SMALL-HOLDINGS IN TEA

RECOMMENDATIONS OF SUB-COMMITTEE.

Recommendations of a Sub-Committee appointed by the Board of the Tea Research Institute.

1. The Institute to appoint a Small-Holdings Officer on a salary scale of Rs. 200-40-400 plus house allowance at Government rates so long as no house is provided.
2. A demonstration plot of about 10 acres to be leased in the Uda-Palata area and worked by the above Officer.
3. Subsidiary plots to be selected on small-holders' own land, to be worked by the small-holder under the general direction of the Tea Research Institute Officer. The Committee stress the importance of selecting the right type of small-holder for this purpose as the success of the work will largely depend on the personality and influence of the persons chosen.
4. In view of the fact that the question is largely an economic one, the Co-operative Society should be approached with a view to help being afforded towards the purchase of manures and other necessities.
5. Leaflets in the vernacular to be prepared for issue after demonstration work has been started.
6. Lectures and demonstrations to be given in bought leaf factories.

The above recommendations were approved in principle by the Board at its meeting on the 28th July, 1932, and financial provision was made for carrying them into effect.

SMALL-HOLDINGS IN TEA

C. H. GADD.

At the request of the Board of Management of the Tea Research Institute a short investigation into the conditions and methods of cultivation of Tea Small-holders in Ceylon was carried out during April and May, 1932, with a view to the making of recommendations for their betterment. As the small-holdings are scattered throughout the major tea areas, a thorough study of the conditions in all districts was impossible in the time available. Enquiries were made, particularly in the area between Nawalapitiya, Gampola and Kadugannawa where small-holdings abound, and in Kotmale where two of the recent Agricultural settlements are situated. From what can be ascertained on passing through other districts, and from conversations with those acquainted with the condition of small-holdings there, it would appear

that no great variation of conditions exist in the different districts, and that where variations occur they are usually of minor importance.

I am indebted to Messrs. H. A. Peiris, D. A. O., and C. N. E. J. de Mel, P. P. I. of the Central Division of the Department of Agriculture for conducting me through small-holdings and settlements in their districts, to the many planters, small-holders, tea traders, proprietors and teamakers of bought leaf factories who have supplied me with information, and to Ratemahatmaya U. B. Unamboowe of Kotmale for personally conducting me through the agricultural settlements of Waitalawa and Kottunugoda and for giving me the benefit of his wider knowledge of the village agriculturist and small-holder.

STATISTICS.

There are in Ceylon, according to the information supplied by the Department of Agriculture, 7,357 small-holdings of tea which embrace a total of 31,350 acres. An analysis to show the size and distribution of the holdings is appended to this report. It will be seen that included in the census are 252 estates of more than 20 acres, 62 of which are over 50 acres in extent. Many such properties are run on estate lines and cannot be regarded as small-holdings in the sense of the word it is used here. They appear to have been included within the census because they do not manufacture their own leaf.

The appended summary of the census shows that there are 2,983 holdings of one acre or less, 3,181 between 1 and 5 acres, 628 between 5 and 10 acres and 313 of over 10 but less than 20 acres in extent. They are distributed through the main tea areas of the Central, Uva, Sabaragamuwa and the Southern Provinces.

THE SMALL-HOLDER.

Usually the tea small-holder is the owner of the land he cultivates but in some cases the land is held on lease. Typically the man is a villager with agricultural interests. Frequently, he also owns other lands on which he cultivates other crops, especially paddy. Unless his land is sufficiently remunerative to support him and his family, he hires out his services as a labourer to neighbouring large estates or to other village cultivators. The man who works his own small-holding usually labours at times on tea estates, and in that way has become acquainted with the methods of cultivation practised there. There is, however, a large number of small-holders who always employ labourers on contract to carry out the major works in their tea gardens. These labourers are villagers who also are casual labourers on tea estates.

That the small-holder (or the labour he employs) also works at times on the neighbouring larger estates is of importance in that it affords an explanation of his knowledge of the methods of tea cultivation. He forms a definite connecting link between the large estate

and the village, and it is through this channel that information acquired directly or indirectly by the large estates is carried to the small-holdings. The small-holder, however, does not adopt all the methods of large estates in their entirety; this is not due to ignorance of such methods but is usually the result of other factors, mainly economic. It would be entirely fallacious to assume that the small-holder is an ignorant cultivator, he is intelligent and observant, though simple and at times indolent.

PLUCKING.

Commonly, the bushes are plucked by hired labour. The rate of payment varies in the different districts, but ranges from 1 to 2 cents per pound. At the time of these investigations the dominant rate in the Kadugannawa district was 1 cent per pound; 1½ cents in Kotmale; and 2 cents in Balangoda and Haldummulla.

The necessity for careful plucking is well understood by the small-holder, and the present low price obtained for the leaf is undoubtedly impressing it well on his mind. There can be very little profit for the grower when good quality village leaf sells for 3 cents per pound, but, when the price falls to 2 cents or less as a result of bad plucking there can be no profit at all after his pluckers and other charges on his holding have been paid. Plucking was certainly coarser when prices were better. Judging from a demonstration given by a small-holder of the type of plucking prevailing when prices were booming, it was very coarse indeed, and at present would be unmarketable. Although the small-holder claims that the village plucker is very difficult to control regarding the standard of plucking, he appears to have achieved much in this direction.

