meerut division. They are large and costly animals, and require careful feeding; they are good workers and also good milkers.

(f) *Montgomery*.—This Punjab breed is now attracting much attention as an excellent milk-yielding strain: it is not antici-

pated that the bullocks bred in these provinces would be good workers, but the breed should be considered in cases where increased milk supply is the chief object.

Minutes of the meeting of the Sanitary Board, held at Lucknow, on the 8th February, 1918.

PRESENT:

The Hon'ble Mr. H. C. Ferard, C.S.I., C.I.E., (I.C.S.), Member of the Board of Revenue, United Provinces } *President.*

The Hon'ble Mr. H. M. Willmott, Chief Engineer, Public Works Department, Buildings and Roads Branch, United Provinces ... ...

The Hon'ble Colonel C. Mactaggart, C.I.E., I.M.S., Inspector-General of Civil Hospitals, and Sanitary Commissioner, United Provinces ... ...

The Hon'ble Mr. G. G. Sim, (I.C.S.), Secretary to Government, United Provinces, Financial Department } *Members.*

Mr. C. H. West, Sanitary Engineer to Government, United Provinces ... ...

Munshi Asghar Ali Khan, Kh n Bahadur, B.A., LL.B., Bareilly ... ...

Lieut. D. R. Ranjit Singh, K.H.S., L.M.S., I.M.S., Allahabad ... ...

Mr. E. A. Kitchen ... ... *Secretary.*

The Hon'ble Mr. H. R. C. Hailey, C.I.E., I.C.S., Director of Land Records and Agriculture, and Mr. R. W. D. Willoughby, I.C.S., Registrar, Co-operative Societies, United Provinces, were invited to attend when case No. 1 was discussed.

1. *Read.*—Letter No. 2885 XI—803-D., dated the 25th September, 1917, from the Secretary to Government, United Provinces, Municipal department, forwarding a note on the improvement of the milk supply in large towns, together with a bulletin by the Director of Land Records and Agriculture and a report by the Committee appointed to consider the same question in the Bombay Presidency, and requesting suggestions bythe Sanitary Board as to what practical action should be

taken by Government in the matter or urged upon municipal bodies.

The question was discussed at length and the conclusions arrived at by the Board were:—

(1) That the fact should be fully recognised that the first question is an increase in the milk supply and consequently a decrease in the price of milk rather than a purer supply.

(2) That in the opinion of the Board the above can best be effected by an improvement in the breed of milch cattle.

(3) That such an improvement depends mainly on a cheaper and more ample supply of fodder.

(4) That a better fodder supply in the neighbourhood of municipalities can best be effected by utilising sullage farms for growing and supplying fodder.

(5) That municipalities are unlikely to adopt this course unless it can be demonstrated that a sewage farm can be successfully worked for the above purpose.

(6) That such an experiment should be made in Lucknow but as pumps for the sewage farm there cannot at present be got, the Board suggests that it might be tried at Allahabad under the control of the Director of Land Records and Agriculture. The Director should advise the Sanitary Engineer as to how the farm there is to be levelled, the Sanitary Board financing the scheme.

(7) That meantime the Board does not advise too drastic measures of control within towns which will have the effect of either lessening the supply or raising the price of milk,

(8) That a special man qualified in Dairy farming be appointed and placed under the orders of the Director of Land Records and Agriculture for organising dairy farming in these provinces commencing with municipal areas.

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CHAPTER II.—MEERUT, AGRA AND ROHILKHUND DIVISIONS.

1.—Dehra Dun.

Dehra Dun Gazetteer.

The indigenous cattle of the Dun are poor. They seldom get enough to eat while for a month or two before the burst of the monsoon they endure semi-starvation. In addition to these disadvantages the cattle are never stall-fed and thus they contract disease from standing out all day in the damp forests. The best of the plough cattle are imported from the districts below the Siwaliks. Cattle-breeding has been tried, but the result was not a success.

The hill cattle are popularly said to be poorer still. But they serve their purpose in the plough well. The cows are wretched milkers and in addition to their functions as the mothers of bullocks their chief *rason de etre* would appear to be the production of manure. Fodder consists chiefly of grass carried in from the more precipitous hillsides by the women, leaves and straw. Fodder is seldom preserved, but hillsides that are too steep for safe grazing act as a natural reserve. In the summer the villagers of the neighbourhood drive their cattle up to the forests in the hills. (a)

Dehra Dun Municipality.

The Secretary, Municipal Board, Dehra Dun, forwards copies of opinion of members of the Municipal Board as given below.

The state both of cattle and milk supply in Dehra City is unsatisfactory. The number of cattle is limited. Those in the

(a) Dehra Dun by H. G. Nelson, I.C.S., 1911. p. 35.

Joseph Newman Vice-Chairman.

villages are crosses without much milk strain. In the city the supply of milk is scanty, pastures few fodder is very dear, even the price of grass is exorbitant, *e.g.*, it costs one Re. 1 a day to feed a cow.

The grass of the Dehra Valley is not rich as food. Some good cows are slaughtered for their skin and beef—specially as there is no municipal control over the slaughter of the poor cattle.

I would suggest. (1) That it be taught to people to get cows of better quality. (2) To grow special grass like "Lusan" and other for cattle, the production of which would be easy. (3) To print pamphlets in Hindi and Urdu for the villager giving him simple instructions how to treat and keep and feed his cattle. (4) To urge on the municipality to see that no valuable and milking and able-to-milch animal is slaughtered for its flesh and skin. (5) To open dairies in the suburb close to the city. This is most important. (6) Pasture land should be provided by the Government and kept as such near by the city and where necessary to be sown with a better quality of grass. (7) Private enterprise to be helped to cut grass and make hay from Government forest lands which should be kept free for this purpose.

Abdur Rezak.

State of cattle and of milk supply in Dehra (in fact every where) is unsatisfactory. There are no grazing grounds or pasturage or jungle leaves for the maintenance of cattle. Grass has become scarce owing to the scanty rainfall and whatever little grass is left is sold by the zamindars and cultivators to the grass cutters for the use of horses and ponies. Fodder crops are not so greatly sown as before. Cattle are disappearing for want of food, and also because a great number of them are killed daily for the sake of meat and hide. Both Hindus and Mahomedans have become callous and blind to their urgent needs in their greed for money.

All grass near towns and cities should only be reserved for milk cattle. Fodder crops should be sown and large quantities by compulsion. Butchering of cows and buffaloes in good condition for the sake of meat and hide should be limited to a small number. Government be asked to remit some of the land and canal revenue so that zamindars and cultivators may not make an excuse for converting grazing lands and fodder into money; export of corn and hides to places outside India may be limited to a small quantity.

Hanuman Prasad.

The state of cattle and the supply of milk is very unsatisfactory and I agree with Babu Abdur Razzak's views in suggesting means to cure the evil.

2.—Saharanpore.

Collector Saharanpore.

The Collector of Shaharanpore sends copies of the reports of B. Ganga Prasad, M.A., S.D.O., of Saharanpore, and Mr. Gurney the Superintendent of the College Dairy Rurki, and says that he agrees generally with the opinion expressed in them.

The quality of cattle is poor. The local bulls are generally weak and of inferior breed. Pasture lands are very inadequate. The supply of milk is very inadequate and what milk is available is of very inferior quality.

S.D.O. Ganga Prasad.

Remedies suggested are:—(i) Importation of good and strong bulls. (ii) Giving of prizes to those who keep good bulls, cows or bullocks at the annual Exhibition. (iii) Calves should not be starved, and should be given sufficient milk. (iv) A sufficient area should be recovered in each village for pasturage. and zamindars should be prevented (if necessary by having recourse to legislation) from bringing it under cultivation. The grazing rates in Government forests may also be reasonably reduced.

Mr. G. S. Gurney, F.S.I., M.R.S.I., Thomason College, Roorkee, says :—

Mr. Gurney.

"I took over charge in 1907, with a European Superintendent to do the supervision but for the last 13 months I have alone the whole thing myself, in addition to my regular duties as lecturer in Civil Engineering. The number of cattle should be quite sufficient to supply the needs of Roorkee, it is the quality which is to blame. All the cows which are worth their feed are imported and I think the majority come from Muzaffarnagar. The cattle in this neighbourhood are small and perfectly useless for dairy work. First and foremost a good bull should be imported. Then the calves should not be starved. There should be some law, and it should be strictly enforced against the adulteration of milk and also against skim milk being sold as fresh. We have a herd of about forty cows here in the college, unfortunately some of them only give very little milk less than a seer."

S. D. O. Roorkee.

A. A. Waugh, Esq., I.C.S., Sub-Divisional Officer, Roorkee. I enclose a copy of a note by the Secretary of Hardwar Municipal, Board. I agree with his remarks. Something is being done by the Government at the present time in the United Provinces to encourage the sowing of good fodder crops such as lucerne.

Secretary Hardwar Municipality.

The state of cattle and of milk supply in Hardwar is unsatisfactory because, (*a*) The number of cattle is small, (*b*) The quality is poor, (*c*) There is a scarcity of stud bulls, (*d*) There are no grazing grounds, (*e*) and there is scarcity and dearness of fodder.

Remedies suggested are :—(*a*) The Forest Department be asked to allow the cattle to graze in the Forest land near Hardwar. (*b*) A few stud bulls be provided and some agency appointed to control the large number of Brahmini bulls, who keep roaming in streets. They should not be allowed to cover

any cow unless they are pronounced by the Veterinary Assistant to be sound and fit for covering purposes. *(c)* When grazing grounds are provided a number of cattle of good breed be made available for sale by municipal authorities. *(d)* A Veterinary Doctor be appointed to inspect the cattle of dairy owners regularly. More cleanliness of cow sheds is required. The municipal byelaws are not enough. (*e*) A model byre be started in which arrangement should be made for an abundant supply of good milk. Unless the prices of fodder become normal and vast grazing grounds are provided, no improvement is possible, because the class of people who are dairy keepers can neither afford to keep good quality of cattle, nor can improve their cattle nor can arrange for their proper feeding or breeding. *Fodder is the main difficulty.*

3.—Muzaffarnagar.

The Magistrate and Chairman, District Board, Muzaffarnagar, states that the condition of cattle and milk supply in this locality is not satisfactory, as the number of cattle is going down for want of fodder and pasture lands and their quality is also deteriorating for want of good bulls. Milk supply is not sufficient and pure.

Dist. Magistrate Muzaffarnagar.

To remedy these evils the following suggestions are made:—

1. Steps should be taken to encourage tenants to grow more fodder of various kinds and they should be taught how to store them. 2. Grazing lands should be provided for every village by Government. 3. Good bulls should be supplied to every village or group of villages. 4. The destruction of young calves and milch cows should be stopped.

Kunwar Enayat Ali Khan, Chairman Municipal Board, Muzaffarnanagar says that the state of cattle and milk supply is unsatisfactory for want of pasture grounds and suggests that such pasture grounds should be maintained by the Board.

Muzaffarnagar Municipality.

4.—Meerut.

Meerut Municipality.

The Executive Officer, Municipal Board, Meerut informs that the state of cattle and milk supply in this municipality is unsatisfactory. Milk is brought to the city from villages also and hence no estimate can be formed as to the number of cattle, but it is suspected that it is large. The quality of cattle is not good. Breeding with inferior bulls is causing deterioration of cattle Pastures in Meerut are almost non existant. Fodder is very dear. The conditions of milk production in the city are unsatisfactory and insanitary. If co-operation is started among the ghosis and gaddis and the municipality starts a model dairy conditions will improve.

Meerut Dist. Board.

The state of cattle and milk supply is not satisfactory. The main causes are:—(a) Pastures being scarce the cost of keeping cattle is very great, and the owners to get an adequate return for the cost of keeping them take as much milk as they can and leave very little to the young one which makes it weak from the very beginning. (b) Want of proper bulls.

Formerly an Indian had a very great regard for a Brahmini bull, a cultivator would not like to turn him out of his fields and a shopkeeper would allow him the use of the gram in his shop freely. The case is quite different now. The cattle are gradually deteriorating in quality and number.

3. To remedy these conditions (a) there ought to be public pastures in big centres and for a collection of villages. (b) Public bodies, Municipal and District Boards and Local Goshalas ought to be induced to keep a good stock of bulls in a proper condition for breeding purposes, (c) the working of the Goshalas to be organised and systematised.

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5.—Aligarh.

The domestic animals are generally of a superior type, owing to the fact that large numbers of animals are imported from the great breeding districts of the Punjab. In Aligarh there are few grazing grounds of any extent, and consequently few of the land-holders make any attempt to breed cattle on their own estates, and consequently reproduction is left to chance, or rather to the agency of the so-called Brahmani bulls, without any selection or effort to improve the local strain. There are no recognised indigenous breeds, and if the locally raised stock is better than the average, the result is due solely to the fact that the country-bred cattle are the off-spring of good imported beasts. From time to time attempts have been made to encourage cattle-breeding by the provision of highclass bulls and by the support lent to the Aligarh cattle show; but the experiments have never had much result and the cattle-show maintained in connection with the Aligarh fair was dropped in 1906. *

Aligarh Gazetteer.

At the first regular cattle census of 1899 it was found that there were 189,522 bulls and bullocks and 19,728 male-buffaloes, which gave an average of 2·39 animals per plough; but the figures include cart and pack bullocks as well as those too old for work. In 1904 the total was found to have declined, including 169,148 bulls and bullocks and 18,797 buffaloes, while the average per plough had fallen to 2 24. The number of cow-buffaloes is larger than in any other district of the United Provinces, and illustrates the importance of the dairy farming business. Apart from the well known concern at Chherat, there is a very expensive and valuable trade in ghee, which is exported in great quantities to all parts of the country. The most common type of cattle disease is foot and mouth, which is widespread during and after the rains. It is much less dangerous than rinderpest and

*Aligarh Gazetteer by H. R. Nevill, I.C.S., F.R.G.S., etc. [1909]

dysentery, which in several years have wrought havoc among the cattle of this district. Anthrax, too, is far from uncommon and is the most fatal of all, though as a rule the outbreaks are merely sporadic. There is a Veterinary Hospital at Aligarh, and *salutris* are maintained by the District Board for inspection and other duties, including inoculation for rinderpest and various diseases, though as yet the practice has attained little popularity.

