

LIVESTOCK—ITS PLACE IN ESTATE PRACTICE.*

By R. Paton.

It is an axiom as old as the land itself that "you can't farm without muck" and never was this truth being more forcibly driven home than it is to-day. Throughout the length and breadth of Britain one is confronted with the depressing spectacle of derelict land, worn-out and impoverished pastures, former good hill grazings overrun with bracken, gorse and brambles rampant in what once were arable fields; and as a concomitant one hears the same tale on all sides of dwindling livestock. The cold blast of economic depression which has assailed the agricultural industry ever since the few prosperous years following the war has completely upset the established rules of farming practice, and farmers have been forced to adopt methods of working their land which are quite opposed to their natural instincts of good husbandry. As I heard it aptly described not long ago, "good farming no longer pays", but the man who said that did so with his tongue in his cheek, knowing full well that the account would have to be squared some day.

Tractors have taken the place of horses on many farms, mechanized transport has almost completely driven the horse from the roads, uneconomic prices for beef, wool and mutton have resulted in a great diminution of cattle and sheep, while pig numbers have also dwindled under pressure of imports of pig products from foreign countries. The net result of all this so far as the land is concerned is a colossal decrease in the amount of humus and urine, which constitute the very life-blood of the soil.

Now, with the shadow of war overhanging the world, the Home Government has awakened to the fact that the fertility of the land has been allowed to sink to such a low ebb that it could not possibly respond to intensive production of food crops, such as would be required in war-time, and so subsidies have been offered for treatment with slag and lime, and now a further grant of £2 per acre is being made for the ploughing up of worn-out grassland; not with the object of bringing it into immediate crop production, but with a view to improving the pasture and getting livestock back on to the land so that its fertility may be restored against the day when heavy demands may have to be made upon it. So far as I know this is the first time that the importance of livestock as a means of promoting and maintaining fertility of the soil against a national emergency has been given the official recognition it deserves. To make the scheme complete proposals relating to subsidies and marketing are either in hand or under consideration to ensure remunerative prices for all classes of livestock.

There may be a vast difference between farming practice at home in the temperate climate of Britain and estate practice in Malaya, but the principle governing soil fertility is exactly the same. The methods whereby fertility is obtained and maintained may also be different, but they boil down to the same thing in the end—humus. Centuries of farming practice have established the irrefutable fact that fertility cannot be maintained for any appreciable length of time without livestock, and I venture to predict that the same truth will be brought home to agriculturists in Malaya, sooner or later.

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That there are drawbacks, and prejudices, to livestock on estates, I am very well aware, but in this connexion, I would suggest that I speak from experience, that most of these drawbacks and prejudices arise from the haphazard methods under which cattle have been tolerated on estates up to the present time. Cattle and goats which the labourers may be allowed to keep, as a sop to the Labour Department or under the necessity of retaining a labour force, are a vastly different proposition as compared with herds which are maintained by the keenness and under the supervision of the manager for the benefit of the estate. Whether they are owned by the labourers or the estate makes little difference; it is the methods under which they are kept that count, and if their value to the estate is recognized to the extent that the manager takes a direct interest in them, it follows that they will be of correspondingly more value to the labourers. Livestock owned by the estate are not likely to show any direct profit at the present time on the livestock account, but with careful management they should show no loss, and properly worked there should certainly be an increase in soil fertility, with a resultant profit from increased crops.

Cattle, pigs, sheep and goats are all suitable for this country, but not all of them are suitable for every estate. Pigs, for instance, might be difficult on an estate with Malay or Javanese labour, and goats are a pest on an estate with young clearings.

Cattle.

The two chief reasons I have heard put forward against the keeping of cattle are—

- (a) lack of grazing grounds;
- (b) damage done by uncontrolled grazing.

As regards (a) I think that too much importance is placed on the necessity for grazing grounds. If fields could be provided with good pasture grasses, we would have the ideal conditions for cattle, but as the pastures simply do not exist, and our main object in keeping cattle at all is to provide manure, it follows that they should be stall-fed as much as possible under conditions that will ensure the maximum conservation of dung and urine. All that is necessary, therefore, is a shed having a good concrete floor, with channels to collect the dung and urine and convey it to a concrete pit, a small area set aside for exercising purposes with a good supply of drinking water, and an area for the growing of guinea grass. This latter can be either an area set aside for the purpose, or the guinea can be grown successfully on the edges of drains or terraces, thereby preventing soil wash as well as providing fodder.