The plucker, however, is not so much concerned with the price that the plucked leaf will ultimately command as with the weight of leaf gathered, because her pay depends upon that factor. Coarse leaf and immature shoots, independent of their position on the bush are likely to find their way into her basket or cloth. She will take shoots from the sides of the bush almost down to ground level and thereby tend to restrict the spread of the bush.

The bushes are plucked at irregular intervals—usually two or three times a month. The relatively long intervals between plucking rounds is partly the result of the removal of immature shoots by the pluckers. On all estates the necessity for close supervision of pluckers is recognised particularly where a regular round is adhered to during times of poor growth, e.g., during drought, to prevent the removal of immature leaf. The estate plucker is assured of her minimum wage no matter what short weight of leaf is brought into the factory but the village plucker's pay is determined entirely by the weight of crop she plucks. The result is that small-holder's bushes are stripped and there is an ultimate loss of crop.

The tea bushes on small-holdings do not flush so readily nor are they so large as the better cultivated bushes on larger estates. These factors tend to increase of time between pluckings.

PRUNING.

Bushes are not pruned at regular intervals but when in their owners' opinion they require it. In other words, pruning is carried out when the bushes "run out" and cease to yield further. The length of the interval depends upon the elevation of the holdings and the condition of the bushes. The small-holder himself appears rather hazy regarding the frequency at which he prunes his own bushes.

I saw no recently pruned tea, but on enquiry the method of clean prune was always explained and a previous pruning cut demonstrated. Even when there was evidence of a "cut across" having been used, the "clean prune" was usually described, and further enquiries were necessary to elicit the information that last time the bushes were "cut across". Wherever the "cut across" had been adopted, it was because certain adjacent estates pruned that way. The small-holder has not yet decided in his own mind whether the "cut across" is preferable to a "clean prune" though he no doubt finds the lower cost of the former attractive. He seemed rather puzzled that estates should have given up a method they had followed for many years. It is only when several estates prune on the new method that the small-holder will give it a trial. He is essentially conservative especially when he does not understand the reason for a change.

Twenty-five cents per 100 bushes appeared to be the normal rate of pay for pruners.

WEEDING.

The ground is weeded "when necessary". This is said to occur every 1, 1½, or 2 months, but as a rule, it is not done till the weeds are thick and tall. Then the work is frequently put out at contract; the rate varying from Re. 1-00 to Rs. 3-00 per acre according to the amount of weed to be removed. Weeding is usually done with a scraper; sometimes with a mamoty, with the consequent loss of top soil on steep slopes.

DRAINS.

Many holdings are very inadequately drained, but where drains have been constructed they receive attention at intervals. The silt from the drains is commonly placed on the lower side though some holders place it above the drain, and a few claim to spread it through the tea. In a few well-cared-for holdings silt-pits in the drains were observed.

GREEN MANURES.

Green manuring is by no means a general practice. Where green manures are grown they are usually of the tree type, Gliricidia and Dadap being the commoner, because they are readily raised from cuttings which are easily obtained. Even in districts where these trees are easily established with little cultivation and where cuttings are easily obtained they are not as common as they should be on small-holdings. The bush type of green manure, e.g., Boga or Crotalaria, is very rare. That can be attributed to the fact that the land has to be prepared for the reception of the seed, which to the villager is expensive.

Green manure trees are often made to serve the dual purposes of firewood and mulch. Instead of taking 2 or 3 loppings per year as could be done in some districts, the branches are sometimes allowed to grow until very woody, so that they become more suitable for firewood. The production of vegetation for green manure is then to be regarded as of secondary importance to the production of firewood.

At the present time very few small-holdings bury either prunings or loppings owing to the high cost of burial and the low price of tea.

In the past, both prunings and loppings were said to have been buried in holes between the bushes. One labourer volunteered the information that he cut holes at Re. 1-00 per 100 and filled them at the same rate. Another small-holder who had given up burying his prunings for the last three or four years said that burial cost him up to Rs. 10-00 per acre. Now the leaves are left as mulch, but there was very little evidence of any mulch on the majority of small-holdings visited. Most of the leaves soon find their way into the drains or are carried off by the wind.

Cover crops are not used. A holding near Haldummulla was seen to be entirely covered by a creeping grass (buffalo grass) which was certainly efficacious in retaining the soil but no doubt was detrimental to the tea. His yield, from data he supplied, was calculated to be very little over 100 pounds per acre (made tea). A suitable cover plant would prove a boon to the small-holder as it would save his soil, tend to keep down his weeds and provide a certain amount of organic matter for his soil.

CULTIVATION.

Artificial manures are rarely used in small-holdings. Those few holdings which, mainly through the activities of Co-operative Societies, had previously used artificials have mostly abandoned them this year as uneconomic. A small-holder who manured last year expressed satisfaction at the result and offered the opinion that tea was well

worth manuring when the crop could be sold at 10 cents per pound, that it paid at 8 cents and possibly at 6 cents, but was unprofitable at the then price of 3½ cents. Many small-holders, however, appear to regard artificial manuring as a rich man's hobby. "I am a poor man" was considered sufficient answer to the question "Have you ever tried the effect of manure on the tea?"