The Health Officer, Municipal Board, Hathras, District Aligarh reports that the state of cattle and milk supply to this locality is unsatisfactory. The number of cattle is not so small but their quality is poor and the milching capacity is on the decline. There are no arrangements for good breeding and the fodder scarce. The housing arrangements of the cattle are also very insanitary.

Hathras Municipality.

Remedies. (1) Breeding bulls should be provided. The Government may supply these to the Municipalities and District Boards which should be asked to open Farms at suitable centres for the benefit of the adjoining villages. The local bodies may if they so desire fix some fee for the purpose. (2) The Brahminical Bulls going astray in the town should be removed and utilised in some other useful way. They are not at all to be employed for breeding purposes. (3) Grazing-grounds should be provided in certain centres which may be under the control of local bodies. (4) There is a great need for the establishment of a model Dairy under the control of the Municipal Board. (5) The local bodies should frame bye-laws to keep proper control over the cattle sheds, milk shops and other places used for the storage and supply of milk.

Ambay Prasada Mathur, Vety. Asstt. Surgeon, Hathras, Aligarh, U. P. submits this note: The state of cattle and of milk supply is not at all satisfactory in this locality. We are not losing in number, but the chief evil which we are con-

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fronting at the present moment is the decreasing quality of Indian cattle. The milching capacity of cows is daily deteriorating. As a remedy I beg to suggest that District and Municipal Boards should establish model farms in suitable rural and urban areas, and breeding on modern scientific liues should be introduced in these farms. In the beginning Government should come to help these local bodies by supplying them with suitable breeding bulls from its farms. There are already two such cattle farms maintained by the U. P. Government under the supervision of its Civil Vety. Department which are issuing bulls to individuals and public bodies in considerable numbers every year free of charge. All the undesirable and inferior bulls should be got rid off and otherwise rendered useless by castrating them. In order to meet the fodder question economically all the municipal arable land should be utilised, besides acquiring land on lease for growing fodder crops. Besides this cow-keeping should be encouraged extensively among individual persons and well-to-do families. Personal care and attention is what is most desired in keeping cow and then only cow-keeping can be made economical in every respect.

Vety Surgeon Hathras.

On account of export of meat to other countries the number of cattle has very much diminished. The difficulty of forage is another cause and the third reason is deficiency in the number of fairly bred cattle. The export of meat to other countries should be stopped entirely and a suitable management should be made for the increase of nice pedigree of cattles.

Atrauli Municipality.

6.—Muttra.

In Muttra, as elsewhere the best specimens to be found are generally imported from Rajputana or the Punjab. The milch cows of northern Chhata, however have long had something more than a local celebrity;

Muttra Gazetteer.

number of bulls and bullocks was 137,927 and of male-buffaloes 27,175, giving a total of 165,102 plough animals, while there were 71,831 ploughs, the duty had consequently fallen to 10·93 acres—still an unusually high figure, and the proportion of animals per plough averaged 2·29, which was considerably below the provincial average. A second census was taken in January 1904, when a very slight increase of stock was observed for though the number of bulls and bullocks had fallen to 134,391, that of buffaloes had risen to 30,827. This gave a total of 165,218 plough animals, and as the number of ploughs was 74,559, showing a marked advance, the proportion of animals per plough was only 2·21 as against a provincial average of 2·33. The plough duty on the total cropped area of 929,243 acres was no less than 12·4 acres, or more than ever recorded previously. Of other animals at the last census there were 79,304 cows, 80,049 cow-buffaloes and 170396 young stock representing a considerable increase since 1899.*

The buffaloes are for the most part bred locally; males used for draught cost from Rs. 12 to Rs. 30 each while milch buffaloes fetch from Rs. 30 to Rs 80.

Cattle-disease—The annual returns of cattle-disease are too unreliable to be worth recording; but they suffice to show that disease is always present in some degree, and occasionally assumes an epidemic character. The most common forms are rinderpest, foot-and-mouth disease, haemorrhagic septicaemia or malignant sore-throat and anthrax. Foot-and-mouth disease is perhaps the most prevalent, but the least fatal. The ordinary forms of cattle disease are prevalent, attempts have recently been made to check the spread of the others by inoculation; but the results achieved has so far been small owing to the apathy displayed by the people. A peripatetic veterinary assistant is employed by the District Board and another is stationed at Agra in charge of the Veterinary Hospital.

*Agra Gazetteer by H. R. Nevill, I.C.S., F.R.G.S., [1905] p. 340.

and the town of Kosi has for many years been a famous cattle mart, though the dealers allege that the best cattle to be obtained there are brought from the tracts already mentioned. In and around Hathiya near Barsana the cattle are above the average and cost about Rs. 90 a pair as against Rs. 50 for the ordinary indigenous breeds. In 1879 the district contained 102,523 plough cattle and 49,845 ploughs; this meant an average duty of 14·3 acres and a proportion of 2·06 animals per plough. In August 1899, a regular stock census was taken and it was then ascertained that the number of bulls and bullocks was 101,210 and of male brffaloes 13,515, giving a total of 114,725 plough animals. There were at the same time 50,181 ploughs and the duty on the average areas of cultivation amounted to 14·2 acres per plough.*

A second census was taken in January 1914, when a considerable decrease in the number of stock was observed. The number of bulls and bullocks had fallen to 91,054. This gave a total of 105,104 plough animals, and as the number of ploughs was 47,515 the proportion of animals per plough was only 2·21 as against a provincial average of 2·33. The plough duty on the average cropped area of 711,875 acres was no less than 14·9 acres, a higher figure than that previously recorded The last census of stock taken in January 1909, showed a continuation of decrease only 81,575 bulls and bullocks and 12,347 male-buffaloes were recorded, the number of ploughs being 42,988. This gives a plough duty of 16·53 acres on an average cultivated area of 711,875 acres, and a proportion of 2·18 animals per plough. Of other animals at the census of 1904 there were 73,332 cows, 76,553 cow-buffaloes and 160,215 young stock, showing a decrease under all heads since 1899. In 1909 the number had further decreased, that of cows being 56,101, of cow-buffaloes, 69095 and of young stock 112,388.

*Gazetteer of the United Provinces. Vol. VII. Muttra, pages 21, 23 and 24. 1911. Compiled by D. L. Drake—Blockman, I.C.S.

number of bulls and bullocks was 137,927 and of male-buffaloes 27,175, giving a total of 165,102 plough animals, while there were 71,831 ploughs, the duty had consequently fallen to 10·93 acres—still an unusually high figure, and the proportion of animals per plough averaged 2·29, which was considerably below the provincial average. A second census was taken in January 1904, when a very slight increase of stock was observed for though the number of bulls and bullocks had fallen to 134,391, that of buffaloes had risen to 30,827. This gave a total of 165,218 plough animals, and as the number of ploughs was 74,559, showing a marked advance, the proportion of animals per plough was only 2·21 as against a provincial average of 2·33. The plough duty on the total cropped area of 929,243 acres was no less than 12·4 acres, or more than ever recorded previously. Of other animals at the last census there were 79,304 cows, 80,049 cow-buffaloes and 170396 young stock representing a considerable increase since 1899.*

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Cattle-disease—The annual returns of cattle-disease are too unreliable to be worth recording; but they suffice to show that disease is always present in some degree, and occasionally assumes an epidemic character. The most common forms are rinderpest, foot-and-mouth disease, haemorrhagic septicaemia or malignant sore-throat and anthrax. Foot-and-mouth disease is perhaps the most prevalent, but the least fatal. The ordinary forms of cattle disease are prevalent, attempts have recently been made to check the spread of the others by inoculation; but the results achieved has so far been small owing to the apathy displayed by the people. A peripatetic veterinary assistant is employed by the District Board and another is stationed at Agra in charge of the Veterinary Hospital.

*Agra Gazetteer by H. R. Nevill, I.C.S., F.R.G.S., [1905] p. 3·40.

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Agra Municipality.

The number of cattle has immensely decreased. Want of pasture and fodder does not allow people to keep cattle. Government should leave grazing-grounds for every village, town and city and stop exporting fodder and grains outside India. Burma meat trade should be stopped.

Firozabad Municipality.

The state of cattle and milk supply are quite unsatisfactory in this locality. The following remedies are suggested :—(i) Special arrangements be made for pastures and adequate number of plots of land be reserved for fodder and pasture thoroughout the whole of India. (ii) Inspectors be appointed everywhere to keep strict and close watch over milk and to examine it (ii) The number of milk cattle is very small which must be enhanced by all possible means.

8.—Mainpuri

Mainpuri Gazetteer.

The animals are for the most part of the ordinary type, bred from the dedicated Brahmini bull. Some attempts have however, been made to improve the breed and have met with a fair measure of success. In 1870 three stud-bulls were imported from Hissar, two of them a cross between a Nagora bull and a Mysore cow, and the third a cross between a Nagora bull and a Hariana cow. Their was a great demand for their services and the experiment was a success. Again, the Court of Wards recently brought in two stud bulls, one of the Khairigarh and the other of the Kosi breed, which stood at Barauli and Arjunpur respectively. The Khairigarh bull produced good stock and was popular. There is an important cattle market at Sirsaganj, which supplies all animals for agricultural purposes to this and the neighbouring districts. Other important cattle markets are at Ghiror and Karhal. *(a)*

*Gazetteer of the United Provinces. Vol. XI Mainpuri, 1910 [p. 29]. Compiled by E. R. Neave, I.C.S.

The returns of the recent cattle census in 1909 showed the district to contain 141,709 bullocks, 56,087 cows, 128,756 buffaloes and 152,813 young stock.

9.—Etah.

Etah has no breed of cattle peculiar to itself, the animals used for agricultural purposes being of the usual small, thin, wiry breed common to the duab. Down in the west of the Jalesar tahsil the cattle are noticeably finer than in the rest of the district, probably owing to the neighbourhood of the great grazing grounds across the Jumna. In the region west of the Isan the deep spring level makes a much more powerful type of animal necessary to work the wells. The improvement of the inferior local breed of cattle has been a good deal neglected in the past; but the matter has been taken up by the late Raja of Awa, who imported a number of good bulls and started a breeding farm at Awa which ought in time to have a considerable influence in raising the standard. *

Etah Gazetteer.

The first regular cattle census was taken in 1899, the second census was taken in 1904 and the last in 1909. The statistics for earlier censuses consisting as they do of the unchecked estimates of patwaris, are of little value. A comparison of the results of each census shows some rather remarkable variations. The number of bulls and bullocks enumerated at the first census was 180,005. It fell to 178,115 at the following census and at the last census it was lower still *viz.*, 157,760. Cows, of which there were 94,820 in 1899, had diminished to 88,066 in 1904 and to 68,343 in 1909. The same steady decrease is found in the case of male-buffaloes, which numbered 22,864 in 1899, 21,547 in 1904 and 20,230 in 1909. In the case, however of cow-buffaloes, the increase has been conti-

* Gazetteer of U. P. Vol. XII Etah 1911 P 16 by E R Neave, I.C.S.

The lowlands supply large quantities of the weed known as Chaupatta, a species of oxalis and near the city this fetches a high price, especially in dry seasons. Another useful weed which is carefully collected is Akra (Vicia Sativa). At the end of the rains large numbers of cattle are sent to graze in the jungles of the Tarai and Pilibhit two or three herdsmen accompanying the animals from each village. The first regular stock census taken in 1899 showed a total of 215,744 bulls and bullocks and 35 301 male-buffaloes. This gave an average of 2·42 animals per plough. The average plough duty was 7·34 acres. A pair of bullocks which can plough but five acres of stiff clay can manage eight or nine acres in the sandy soils of Faridpur. The next census taken in 1904, showed a substantial increase, bulls and bullocks numbering 249,844 and male-buffaloes 39,042 but the average per plough remained practically the same as before. The last enumeration was that of 1909, when the total number of bulls and bullocks was 212,292 and of male-buffaloes 32,321 while the average per plough was but 2·23. There were 80 312 cows and 63,754 cow-buffaloes. In almost all years cattle disease is very prevalent throughout the district. At times much damage has been caused by severe epidemics of rinderpest and as yet little progress has been made towards establishing a general belief in the efficacy of inoculation, although two Veterinary Assistants are entertained by the District Board for the prevention of disease and for the maintenance of the hospital at Bareilly.

11.—Bijnor.

The domestic animals of Bijnor are usually of a higher stamp than those found in the districts to the south. This results from the presence of large grazing areas and the abundance of pasture. The bullocks are usually small and compact, but are capable of great endurance and have a somewhat high reputation in other districts. The cost of an average bullock for ploughing purposes ranges from Rs. 30 to Rs. 50, while those employed for draught generally cost over Rs. 100 each, a cow can be obtained at any price between Rs. 15 and Rs. 35. At the stock census of August 1899 there were 193,144 bulls and bullocks and 16,332 male-buffaloes giving a total of 209,476 plough cattle or 2·82 to each plough. A second census taken in January 1904, showed that the number of bulls and bullocks had risen to 210,455, and these, together with 16,010 male buffaloes, gave an average of 2·73 per plough. The number of cows also is remarkably

Bijnor Gazetteer*

*Gazetteer of Bijnor by H. R. Nevill, I.C.S., F.S.G.S. 1908 P 31.

large for at the last enumeration there were 130,138 cows and 39,383 cow-buffaloes, as well as 164,544 animals classed as young stock.

The district is not often visited by severe epidemics of cattle disease. Isolated cases of anthrax are reported from time to time, while haemorrhagic septicaemia, which is so common in the central and eastern submontane tracts is here almost unknown. Three Veterinary Assistants are attached to the district and good work has been done in promoting inoculation, which at first was viewed with disfavour, but is gradually growing in popularity as its benefits are appreciated.

12.—Budaun.

Budaun Gazetteer.