Under these conditions cattle will keep well and healthy, uncontrolled grazing and its attendant evils will not exist, and the manure can be utilized to the best advantage. Where composting is being practised, the addition of manure and urine to the heap will both expedite the breaking down process and enhance the value of the compost. From a manurial point of view the urine is most important, and great care should be taken to see that this is not wasted. If it cannot be applied to the land direct, compost heaps are the best means of "banking" it, but such heaps should be protected from rain otherwise a lot of the value will be washed out of them. The greatest value is obtained from the manure if methods of handling it are directed towards the production of the biggest possible

volume of humus, with the minimum of waste, and in actual practice many ways and means of achieving this object present themselves. The following suggestions, however, are put forward for what they are worth:—

- (a) Collection of dung and urine in concrete sumps and direct transport to the field. In this case the liquid manure should be poured into trenches which have been filled with vegetable matter such as grass and weeds, cover crop, coco-nut husks, &c., and then covered over with soil. This method can be applied also to the planting hole in the case of young rubber.
- (b) Collection as above and daily application to compost heaps which are afterwards dug into the soil.
- (c) Composting in the cattle shed after the manner practised at home in the "reeds" and courts of the cattle-feeding countries. This is the ideal method of making farmyard manure, but so far I have not tried it in this country, and so I cannot say anything about it.

On coco-nut estates under grass and mixed covers the cattle need never be housed at all. A method which I have employed with a herd of cattle for the past few years, and which has given very good results, is to move them systematically through selected areas, tethering them to individual palms at night, ten successive nights at each palm. During the day the cattle graze in the same area, and the driving to and fro from cattle sheds to grazing grounds, which is the usual routine with herds belonging to the labourers, and which is a potential source of damage and trouble, is entirely eliminated.

A good way to start off an estate herd is to purchase from 15 to 20 of the best young heifers available, and these can be picked up at about 20s. to 30s. a head. When they are two years of age a selected bull should be added to the herd, and thereafter the normal increase should be one calf per cow per annum. Bull calves should be castrated, unless required for breeding purposes, and all the calves should be allowed free access to their dams. A good cow at home will produce enough milk to rear two or even three calves, but in this country the average cow has barely sufficient milk to make a good job of one. And even then, in the hands of native dairymen and estate labourers, the calf has to be content with what it can get after the cow has been milked very nearly dry. It will be appreciated, therefore, that estate herds allowing the calves all the milk would very soon effect a great improvement in the standard of cattle throughout the country.

A herd started by the purchase of young animals need not entail a very big outlay, and after the first year or two the capital value should more than double itself. For about 30 animals, one or two herdsman, according to whether the cattle are stall-fed or not, are sufficient, so the monthly expenditure is the amount of their wages only, and after a few years there should be sufficient revenue from sales to more than cover this. The handling of the manure, of course, is a direct charge to manuring, and the amount of labour required will depend on circumstances. That this will pay for itself, however, in terms of increased fertility leaves no room for doubt.

Pigs.

As compared with cattle, pigs require much more supervision and management if they are to be reared successfully. Here again manure should be the main consideration, but during periods of very low prices there is apt to be a deficit in the

working account which will make the manure look rather expensive. It must be borne in mind, however, that where the pigs are properly fed the manure is much more valuable than that obtained from cattle, on account of the high proportion of concentrates included in their rations. A good feeding mixture contains broken rice, rice bran, coco-nut cake, and ground-nut cake, whereas cattle, as a rule, get no concentrates at all.

A herd based on 20 to 30 breeding sows will mean about 200 to 300 animals of all ages always in stock, and this a unit which can be handled efficiently by three coolies for the actual cooking, feeding, cleaning, &c., and attention to sows at farrowing.

Cross-bred animals, viz., strains obtained by mating pure-bred boars to local sows in the first place, and then breeding from the cross-bred sows again with a pure-bred or suitable cross-bred boar, pay best as they inherit the virtues peculiar to both in respect of stamina, rapidity of growth, prolificacy, abundant milk and resistance to disease. It has been proved by experiment and confirmed in practice that litters of cross-bred pigs are considerably heavier than Chinese pigs at time of weaning, and that the live weight gain thereafter brings the cross-breeds to a killing weight of about 120 katties anything up to two months earlier than the Chinese breeds, with a much better carcase.