The soil is never disturbed except on the rare occasions when prunings are buried and during weeding. Forking is by no means a common practice, in fact, it is very rare. An increase in the use of artificial manures would also have a beneficial effect on the aeration of the soil, as if such were purchased they would certainly be forked in..

It will be realised that the small-holder attempts to maintain his bushes on the original reserve of plant food material in the soil. Little or nothing in the way of foodstuffs is applied to replace that taken away as crop or built into the bush. The consequence is that the bushes are small and in poor heart and the soil is steadily deteriorating.

PESTS AND DISEASES

Speaking generally, pests and diseases are probably less prevalent in small-holdings than in the larger estates. The holdings under present conditions cannot be regarded as a menace to large-scale cultivation through being centres of disease. Even the ubiquitous shot-hole borer is less prevalent there than in many cultivated estates, mainly, no doubt because the bushes contain less wood of suitable thickness to accommodate the borer.

CROP.

It is very difficult to arrive at any very accurate estimate of the crop collected by small-holders. No records are kept, but data in the following form is typical of what may be obtained: "80-140 pounds per plucking; 2, rarely 3 plucks per month; acreage 2 acres." These particular details were obtained from one of the best type holdings in the Ulapane district, and a pluck of 130 pounds was seen at the time of enquiry. Taking an average of 120 pounds twice a month a production of 360 pounds per acre of made tea can be calculated. The owner of this two-acre field held in all 6¾ acres, and as he sold his tea direct to a factory he was able to state his total receipts for the previous month, viz. Rs. 53-00. As the rate of payment was 5-5½ cents per pound the calculated yield is 500-600 pounds per acre made tea per annum. That month had been a good yielding month, so the calculated estimate for the year is undoubtedly high; it is higher than that calculated from the previous data.

The above figures are given to illustrate the difficulty in estimating yields from data available. Estimates based on an examination of the bushes by an experienced planter would possibly be more reliable. In the writer's opinion the average yield is well below 400 pounds per acre, a value estimated above for a good holding. An experienced planter in the Balangoda district, well acquainted with holdings in his neighbourhood, expressed the opinion that it could not be much above 200 pounds per acre. The yield varies with elevation and district, the condition of the holding and the percentage of vacancies. It is clear, however, by comparison with adjacent estates that the yields of small-holdings could be raised by suitable cultivation to at least 2 or 3 times their present amount.

DISPOSAL OF CROP.

The small-holder has little or no difficulty in the disposal of his crop; he sells either directly or indirectly to estate factories or to factories erected specially for the manufacture of his leaf, commonly termed "bought leaf" factories. The competition between bought leaf factories where small-holdings abound is very keen, and this competition ensures to some extent that the grower is not unduly exploited.

Between the factory and the small-holder comes the inevitable middleman or tea trader. Instead of having to carry his crop, may be a distance of several miles to the factory, the small-holder can sell it at a near-by boutique or collecting centre, where he obtains spot cash for it. The trader collects the leaf from his various centres and conveys it to the factory by bullock cart or other convenient means of transport. It is in the trader's own interest to get the leaf to the factory in the best possible condition. When the small-holder has to carry his leaf, as much as possible is crowded into the basket or bag in order to reduce the number of carriers; consequently the leaf arrives at the factory in a heated condition.

There is a standard difference of ½-cent per pound between the prices paid by the factory and the trader. This may be regarded in the nature of transport charges. A small-holder, who transported his own leaf to a factory 1½ miles distant, paid Rs. 2 per 100 pounds, i.e., 1/5 (one-fifth) cent per pound. At that rate for a load of 50 pounds the carrier would receive 10 cents for his 3 miles' journey. Taking into account that the trader's expenses are likely to include commission to boutique-keepers who use their shops as collecting centres, and that the distance of transport frequently greatly exceeds 1½ miles, the rate of ½-cent per pound does not appear excessive.

The small-holder is fully aware that he can receive a higher price at the factory door than from a trader, yet, even when his garden is close to a factory, he frequently prefers to sell to a trader. The

reason for this is that the trader pays cash at the times of sale, whereas the factory runs a monthly account. Moreover, the trader will usually advance money on the crop, and this fact is made full use of.

It will be readily understood that a factory will prefer to buy a single large quantity of leaf than numerous small amounts. The pluckings from very small gardens will consequently be unpopular at the factory and steps may be taken to force the sale to a trader who will collect and sort the smaller quantities before bringing them to the factory as one consignment. This view is supported by the fact that bought leaf factories in the past advanced money to traders, though I understand that this practice, owing to financial stringency, is now ceasing, and that some factories employ their own collecting agents. The managers of bought leaf factories, however, emphatically denied that they ever refuse to buy small quantities of leaf from a small-holder if it is in good condition.

OPENING NEW LAND.

Except on the new agricultural settlements such as those at Kottunugoda and Waitalawa, in Kotmale, which I visited with the Divisional Agricultural Officer, Central Division and the R.M., Kotmale very few small-holdings are being opened in tea. The settlements I saw are divided into 1-acre blocks, $\frac{3}{4}$ of which are being opened in tea; and the remaining $\frac{1}{4}$ acre is used for the growing of vegetables, fruit trees and for the house site. As there are numerous applicants for such blocks of land some selection can be made to obtain a good type of settler. The Agricultural Instructor of the Department of Agriculture and the R.M., Kotmale had taken great interest in and had supervised the work of opening these lands. The R.M. is an enthusiast with agricultural interests and it is the effect of his influence that can be observed in the holdings. The Agricultural Instructor is keen, a hard-worker with a sound knowledge of his work, but it was noticed that a word from the R.M. had a greater effect than a lecture from the Agricultural Instructor. This is not intended to convey a criticism of the Agricultural Instructor, but to indicate what, in my opinion applies to most districts, namely that the work of an Agricultural Instructor must have the backing and support of the headman if it is to prove effective.