The quality of the locally-bred animals which are of the ordinary inferior type depends much on the available pasturage and consequetly there is a somewhat marked difference between the cattle of the highly-tilled uplands and those of the Ganges *khadir*, and especially the Gunnaur tahsil in which extensive and valuable grazing-grounds exist. For several years superior grade stud-bulls were stationed at Simri in Gunnaur and at Sainfullaganj in pargana Islamnagar, but the experiment did not prove successful. Much of the old pasture land has been broken up with the spread of cultivation; in former days the grazing grounds of Kaulhai in Sahaswan and of Usawan in Usehat were very famous but all trace of them has long disappeared. *

An enumeration made in 1892 gave a total of 223,205 plough animals or 2·63 to each plough, the average duty per plough being 5·66 acres, as calculated in the cultivated area. A regular cattle census taken in August 1899, showed that the number of animals had risen to 243,581 the average to each plough being 2·33, the duty had increased to 8·12 acres. A second cattle census was taken at the beginning of 1904, and it was then found that there were 257,237 bulls and bullocks and 20,125 male buffaloes giving a total of 277,362 plough animals; but though the gross number had increased, the average for each plough had declined to 2·26. In addition there were 116,543 cows, 101,856 cow-buffaloes and 213,024 young stock. Cattle disease of various descriptions is fairly common at all times in the district and especially in the lowlying tracts. At times epidemics of considerable intensity occur and the resultant mortality is very great. A veterinary assistant has been posted to Budaun under the control of the District Board.

*Gazetteer of Budaun by H. R. Nevill, I.C.S., F.R.G.S., etc. 1907. P 23.

13.—Moradabad.

Moradabad Gazetteer.

The cattle bred in the district are of an ordinary type. The bullocks are small but compact and capable of considerable endurance. (a)

A regular census of the animals kept in the district was first taken in 1899. There were then 276,279 bulls and bullocks and 37,650 male buffaloes, giving an average of 2·44 animals per plough. A second census taken in 1904 showed a considerable increase but owing to the larger number of ploughs the average had dropped to 2·38. The last census taken in January 1909 gave a total of 279,175 bulls and bullocks and 27,666 male buffaloes. The average per plough was only 2·24 as compared with an average of 2·29 for the whole of the Rohilkhand Division. Since 1894 a Veterinary Assistant has been maintained by the District Board and recently the staff has been increased and a Veterinay hospital has been started at Moradabad.

Dist. Board Moradabad.

The Chairman District Board, Moradabad informs that the state of the cattle and of milk-supply in the locality is unsatisfactory. There are numerous causes which have contributed to this grave and deplorable state of thingsbut most important of them are :—1. Want of pasture 2. Indiscriminate and ever increasing slaughter of cattle every year for hides and on account of the Burma dry meat trade. 3. Scarcity of fodder. 4. Promiscuous breeding. The remedies suggested are (1) Improved grazing facilities should be provided. (2) Slaughtering of calves and of cows and buffaloes in milk should be prevented. (3) Efforts should be made to have the area under fodder crops increased. (4) Deterioration in breed can be checked by importing a number of good bulls from outside and by introducing a distinct and homogeneous breed and by endeavouring to keep it pure,

14.—Shahjahanpur.

Shahjahanpur Gazetteer

The domestic animals though generally well suited to the conditions of the country, are of a small and inferior type. Attempts were made by Mr. Carew of Rosa in 1866 and by Government in the following year to improve the local stock by means of bulls imported from the Punjab and other parts, but the experiment proved unsuccessful owing to the inability of these animals to withstand the change of climate. (b)

(a) Moradabad Gazetteer by H. R. Nevill, I.C.S., F.R.G.S., etc. [1911] p 18.

(b) Gazetteer of Shahjahanpur by H. R. Nevill, I.C.S. F.R.G.S. etc. 1910 p 19.

The first enumeration of 1899 showed that the number of bulls and bullocks was 191,780 giving an average of 2·38 animals per plough. A second census in 1904 showed that the number of animals to each plough was 2·37. The third census taken in 1909, showed a decided decline the total number of plough animals being only 225,245 of which 43,381 were buffaloes while the proportion fell to 2·17 animals per plough. Efforts have been made during recent years to encourage inoculation for rinderpest and other diseases with encouraging results; three Veterinary Assistant Surgeons are employed by the District Board.

Health Officer Shahjahanpur.

The Health Officer Shahjahanpur reports that the state of cattle is deplorable and milk-supply very scanty. The animals are very poorly looked after regarding their grazing, housing breeding and fodder both by private individuals and by professional "Ahirs". A large number of animals are being slaughtered daily for Burma dry meat trade Co. No public or private grazing land for animals is provided in the city. Four grazing lands of at least half a mile square each, should be kept reserved for animals to graze there free of cost.

15.—Pilibhit.

Pilibhit Gazetteer.

The cattle bred in the district are of a superior type to those found in the parts of Rohilkhand to the south and south-west owing no doubt to the manifest advantage enjoyed by Pilibhit in the matter of pasturage and grazing-grounds. In 1899, it was ascertained that there were 114,983 bulls and bullocks and 32,013 male buffaloes giving an average of 2·47 per plough, and a plough duty of 7·17 acres of cultivation. In 1904, the number of bulls and bullocks was 125,117 and of male buffaloes 40,242. This gave an average of 2·51 per plough. *

Collector Pilibhit

This district is a considerable breeding and grazing ground both for ordinary cattle and buffaloes. The cattle being required primarily for ploughing and cart work, they are bred with a view more to their qualities in this respect than for the milk-supply which is here of minor importance.

Pilibhit Municipality.

Chairman Municipal Board, Pilibhit states that the condition of cattle and milk-supply in the locality is unsatisfactory. The cattle in the locality are generally of a stunted growth and supply of bulls for breeding purposes can remedy the defect. There are no grounds to yield sufficient pasture and the Government should be moved in the matter.

* Pilibhit Gazetteer by H. R. Nevill, I.C.S., F.R.G.S., [1909], p. 77.

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CHAPTER III

ALLAHABAD, JHANSI, BENARES AND GORAKHPUR DIVISIONS

1.—Farrukhabad.

The animals are of the small inferior type met with throughout the Duab, no attempt being made to supervise their breeding or to influence the selection. Larger breeds like the Mewati, Kosi and Barmana are imported, mainly from the annual fair at Makanpur in the Cawnpore district, which is the great source of supply for this part of the country, the first regular cattle census was taken in 1899, when it was found that there were in the district 186,544 bulls and bullocks, and 19,456 male buffaloes, giving a total of 206,000 plough animals. There were at the same time 87,439 ploughs and the average number of cattle to each plough was thus 2·36. The next census was held 5 years later in 1904, and it was then found that while the number of plough cattle had increased to 234,077 the number of ploughs had also risen to 100,017, and the average number of cattle to each plough had thus fallen to 2·34. The third and most recent census was held in 1909 and showed a remarkable decrease all round, which is probably to be explained by the severe fodder famine of 1905-06. Plough cattle had fallen in number to 194,684 and ploughs to 88,738, the average number of animals per plough being now only 2·20. Young stock had fallen back nearly to the figure at which they stood ten years earlier, and now only numbered 164, 113, and there were 77,024 cows and 82,871 cow-buffaloes. The ordinary cattle diseases prevail and there are 3 veterinary assistants maintained by the District Board whose services are available free.(a)

Farrukhabad Gazetteer.

The Chairman District Board Farrukhabad at Fatehgarh U. P., states that the state of cattle and milk supply in this district is unsatisfactory due to bad breeding, dearth of fodder, decrease in number of cattle and

Farrukhabad District Board

(a) Farrukhabad Gazetteer 1911 P. 16 by E. R. Neave, I.C.S.

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want of pastures. These evils can well be cured bythe setting apart of good portions of fodder-producing land as pastures in every village and the improved facilities for procuring animals of good breed.

2.—Etawah.

The district has no particular breed of cattle of its own, nor have any schemes been undertaken for improving the indigenous animals. Where well irrigation is practised the bullocks are generally stronger in build and larger than those required for ordinary agricultural purpoees. Buffaloes are employed usually by the poorer class of cultivators. Milch buffaloes are commonly kept by all who can afford them and supply as much as 7 or 8 seers of milk a day; they cost some Rs. 50 each. The most important markets for the district are the Batesar fair in Agra and the Makanpur fair in Cawnpore.(a) When a regular stock census was taken in August 1899, there were 146, 513 bulls and bullocks and 26,518 male buffaloes, giving a total of 171,031 plough cattle, while there were 76,941 ploughs. This gave a plough duty of 7·08 acres and a proportion of 2·23 animals per plough. In January 1904, a substantial increase under all heads of stock was observed. It was then ascertained that there were 150,588 bulls and bullocks and 28, 165 male buffaloes, giving a total of 178, 753 plough animals. The number of ploughs on the same occasion was returned at 81, 153, so that the proportion of animals per plough had fallen to 2·20. The plough duty on the average total cropped area of 674, 302 acres was 8·31 acres. The most recent stock census was taken in January 1909, and there was a decline under all heads except that of cow buffaloes; these had increased in number to 84, 644, while there were 119. 322 bulls and bullocks, 24,819 male buffaloes, 82,011 cows and 167,755 young stock. The commonest forms of disease are rinderpest, known as the rogi, debi, chechak, and sitala; foot and mouth disease called khar pacea; anthrax; and haemorrhagic septica-

Etawah Gazetteer.

(a) Etawah Gazetteer 1911 p. 21- by D. L. Drake—Brockman, I.C.S.

emia. A peripatetic veterinary assistant is employed by the District Board, and another is stationed at Etawa in charge of a veterinary hospital.

Pandit Baijnath Choubey gives this information relating to cattle of the Etawah district in U. P.: Both in number of cattle as well as their quality their condition is unsatisfactory due to (a) Bad breeding owing to the paucity of good, healthy and suitable bulls (b) Scarcity and high price of fodder (c) Want of good and free pasture lands. The old custom of the dedication of the Brahmani bulls has been much disorganised and degenerated. It requires improvement in the selection of good bulls and their maintenance by the dedicators otherwise the Municipalities in towns and village Panchayats in villages be made responsible to keep free breeding studs in the interests of the public welfare. The fodder produced in the district must not be freely exported out of that area, surplus fodder only being exported. It is said there were pasture lands in olden times in every village, but they have all been converted into cultivated lands for the production of corn. Pasture lands are necessary for the general welfare of the cattle and men, as the fields to grow corn. Where there are forests, they must be open to the cattle for free grazing and suitable and sympathetic arrangements made towards that end by the Government.

Pt. Baijnath Choubey.

3—Cawnpore.

The local cattle are generally of a small and inferior type, of little use for draught purposes, though suitable enoug for ploughing in the light soils which cover the bulk of the area. This is due principally to the absence of adequate grazing-grounds. Efforts have been made from time to time with the object of improving the local breed by the importation of Hanshi bulls and even English stock; but in either case they proved unsuited to the climate, and required more food and greater care than the ordinary cultivator could afford.(a)

Cawnpore Gazetteer.

(a) Cawnpore Gazetteer—1909 p. 18 by H. R. Nevill I.C.S., etc.

The first regular enumeration of cattle held in 1870 gave a total of 189, 899 plough animals, 96, 217 draught bullocks, 171, 275 cows and young stock and 28, 396 buffaloes. The average number of cattle per plough was about 2.1, while the average plough duty was 8·25 acres, the figure ranging from 7·25 in Akbarpur and Bilhaur to as much as 10 acres in Ghatampur. In 1899, when the number of bulls and bullocks was 200, 698, of male buffaloes 42.273, of cows 142, 913 of cow buffaloes 91,485 and of young stock 217,533. This showed an increase of over 100,000 horned cattle and of more than that amount in the case of buffaloes; the number of available cattle per plough had risen to 2·28 the plough duty had dropped to 7·44 acres. The next census was that of 1904, when a further general increase was found to have taken place especially in the case of cows and young stock. There were then 219,255 bulls and bullocks, 154,423 cows, 45,977 buffaloes, 92,241 cow-buffaloes, and 245,660 young stock. The numbers of milch-cattle are well above the average, indicating the importance of the ghi industry, the city of Cawnpore providing almost inexhaustible demand for this commodity. Cattle-disease is at all times more or less prevalent and is no doubt disseminated from the great cattle fairs, particularly that of Makhanpur. The District Board maintains two veterinary assistants. Of late rinderpest has been comparatively rare, though this cannot be at any degree attributed to spread of inoculation.

Cawnpore Goshala

The Secretary, Cawnpore Goshala complains of the extremely unsatisfactory condition of cattle and supply of milk and says that day by day the number of cattle is decreasing. This is due to the scantiness of grass fodder and want of pasture grounds, as also to bad breeding. Owing to the deterioration both in quality and number of bullocks the produce is decreasing day by day and thus the state of cultivation is getting worse and worse, a condition of things which we cannot contemplate without serious alarm and apprehension. Schemes of Dairy and breeding farms should be printed in different languages and distributed free to all. Dairy and breeding farms should be established in sufficient number all

over the country. The Government should actively help the work by providing facilities and encouragement by dissemination of useful information. The number of veterinary surgeons should be increased, sufficient pasture grounds should be left in villages for grazing purposes.

Lands on the right and left of the main streets and of the Railway lines as well as small fields within the city and lands in the forest where sufficient fodder can grow should be kept free for general cattle grazing.

Cawnpore Municipality.

Chairman, Municipal Board Cawnpore reports that the state of cattle and of milk supply in this locality is not satisfactory. Of the various reasons in respect to the scanty supply of milk and the deplorable condition of the cattle the chief is the want of sufficient pasturage. Breeding should also be improved. The chief remedy is the provision of pasture.

4.—Fatehpur.

Fatehpur Gazetteer.

The domestic animals of the district are for the most part of the usual coarse and inferior description found in the Doab generally. The better varieties are imported, from the neighbouring districts to the west. The only part of the district in which any cattle breeding is carried on is that in the neighbourhood of the Rind, the animals there raised having a high reputation and fetching good prices in the Bindki market. The ravines of the Rind as well as those of the Ganges, Jumna and Bari Nadi provide the best pasturage in the district. Large quantities of ghi are manufactured and exported from Bindki, while at Kora there is an important trade in bones and hides. The slaughter-house at Kora is situated on the ruined site of a fort outside the town, and here scores of cattle are slaughtered daily, the meat being exported to the neighbouring parts of the Cawnpore district. There has been no attempt made at any time to improve the local breed of cattle by selection and the usual Brahmani bull system prevails.(a)

(a) Fatehpur Gazetteer p. 33 by H. R. Nevill, I.C.S., F.R.G.S. etc., 1906.

In 1877, the returns showed 289 cattle to the square mile, or roughly 474,000 in all. The enumerations of recent years show a great decrease.

5.- Allahabad.

Allahabad Gazetteer.

