

the country has also increased by 5,000,000 souls during that period, so that the demand has been greater at home, and the supply less, which is being made up by foreign importations, to the serious loss of the agriculture of the country and industries depending upon it.

Remedies.—Mr. Rintoul naturally suggests as one remedy for the decay of agriculture, that the rents of land be adjusted in accordance with the prices of the products of the soil. Land being the raw material from which the farmer has to produce, if it is valued too high it is impossible that his business can prosper, and so long as this exists agriculture must continue to decay. A further remedy would be realized in having returned to the soil all city refuse, so that the fertility of the land may be saved economically from depletion. To show the practicability of such an undertaking, the details of what has been accomplished by the city of Glasgow are recited. As the works for treating the sewage of that city now stand, 10,000,000 gallons of sewage which had formerly passed into the Clyde is converted into sludge cake possessing considerable manurial value. During the past twelve months, since the works came into operation, 127,587 tons of crude sludge has been extracted from the sewage, and reduced to 10,000 tons by filter-pressing. In this form it is conveyed to the country, where any farmer can have it, carriage paid, at 25 shillings per ton. [It is noticeable that the writer of this paper does not suggest a return to the corn laws as a remedy.] With regard to the duty of the Government in this matter, Mr. Rintoul claims that cheap loans should be provided to landowners whose land has become derelict and exhausted, for the purpose of restoring it to a cultivatable condition. Light railways should also be provided, diverging from the main lines, and city corporations should be prevented from cremating or casting into the sea sewage which might be made a national gain.

The last remedy given is a national system of reclamation of all suitable tidal wastes which would provide virgin soil for general cultivation and for the extension of marsh pastures, so that the raw material necessary for successful farming and stock raising and fattening be kept up. In this connection, a scheme of reclamation on an extensive scale was cited whereby 150,000 acres of land might have been added to the United Kingdom on the Wash lying between Lincoln and Norfolk, at a cost of some twelve pounds per acre. The increased produce that would annually be derived from such a result must be regarded as a great national benefit.

C. P. R. Lands.

Mr. L. A. Hamilton, Land Commissioner of the Canadian Pacific Railway, announces a new system of payment for the lands of that Company, which will come into force January, 1897. The terms are much more advantageous than those at present existing. Under the new plan, principal and interest will be joined together and divided into ten equal parts, to be paid annually. If the first cash installment is paid, no interest will be charged during the first year of occupancy, while the land remains unproductive. A rebate of ten per cent. on all cash payments in excess of the regular amounts due will be allowed. All payments will fall due on the first of November of each year, thus affording an opportunity of realizing on the season's crop before the time of settlement. In effect, the earlier payments are made lighter, being equalized and extended over the whole term of ten years, and the amount is simplified so that the purchaser knows what he is undertaking at a glance, without having to wrestle with interest tables every year.

Farming in India.

BY R. MACONACHIE, B. A., INDIAN CIVIL SERVICE (RETIRED).

The conditions under which agriculture is pursued in India are so widely different from those of farming in Canada that any close comparison is difficult. Yet a few salient facts can be noted, which, to the thoughtful mind, may be interesting. In the first place, the great mainstay of Indian agriculture is

IRRIGATION.

It is true that large areas are sown in dependence on the rain of heaven, but crops thus obtained are very insecure, and every good farmer strives to get some of his land protected by a well or canal. The well is often owned by a number of shareholders, generally kinsmen, whose right to the water is determined by ancestral shares, or the extent of land they each hold. The use of the well is enjoyed by each in turn for so many hours, each man turning out to work with his oxen at whatever hour in the day or night his time comes. A pair of oxen will work about four hours at a stretch turning the wheel or pulling up the bucket which lifts the water. The canals are for the most part large works, constructed by the Government, and the water is delivered to the farmer at so much per acre. It is estimated that there are 25,000,000 acres under canal irrigation at present in India, and there are several large, new schemes under consideration. It is obvious that this artificial increase in the moisture of the soil is obtained at a very considerable cost, whether such cost be represented by a canal acreage rate, or the "wear and tear" of oxen, and their feed. If, however, the Indian farmer spends much in irrigation, he gains greatly in comparison with workers here in the wonderful