The acre of land even when in full bearing is never likely to be sufficient to maintain a settler and his family. To supplement the income from the holding even when it is in full bearing the men will have to obtain employment on neigbouring estates. They are experienced labourers and to a certain extent have adopted the methods used on estates where they work. Where they deviate from such methods it is not through ignorance but as a result of economic impulses.

The seed is planted at stake after the land has been cleared and holed at a distance of $3 \times 3\frac{1}{2}$ feet. Usually a catch crop of manioc is taken during the first year. A good deal of remonstration from the R.M. was necessary to prevent second and third crops being taken, though the holders knew that the growing of such would be detrimental to the tea.

The same economic impulse is to be seen in a tendency of some of the holders to hard pluck the young bushes. In a few cases the the bushes were severely plucked, almost stripped for some time before they were centred. As a rule, they were centred at about 4 inches when about 3 years old. After being centred the bushes are likely to be taken into bearing when grown sufficiently high. One settler had centred his bushes when they were 18 months old; the bushes were ready for a first prune at 3 years after which they are to be taken into bearing. This method appeared to be very suitable for that soil and elevation, and in my opinion was more suitable for the small-holder than centring after 3 years' growth, which appeared to be commoner practice.

It was evident, however, that even the R.M's. influence was not sufficiently great to prevent the worse type of cultivator from stripping his unpruned tea. The small-holder may be a good agriculturist but he is a poor economist. Apparently, he finds the appeal of a few cents he will get for the strippings of his young tea irresistible It is not because he is destitute. He can earn sufficient on neighbouring estates to maintain his family and yet have time to cultivate his holding, in the work of which he is ably supported by his women folk. It is a great pity that he is so often so short-sighted that he cannot see the injury he is doing to his bushes by such premature plucking.

The plots are drained and in many cases silt-pitted. Paspalum, and in some cases Boga as well, has been planted on the edge of the drains. The paspalum is cut as fodder. Green manure trees such as Dadap, Albizzia and Grevillea are to be seen in every holding. Indigofera is being propagated from the few plants there. The tea plants on the majority of holdings are about 3 years old and well grown; the stand is uniform and there are few vacancies.

The presence of shade trees is not due solely to the holders knowledge that they are good for tea, but to a large extent to the activities of the R.M. He has established a nursery where these trees are raised and they are sold for small price to the cultivators. A tree paid for, even though it cost but half-a-cent, is likely to be better cared for than one acquired without effort.

The standard of cultivation throughout and the condition of the holdings are in general of a much higher standard than those seen in many villages. One excellent holding I noticed had stone terraces in places above the drains; another had recently been forked throughout, though no artificial manure had been introduced with the fork for financial reasons. Some holders had erected serviceable permanent houses, whereas others were satisfied with erections of a more temporary nature.

LEASE-HOLD.

The terms on which tea land is leased to the small-holder affords some indication of the agricultural value of the land and the attitude of the owner towards his permanent crop plants. It was ascertained that near Kadugannawa a few years ago, tea land could be leased for Rs. 10-00 to Rs. 20-00 per acre. At the present time, the small-holder can obtain for Rs. 10-00 per acre, what previously he had to pay Rs. 20-00 per year for. That is not due so much to the deterioration of the yielding capacity of the bushes as to the present depressed state of the tea market.

The terms of the lease are generally very easy. The lessee undertakes to maintain the boundaries and drains, and to keep the land clean by weeding once a month. Apart from such agreements he is free to cultivate the land as he chooses. He can exploit the land and the tea bushes on it to the fullest extent. There is no standard of fertility to maintain, and there is nothing to prevent continuous stripping of the bushes.

Though there is nothing in the lease to prevent the lease-holder from extracting the last cent out of the land and bushes without putting anything back, one cannot tell from a survey of a plot whether it is cultivated by the owner or held on lease. That this should be so may be explained on two hypotheses. First, an innate sense of honesty prevents the lessee from unduly exploiting the holding. Second, that both owner and lessee regard the existing methods of exploitation of a tea garden as sound, both agriculturally and economically; their object is to get as much as possible from the garden with a minimum expenditure of money and labour. The villager appears to live for the day; he apparently makes little provision for the future, so the second hypothesis is probably sound though the first is not to be ignored.

FINANCE.

The great majority of small-holders have no working capital and practically the whole of the income from the holdings is applied to the owner's maintenance and personal needs. Any expenditure on the garden whether it be for cultivation or manure has to be very

carefully considered. A small-holder who spends the day on a large estate forking the soil receives his day's pay, whereas if he spends the same amount of energy on his own holding his immediate return is nil, and his ultimate return is at best problematic. Possibly he has found from experience that forking alone, without the application of artificial or green manures, is not economical. His view appears to be that only the rich man can afford manures and that he would use them too if he could afford them. An increased use of fertilisers would probably lead to better all-round cultivation.