It has been proved also that sows of the European breeds are not such good milkers in this country as Chinese sows, hence the necessity for retaining a proportion of native blood. Cross-bred sows of large white, middle white and large black strains, all of which have been in this country, are usually prolific breeders and good milkers.

Exercise is essential to keep breeding stock in good condition, and it is advisable to let young pigs and weaners have free range for an hour or two each day until they are four months old. If due consideration is given to this requirement when the site for the piggery is being selected, no great harm or trouble should result, and a small herd-boy put in to look after the pigs while they are out can keep them from straying into areas from which it is desirable that they should be excluded. Young clearings and nursery areas should be definitely forbidden, but there is very little damage that pigs can do in old rubber. When tapping is in progress, and the cups are fairly low down on the trees, pigs, of course, should not be let out until after the latex has been collected, otherwise a certain amount of crop is liable to be lost.

With training and close supervision Tamils make excellent pig-men, so there need be no difficulty on account of labour. A certain amount of foodstuffs, such as tapioca roots and sweet potatoes, can also be grown if land is available, and it may be possible to give such land out in the form of allotments to the labourers and then buy the produce from them. This provides work for dependants and enables them to earn a small income, thereby easing the strain on the family budget and at the same time contributing something towards improving the position as regards locally-produced foodstuffs.

One method whereby a herd of pigs can be started easily is to purchase, say, ten to fifteen in-pig gilts, preferably of a good cross-bred strain and in pig to a pure-bred boar. This forms the foundation of a good herd which can be built

up to whatever size is desired. The gilts should all farrow within two or three months of taking delivery, and when the young ones are ready for weaning a suitable boar should be purchased with which to carry on the breeding.

The manure from the piggeries should be conserved in as concentrated form as possible and to this end a concrete sump should be provided to receive all the washings from the pens. Rain water from the roof should not be allowed to enter the sump as otherwise the manure will become too highly diluted. The pigs too, particularly the fatteners from which the best manure is obtained, should be housed fairly intensively so that the manure is not overdiluted by the washing of the pens. By this it is not meant that the animals should be overcrowded but the buildings should be designed so that the biggest possible concentration of manure is conveyed to the sump with the minimum of washing. One hundred and twenty fattening pigs housed in ten pens, each pen having a floor space of 10 feet by 8 feet under cover and 15 feet by 8 feet uncovered, will keep a sump 6 feet square full of good rich manure. The sump should be allowed to fill up and thereafter the quantity removed each day should be just more or less the amount which goes into it.

The manure as it comes from the sump is, of course, in semi-liquid form, and it has, therefore, to be transported in drums or buckets. In this form it is very suitable for applying direct to coco-nut and oil palms by pouring it in a circle at a radius of about 8 feet around each palm. The quantity required will depend on circumstances, but it is better to err on the side of being too liberal than otherwise.

Other ways in which this manure can be usefully applied are—

(a) *Nurseries*.—Periodic waterings with a fairly dilute mixture applied between the rows, preferably after a light chipping of the soil, will keep the seedlings making good healthy progress. Heavier dressings will promote rapid growth when it is desired to force on the seedlings for any special purpose.

(b) *Basket Seedlings*.—Two or three applications of a fairly weak mixture spread over the time between planting in the basket and removing it to the fields will ensure good, strong plants which will go ahead without any check.

(c) *In the Planting Hole*.—By filling the holes with soil to within 9 inches of the top and then applying a bucket of manure to each hole about two weeks before completely filling the holes and planting, some very fine results have been obtained both from basket seedlings and budded stumps.

(d) *Young Rubber*.—Seedlings and budded rubber will both rapidly respond to applications made in the field, and care has to be exercised to avoid overmanuring as it is likely to promote a bigger development of branches and foliage than the young plant can support. Unfortunately, a luxuriant growth of weeds is also encouraged, but can be depressed by planting a mulch of bush prunings or other cover crop around the plant, at the same time the mulch rapidly breaks down under the influence of the manure to form a rich, crumbly mould.

As regards the economics of pig-keeping it must be emphasized that present-day prices allow of no margin of profit on the pig-keeping account. Anyone who adopts this form of livestock must concentrate, therefore, on making revenue as nearly as possible equal expenditure and be prepared to charge any loss there may be to enhanced fertility of the land. It must be emphasized also that any cutting

of expenditure in regard to feeding and the production of manure can only result in disappointment. In this connexion I cannot refrain from remarking that, in my opinion, it is a pity the Government does not do more to encourage this form of animal husbandry by restricting the import of pigs from other countries.