The domestic animals found north of the Ganges are usually of an inferior quality. The trans-Jumna tract is a cattle breeding country, owing to the presence of extensive pastures, and the Khairagarh cattle resemble those bred in the hill country of Karwi and Rewah. In the cattle census of 1899, it was found that the district contained 322659 bulls and bullocks and 30372 male buffaloes, which gave an average of 2·239 animals per plough. The next census in 1904 showed a large increase, bulls and bullocks numbering 359233 and buffaloes 31448, the average rising to 2·44 per plough. The last enumeration was taken in January 1909 and on this occasion a slight decrease was observed. The number of bulls and bullocks was 349151 and of male buffaloes 25364 while the average per plough, calculated on the ascertained number of the latter, was 2·35. Young stock numbered 260070 and there were 192271 cows and 103333 cow buffaloes. Dairy farming has received a great stimulus at and near Allahabad from the example set by the military farm, which has also served to demonstrate the value of the superior breeds imported from the Punjab and other stock raising centeres. For the prevention of disease three veterinary assistants are maintained by the District Board, one being in charge of each of the main geographical subdivisions of the district, and the closer supervision has rendered it possible to check the spread of disease far more effectively than was formerly the case. Much too has been done towards the popularisation of inoculation, which is still regarded with general suspicion. The District Board also maintains a veterinary hospital at Allahabad.(a)

(a) Allahabad Gazetteer p. 20 by H. R. Nevill, I.C.S., etc., 1911.

The Allahabad Hindu Sabha reports that the number of cattle is insufficient, the quality of cattle is very low, there is no regular system of breeding, there are very little or no pasture lands. The supply of fodder is quite inadequate. They make these suggestions, *viz.* (*a*) Railway freight on cattle and fodder should be reduced. (*b*) All lands belonging to Government, Municipalities Local Boards or other public bodies should be freely left for pasture with any such restriction as may be necessary for protection of graves, flower plants etc., and grass growing on such lands should on no account be sold.

Allahabad Hindu Sabha

(*c*) Private owners of land should be compelled to leave a proportionate area of their holding or Zemindari for pasturage and the Government should exempt such area from payment of Government Revenue.

(*d*) Government should provide model farms in each province with district farms in each district. There should be good veterinary hospital attached to every such farm.

(*e*) Destruction of young cattle and of better stock capable of being covered should be totally prohibited.

(*f*) Private societies and individuals should be encouraged by the Government by grants-in-aid and also prizes at annual exhibitions.

In the U. P. Council meeting of the 2nd June, 1919 in answer to question No. 36 asked by the Hon'ble Munshi Narayan Prasad Ashthana., the Hon'ble Mr. Blunt replied that unrestricted free grazing is permitted on all roadsides save those within the limits of municipalities and civil stations, and where arboricultural operations are in hand. In such cases the grass is leased out to a contractor with the object of securing that cattle are kept under control. In the opinion of Government the need for such a restriction in these areas is fully proved and there is no suitable alternative to a lease. Nazul lands, other than roadsides, are chiefly within municipal areas. It does not appear that any rules have been laid down by Government in respect

Government on Pasture lands.

of the grazing on such lands: and in as much as they are under the control of the municipal boards, Government does not propose to frame rules to fetter the boards' discretion in the matter.

6.—Jhansi.

Jhansi Gazetteer.

The indigenous breeds of cattle are generally of an inferior character. Bulls and bullocks for the plough are usually imported from other districts. For draft purposes there is a good indigenous breed at Chanderi; for breeding purposes the Kenwariya still holds the first place, because it is more suited to the dry and raviny nature of the district. In 1906 the plough duty averaged 12·7 acres for that portion of the district and 8·4 acres in Lalitpur.

At the stock census taken in 1899 it was ascertained that number of bulls and bullocks was 181362 and of male buffaloes 4755. The number of ploughs at the same date was 76045 leaving a proportion of 2·30 animals per plough against a provincial average of 2·33.(a)

The most recent census of stock was taken in January 1909, and it was then found that there were 197471 plough animals, 267122 cows and cow buffaloes, and 261067 head of young stock in the district. The usual forms of sickness are always prevalent, and occasionally assume an epidemic character. Rinderpest and hæmorrhagic scapticæmia also occur.

7.—Jalaun.

Jalaun Gazetteer.

The local animal is weak and stunted, but more substantial zamindars or cultivators occasionally possess imported cattle of some merit. An attempt made in 1867 to improve the local breeds by the importation of Hissar bulls proved a failure and a more recent attempt 1899—1900 at the same object by importing bulls of the Kanwariya stock from Banda and from Kosi in the Muttra

(a) Jhansi Gazetteer by D. L. Drake—Brockman, I.C.S. 1909.

district, met with no better success.(a) A cattle census taken in 1835 at the time of the settlement of the 'Jalaun Tract,' comprising roughly three quarters of the district, returned 63654 bullocks and 4151 bull buffaloes. There were at the same time 24072 drill ploughs and 22547 bakhars or hoe ploughs, giving 1·45 animals per plough and a duty of nearly 10 acres per plough. In August 1899 a regular stock census was taken, and it was then ascertained that the number of bulls and bullocks was 66359 and of male buffaloes 2441 giving a total of 68800 plough animals, while there were 29137 ploughs: the proportion of animals per plough thus averaged 2·35. At a second enumeration. taken in 1904 the number of bulls and bullocks had risen to 80303 and that of the male buffaloes to 4023. This gave a total of 84326 plough animals, and as the number of ploughs was 33454 the proportion of animals had risen to 2·52. A peripatetic veterinary assistant is now employed by the District Board, and successful efforts to check the spread of rinderpest by inoculation have also been made.

E. S. Liddiard Esquire I.C.S. Magistrate of Jalaun, U.P. states that the number of cattle is adequate: but the quality bad in every respect. Breeding is unknown: pasture and fodder is deficient in dry years though adequate in wet: but the villager has no idea as to how to feed properly.

District Magistrate Jalaun.

The remedies required are :—

(1) The establishment of breeding farms for the type of animal locally suitable *e.g.* there used to be a Bundelkhand breed a black grey animal with patches of white—very fine bullocks which could be resuscitated if a breeding farm was established.

(2) Co-operative societies for ghi production.

(3) Improvement of pasture which necessitates restriction of grazing to a proper number of animals per acre and absolute restrictions from June to November when cutting should be undertaken.

(a) Jalaun Gazetteer by D. L. Drake-Brockman, I.C.S. 1909.

8.—Hamirpur.

The indigenous breed is of the ordinary inferior type and attempts made by some Zeminders as well as Government were unsuccessful owing to the inferiority of local cows and because the bull is incapable of standing heat. Cow-buffaloes, on the other hand are largely kept by all classes, their milk forming an important article of diet and the making and selling of *ghi* being a favourite occupation of Ahirs. Generally speaking the district abounds in good grazing-grounds, and a large stock of cattle costs little to maintain.

Hamirpur Gazetteer.

A stock census taken in August 1899 showed that there were in the district 112,121 bulls and bullocks, 123,154 cows, 4,794 male buffaloes and 43,951 cow buffaloes, together with young stock numbering 157,273 head. The number of ploughs at the same time was 45,509, and if male buffaloes be included in plough cattle, 2·57 cattle are allotted to each plough. The last enumeration was made in 1909, and it was then ascertained that the number of stock under all heads except cow buffaloes had fallen. Bulls and bullocks numbered 117,526 and male buffaloes 3.112: the number of cows had declined to 109,328 and of young stock to 156,119, while that of cow-buffaloes had risen to 45,875. Two peripatetic veterinary assistants are employed by the District Board.(a)

District Board Hamirpur.

The Chairman, District Board, Hamirpur writes to say that the state of cattle and milk-supply is most unsatisfactory due to poor quality of cattle, unregulated breeding and wretched pasturage. fodder is also not sufficiently grown. Ten average village cows hardly give a seer of milk between them. As far as milk-supply is concerned he does not believe that any measures will have any appreciable effect. According to him any hope of improvement lies in the buffaloe and the goat and not in the cow.

(a) Hamirpur Gazetteer by D. L. Drake—Brockman I.C.S. 1909.

9.—Banda.

Banda Gazetteer

There is one well-defined breed of cattle in the district called the Kenwariya breed as its habitat is along the Ken river. It is a lowset, sturdy and fairly powerful animal of a rufous colour, which in the opinion of experts is well-suited to the work it has to do in the plough. In some places in Banda, Badansa, and Kanasin it is usual to select good young male stock for breeding and this is carried a step further in the patha of Man and Karwi in the reservation of and better attention devoted to young bulls called Ainchars. These are restricted to cattle-owners of some standing only. There is a fairly large cattle fair held at Naraim in tahsil Girwan. In 1899, bulls, bullocks and male buffaloes numbered 161, 396 ; cows and cow-buffaloes 257,478 and young stock 199,542. In 1904, these numbers had risen to 202, 212, 277, 433 and 202, 809. Cattle disease is endemic but serious outbreaks are rare. Three veterinary assistants have been appointed by the District Board and there has been some measure of success in inducing the people to adopt segregation.(a)

10—Benares

Benares Gazetteer

No attempts have been made to improve the indigenous strain, which is of a very inferior description, owing presumably to the absence of adequate pasture lands. The most superior bullocks come from the Makanpur fair in the Cawnpore District, and these are used principally for draught purposes and fetch high prices. The Barhampur animals are said to be of a distinctive type, recognizable from the common country-bred by their broader muzzles and shorter horns. Buffaloes, too, are mainly imported either from Jamalpur and Gorakhpur or from Bundelkhand. In 1899 the Benares and Chandauli tahsils contained in all 129623 bulls and bullocks, and 3164 male buffaloes, giving a total of 132787 plough animals, with an average of 2·43 animals per plough. In the beginning of 1904 it was found that the

(a) Banda Gazetteer p. 34 by D. L. Drake-Brockman, I.C.S. 1909.

number of bulls and bullocks in the Chandauli and Benares tahsils was 135686 and of male buffaloes 2521 while the respective figures for Gangapur were 21155 and 392, bringing up the total of plough animals to 159754, the general average being now only 2·31 animals per plough. The principal cattle diseases prevalent are foot and mouth disease rinderpest, haemorrhagic septicaemia and anthrax. The usual prescription is a series of sacrifices, and the people are slow to learn the benefits of inoculation and medicines.(a)

The Executive Officer, Municipal Board, Benares complains that the state of cattle and of milk supply in the city of Benares is most unsatisfactory. The cattle are few, the quality is poor. Adulteration is the rule ; fodder is scarce and grazing fields are not easy to find in or near the city. The remedies suggested are the establishment of dairy farms just outside the city and the conservation of fodder in silos. What is needed is to take the ordinary Ahir and teach him by means of object lessons—he will not learn otherwise—through properly organised dairy farms running along business and not philanthropic lines.

Benares Municipality

11.—Mirzapur.

The domestic cattle of the district are generally of an inferior order. The animals used in agriculture, except in the few cases where the more opulent landholders have imported better breeds of draught oxen, are undersized and ill-fed. No attention is paid to breeding, nor are any cattle kept specially for stud purposes. A local saw runs "the purbi for the plough, the damoh for the pack, and the deoha for the clod crusher." The cow-buffalo is bred for its milk. On the whole the buffalo of the district is a better-bred animal than the ox, and some really fine specimens may occasionally be seen employed in the haulage of stone from the quarries. Mirzapur is one of those districts of the province which possess large jungle grazing grounds of their own, and

Mirzapur Gazetteer

(a) Benares Gazetteer, p. 18 by H. R. Nevill, I.C.S. 1909

consequently the proportion of cattle in it per plough is higher than that in most of the less favourably situated districts of the province. In 1899 it was found that there were 110973 bulls and bullocks and 2638 male buffaloes in the district, excluding the Family Domains, giving a total of 196611 plough animals, or an average of 3·2 animals per plough. Of other stock there were 181231 cows, 33511 cow buffaloes, and 165289 young stock. A second census taken in January 1904, and it was then ascertained that there were no less than 341209 bulls and bullocks and 6579 bull buffaloes in the whole district including the Family domains. At the same time the number of ploughs had risen to 12122 with the result that the average number of animals per plough did not exceed 2·8; while there were 294624 cows, 85125 cow-buffaloes and 296155 head of young stock. The most recent census of agricultural stock was taken in January 1909, but the returns do not include the Family Domains. In the rest of the district there were 259978 bulls and bullocks and 2575 male buffaloes. At the same time 84526 ploughs were recorded, the proportion of animals per plough being 3 10. Cattle disease is more or less prevalent in the district, especially in the south.(a)

Mirzapur District Board.

The Chairman, Mirzapur District Board, states that the quality of cattle and breeding is bad in this district and that an organized enterprise of improving the stock on the part of public spirited landowners by providing stud bulls and model herds will improve the situation.

12.—Jaunpur.

Jaunpur Gazetteer

The cattle are of the usual small and inferior descripton, but have the reputation of being hardy and little subject to disease. The district possesses a minimum of pastureland, and consequently cattle breeding is not carried on to any extent. Not long ago an attempt was made to improve the breed by means of imported bulls but though the experiment proved successful it was not continued. In 1908

(a) Mirzapur Gazetteer by D. L. Drake-Brockman, I.C.S. 1911.

four bulls were obtained from Kheri by the Court of Wards on behalf of the Dube Estate, but they were found to be unsuited to the district. The principal markets are Katra Sujanganj, Badshapur and Koeripur in the Khutahan tahsil on the road to Sultanpur; and another bazar for cattle has recently been started in the village of Bhagasa near Khutahan. The statistics compiled at the last revision of records showed that there were then some 238000 bullocks and male buffaloes in the district, giving an average of 2·13 to each plough and 5·4 acres cultivated for each pair of bullocks. In 1899 it was discovered that there were 252130 bulls and bullocks and 12103 male buffaloes, giving 2·23 animals to each plough. At the last enumeration in 1904 there were 258828 bulls and bullocks and 12074 buffaloes or only 2·09 per plough. The returns also showed 142959 cows 75770 cow-buffaloes and 180944 young stock.

Cattle disease is not very common, and epidemics of any intensity occur but seldom. A veterinary assistant is maintained by the District Board, but little has so far been done in the way of inoculation: a hospital was started at Jaunpur in 1905, and is rapidly growing in popularity.(a)

13.—Ghazipur.