Co-operative Societies have done much to assist the small agriculturist by obtaining and advancing manures to members. Investigations into the operations of Co-operative Societies would show the extent of their work in this direction. A village society last year is said to have disposed of 3 tons of manure to small-holders at Rs. 7-50 per cwt., and but for the depressed state of the tea market, its activities in this direction would probably have increased. The tea trader also will advance manures and refund himself from the proceeds of the crop as it is sold to him. It is a matter of indifference to many traders whether the money advanced is expended on the improvement of the holdings or on private festivities; they are assured of their return through the crop on which they have advanced money. It is, therefore, easier for a small-holder to obtain an advance from a trader than from a Co-operative Society, which does not trade and which will make enquiries regarding the purpose of the loan before making it.

The question of mortgages and other methods of raising money need not be considered here. The finances for the improvement of a holding should be obtained from the income derived from that holding, if it is in bearing, or from money obtained by labour outside, if it is not in bearing. For this reason lands granted to settlers under the recent Government Settlement Schemes cannot be mortgaged.

GENERAL CONSIDERATIONS.

The village cultivator is like most agriculturists essentially conservative in outlook. He treats his crops as his father and forefathers did before him, he knows that the methods have stood the test of time and his practices have been built up from the experience of ages. He will listen patiently to the theorist but no amount of argument alone will cause him to change his methods. That stubbornness is, however, not to be mistaken for ignorance; he is, in the writer's opinion, both observant and intelligent.

It may be difficult to reconcile this view with many of his practices in tea cultivation. To him, tea is a new crop, he has not the knowledge of his forerunners behind him and consequently he is not so sure of himself. He, therefore, turns to the practical planter for

advice and not to the theorist. He watches closely the methods used on estates and will work on the estate if necessary to acquire a better knowledge of a method he intends to use. A change in the method of pruning on a neighbouring estate is not passed unobserved. If other estates make a similar change the small-holder will change his method too. He will follow on the assumption that if a number of large estates change their method there must be good reason for it. On being asked why he has changed from a "clean prune" to a "cut across" a small-holder will reply that he has done so because such and such an estate now prunes that way. He may not know whether it is a better method for his purpose but he can usually name a number of estates that use that method. He is observant and is quick to appreciate advantages (if any), as may be instanced by the small-holder who concluded that the "cut across" was the better method because he noticed fewer deaths to occur after pruning. In such a way, a knowledge of tea cultivation is acquired by the villager, the methods of large estates are followed first and the experience gained is added to their own fund.

It does not follow that because a large estate does a certain thing the small-holder will necessarily follow, otherwise why is manuring, green or otherwise, so rare on small-holdings? Here the question of cost comes in. There are certain operations which are absolutely essential for the harvesting of the crop, e.g., pruning, and in-these the small-holder quickly follows the methods of large estates. Others, such as green manuring, are not essential—the bushes will yield some crop whether they are manured or not and in these it is the matter of immediate cost which frequently determines whether the practice will be followed or not. As regards green manures, seeds or cuttings have to be obtained and tea land has to be prepared for their reception; after some time when the plants have grown sufficiently large, they are lopped and the loppings have to be buried. Each of these steps requires money or labour, and what is the immediate visible result on the tea? When will the cultivator be reimbursed for his expenditure or labour? No amount of lectures or propaganda will cause the small-holder to change his attitude, the return is too slow and not sufficiently visible to the eye.

One has also to take into consideration the villager's general attitude towards perennial crops, whether tea, rubber, or coconuts, and compare it with his treatment of annual crops such as paddy or tobacco. The latter have to be cultivated and the harvest, taken a few months after sowing, has a direct relationship with the class of cultivation. Poor cultivation will result in a poor crop, that is the experience of the ages and clearly understood. A perennial crop, however, is not so dependent upon cultivation; the tree will continue

to yield whether it is cultivated or not. Wild trees are left alone, yet they annually give their harvest. That is the most obvious part of nature's lesson. That the harvest might be greater if the trees were cultivated may not be disputed, but it is doubtful whether the small-holder has realised the profit resulting from good cultivation.

Tea is probably the most heavily manured perennial crop grown in Ceylon, and it has achieved that position because such treatment has proved profitable. Yet the small-holder has rarely manured his tea. This is mainly because he demands a quick and visible return. The nature of the tea crop debars this. The bushes are plucked 2 or 3 times a month and any increase in crop resulting from the manuring is not collected in one harvest but bit by bit through the year. The cost of his manures and the application of them is paid in rupees, but his return arrives by instalments in cents. His profit is not immediately visible and is not easily calculable in the absence of records, so some doubt must exist in his mind that a profit has resulted.

If the small-holder suspects that cultivation might prove profitable his financial position frequently is such that he is hesitant to experiment. That he requires the proceeds from his crop for his immediate requirements is seen in the fact that though near a factory he will sell to a trader rather than directly to a factory which pays at a higher rate, but monthly. Advances obtained from a trader are rarely used for the production of the crop on which the advance has been made. So long as that financial condition prevails the probability of improving the methods of cultivation are remote.

AGRICULTURAL INSTRUCTION.

Agricultural instruction to villagers is not merely a matter of the teaching of theory or the particular use of tools or special methods; it is more a question of personal contact, mutual respect and a complete confidence in the integrity and knowledge of the instructor. An instructor who is personally known to the villager and respected by him will have a much greater influence and will produce more lasting and beneficial results than can an itinerant lecturer with his occasional talks.