Sheep.

Where conditions are suitable, that is to say, wherever there are areas under grass, sheep do very well and are well worth keeping. They exhibit no tendency to stray, are very easily herded and therefore constitute no menace to growing crops.

A flock of Kelantan sheep was started on this estate some 25 years ago, and it is still going strong. Numbers are maintained round about 100 and for the past ten years Calcutta rams have been used for breeding purposes. Some difficulty exists now, however, in getting rams from India and some other breed will have to be tried.

Of all the animals with which I have had experience in this country, sheep are the least troublesome, and the following few points are the only ones which have to be observed:—

In the first place, they must be housed at night in a shed raised 2 or 3 feet above ground level and the floor of the house must be slatted to ensure that all the dung and urine will drop through. The ground beneath should be concreted and sloped to a concrete tank in which all the manure is collected.

The second important point is that the sheep should not be turned out in the mornings until well after the sun is up, and they should not be also housed again until just before dark in the evenings.

One or two rams only should be retained, according to the size of the flock, and allowing one ram for about 30 to 40 ewes. All other ram lambs should be castrated while they are still very young. From the age of one year all the sheep should be clipped periodically. The wool also is a valuable manure and should not be wasted.

No feeding of any kind is required other than grass, but a trough of good clean water should be available near the shed. Wet or swampy grazing grounds should be avoided and conditions around the shed kept clean and dry.

The amount of manure produced by a flock of 100 sheep is surprising and it is very highly concentrated and therefore of considerable manurial value.

With a Tamil labour force a flock of sheep is a decided asset also from the point of view of supplying fresh mutton on occasion and revenue from this source is generally sufficient to cover expenditure.

Goats.

Generally speaking, goat-keeping should follow the same methods as those outlined for sheep, but special pens should be provided for the entire males. Bunches of green bushwood should be hung up in the sheds at night, otherwise the animals are inclined to gorge themselves when they are turned out in the morning and suffer colic and other digestive troubles in consequence. Grazing grounds are essential and for this purpose light "belukar" or abandoned areas are ideal. Wet and swampy places should be avoided.

In the case of both cattle and goats the animals may be all owned by the labour force, but to get the benefit of them the sheds should be provided by the estate so that the manure may be properly conserved. The advantages of this system are apparent to any manager who realizes the importance which the ownership of livestock plays in the establishment of a settled labour force.

Having dealt now with a brief outline of how these four classes of livestock may be kept to the benefit of any agricultural holding, there remains one other point—disease. This must always be a risk where livestock is concerned, but with common-sense methods of housing, feeding and attention there is no reason why undue losses should occur on this account. Cleanliness and the avoidance of over-crowding are of first importance, and these are both possible of attainment on any estate. Immediate isolation of any animal which appears to be off colour is also easily arranged, and is only a common-sense method of avoiding trouble. To the same end any new animals which are being added to the herd should be kept apart from the others for at least three weeks. Digestive disorders all arise from faulty feeding and supervision alone will prevent this.

Overcrowding is a source from which various ills arise. Not least of which is infection from intestinal parasites. Badly designed houses also give rise to ailments such as rheumatism, particularly in the case of pigs, for which a dry sleeping place is absolutely essential.

More serious diseases, such as foot and mouth disease and swine fever, must not be lost sight of, but the risk of these is also minimized by strict adherence to the rules of cleanliness and quarantine. In case of doubt or definite outbreak, the Veterinary Department can be relied upon to take the necessary steps for treatment and control. In all cases, however, prevention is better than cure, and if this is borne in mind from the outset, the risk of disease should not prevent anyone from going in for livestock.

As regards housing, feeding and general management, the Department of Agriculture has already issued some excellent articles and anyone following these will not go far wrong.

In conclusion, I would emphasize the point that cattle manure alone will not work miracles, nor will it oust artificial fertilizers from their place in agriculture. Used in the proper manner, however, under conditions of correct soil management, it will so enrich the soil in humus and bacterial activity that the response to any other form of manuring or cultivation will be materially increased. The bounty of the "good earth" is there for our winning, but only as we nurture it shall we reap the reward.