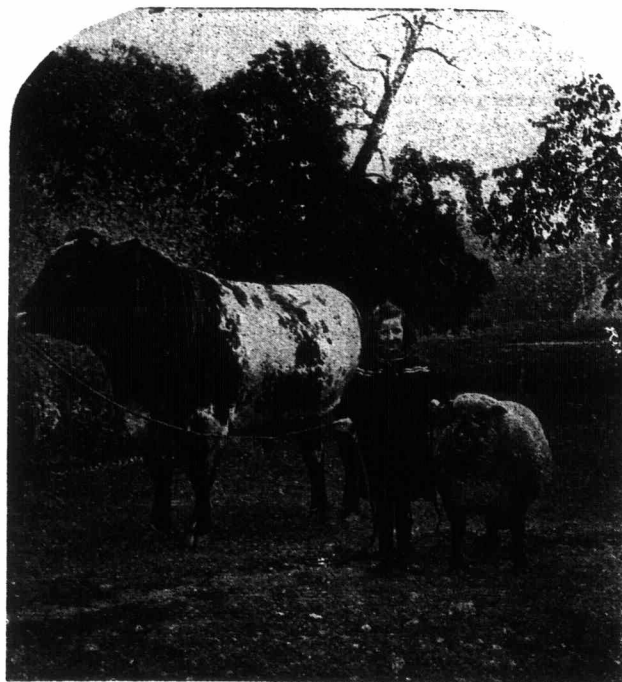
CHEAPNESS OF LABOR.

A plowman can be hired in almost any part of India for less than nine cents a day, and the feed of two bullocks, with which he would plow about two-thirds of an acre, would not ordinarily exceed seven or eight cents. The cost of plowing an acre, therefore, would be about twenty-five cents, or about one-sixth of what is reckoned as fair here. The whole cost of the hiring of an ordinary agriculturist would not be more than \$2.50 or \$3.00 a month; indeed, this is rather a high estimate. All agricultural work, in fact, is done in India at an enormously lower rate than in Canada, and though labor here is more rapid and efficient, it is more than proportionately dearer. As regards

PRODUCTIVENESS

of soil, Canada has the advantage. Unirrigated wheat in India cannot safely be averaged at more than 550 or 600 pounds to the acre, though on irrigated lands crops of twice that amount are not uncommon. Plowing, sowing, and harvesting are all done in the most primitive fashion. The plow is of wood, and goes very little way into the ground. Sowing is either broadcast, or in rows, pouring the seed from a bag through a hollow cane. Threshing is performed by the feet of oxen driven round and round a pole till the grain is separated from the chaff, and then it is winnowed by holding up a sieve in the wind. Everything is carried on as it has been for many centuries, and reforms are all but impossible. The only improvement that seems really to have taken root among the people is the substitution of an iron crusher of the sugar-cane juice for the old wooden one. Machinery can hardly ever be profitable while

A Glimpse at Mr. Robt. Davies' "Thorncliffe Stock Farm" in 1894.



"A little child shall lead them."

THE SHORTHORN, "LORD OUTHWAITE," AND THE SHROPSHIRE, "BARNONE."

hand labor is so cheap. Another leading fact in agricultural economics in India is the large item of

LAND REVENUE

payable to the Government. According to historical tradition, all land belonged to the sovereign power, and the old kings limited their revenue demand only to what they thought could be screwed out of the people. Succeding to the position of the Hindu and Mohammedan rulers, the British Government, wishing to create a valuable property in the soil for the private proprietor, cut down the land revenue assessment gradually till it stands now at something less than one-sixth of the produce estimated in cash. Viewed historically, the arrangement is righteous and moderate. It is indeed the only way in which Indian administration could be carried on, but Western economists are apt to exclaim against a "tax" which may be estimated at 16 per cent. of the farmer's annual income.

Working under these leading conditions—viz.: (1) a great need, almost necessity, of irrigation; (2) great cheapness of labor; (3) land, as worked, only moderately productive; and (4) a heavy cash payment yearly to the ruling power—the Indian agriculturist grows wheat, barley, "gram" (a kind of pea), mustard, and a number of pulses in the cold weather; and Indian corn, millet, sugar cane, indigo, and rice in the hot weather. Opium, tea, and coffee are grown in special tracts. Wheat is almost confined to the Punjab and the country to the south-east of it. Manuring is known and valued by the better class of agriculturists, but the area for which supplies are available is comparatively small. As for stock-raising, perhaps in no one particular is Indian agriculture so bad as in this. The native farmer, left to himself, takes absolutely no trouble about improving the breed of his

cattle. Cows are served by any of the stray bulls left to roam the countryside. Considerable efforts have been made by the British Government to improve this state of things, but there is a religious prejudice in the way. It is a religious act of piety for a Hindu to let loose a bull in the name of the Deity. Such animal then is allowed, in most places, to go over the village lands and to trample on and eat the crops without any interference. Mohammedans, however, occasionally object.