If this view is accepted it follows that a number of good instructors each capable of advising on questions dealing with all agricultural crops and each working over an area, the size of which admits of personal relations between instructor and agriculturists will do more sound work than could an equal number of instructors, each specialist in a particular crop but working over the combined area. In the latter case not only would the work be productive of poorer results but the difficulties of administration and the cost of travelling would be enhanced.

Agricultural research work in Ceylon has been apportioned to specialist research stations, of which the Tea Research Institute is one. Though in many respects it is advantageous to separate research work on Tea from those on Rubber and Coconuts or other crops, it is not equally advantageous to split village agriculture into similar specialist divisions. A small-holder of tea frequently cultivates other land for other crops, such as paddy, and it is obviously preferable that such a man should have one agricultural instructor than that he should apply to different instructors for advice on the different crops he cultivates.

Instruction in village agriculture, of which the cultivation of tea is a part, is essentially a function of a benevolent Government. This work is at present in the hands of Divisional Agricultural Officers of the Department of Agriculture under each of whom is a number of Agricultural Instructors. Each instructor is allotted a definite range with a village or town as headquarters. His duties are numerous and his range in many cases unduly large, but his purpose is to give agricultural instruction and to improve village agriculture in every way within his power.

That service has been in operation for several years and much useful work has been done through it. If further extensions in agricultural instruction are to be made they should be directed towards the strengthening or augmenting of the existing service and not towards the replication of it by individual research stations.

Such a view does not imply that the Tea Research Institute should take no part in the instruction of the village agriculturist concerning the methods of tea cultivation. Much assistance can be provided not only indirectly by courses of instruction to agricultural instructors as outlined in the recommendations but also more directly by means of demonstration plots as indicated on page 104. The work of any officer employed by the Tea Research Institute under any scheme of demonstration should be supplementary to the present work of the Agricultural Department regarding tea and not as a replacement or substitution for that work.

DEMONSTRATION PLOTS.

As a small-holder normally learns more readily through the eye than through the ear it should follow that demonstration plots must form a suitable means of instruction. One has, however, also to bear in mind that every estate is virtually a demonstration block for neighbouring small-holders.

During the course of these investigations, the writer had the good fortune to see two blocks, which in many ways, were model demonstration plots. One, situated on the Waitalawa Agricultural

Settlement was maintained by the Ratemahatmaya of Kotmale purposely as a demonstration plot; the other was an area of about 2 acres situated between Kadugannawa and Peradeniya, leased by a tea trader, and cultivated for his own purposes.

The R.M's. block is in every way the same as those of the ordinary settlers. It was opened at the same time and the methods used there are reflected throughout the whole settlement. The plot is drained and silt-pitted, green manures of both tree and bush types are grown, and Indigofera is being tried as a cover crop. The majority of the holdings in that settlement are in like condition. Yet in the adjoining holding, at the time of my visit, stood well-grown 3-year-old plants ready to be cut back, which were being plucked hard, despite the remonstrations of the R.M. and Agricultural Instructor.

Taking the whole settlement into consideration, it would appear that the demonstration block had a marked beneficial influence. That may not be disputed, but personally I am inclined to attach more importance to the R.M's. personality and influence than to his demonstration block alone. He was good enough to conduct me personally around the Kottunugoda Settlement which is also under his charge. There he had no demonstration block, yet the condition of that settlement was as good, if not better than that at Waitalawa. I judge that his active interest, the high respect in which he is held, plus a certain amount of the authority with which he is invested has done far more good than could any demonstration block alone without these personal attributes.

The tea trader's holding was old tea, well-drained, silt-pitted and artificially manured. The bushes were in excellent condition and evidently yielding well. The holding was in very good order and an excellent demonstration to surrounding holders. Yet, adjoining it on one side was a typical small-holding which perhaps showed up badly by contrast as there was no prominent boundary between the two blocks. The holding on the other side was drained and had silt-pits in the drains; of the latter the owner appeared quite proud. He also grew a few green manure trees, but there the effect of demonstration appeared to cease. I asked this small-holder, who had shewn me the tea trader's garden if he had ever tried artificial manure himself. He replied that he was a poor man and that with the present price of tea one could not afford manures. In boom times, when he had been getting as much as 20 cents per lb. for his leaf he was quite satisfied with the income from his garden, so had not tried manures then. He knew nothing of the profits which result from artificial manuring.

The trader unfortunately was away from home, but from a conversation with some people at his house, I gathered that he was a leading spirit of a Co-operative Society. This society last year induced 10 cultivators to apply manure to their tea. My informant said that all the cultivators were satisfied with results, but owing to the present price of leaf they had discontinued manuring. One who had applied manures previously, but had now stopped, gave me the figures quoted earlier. These observations illustrate the limited sphere of influence of, and the poor results to be obtained from, a demonstration plot compared with the effects of personal influence of keen enterprising cultivators.

Special plots to demonstrate agricultural operations such as weeding, forking, pruning and plucking are valueless to a man skilled in such operations. As the work on the majority of small holdings is done by labourers who have learned their work on large estates, it appears no more necessary to demonstrate such operations to the small-holder than to normal estate labour. Both labourers have learned in the same school.