The cattle of Ghazipur are generally of an inferior type. Attempts have been made to introduce a better stamp of animal but without success. As a rule, however the bullocks of the country are strong enough for the work required for them in the matter of ploughing and irrigation. The first systematic attempt to ascertain the number of cattle in the diserict was made in 1899 when an enumeration showed a total of 178720 bulls and bullocks and 2825 male buffaloes, which gave an average of 2·34 animals per plough. In 1904 the number of bulls and bullocks was 194853 and of male buffaloes 2079 this yielded an average of 2·29 per plough.(b)

Ghazipur Gazetteer.

(a) Jaunpur Gazetteer by H. R. Nevill, I.C.S. 1908.
(b) Ghazipur Gazetteer by H. R. Nevill, I.C.S. 1909.

Foot and mouth disease and rinderpest are most common and anthrax occurs sporadically; while in the lowlands black quarter and the malignant sorethroat known as hæmorrhagic septicæmia are particularly to be dreaded.

The cattle are not of good quality and the milk supply is insufficient. The Ghazipur district is a highly cultivated one and the grazing is insufficient for the number of cattle and people are not in the habit of sowing fodder crops. Arrangements are being made to secure good Hansi bulls for the district. The Municipal Board has a bull and the District Board is about to acquire one and a gaushala has recently been opened. The only remedy for the present state of affairs is to get people to learn the science of cattle breeding and dairy farming.

Collector Ghazipur.

The Chairman, Ghazipur Municipality complains that the state of cattle and milk-supply is not satisfactory. Milk Adulteration Act has not yet been extended to this Municipality, although urgently needed. Supply of fodder and existence of pasture-lands are quite unsatisfactory. He suggests that supply of fodder should be increased by encouraging cattle-keepers to sow lands with grass and fodder-crops, and adequate pasture-lands should be set apart and kept in best possible condition. Government should be asked to provide such lands free of cost, as the cattle-keepers are not prosperous enough to spend their little money in acquiring such land.

Ghazipur Municipality.

14.—Ballia.

The domestic animals in this district are for the most part of the ordinary inferior description. No systematic attempts have been made as yet by Government to improve the breed of cattle in the district, although the private importation of upcountry bulls has on several occasions been attended with successful results. Dasila cattle have some local reputation but are generally considered inferior to the imported animals. There is an important cattle market

Ballia Gazetteer.

at Sahatwar in the Bansdih tahsil where bullocks are brought in large quantities and are sold to agriculturists and of recent years the market at Keora in the same tahsil has attracted a considerable amount of trade.

The first regular cattle cens us was taken in August 1899, it was found that there were 136226 bulls and bullocks and 1237 male buffaloes; giving a total of 137463 plough animals, with an average of 2·3 animals per plough. In January 1904 the number of bullocks and bulls was found to have dropped to 132045 and that of male buffaloes to 905 giving an average of only 2·11 animals to each plough. According to the returns the average plough duty amounted to nearly 8·2 acres which is well above the general average.(a)

Cattle disease is at all times more or less prevalent in the district. Since 1904 a veterinary assistant has been attached to the district, but very little has as yet been effected, either in the matter of inoculation or in arousing the people from their general apathy towards scientific treatment.

Collector of Ballia.

G. Flowers Esquire I.C.S., District Officer and Chairman District Board of Ballia says that taking the district as a whole no particular complaint is possible as regards the state of cattle and of milk supply. No suggestions can therefore be made.

15.—Gorakhpur.

Gorakhpur Gazetteer.

The ordinary cattle of the district are small and decidedly inferior in strength to those of the west, though they are reputed to be endowed with great powers of endurance, and are certainly able to do their work on very little food and that of a miserable quality. Owing to the abundance of pasture, especially in the northern tahsils, Gorakhpur ranks among the chief breeding districts. The first regular cattle census was taken in 1899 and this showed a total of 602778 bulls and bullocks and 8899 male buffaloes giving an average of 2·31 animals per plough. In 1904 a

(a) Ballia Gazetteer by H. R. Nevill, I.C.S. 1907.

second census showed a general increase in the number of plough cattle rising to 666827 of which only 5633 were male buffaloes but at the same time there was a corresponding increase in the number of ploughs, the average being but 2·25 animals to each plough. The chief resorts of the graziers are the open grass wastes of Domakhand and the low manjhar between the Rohin and Piyas, whither great herds are driven up annually from the south, occasionally from considerable distances to pick up a living on the pastures from October to June, the return journey taking place just before the commencement of the rains. It is of high importance that these grazing-grounds should be preserved for the purpose. The conversion of such areas into arable land would remove one of the principal safeguards for the cattle of this and several of the neighbouring districts. The most prevalent types of cattle-disease are foot and mouth disease, rinderpest and anthrax. There are three veterinary assistants attached to the district, with headquarters at Gorakhpur, Kasia and Deoria and at the first of these is a cattle hospital.(a)

A. P. Collett Esq., I.C.S., Chairman, Gorakhpur District Board says : There are 6 tahsils in this district. The state of cattle and of milk supply in two of them are fairly satisfactory. One of these two adjoins the Nepalese border and the other is lying almost on the Sarju river and has some smaller rivers and several big tals. There is thus plenty of pasture, but no attempt at selective breeding is made. It is unsatisfactory in the remaining 4 tahsils. The number of cattle is not sufficient to give plentiful supply of good cheap milk, because pressure of cultivation has reduced pasture areas and because the climate is bad for cattle and reduces the milk of good imported milkers. I can only suggest the reservation by Government of all precarious areas where uneconomic and speculative cultivation is carried on such as the Khadirs of rivers. The strips of land on each side of Railway lines might also be reserved.

Gorakhpur District Board.

(a) Gorakhpur Gazetteer by H. R. Nevill, I.C.S. 1909.

16.—Basti.

The cattle of Mabuli have a certain reputation; they are of small size, but are very strong and enduring. In former days herds of wild cattle were to be found in the jungles along the Kuwana in pargana Rasulpur and also in tappa Atrawal of Vagar; but these, as in Gonda were merely the descendants of domestic animals that had escaped and at the present time they have completely disappeared. During the spring and summer large numbers of cattle from this district are driven northwards to find pasture in the Nepal Tarai. They usually leave in December and return in June or July, when the advent of rains renews supply of fodder at home. Nothing is done in the way of scientific breeding. In 1867 some Hissar bulls were imported for stud purposes in Gorakhpur and Basti, but the experiment proved a failure and has not been repeated. As in all submontane tracts, the malignant sore-throat known as hæmorrhgic septicæmia, occurs in most years and causes heavy mortality. In order to check the spread of cattle disease one Veterinary Surgeon is attached to the district, and a second is shortly to be appointed; but so far the results have been but small, as the people generally offer a passive resistance to inoculation.(a)

Basti Gazetteer.

17.—Azamgarh.

No systematic attempts have been made as yet by the Government to improve the breed of cattle in the district nor have any private individuals shown any enterprise in this respect. The cattle used in the plough are for the most part small and deficient in strength. In some localities large numbers of buffaloes are to be seen. The rushes and rank grasses in the swamps and marshes of the district form excellent fodder for buffaloes. Grazing grounds are scarce and that the majority of the cattle are stall-fed. The principal dry fodders given to cattle are the stalks

Azamgarh Gazetteer.

(a) Basti Gazetteer p. 25 by H. R. Nevill, I.C.S. 1907.

called danta, narai and pora of the millets mandua, sanwan and Kodan the straw of rice and the chaff or bhusa of cereals, peas and other pulses. The commonest forms of cattle desease are hæmorrhagic septicæmia and anthrax, though foot and mouth disease and rinderpest also occur. The District Board maintains one peripatetic veterinary assistant and a veterinary dispensary has been opened at Azamgarh, but little progress has as yet been effected either in the matter of inoculation or in arousing the people from their general apathy towards scientific treatment.(a)

J. C. Smith Esq., I.C.S. Collector, Azamgarh says that both the state of the cattle and their food supply are unsatisfactory. The number of cattle is sufficient, but the quality is poor and little or no attention is paid to breeding. Moreover there are no large pasture grounds, and for 4 to 6 months in the year there is a great shortage of grass. There is reason to believe that the export of oil-seeds and the consequent scarcity of oil-cake for fodder has a very deleterious effect on the value of the manure, and a further point is that by the export of bones the land loses another highly necessary fertiliser. If this difficulty could be got over the quality of the cattle would automatically improve and other necessary changes such as more careful selection of stocks for breeding would then become possible. Under present conditions fodder is so scarce and expensive that it is not possible for any one but a rich man to take any effective action towards the improvement of his cattle.

Collector Azamgarh.

Mr. T. A. Buartine, Azamgarh writes that fodder problem is most serious and the deterioration of the cattle of this district has reached an acute stage both on account of fodder and breeding bull problems.

Mr. Buartine.

(a) Azamgarh Gazetteer by D. L. Drake-Brockman, I.C.S.

CHAPTER IV.

KUMAON, LUCKNOW AND FYZABAD DIVISIONS.

1.—Nainital.

In 1904 it was ascertained that there were 114118 bulls bullocks in the district and 155287 cows, as well as 76519 young stock. In the hills the domestic cattle of indigenous origin are small in size and usually red or black in colour. As a rule the milch-cattle are not fed on grain or c:: but are only pastured, and after the harvest are allowed to eat down the stalks remaining in the fields. Several attempts have been made to improve the local breed but without success for the finer kinds brought from Hissar could not stand the climate and were considered too heavy for common purposes. Buffaloes are kept for milking purposes and manure. Cattle disease appears to be endemic in the hills, the Bhabar and the Tarai. In order to cambat cattle disease and to reduce its ravages by inoculation, a veterinary assistant was posted to the district in July 1894. Since that date there has been a steady and constant decrease in the mortality.(a)

Nainital Gazetteer.

The Chairman District Board Nainital says that conditions in this district are so abnormal that it is difficult to give information that applies to the whole district. Prices of dairy produce are high and tend to rise and I fear that so far attempts to conserve and improve the stock of the district have not met with much success.

Nainital District Board.

Cattle which would look healthy and fat during rains in the Tarai are very poor when winter begins. In hill portion there is ample jungle land for grazing and supplly of grass but for the restrictions promulgated by the rules and regulations of Forest Department the people cannot rear cattle to that extent as they used many years back and hence the decrease in the number of cattle generally and supply of milk,

(a) Nainital Gazetteer by H. R. Nevill, I.C.S. 1904.

Ghola Datta Pande Vakil

ghee and butter too. In the Bhabar and Tarai portions too, Forest rules and regulations are keenly felt and there is a dwindling in number of cattle and consequently the supply. Naini Tal District consists of three Sub-divisions (1) Naini Tal (hill portion) (2) The Bhabar and Tarai (3) Kashipur. There are two Municipalities and 4 Notified Areas. Total area within village boundaries 747,460 excluding area within Municipalities and Notified area. Out of the above 747,460 acres 53666 is waste land, 272798 acres is irrigated and dry cultivated and the rest 420996 is culturable. Lucerne was tried in Bhim Tal by Mr. Jones but he is of opinion that it is expensive. No Brahmani bulls at present. Private persons have got bulls. The District Board have a Montgomery bull but he is not much in demand. There is deterioration both in quantity and quality of cattle mainly due to the scanty fodder, lack of interest of people for rearing cows, want of proper means of treatment of diseases of rinderpest and foot and mouth and system of giving contracts for hides and bones. These contractors often have the diseases spread for obtaining more hides. The remedies would be by granting free and liberal concessions in Forests for fodder and grass, opening grazing grounds encouraging people to keep dairies. If parts of Forest and of 2 or 3 miles from Naini Tal Municipality with grazing concessions be opened I hope there would not be such dearth of milk and butter. The Cantonment in Naini Tal lately tried to set this example by opening a dairy near Kailakhan but I regret that it was closed as soon as it was started. The District Board had one breeding stud at Haldwani some years ago but now none. Rinderpest and foot and mouth diseases generally break out in summer. Two Veterinary Assistants maintained by the District Board are sent out for treatment and cattle keepers are warned to keep their cattle aloof from those suffering from diseases. There are no Goshalas except one in Kashipur. At Teliapara there is Government Farm for cattle. At Muktesar there is Imperial Bacteriological Laboratary.

2—Almora

The cows are wretched milkers, producing usually not more than a seer of milk a day. Fodder consists chiefly of grass carried in from the more precipitous hill sides by the women, mulberry or oak leaves or straw. Grain and salt are rarely given. The cattle graze among the stubble of harvested fields and in the forests and village pastures. Dudatoli in the Garhwal District and Dunagiri near Dwarahat are famous grazing resorts for cattle. Cattle are often visited by the rinderpest, called manrog. The people are well awake to their own interests and usually take effective measures for the segregation of infected animals. Little cattle breeding is conducted in the District, and the only trade that exists is the sale of some rather poor young bulls to the Muktesar Bacteriological Laboratory. Mr. Stevenson crossed the indigenous breed with plains bulls and has produced an animal that meets his double object of milk and manure; an animal that can graze from morning to night in all weathers, does not require blanketing in the winter and gives a fair amount of rich butter producing milk. The yak is occasionally in the extreme north tamed and reduced to domestic servitude. But it can not safely be brought much lower than ten-thousand feet, and hybrids are more commonly used. When the sire is a yak and the dam is a hill cow the product is called jubu; when the parentage is reversed, garjo, The yak will carry two or three maunds. is docile and sure footed and is often ridden.(a)

Almora Gazetteer

3.—Lucknow.

Pandit Gokarnanath Misra, Advocate Lucknow is of opinion that the state of cattle and of milk supply in Lucknow and the neighbouring districts is not satisfactory. The state of cattle is unsatisfactory both with regard to the number of cattle and quality of cattle. The quality seems to have been affected by the want of good

Gokarnnath Misra

(a) Almorah Gazetteer by H. G. Walton, I. C. S. pp. 35—(1911)

fodder. As to breeding there is no satisfactoy arrangement of getting good bulls anywhere. The District Board keeps a few bulls at the head-quarters but ordinary cultivators cannot avail themselves of them. A few years ago the Government of U. P. had appointed a committee under the presidency of Sir Duncan Baillie to consider the question of cattle breeding, milk supply etc., etc., and one of the recommendations of the committee was that provision should be made for reserving large areas for the grazing of the cattle. I have not however found anything being done by the Government on this subject. Efforts should be made to provide good bulls at suitable centres throughout particular district accessible to all the people. Government should be asked to induce the land-holders to reserve some definite area in every village for grazing purposes and rules should be framed for the guidance of the Settlement Officers that at the time of Settlement such lands are to be entirely exempted from assessment. Steps should be taken to open one or several Dairies in important towns. The number of Dairies in existence at present is too small and the management in many cases is defective.

