

The Problem of Grassland Improvement in India.

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IT is well known that India has more number of cattle than it can support, and that therefore, its cattle and its dairy industry are of an inferior quality. Due to the keen interest His Excellency the Viceroy has been taking in this problem of prime importance to an agricultural country like India, a movement not merely for improving the breed of Indian cattle, but also for tackling problems of animal nutrition and grazing have come to the forefront. It must be borne in mind that in order to evolve and maintain improved breeds of cattle we must give not only sufficient food but the right kind of food for them. Now, the foods for cattle can conveniently be grouped under four headings: (1) natural grasses, (2) fodder crops, (3) silage and (4) concentrated material such as oil-cakes, etc.

If we desire to maintain our cattle in good health and if we wish to raise their

So far as the fodder crops and concentrated foods are concerned we find that the amount of their supply is diminishing on account of the policy for larger and larger production of what are called "economic crops," and also on account of unrestricted exports of oil-cakes. Moreover, the cultivation of fodder crops depends upon irrigation, and this facility is not available everywhere in India. Again, the production of silage directly depends upon the production of surplus quantity of grass during the very short monsoon or upon a sufficient production of fodder crops; but the latter are possible only in irrigated areas. It follows therefore, that, ultimately we must look to our natural grasslands as the main source of food-supply for our cattle.

Now, if we have to depend upon our grasslands for the supply of essential food for our cattle, it is obvious that we should

take immediate steps to grow "two blades of grass where one grew before". And, this is without doubt possible, if we know how to do it and if we go about doing it in the right way.

Before we can decide how to increase our production of grass, we must take a survey of the nature and conditions of our grassland areas. The following are some of the outstanding facts concerning our own grasslands, and such a survey is bound to reveal that:

1. India is climatically at a disadvantage, in that it has no natural grassland area. In fact, whatever grasslands we have, are but semi-natural, and have arisen from the destruction of forests.

2. India has been having a larger number of cattle than its grasslands could support. This has led to over-grazing of our grasslands resulting in the deterioration of our cattle stock.



Photo by F. R. Bharucha.

Shows three stages of succession of vegetation from the mixed deciduous forests (in the background) to the present semi-natural grasslands (in the forefront), brought about by biotic factors. Intermediate shrub stage in the middle ground.

capacity of milk production to its maximum, they must be fed on varying mixtures of the above forms of food.

3 Governments have no responsible Department,¹ Imperial or Provincial, which would follow a definite co-ordinated policy for the maintenance and improvement of our grassland areas and of our cattle by periodical scientific survey and consequent programmes for improvement. Thus upto now, in actual practice, the Government have not formulated or followed any systematic policy or method for procuring the best kinds of grasses to maintain our cattle, as is being done in Great Britain, Continental Europe, America, New Zealand, Australia and South Africa. Instead of this, the Forest, Revenue, Agriculture and other departments have been constantly exploiting grassland areas, each for its own reason for the increase of its revenues,² whereby our grassland areas are getting increasingly depleted.

4 Such a depletion of grassland areas has been creating a greater and greater congestion on them by over-grazing so much so that (a) the existing grassland areas are losing even the naturally deficient grassland characteristics they possessed, (b) they are fast becoming wastelands, and (c) our already poorly bred cattle are going down in quality.

5 All this tends to suggest that if we do not take immediate steps, our grasslands are in danger of destruction, and this will lead to a further deterioration of our cattle.

How best should we deal with this serious problem so that cattle breeding may not only thrive, but even progressively evolve into a vital industry of India. The best way to begin with would be

(1) to make detailed floristic and ecological surveys in a few selected, typical areas representing the several types of our grasslands as they exist under different climatic and edaphic conditions,

(2) to map out these areas on the basis of vegetation units *i.e.*, in terms of different types of areas with reference to the specific nature of the *Plant Association* prevalent in each.

(3) These two preliminary steps will enable us to make estimates of the actual quantity and quality of food resources now available for our cattle. This must follow a detailed study of the soils and other environmental conditions of each of the plant associations in order that we may be thereby enabled to understand the qualities and deficiencies of the soils, with a view to employing appropriate methods to improve the same.

The specimen surveys of each type thus made will enable us to arrive at conclusions which will be generally applicable to other similar areas in the land. In short, a *Vegetation Survey* as described above is the primary need of our country.

But, *pari passu* we must take immediate steps to fence off or otherwise protect such big areas, as we find these are in danger of total destruction through further over-grazing.

To summarize, the main points for consideration at the present stage are

(1) Specimen surveys of the vegetation of our grasslands on an ecological basis.

(2) Protection of our over-grazed grasslands by fencing off or otherwise, in order to check the process of total destruction with which our grasslands are threatened as also to allow relief for the natural regeneration of the vegetation.

(3) Frame up and work a system of *rotational grazing* in accordance with the character and capacity of each type of our grassland areas.

After these primary needs are fulfilled, we can go on to tackle the greater problems of (a) finding out the nutritive values of our grasses, (b) the effects of the application of different types of artificial and farm manures, (c) the introduction of new species of grasses, (d) experiments of seeding, and, finally, (e) the effect of different types of grasses on the health of the cattle and their milk-producing capacity.

I think such a programme of industrialisation of our grasslands and cattle-breeding can best be undertaken by a special department of the Government or by a *Research Institute* entirely devoted to the study, care and management of our grasslands and our cattle.

¹ So far there are only proposals for the formation of a Central and Provincial Fodder and Grazing Committee.

² *Re Punjab grasslands* Dr. Gorrie says "The Revenue Department is anxious to collect its revenue, the Forest Department to grow trees, the Agriculture Department to cultivate better paying crops, the Veterinary Department to rear more stock, the local landowner to keep a stud bull, the Irrigation Department to find more canal water, the public health authorities to improve the drinking water. These are all competing for the areas which should be the natural fodder reserves of the Province." And Dr. N. C. Wright affirms that this statement is true with equal force for the whole of India (*Report on the Development of the Cattle and Dairy Industries of India, 1937*).