Plots to show what shade, green manure or cover plants will grow in the different districts also have a very limited value. The small-holder when interested in these subjects is more likely to follow the practice of large estates where such plants are grown on a large scale. It is a waste of time for a small demonstration plot to exhibit in its limited space all the various trees and plants to be seen on neighbouring estates.

The main thing to demonstrate is how to make a profit, but I have yet to see a demonstration plot which does that. That certain methods of cultivation and manuring lead to the production of better looking gardens and finer tea bushes must be obvious to all small-holders. They are fully aware that such methods demand money and labour, which they can estimate fairly accurately, but they appear to be entirely ignorant of the returns obtained from the use of these methods. If demonstration plots are to serve their best purpose some method of demonstrating profit-making should be undertaken.

SUGGESTIONS.

The amelioration of small-holdings is not so much a matter of instruction in the art of agriculture as it is of economics and finance. Agricultural instruction alone can benefit the small-holder but little. He is skilled in agricultural operations and is aware of that skill; his instruction should be of a more general and personal nature, and along broader lines.

INSTRUCTION.

That instruction in village agriculture, including tea, is essentially a function of the Agricultural Department has been shown earlier (Agricultural Instruction). In this work the Tea Research Institute

could materially help by organising courses of instruction and refresher courses for agricultural instructors stationed in tea districts. Through these and by conferences, the instructors could be kept acquainted with the results of the work of the Institute, and opportunity would be afforded for the discussion of problems particular to small-holdings.

The small-holder at present learns from the larger estates, and he acquires a knowledge of more modern methods only after the large estates are convinced of their practicability. There is, therefore, some delay in the transmission of information to him but this delay is not altogether disadvantageous. The fact that he gets his information from large estates ensures that the methods are practicable and not merely theoretically sound; he also learns in a manner with which he is best acquainted, viz. visually.

Conferences between research officers and agricultural officers would afford opportunities for the explanation of the theory underlying new methods and for the demonstration of these methods. The Agricultural instructor would thus form a definite *liaison* between the T. R. I. and the small-holder, and be in a position to explain and demonstrate new methods and discuss the suitability or otherwise of such methods to the small-holders' particular needs.

The instructor should be allowed to communicate direct with staff of the Institute on matters relating to their work with tea. This would allow of individual problems relating to small-holders being brought early to the attention of the Research Officers concerned, and of available assistance being afforded immediately. The instructors, however, would remain entirely under the jurisdiction of the Department of Agriculture; the Institute would have nothing to do with their work or their disposal, except in so far as it is possible to keep them fully acquainted with improved methods of tea cultivation.

LEAFLETS.

The distribution of leaflets or pamphlets in the vernaculars at present can serve little purpose. Such articles would necessarily have to be written in general terms; and the villagers would have to sort out the answer to his particular problem from a mass of generalities. The vehicle of instruction is unsuitable, in some cases, if the leaflets are broadcast in the absence of demonstration; in others, the instruction would be useless unless the problems of finance and of the supply of necessary requisites are previously solved.

DEMONSTRATION.

The value of demonstration plots has been discussed earlier where it was pointed out that their main object should be to demonstrate how the gardens may be made more profitable. If this could

be done, it seems probable that beneficial results might be achieved by such plots.

The best results are likely to be obtained where the demonstration plot is a typical holding run by a progressive small-holder of suitable personality, character and influence, preferably one who himself works in his holding. Thus the object of the plot would be to demonstrate that a small-holder can make an increased profit, and *not* that a Government or an Institute, which to the villager is assuredly rich, can make an enhanced profit from a small-holding. This point is of importance because a plot owned by a wealthy body is not very different from normal estates which already serve as demonstration plots in many respects.

The selection of small-holder demonstrators must be carefully made. In this, revenue officers, headmen and agricultural officers might assist, possibly their services would be very necessary, but no great difficulty need be anticipated in this matter.

The small-holder would have to undertake to work this holding as instructed by a supervisor. He should be assured of a certain increased income from his holding, or alternatively, he should be guaranteed against all loss resulting from the use of special methods. The former method would appear to be the simpler in operation. It should be possible to estimate what increased yield is likely to accrue from the special treatment, from which can be calculated after deduction of the cost of manures and other like expenses, the amount of expected increase of the holding's income. An assured income plus any profit which could be made in excess would appeal more strongly to the villager than a problematic profit only.

The object in view is to demonstrate to selected small-holders that proper cultivation of tea pays. Success would soon become common talk in the villages and others would be more ready to try. By success is here meant that the plot owner has obtained from his holding an increased income which more than paid for the requisites and labour, and that the demonstration has, therefore, been carried through without any cost to the organising body other than the supervisor's salary and travelling expenses. The cost of the operations and the amount of crop collected, together with any previous record available, would be posted prominently on a board near the entrance to the plot, so that visitors may see what the improved condition of the holding had cost and what profit had resulted therefrom. This would also advertise the success of the operations and give the surrounding small-holders cause to think.

At the same time it must be realised that a failure would be equally well advertised and that a failure will probably do more harm than a success will do good. For this reason it is probable that the

present is not the best time for initiating such demonstrations, as many estates are finding it difficult at present market rates to show a profit under any system of cultivation. As market conditions improve it should be possible to organise demonstration plots along the lines here briefly outlined.