4.—Unao.

Unao Gazetteer

Though small in size, the cattle appear to answer all the purposes required of them. Not long ago an effort was made by the introduction of two Hanshi bulls to improve the breed, but the people declined to use them, on the plea that they were too large and heavy for their small cows, for a commencement, the introduction of a small breed would probably succeed better; the present standard must be raised considerably before a cross with the larger and finer kind of stock can be effected. Nothing further has been done. Small local markets are also held at Ramdin Khera in pargana Bangarman and at Kursat in Safipur. Cow-buffaloes are kept for dairy purposes, ghi being largely made for exportation as well as for local consumption. The quality of the cattle

(a) Unao Gazetteer by H. R. Nevill I.C.S. 1903 p. p. 15.

cannot be very good, for there are no true pasture lands in the district. Cattle disease is not so prevalant in Unao as in the northern districts of Oudh. In April 1902 the services of a Veterinary Assistant were placed at the disposal of the District Board and in November 1903 he reported that foot and mouth disease was the only contagious disease prevalent in the district.(a)

5.—Rai Bareli.

There is a great insufficiency of suitable pasture land. In and about the numerous jhils there is a kind of pasture on which the buffalo thrives but which is quite unfitted for cows.

Rai Bareli Gazetteer.

Cattle-disease is constantly prevalent in the district, but is generally of a mild type, foot and mouth disease being the most common form. The services of a Veterinary Assistant Surgeon have been placed at the disposal of the District Board.(a)

6.—Sitapur.

There are, strictly speaking, no indigenous breeds, the animal bred in the district being mainly the offspring of imported stock. Herds kept in the district for any length of time without fresh infusions of imported blood rapidly degenerate especially in the upland tracts, where grazing is scanty. Those held in the highest estimation are of the

Sitapur Gazetteer.

Khairigarh breed; the plough bullocks of the Ganjar are not popular with upland farmers, on the ground that they do not last long and are liable to suffer from tender and swollen feet. Cattle-breeding in the Ganjar is conducted on an altogether unsystematic method, no care being exercised in the selection of bulls. In the uplands, too, the same conditions prevail, and the result is seen in the small and weedy calves. Cattle disease is from time to time very prevalent in this District, especially in the lowlying tracts, where on several occasions its ravages have been most serious and have checked the development of agriculture. The

(a) Rai Bareli Gazetteer by H. R. Nevill, I.C.S., 1905 p. p. 16.

services of a Veterinary Assistant have been placed at the disposal of the District Board; but the ignorance of the people has as yet prevented the achievement of any marked result.

Agha Syed Fateh Shah, Chairman Municipal Board, Sitapur forwards report made by Ram Dial Varma, Vice-Chairman for information.

Sitapur Municipality

Cattle in Municipal area are almost sufficient in number, good in quality and well fed. Breeding arrangement is also satisfactory, a bull of approved quality is always kept by District Board in their Veterinary Hospital. Other sacramental bulls or sands as they are commonly known (for the great part of Hisar breed) go about with the herds and their is no complaint of breeding arrangement. The condition of the cattle in the District area is very regretable. Number of cattle was poor and whatever it was has further been reduced due to the famine conditions prevailing. A large number of poor and ill-fed cattle have been sold and ultimately slaughtered by butchers. With few exceptions here and there the animals are of poor physique. Only ill-fed and emaciated bulls of the like quality being available for breeding. No regular pastures are set apart. The Zamindars' pastures or *Bachaila* is either reserved for his own cattle or sold for an exhorbitant price. In every village a certain percentage of area should be kept apart rent and revenue free for grazing purposes. Road side patris of the roads belonging to District Board, Local Board and of provincial roads be opened free to the cattle for grazing. The cost and freight of the forest grass be so much reduced as may ensure a steady supply at a reasonable price. A dairy be opened at the head quarters of every District under Government or District Board management.

Ram Dyal Varma

Want of good breeding and want of common pasture grounds are rapidly decreasing the number and quality of cattle. The Zamindars should be induced to adopt measures which will improve the breed of cattle and will provide sufficient pasture and fodder to them. Promotion of the cause of 'Goshalas' which

Khairabad Municipality

have for their object the protection of weak and defunct animals.

7—Hardoi

Hardoi Gazetteer

The domestic animals are, in general, of a somewhat superior type to those of the Southern Oudh. An enumeration of the plough cattle at the beginning of the last settlement operations showed a total of 272347 bulls, bullocks and male buffaloes, which gave an average of 2·24 animals per plough, while the average cultivated area for each plough was 6·6 acres. In January 1904 the number of plough animals had risen enormously, the total being 400294 or more than in any district of the United Provinces save Gonda alone. There were then 2·44 animals per plough. The commonest diseases are, as usual, rinderpest and foot and mouth disease. Foot and mouth disease is always present, and anthrax also occurs from time to time(*a*).

8.—Kheri.

Kheri Gazetteer.

With its wide areas of forest and its extensive grazing grounds, Kheri forms the chief cattle-breeding district in Oudh, and the animals raised here and exported to less favoured tracts constitute a valuable source of income. Large numbers of draught bullocks of superior quality are suplied to all the Oudh districts and also to those of the Gorakpur division. Popular belief ascribes the good quality of the parehar breed to the effects of the water of the Kathua, along whose banks are the principal grazing grounds. The villages most famous for their cattle are Nakora and Kalwa in Aurangabad. These animals are of moderate size, with a symmetrical body, fine and glossy hair, small ears, long and pointed horns, and the tail thin, tapering and small, and terminating with a luxuriant tuft of hair which is almost always white. The usual colours are grey-white, or black with white patches. The bullocks which have an irritable temper, are very fast and are said to be more enduring than

(*a*) Hardoi Gazetteer p. 18 by H. R. Nevill, I.C.S., F.R.G.S. etc., 1904.

animals of any other breed; they are especially good for draught work. The second breed is the Bhur, which is found between the Sarju and Chanka rivers. They differ from the Parehar in their large size and coarser hair, while the bullocks are docile and comparatively slow movers. The Khairigarh breed, which occurs between the Sarju and the Mohan, can hardly be called a district type now, on account of the constant admixture of Bhur blood. Here and there, however specimens of pure-bred Khairigarh animals are to be found, which differ from the typical Bhur bullocks in having finer and more pointed horns with their ends turned backwards, a larger size, finer hair, longer tail, broader forehead and chest, and generally a more symmetrical shape. They are faster than the Bhur and nearly as hot tempered as the Parehar. Closely allied to the Khairigarh breed are those known as the Majhra Singahi from the villages of those names in the extreme north west of pargana Palia. In their features they generally resemble the Khairigarh animals, but are larger and enjoy the same degree of reputation as the Parehar for the pace. Lastly there is the Dhanrahra breed, commonly found in the pargana of that name. This is the least valuable of all the breeds belonging to the district. The bullocks are of larger size than the others and have rough and coarse hair, a heavy dewlap, thick, but often small and blunt horns, large bones, small but fleshy legs with toes widely set apart. They are said to be good for heavy draught work, but are very slow movers with a sluggish, gentle temper. The district pastures are generally insufficient for the number of cattle, and are annually diminishing in extent. Consequently the breeders depend mainly upon the grazing available in the jungles of Nepal. The congregation of herds of all breeds in Nepal is an undesirable factor in the situation, as there is a constant danger of cross-breeding. The grazing areas, too, and especially in the Parehar tract, have so decreased of late years that many of the herds are kept in the jungles throughout the year—a measure which is gradually reducing their numbers. The yield of milk is small, and even in the case of stall-fed

cows averages from half a ser to a ser daily. The district is at all times subject to epidemics of cattle disease which carry off large numbers of animals. The commonest forms of disease appear to be rinderpest, locally known as pokna or rez, foot and mouth disease or khurha, that known as ghatarua, which has been diagnosed as hæmorrhagic septicæmia. The services of a civil veterinary assistant have been placed at the disposal of the District Board.(a)

9—Fyzabad

Fyzabad Gazetteer

The cattle raised in the district are as a rule undersized and weak, although sufficient for the light work required of them. There is no attempt at scientific breeding and practically no steps have been taken to bring about any improvement. On one or two occasions bulls have been imported from the west, but the experiments have resulted in failure, the animals proving too heavy for the small cows of the country. In 1895, at the time of the last settlement, the ascertained number of plough cattle in the district was 277901 giving an average of 2·06 animals per plough. A regular stock census was taken in August 1899, and the returns show that there were 291856 bulls and bullocks, and 6426 male buffaloes, giving a total of 298352 animals and an average proportion of 2·26 to each plough, as against a provincial average of 2.38. A second census was taken in January 1904, and it was then ascertained that the number of plough animals had very largely increased, there being in the district 320216 bulls and bullocks and 5015 male buffaloes; the total was thus 325331. Rinderpest carries off a large number of cattle in this district. Foot and mouth disease is generally common; anthrax also appears from time to time and the disease almost always terminates fatally. A veterinary assistant is employed by the District Board and a Veterinary Hospital is maintained in the city of Fyzabad.(b)

(a) Kheri Gazetteer by H. R. Nevill, I.C.S. pp, 25 1905.
(b) Fyzabad Gazetteer P. 13 by H. R. Nevill, I.C.S. 1905.

Chairman Municipal Board, Fyzabad : Both the number and the quality of the cattle are not at all satisfactory and consequently the quantity and quality of their products are also similar. This is chiefly due to insufficient feeding and insanitary stabling. On account of absence of sufficient pasture land and scarcity of fodder the cattle are all ill-fed and weak and fall victims to diseases very easily. Insanitary condition of cow-sheds help a great deal in the outbreak and spread of epidemic diseases. The most important of all the remedies that can be suggested to cure these evils is to supply *ample and free* pasture lands. Next to this is to remove the cow-sheds from congested areas to the outskirts of the city. The question of breeding should be considered after these.

Fyzabad Municipality

10—Gonda

The cattle of this district are generally of a somewhat superior type to those seen of the Ghagra, owing to the larger areas of available pasturage and grazing ground. The principal local breeding grounds are in the north under the forest, where cattle are kept in large herds. There are also good grazing grounds in the neighbourhood of the tikri forest and in the various private jungles; a considerable area too is devoted to grazing along the terhi while the manjha lands of the Ghagra also provide pasture of a somewhat inferior quality. The so-called Rampur breed, which derives its name on the terhi in which Raja Krishna Datt Ram resided, is not properly indigenous, being the offspring of cattle imported by the Raja from Rajputana. These animals are famous for their vice, ugliness, and great power of endurance. The large number of cows and cow-buffaloes show both that Gonda is a breeding district and also that it has a large ghi industry, great quantities of the latter article being exported to the southern markets. Like all the submontane tracts the district is exposed from time to time to severe epidemics of cattle-disease. Certain forms such as(a)

Gonda Gazetteer

(a) Gonda Gazetteer p. 22 by H. R. Nevill, I.C.S., etc., 1905.

rinderpest, foot and mouth disease, black quarter, and haemorrhagic septicaemia, appear to be endemic in the district, while anthrax also appears from time to time. A veterinary assistant has been placed at the disposal of the district board.

11—Sultanpur

Sultanpur Gazetteer

The indigenous breeds are miserably poor, and all the better sorts are imported. Cattle markets have sprung up at Sultanpur, Aliganj, Guptarganj, Bisheswhrganj and Kalianpur. The general inferiority of the breed of cattle is illustrated by the fact that the average cultivated area per plough, according to these figures was only 4·51 acres in 1899. At the same time this low average is probably also a sign of careful cultivation. The principal epidemic disease that prevails amongst cattle in this district is rinderpest(*a*).

12—Partabgarh

Partabgarh Gazetteer

The cattle of the district are small and suffers from the deficiency of good pasture, but though insignificant in appearance, they are sturdy and enduring. Breeding is left entirely to the course of Nature, attempts were at one time made to improve the breed on one or two estates under the court of wards, but the experiment proved a failure, the cows were too small for the imported bulls, which drove off the small indigenous animals and thus brought breeding to a stand-still. In 1892, at the time of the last settlement the number of plough-cattle was given as 248538 which gave an average of 2·17 cattle per plough and an average duty 4·34 acres. In 1904 the number of bullocks was 254658 and male buffaloes 14459 giving 2·16 animals to the recorded number of ploughs, cows numbered 122949 and cow-buffaloes 70373. Cattle disease does not appear to have been at any time prevalent in this district. The services of a veterinary assistant have been placed at the disposal of the district board(*b*).

(*a*) Sultanpur Gazetteer by H. R. Nevill, I. C. S. pp. 18—(1903).
(*b*) Partabgarh Gazetteer by H. R. Nevill, I. C. S. pp. 16—19 (1904)

13.– Bara Banki.

The domestic animals of the district are of the usual small and inferior type that we find throughout the south of Oudh. There is no attempt at scientific cattle breeding, and indeed it would be impossible in this district owing to the absence of sufficient pasture land. Cattle disease though never absent from the district is seldom very prevalent. The services of a veterinary assistant have been placed at the disposal of the District Board. The people of this district are as everywhere else, averse to treatment in the case of any disease befalling their cattle; but of late years a more intelligent spirit has begun to prevail, and the efforts of those concerned have been attended with satisfactory results.(a)

Bara Banki Gazetteer.

14.—Rampur State.

In 1904 the number of plough animals was 129586 bulls and bullocks and 19558 male buffaloes, giving a total of 149144 plough animals or an average of 3·1 for each plough. In 1908 the number of plough animals had risen to 186989 of which 162526 were bullocks and bulls and 24463 were male buffaloes. Not only has the gross number of plough animals thus increased, but also the average for each plough has risen from 3·1 in 1904 to 3·9 in 1908. The domestic cattle of the State are of the ordinary size and quality. The Punjabi breeds of cattle, such as the Hissar and the Hansi, do not thrive in Rampur. In 1897 there was a serious mortality among the cattle, especially in the Shahabad, Suar, Milak tahsils. Most of the deaths were due to an infectious disease, presumably rinderpest, which assumed an epidemic form. Various remedies were tried but none proved efficacious with the exception, so it is alleged, of the smoke of tiger's fat.