COMPETITION WITH CANADA.

To bring these necessarily brief remarks to a practical head, it may be stated that the only article in which Canada and India can come into direct competition is wheat. Wheat is exported mainly from the port of Karachi, in Sind, but also from Bombay; and the trade has been created by the development of the "through railway" system, which allows special rates favoring wheat carriage to the sea coast. Yet, in spite of this, the wheat trade from India could never have attained its present dimensions had it not been for the

DEPRECIATION OF SILVER

in comparison with gold, by which the purchasing power of the export buyer has been greatly increased. This is the main reason for the large increase of Punjab wheat exports of late years. Should the value of silver from any cause rise, wheat export from India would receive a sharp check and might permanently be injured. Ralli Bros., the great Greek firm which hold most of the trade in their hands, have been doing business at times at hardly any profit, and the fluctuation of the rupee has been so irregular as to make wheat speculations dangerous to all but operators holding immense capital.

STOCK.

Sheep Going into Winter Quarters.

BY RICHARD GIBSON.

Probably this is the most critical time that the flockmaster passes, except during the brief lambing period. There is the selection of the breeding flock, the discarding of the aged, those that breed or raise their lambs badly, have lost a portion of the udder, etc. We all know that as much skill is required in drafting the flock as in filling up. No wise man sells his best females unless for good and sufficient cause, but it is one thing to select the breeding ewe and another the show ewe. The latter, according to the whim of the judge, may be the very ones the breeder wants to discard—big, loose, opened-coated, raw-backed ones that fill the eye, while the smaller, thicker, better backed ones are passed. These, however, are the sort the breeder wants to select. Go for quality every time, no matter what the breed, and let judges and buyers go for size if they wish—they are only taking what you ought to spare. Keep on the even tenor of your way and in the end you will come out all right. The medium sized ones of all breeds are the average ones, and they will be found to produce the most pounds of meat at less cost than either the big or the little ones of their respective breeds.

After deciding upon the breeding flock, select your ram. Buy the best you can and let him be as near perfect as possible. This zigzag, teeter-teeter business advocated by most writers is, in my humble opinion, all bosh. Animal life is not like a sculptor's model, on which a chunk of clay will stick and may be trimmed off if necessary; but with the live creature these chunks of fat, it may be, on the rumps remain for generation after generation. A breeder realizing that his last ram left his offspring, it may be, weak in the leg, he is persuaded to buy one abnormally large there, which simply means he is not symmetrical—a freak, as it were. If his ram is as successful as he anticipates, the next year he will seek for a freak in the other direction, with a large fore end—and so seesawing backwards and forwards, never coming to any decided method or making a reputation. Take my advice: aim to breed each year to the evenest, smoothest, best backed, thickest fleshed ram to be found of the type you have chosen, and don't go for the big ones of the breed. If you are breeding Shropshires, don't go for the very largest or for the smallest. If size is what you are after, buy a Hampshire or Oxford at once, but don't turn up your nose because every breeder is not sacrificing type and quality.

The Change to Winter Food must be gradual. Grain, except to the lambs, ought not to be necessary, and the flock that requires it is not the sort for any farmer to keep and make money. Buildings may be of the most superficial kind, and I always expect to find an ordinary flock on a rich man's place. An architect's building is, as a rule, an abomination, as far as the comfort and well-being of the flock is concerned. Architecturally, it may fill out a picture in the landscape and be an addition to the view from the residence, but the poor animals coughing and running at the nose, coats out of condition, with a sickly, delicate, anemic appearance, are to be pitied. The best building is a big, deep, open shed, tar papered and sealed, three feet high on three sides of building, and open to the south, with big yards or paddocks attached to go in or out at pleasure. Any amount of cold will be suffered with impunity, but drafts are abhorrent and wet positively injurious, so govern thyself accordingly. No one need hesitate to buy a few sheep because he has not a good