Precautions would have to be made for the checking of expenditure and income. The expenditure and quality of work done could be checked during periodic visits by the supervising officer, and if the crop is sold to a certain factory or trader, a check on the out-turn could be obtained through that agency.

Demonstration plots somewhat of the type here envisaged would serve a useful purpose. Progress would be slow at first but what is effected is likely to be permanent. If successful the sole costs would be those of supervision and the travelling expenses of supervising officers.

FINANCE.

The amelioration of small-holdings cannot be alienated from the problem of financing the village cultivator. This is a difficult and complex matter which has occupied the attention of others more qualified to solve the problem than I am. Co-operative Societies constitute an important part of the answer to the problem, and their work should be given every encouragement. An extension of their work along the lines of co-operative trading might prove of value.

It should be realised that a small-holder, should he desire to use artificial manures, is not in a position readily to obtain them. If he is a member of a Co-operative Society he may get assistance there; otherwise he must go to a village trader to obtain his supplies. Although the small-holder, while working on a large estate, may at different times have spread many tons of manure, he is unacquainted with the constituents of the mixture. He, therefore, rarely knows what he wants as manure, and the trader is in little better position to advise him. The trader will obtain a manure for him and possibly advance the money for the purchase of it, but it is questionable whether that is the best source of supply for the small-holder.

The problem of finance cannot altogether be dissociated from the question of the provision of agricultural necessities. A trader is in a better position to supply both funds and requisites than is a Co-operative Society, because he can reimburse himself for any advance of money or supplies by means of the crop, which the borrower must sell to him. A manure can thus be bought with tea leaf by instalments, but the advantage is mainly with the trader, who makes profits on the sale of the manure and tea leaf, in addition to

his interest on the loan. The trader could to some extent be displaced by co-operative trading, and a movement in that direction by existing Co-operative Societies would probably prove beneficial. The work of collecting and transporting the leaf to the factory could possibly be done co-operatively at less than the trader's margin of half-a-cent per pound; suitable manures could be advanced against the crop, and possibly the factory would finance the Society for this purpose in much the same way that it has advanced money to tea traders in the past.

MANUFACTURE.

The small-holder is not interested in the question of manufacture, his interests cease with the sale of his green leaf. All factories, whether estate or bought leaf, can at present obtain the assistance of the Tea Research Institute in the improvement of their methods of manufacture, and no special steps appear to be necessary to deal particularly with the manufacture of village leaf.

The association of those interested in the manufacture of bought leaf, such as that which has recently taken place at Kadugannawa will afford a simplified means of communication between the T. R. I. and bought leaf factories. Also, should the members of such associations desire it, members of the Research Staff of the Institute could address them on appropriate subjects.

28th May, 1932.

SUMMARY OF SMALL-HOLDINGS CENSUS.

	Acres.	Number of Holdings. Total	1 acre or less	1-5 acres.	5-10 acres.	10-20 acres.	20-50 acres.	Over 50 acres.
CENTRAL PROVINCE.								
Kandy District.								
Yatinwara	1295⅛	405	132	221	31	17	4	-
Harispattuwa	631¾	162	52	87	14	7	1	1
Uda-Dumbara	741½	325	49	253	16	6	1	-
Uda-Palata	3206¾	1575	814	640	79	27	14	1
Uda-Bulatgama	381½	1088	455	510	72	27	21	3
Matale District.								
Matale South	603¾	194	91	74	16	11	2	-
Matale East	76½	17	4	8	4	1	-	-
Nuwara Eliya District.								
Kotmale	1766½	561	300	171	62	20	6	2
Uda-Hewaheta	983	190	25	119	26	13	7	-
Walapane	178	86	11	17	4	2	2	-
TOTAL	13304	4553	1933	2100	324	131	58	7
UVA.								
Udukinda District								
Udukinda	4784½	1173	509	476	106	49	24	9
Yatikinda	1551¾	136	34	16	12	9	13	8
Wiyaluwa	368⅛	26	5	13	5	-	-	3
Buttala	5	1	-	1	-	-	-	-
Wellawaya	336½	33	2	13	7	6	2	3
TOTAL	7246⅛	1369	550	563	130	64	39	23
SOUTHERN PROVINCE.								
Galle District.								
Bentota Walallaurti K.	392	38	3	19	7	4	4	1
Wellabada Pattuwa	368½	42	7	15	10	4	6	-
Four Gravets	183	7	-	-	1	2	4	-
Talpe Pattuwa	748½	103	27	37	18	10	10	1
Gangabada Pattuwa	1879⅜	456	212	174	24	26	16	4
Hinidum Pattuwa	20	1	-	-	-	1	-	-
Matara District.								
Morawak Korale	4374	424	165	125	54	35	27	18
Weligam Korale	191⅛	23	4	11	2	3	3	-
TOTAL	8156⅛	1094	418	381	116	85	70	24
SABARAGAMUWA.								
Ratnapura District.								
Kuruwita Korale	283	8	-	2	2	-	2	2
Nawadun Korale	603	65	15	26	10	7	3	2
Kukulu Korale	43	2	-	1	-	-	1	-
Balangoda Area	1201⅛	184	57	78	25	9	12	3
Kegalle District	712	82	10	30	21	17	3	1
TOTAL	2842⅛	341	82	137	58	33	23	8
GRAND TOTAL	31549¼	7357	2983	3181	628	313	190	62