Rampur Gazetteer.

(a) Bara Banki Gazetteer by H. R. Nevill, I. C. S. pp. 21 1904

1. DAM Ordinary Country Cow.

2. OFFSPRING of the above cow and a good up-country bull.

3. OFFSPRING of the same cow (No. 1. and a non-descript country bull.

Improvement of Breed. (By the courtesy of the Howrah Go-Rakshini Sabha.)

Bhoodeb Publishing House, Calcutta.

CSL

PART XI. APPENDICES.

"Therefore I would say most emphatically that in any question of beef versus milk, it would be far better that we should become a nation of vegetarians than that our babies should be deprived of one pint of their proper sustenance."

Hon. Mrs. Lionel Guest in *the Cow and Milk-Book.*

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APPENDIX 1.—NOTE ON BREEDING.

Breeding with better class bulls has a two-fold advantage. *First* we get a superior quality calf and *second* but of the *utmost immediate importance*, the milk producing power of the cow is increased. Experiments at the Bengal Humanitarian Association cattle-sheds at Lillooah and at the Howrah Go-Rakshini Sabha cattle-yard at Howrah have proved this beyond doubt. On the other hand mating of a superior quality cow with an inferior bull not only produces a low quality calf but impairs the existing milk-yield of the cow as well. Cattle-owners seem to ignore this important aspect of the question altogether and do not seem to take the trouble of mating their cows with superior bulls, which of course is a very difficult task to get in most places now-a-days, for the far-off advantage of getting a good calf, which on growing up after the lapse of several years, is likely to yield more milk. Covering by a good bull would augment the milk-supply of the cow covered at its next lactation period and this is ascribable to the simple reason that Providence arranges for the supply of more milk to the dam to meet the increased demand of its improved type calf to come.

A picture of stock showing effects of getting the same cow covered by good and bad bulls will be found opposite this page.

It is prudent and of lasting effect to improve a breed by mating a cow with the best bull of the same breed. The effects of mating with foreign or non-indigenous breed soon die

GSL

away owing mainly to climatic influences and also owing to want of introduction of fresh high-class bulls to keep up the quality of the strain. The regular importation of high-class bulls very seldom happens owing to abatement of enthusiasm with the result that the breed plunges into greater degradation than before.

APPENDIX II.—REPORT OF THE SMITH COMMITTEE

The All-India Cow Conference Association was started from the first Session of the All-India Cow Conference held in Calcutta in December 1917 under the presidentship of the Hon'ble Justice Sir John Woodroffe. At a meeting of its General Committee held shortly after, it was decided to collect first-hand information relating to cattle by writing to responsible persons—officials and non-officials alike—seeking such information. Accordingly letters of queries were issued to all District Boards, Municipalities, Bar Libraries, influential people and latterly to Agricultural Associations throughout India.

At first the response was meagre. Early in the beginning of the second year of its existence the Association sent out queries to the same bodies again, the letters this time contained three simple questions *viz* (1) Whether the state of cattle and milk supply was satisfactory? (2) If not, what were the causes of such unsatisfactory condition and (3) What remedies they would suggest.

On this second occasion a fairly large number of replies were received which contained many useful and valuable information. A Committee was formed consisting of Col. A. Smith, Dr. H. W. B. Moreno and the author to examine the replies and report on them. The gist of replies was compiled in two Tabular Statements and the Committee submitted their report noting that the principal causes of complaint according to their gravity and importance are: (1) Want of pasture lands, (2) Want of breeding bulls and last though by no means the least (3) Excessive slaughter of cattle.

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APPENDIX III.—NOTE ON CASTRATION IN INDIA.

1. The practice of castrating bull-calves has been in vogue from the time of the Hindu rulers and we find mention of *balivarda* (bullocks) in Puranas and ancient Sanskrit books.

2. They had apparently a three-fold object in resorting to castration *viz* (*a*) to render the creature docile and capable of steady hard work, (*b*) to store up the energy of the animal and thus to enable it to become more healthy and long-lived, and lastly (*c*) by the castration of indifferent stock, to minimise the chances of propagation of scrub species of cattle.

3. The age at which the operation is performed varies with customs and sentiments of different provinces. In Bengal and its contiguous provinces, for example calves are generally castrated at a comparatively early age *i.e.*, between the 6th and 12th month, while in Punjab and Bombay they do it at a later age, say between the 3rd and 4th year. Both practices have their advantages and disadvantages, but taking into consideration all aspects of the question, it would seem better to have the operation performed at a younger age—say when the calf is below one year of age.

4. The actual process of castration is performed by Mahomedans, Chamars and other low class Hindus and also by some aboriginal tribes. There are only two ways of doing the thing at least so far as is known to the natives who are accustomed to stick to their primitive methods—*viz* (*a*) by severing the testicles with the help of a knife, sewing up the cut and putting some turmeric powder on the wound to serve as a disinfectant; (*b*) by putting the testicles on a piece of stone after previously tying up the leg of the animals, and then crushing them by hammering another stone upon it. The vital parts are thus rendered ineffective. This process though apparently cruel has two advantages *viz* it causes no escaping of blood and there

are little chances of blood-poisoning from the wound being septic—there being no external wound observable.

5 We have no idea of the details of the process involved in Burdizzo's Clamp Castrator, but from the reports and advantages that are claimed on its behalf, it would seem to be a safe and comparatively humane method. It is desirable that demonstration of the process be more widely shown throughout the country and public opinion in support of it thus obtained.

6 The castrating of a limited number of bull-calves of inferior quality supplemented by facilities for supply of adequate number of good breeding bulls, appears to be of decided practical good to the community.

The 8th July, 1925.

NOTE.—Since writing the above I had an opportunity of seeing a demonstration of Burdizzo's Camp Castrator at Poona in August 1925. It is a simple instrument consisting of a metal clamp with long handles. The operator requires little experience and still less tact and the chances of bad after-effects are reduced to a minimum. The bull is tied down, and the open blunt clamp is applied to the chord which connects the vital portions with the body. A steady and sharp hand pressure at the end of the handle presses against the chord and makes it ineffective by this pressure. The connection being thus broken, the testicles get dried up and out of use. Thus the bull is rendered sterile without the splitting of blood or any external injury, the pain is felt only for a minute or two and there are no after-effects. Wide-spread use of this castrator seems to be highly beneficial to the country.

The 6th October 1926 N. CHATTERJI.

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A Note on the Cattle of India

With special reference to Breeding, Pasturage, Slaughter and Export.

Whatever ignorant or interested persons may say, the fact remains that the number and quality of cattle that we have at present in India are quite unsatisfactory both for the purposes of production of milk and cultivation of land. The numerical inadequacy will be evident from a comparison of the proportion of cattle to population and area of India with that of other similar countries of the world; thus, as the following Table shows, the proportion of cattle to population in Denmark is 25 per cent. greater and in New Zealand 150 per cent., greater than that in India, while tha proportion of cattle to area in Denmark is 50 per cent. greater and in New Zealand 125 per cent. greater than that in India.

Country.	No. of cattle.	Area in Acres.	Population.	No. of cattle per 100 population.	No. of cattle per 100 Acres.
India ...	146,000,000	960,000,000	244,267,000	59	14·5
Denmark ...	2,000,000	9,000,000	2,500,000	74	22
New Zealand	2,000,000	6,700,000	1,2[illegible]0,000	150	32

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The recent Live-stock Statistics published by the Government of India shows that the numerical strength of our cattle is declining. In 1914-1915 the total number of cattle was about 147 millions. In 1919-1920 it came down to about 145 millions. A decline of about 2 per cent. in 5 years is not altogether negligible. Official explanations are not wanting which ascribe the cause of this decline to draught and fodder famine, but that does not make the situation any the more hopeful.

Next let us consider if we have got sufficient plough-cattle to till our lands, and milch-cattle to supply us with milk. According to agriculturists and agricultural experts one pair of bulls or bullocks can cultivate only 5 acres of land during a season. As the following table will show, there are about 228 million acres of arable land in British India and of the total number of bulls and bullocks, deducting 25 per cent. as sick, infirm, too young or too old, and another 25 per cent. as being diverted for other purposes such as drought and the like, we get only 24 millions of cattle for the purposes of cultivation. This works as 19 acres per pair of cattle, whereas this area would require in the ordinary course at least 4 pairs.

Similar is the inadequacy of milch-cattle. There are in India 254 millions of people and 50 millions of milch-cattle. Taking the average yield of milk per cattle to be 2 pints per day for 7 months in the year (according to Captain Matson and Mr. J. R. Blackwood, I C.S.,) we find that each person gets ¼ pint of milk a day, whereas the need per individual is reckoned at 2 pints at least a day.

For Tables showing proportion of agricultural cattle to cultivated area and milch-cattle to population—*Vide* next page.)

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Table showing proportion of Plough-cattle to Cultivated Area.

Place and year.	Cultivated area in acres.	Total No. of plough-cattle.	No. actually available for cultivation.	Quantity of cultivated area in acres per plough cattle.	REMARKS.
British India 1914-1915.	227,611,000	48,645,000	24,322,500	10	One pair *i.e.* 2 plough cattle in India can till only 5 acres per season.
Indian States (so far obtainable) 1914-1915.	31,935,000	4,002,000	2,001,000	16	
Total or average.	259,546,000	52,647,000	26,323,500	10	

Table showing proportion of Milch-cattle to Population.

Place and year.	Population.	No. of milch cattle.	Average yield of milk per day (in pints) at 2 pints per cattle for 210 days.	Quantity of milk in pints available per man per day.
British India 1914-1915.	244,267,000	50,946,000	59,437,000	$\frac{1}{4}$
Indian States (so far obtainable) 1914-1915.	70,865,000	5,838,000	6,811,000	$\frac{1}{10}$
Total or average	315,132,000	56,784,000	66,248,000	$\frac{1}{5}$

Coupled with this numerical inadequacy when we consider the growing deterioration of cattle and the depletion of the best breeds due to indiscriminate slaughter and export, and the terrible results that have followed *viz.*, appalling infant mortality and gradual shortage in the rate of out-turn of crops (as per Tables below), the importance and urgency of the question of preserving and improving the cattle-resources of the country can be very well realised.

Average Annual Death-rate per 1000 Population.

Country and Year.	Under One Year.	All persons.	Remarks
India (1908-1909)	260·7	38·2	
Japan (1908)	...	20·9	
Great Britain and Ireland (average 1896-05).	150	17·5	
Denmark do.	136	15·5	
New Zealand	32	9·5	

World's Crops in 1916-17.

Name of Country.	Area in Acres under wheat cultivation.	Wheat produce in Bushels	Rate of out-turn in bushels acre	Area in Acres under Rice Cultivation.	Yield in cwt.	Rate of yield in cwt. per acre
India ...	33,067,000	381,268,250	11·5	78,730,642	544,840,000	7
Japan ...	1,457,000	22,658,622	32	9,168,303	111,823,000	12·4
Denmark ...	131,000	4,287,466	33	.....	.....	...
Great Britain ...	2,103,000	59,623,650	30	.....	.....	..
Switzerland ...	139,000	4,545,606	32·5	.....	.....	...
Canada ...	14,795,000	233,256,994	17	.....	.....	...
Egypt ...	1,116,000	29,772,285	29	.....	.....	...

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The main factors which contribute to the present unsatisfactory condition of cattle in India are (1) want of proper breeding; (2) want of grazing grounds; (3) indiscriminate slaughter and (4) export.

Let us consider these items one by one:

BREEDING BULLS.

The deterioration of cattle in India is mainly due to want of good breeding bulls. Mr. J. R. Blackwood, M.A., L.L.B., I.C.S., Director of Agriculture, Bengal, remarks in the *Survey and Census of the Cattle of Bengal* (P. 22) [1915] that "there is not a single district in the province which has an adequate supply of good breeding bulls." He very rightly thinks that "the old Hindu system of breeding by means of sacred Brahmini bulls was a good one from the point of view of the cattle themselves, because it ensured that the calves dedicated were picked animals and the practice of allowing them to roam at will, ensured that they were well fed and had plenty of exercise." Unfortunately these bulls are deteriorating not only in Bengal but in other parts of India as well. Mr. Carruth, Mr. Sampson, two Deputy Directors of Agriculture, Madras endorse this view and Mr. R. Cecil Wood M.A., Director of Agriculture, Madras and Mr. F. Ware, M.R.C.V.S., Superintendent, Civil Veterinary Department, Madras, have been forced to admit that "testimony (of deterioration) is more universal with regard to the Brahmini bull classes, and I think it may be said that the class of these animals shown in recent years is not as good as it was." (*Vide* Appendix II of the Report of the Proceedings of the Board of Agriculture in India, 1919). Similar views are also entertained on the subject by the Directors of Agriculture of Bombay and the Punjab. The number of Brahmini bulls, apart

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from deterioration in quality, is also greatly deficient. One responsible officer, characterises the deficiency of such bulls as being "enormous." Mr. Blackwood carefully compiled figures for Bengal and the proportion of Brahmini bulls to cows in one district, say, Howrah, will serve as an eye-opener. In an important district like Howrah the number of Brahmini bulls is 54 as against 62,941 local cows and the proportion of Brahmini bulls to cows is 1 to 1535. Whatever may be the cause of this deplorable deficiency, either the High Court judgments declaring them as *res-nullius* (I. L. R. 17 Cal. 852; 8 All 51, 9 All 343; and 11 Mad. 145), the encroachment on pasture-grounds or both, the time appears to have come when vigorous action need be taken by the Government as well as by the people in this direction. Sir John Woodroffe Kt. M.A., B.C.L., President of the All-India Cow Conference Association in his Report for 1918 aptly remarks that "as regards breeding a necessity appears to be made up for immediate action." * * * "In Bengal (for example) there are only 71 pedigree stud bulls of which 36 belong to Government and 35 to private individuals to cover 7,000,000 cows."

A Committee appointed by the Board of Agriculture in India to consider the question of improving breeds of cattle and consisting of members like the Hon'ble Mr. H. R. C. Hailey, I.C.S., (U. P.) Col. Pease (Punjab), Lieut. Col. Farmer, Dr. Parr and Messrs. G. Evans, M.A., (C. P.), Hamilton, Sitole (Baroda) and Smart (Bombay) after careful investigation came to the deliberate conclusion that "the drain on the existing breeding centres had become so severe that the price of cattle was eating seriously into the profits of such cultivators as rely exclusively on them for their plough-cattle." The Committee held that the number of cattle breeding stations were

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"wholly inadequate in nearly all provinces" and recommended an increase in their number. The Committee further remark that "there appears to be a distinct danger of valuable indigneous breeds dying out. It is most essential that separate farms should be devoted by Government for maintaining the purity of these breeds. Certain definite tracts should be recognised as breeding tracts and effort at first concentrated in these areas, and special staff attached to them who will devote themselves to the question of supply of bulls, regulating of breeding, advising as to rearing etc." The Committee further recommends the distribution of breeding bulls amongst villagers taking close personal interest in the matter, amongst co-operative societies, selected malguzars upon certain terms such as keeping the bulls in proper condition and lending their services to their neighbours for reasonable charges. The subject of the improvement of the breed of cattle has been discussed by the Imperial Board of Agriculture on several occasions, specially in 1913 and 1916 and has also been carefully considered by the Directors and Superintendents of Veterinary Departments of the various provinces of India and the following is a summary of their recommendations, on the lines of which the Government are expected to take action without delay.

1. The evil effects of the *res-nullius* judgments should be remedied by direct legislation, vesting the Brahmini Bulls in Municipalities, District Boards and Local bodies, which bodies again are to be compelled to maintain themselves or cause to be maintained by making suitable grants, by any public or private body a minimum number of good breeding bulls commensurate with their income and proportionate to the cattle within their jurisdiction. (Sir John Woodroffe).

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2. Everything should be done to encourage keeping of good bulls, specially for stud purposes and District Board bulls should be provided to as large an extent as possible. (Mr. D. Meadows M.R.C.V.S., and Dr. Voelcker).

3. Real improvement in breeding can be effected only by improving the local breeds by working with the best selected indigenous cattle-stock and not by cross breeding or introducing foreign blood (Major H. T. Pease, C.V.D.). Attempts to breed from English and Australian breeds have been mostly failures (Mr. D. Quinlan, M.R.C.V.S., and Messrs. E. W. Oliver & C. W. Wilson). All breeds of cattle have deteriorated greatly owing to the intermixture with surrounding breeds (Major Baldrey), and the Burman idea of scrupulously avoiding cross-breeding has helped in preserving "the thoroughly good qualities of the Burman cattle" (Col. G. H. Evans).

4. It is incumbent on Government to encourage and foster the cattle-breeding industry with vigour (Col. G. K. Walker, Messrs. Jacob, Wood, Mackenzie, Knight, and Taylor—Proceedings of the Board of Agriculture in India 1919—pp. 20-21) by—

(a) Increasing the number of cattle-breeding stations of Government.

(b) Government should maintain indigenous breeds of cattle of value and preserve the purity of these breeds,

(c) To open and preserve breeding tracts.

(d) Distribution of good stock from the Government farms or other recognised farms.

N. B.—It should be the aim of the breeder to raise a dual quality animal, the males of which would be useful for draught purposes and the females for dairy purposes. Experts are unanimously of opinion that this is quite possible and even natural. (Mr. P. J. Kerr, I.C.V.D., Mr. J. R. Blackwood, I.C.S.)

GRAZING GROUNDS.

The next important draw-back is the want of adequate pasture grounds for the use of cattle. The following comparative tables show at a glance the utter inadequacy of grazing grounds.

Pasture Lands All the World Over.

Name of country.	Total area in acres.	Grazing Grounds in acres.	Ratio of total area to grazing ground.
Great Britain and Ireland	77,500,000	23,000,000	3:1
England	32,500,000	10,000,000	3:1
Germany	133,000,000	21,400,000	6:1
New Zealand	6,700,000	2,700,000	3:1
United States of America ...	1,903,000,000	117,000,000	16:1
Japan	105,600,000	17,600,000	6:1
India	960,000,000	35,000,000	27:1
Bengal	50,500,000	3,000,000	17:1

Proportion of Grazing Area to Cattle.

Name of Country.	Grazing Ground in acres.	No. of cattle.	Area of grazing grounds in acres per head of cattle.
United States of America ...	117,000,000	72,534,000	1·6
New Zealand	2,700,000	2,020,000	1·35
Germany	21,400,000	17,227,000	1·44
Bengal	2,929,000	14,079,000	·17

The subject of curtailment of grazing grounds was thoroughly discussed by the Imperial Board of Agriculture in 1907. Colonel Morgan reported that the extension of cultivation in the Punjab canal colonies and in Sindh was "resulting in a serious contraction of the large breeding herds that supplied the work-cattle of many districts." Lieutenant-Colonel Raymond says that "the reports of all the district officers of Bengal go to show that the curtailment of grazing lands has taken place in almost all the districts of the province and has caused deterioration of cattle." The Deputy Commissioner of Darjeeling says that his "district appears to be eminently fitted to illustrate in a striking manner the gradual tendency of the Forest Department to bring within its reserve, lands which hitherto afforded sufficient space for cattle to graze on. It is apparent that there is a general tendency towards encroachment of grazing lands, and it is probable it will continue if steps are not taken to check it." Mr. Blackwood remarks "that the most important circumstance adverse to cattle-breeding in Bengal is undoubtedly the deficiency of pasture."

Mr. Oliver, Superintendent, C. V. D., who carried on his investigation in the U. P., reports that in submontane districts "considerable curtailment of grazing-grounds is undoubtedly in progress." Out of the 38 districts reported no noticeable decrease of grazing grounds has taken place in 22 districts but "in the remaining 16, the reduction in the area of pasturage has told severely on the cattle."

The Bombay officer reports on "dimunition of grazing grounds in the districts of Karnatak, Belgaun, Bijapur, Dharwar and Kanara in the course of the last 20 years."

Captain Walker reports from the Punjab that "the curtailment of grazing grounds during the last 20 years

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has been great" and in the Cattle Census Report of 1914 Mr. W. S. Hamilton I. C. S., Director of Agriculture, Punjab, reports that "in all districts in which there is lack of grazing, the cows are markedly less than in 1909."

C. P. and Madras are not better off, while Burma complains of "trouble in getting fodder for cattle in times of excess of water-floods etc." Major Trydell, who made an elaborate and careful enquiry into the matter, says: "In most localities I have visited, the cultivator declares that the chief and great trouble he has before him is the absence of grazing and his poverty does not warrant his being able to give sufficient grain etc. to female stock."

Mr. H. C. Sampson B. Sc. F. H. A. S. F.B.S.E. Deputy Director of Agriculture, Madras, suggested the exemption of recognised grazing tracts from restriction, and Mr. W. W. Smart, Director of Agriculture, Bombay, went further and recommended the removal of restriction from all grazing lands.

The subject came up for discussion before the Board of Agriculture again in 1913 and a Committee with the Hon'ble Mr. Hailey as Chairman made the following recommendations, which were unanimously accepted by the Board, *viz* :—

(*a*) "Preservation of grazing grounds by legislation. All restrictions of grazing rights to be deprecated." Local officers and Local Boards to be made to demarcate grazing areas and prevent them from being encroached upon.

(*b*) "Improvement of waste areas. This should be systematically undertaken by the Forest Department acting in close association with

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the Agricultural Department; and the land thus reclaimed to be thrown open for grazing."

(c) Legislation to prevent further encroachment upon existing grazing grounds, and authorising local Bodies to expend a portion of their income for acquisition of grazing areas.

(d) Acquiring grazing grounds at the cost of the State, local bodies etc.

(e) Reafforestation by the Forest Department.

A pseudo-economical issue is often raised that the conversion of grazing grounds into cultivated areas help raising of crops for human consumption and this natural tendency should not to be stopped. But is it really so? What do they do in other civilised countries? They do not encroach upon pasture grounds but resort to intensive methods of cultivation by raising more crops from the same areas. "In Bengal at the present time waste land is being encroached upon, because it is more profitable to cultivate it than to retain it in waste. In Great Britain the opposite tendency is manifested *viz.*, to gradually throw more and more cultivated land into pasture" (Mr. J. R. Blackwood's Cattle Census Report of Bengal 1915). The utter hollowness of the proposition will be realised from the following table which proves that by extension of cultivation we do not get greater out-turn of crops, and the reason is simple. We have not got, as proved before, sufficient number of plough-cattle to properly cultivate the existing arable land, and the inclusion of further land within cultivated areas inevitably means indifferent cultivation followed by no crops or a very small out-turn of crops *plus* decimation of cattle. There is thus no use in encroaching upon pasture grounds. It is false economy.

Table showing Decrease in Out-turn of Crops with Increase in Cultivation.

Bombay Presidency.			Bengal.	
Year ...	1910-11.	1913-14.	1902-03.	1904-05.
Cropped area (in acres)	30,742,000	30,845,000	Cropped area in acres ... 59,314,000	61 034,000
Out-turn of crops in lbs. per acre ...	540	501	Total out-turn of crops in Tons ... 26,377,197	24,676,439

N. W. F. Province.

Year	1903-04.	1907-08.
Cropped area in acres	2,466,220	2,657,906
Out-turn of crops in lbs. per acre ...	658	566

CATTLE SLAUGHTER.

Perhaps the most important of all matters relating to the subject worth the most prompt and serious consideration is the indiscriminate slaughter of cattle. No doubt superficial observers may say that we have a sufficiency of cattle—nay, an over-sufficiency (*The Gospel and the Plough* by S. Higginbotham, M.A., 1921) and what is needed is to weed out, say 2/3rds of their existing number (Col. A. Smith) for the ostensible reason "that 90 per cent. of these cattle are an economic loss to the country *i.e*, the cow does not pay her board in the milk and offspring which she gives." So the abominable system of slaughter that is going on in the town and cantonments should not be interfered with. Any one who has cared to make a little deeper study of the matter will readily find that the manure-value of the dung and urine of the cow gives

sufficient return for her board. The cow is not so abundant as she is supposed to be. Take the case of Denmark or New Zealand, not to speak of Canada, Australia or the U. S. A., the number of cattle per 100 population or 100 acres of land is from 50 to 200 per cent. more than that in India (*Vide* page 1 *ante*). How then can you say that India is over-stocked with cattle? Then what has produced the present depletion in good cattle? The best cattle in the prime of their lives are sent to the towns "where they are usually subjected to the cruel *phooka* process, and as soon as they cease to give milk they are handed over to the butcher. Thus instead of leading a useful life of 10 or 12 years, she is put an end to at the end of her first or second lactation period." (C. F. Payne, Esq., I.C.S., Chairman, Calcutta Corporation). In this way the best cattle of the country are being eaten up, leaving only the worthless and the inferior stock. Mr. R. C. Wood, M.A., (Director of Agriculture, Madras) in his *Note on Cattle* says "that most of these cows (which come to supply the demands of the Madras milk trade) go to the slaughter-house as soon as they run dry, and that calves are allowed to die of neglect." Messrs. S. Milligan, M.A., B.S.C., (Imperial Agriculturalist, Pusa) and C. M. Hutchison, B.A., (Imperial Agricultural Bacteriologist) in their *Note on Dairying in India* write "that there is little doubt but that the town dairies are producing a serious drain on the best milking cattle in the country. The percentage of good milkers amongst Indian cattle is so small that this may in the end bring about serious results. The question of the preservation by Government agency of the best milking cows in the country is therefore an urgent one." Messrs. Smart (Deputy Director of Agriculture, Bombay) and Hamilton (Director of Agriculture, Punjab) confirmed the same opinion from their experience. In this way the present and

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future generations of good cows are gradually and speedily being exterminated. Attempts made from time to time to prevent this serious drain by the Municipalities failed owing to defective legislation which, it is said, precludes these bodies from enforcing restrictive resolutions. This is highly deplorable In all civilised countries there exist laws for preserving breeds of cattle and birds by penalising their slaughter. It is a pity that similar measures by the Indian legislature have not yet been considered fit for adoption in this country inspite of the strongest recommendation of the Government experts themselves. Cattle are also slaughtered for the dried meat trade and the trade in hides and an idea as to the number of cattle annually slaughtered will be found from the recent circular letter addressed to Municipalities by Sir John Woodroffe, as President of the All India Cow Conference Association in which after careful enquiry he estimates it to be something like 10 millions out of a total stock of 145 millions. It appears to be incumbent upon the Government to introduce legislation authorising local bodies to stop the slaughter of useful cattle, at least cattle which are capable of giving milk.

CATTLE EXPORT.

The export of cattle is a comparatively minor matter no doubt, but it is the quality of the cattle exported that makes the situation worth serious consideration. The Ongole, Punjab and Bombay cattle are chiefly exported to the Malay Peninsula, South Africa and South America, and the export trade has considerably increased of late after the war. The Hon'ble Mr. Claude Hill in opening the 9th Meeting of the Board of Agriculture held at Pusa in 1910 referred to the "detrimental effect" which it was producing in some parts of India, by causing an undue drain on the cattle of those parts "The

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unsatisfactory point in the trade" the President points out "is that the Indian breeder has not become sufficiently conscious of the true value of a well-bred bull, and usually parts with it at a price which represents half its value." He points out that there is a need for the "Government looking into the matter and for the exercise of control and discrimination in the working of the trade."

A committee appointed by the Board of Agriculture in 1916, with Mr. Keatinge (Director of Agriculture, Bombay) as President, reports that three breeds are usually exported *viz.* (1) "the Kankreji breed from North Guzerat, (2) the Karachi breed from Bombay and (3) the Ongole breed from Madras. There has been relatively large exports of the last 2 breeds of cattle and the export, which is made for breeding for meat has considerably depleted the breeds." Another committee appointed in 1919 recommended the "levying of an export tax of say Rs. 10 per head on all animals from the Ongole tract exported by sea from Madras" as also from other centres. At the suggestion of the Hon'ble Mr. Justice Greaves, some time President of the All-India Cow Conference Association, the Government of India promised to carefully enquire into the matter and restrict export, if necessary. It is not known what action has been taken by the Government up till now. The Hon'ble Mr. Sharma, Member in charge, is also reported to have expressed the same view in reply to a representation from the All-India Cow Conference Association. Many Indian States such as Bansda, Barwani, Chamba, Sarila, Sayla, have stopped export of cattle outside India, (*Indian Humanitarian* November 1919) and it would be well, considering the present scarcity of superior grade cattle, to stop the export altogether for a few years until the number of good cattle returns to its normal condition.

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