

THE WORK OF THE TEA RESEARCH INSTITUTE

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I do not wish to take up too much of your time as we have a full programme in front of us, but it is customary for me on these occasions to review briefly a few of the more important problems which confront us and to give you some indication of possible future developments in the activities of the Institute.

There will probably be little doubt in the minds of those present, at any rate of those who work at elevations above about 2,000 feet, that the event which has caused most concern to the Industry was the sudden appearance in Ceylon of the Blister Blight disease of tea which occurred in October, 1946. With memories of the fate which overtook the Coffee Industry, there was wide-spread alarm that our tea might be faced with a similar disaster. But, however inconvenient and serious Blister Blight may be, this alarm was in reality based on a misapprehension. In contradistinction to the coffee leaf disease, Blister Blight does not attack mature leaf. Hence, assuming that reasonable precautions are taken, there is, therefore, little risk to tea in plucking of complete defoliation taking place resulting in a wide-spread death of bushes. With such bushes the

most serious consequence of course is the loss of crop resulting from infection of the flush.

Ceylon was fortunate in that the disease did not appear until late in the year, only a short time before the climatic conditions prevailing in our dry season could take effect and check attacks. There was thus an interval before the next south west monsoon in which the position could be reviewed and steps taken to meet the threat. In fact, the subsequent monsoon in 1947 was very light in character, with frequent intervals of sunny weather. The incidence of Blister Blight was in consequence much less severe than most people expected and there was a tendency in some quarters to pass over from an unjustified permission to a rather exaggerated optimism about the disease. By this time the steps to be taken to counter the disease had been worked out and it was possible at the end of that year to bring into practice the recommendations which had been made in regard to pruning times and pruning methods. I am not going to deal with these methods which will be referred to by Dr. Gadd in his address to you this afternoon but simply wish to record that,

speaking generally, I think it may be claimed that the recommendations made have proved sound and have been successful in practice. It is necessary, however, to stress the principle underlying these recommendations about pruning which is actually very simple. Briefly it amounts to nothing more than this: In hot sunny weather the Blister Blight spores cannot survive for more than a very brief period of time and the risk of new infection is at a minimum; recovery from pruning therefore should so far as possible take place while these conditions obtain. Climatic conditions vary so widely in Ceylon that it is impractical, and it would be undesirable, for us to attempt to lay down precise dates for pruning. You yourselves are in a much better position to decide. You know the time required under your conditions for your tea to come back from pruning and when reasonable spells of weather unfavourable to Blister Blight may be expected. These much be the determining factors in arranging your own pruning programme.

To pass on to tea in plucking, I should be interested to hear — perhaps rather later this morning when we are discussing Dr. Gadd's paper — what estimate some of those present would give of the loss of crop which has resulted from Blister Blight. In 1948, in the South west zones, we experienced for a change a normal monsoon, that is to say a period of cool, wet and sunless days extending over some three months. Conditions, therefore, were ideal for Blister Blight which was more in evidence then in 1947. But, as we are all aware, such conditions in themselves shut down flush production and lead to short cropping. It is difficult to separate these factors, and any estimate of Blister Blight loss must therefore be to a considerable

extent a matter of opinion and of no particular accuracy. We should however like to have opinions on this point. It is a matter of experience again that where favourable weather, and here I am referring to weather favourable to the crop, follows on the decline of Blister Blight attacks, the bush, generally speaking, makes a remarkable quick recovery and flushes of crop frequently occur. How far do these mask the previous loss and what is their effect on the future behaviour of the bush? It is at least significant that in the past year, when conditions for Blister Blight have been favourable, and fertilisers have remained in short supply, the export figure for Ceylon teas has reached a fresh record. Because I mention this please do not consider for a moment however that I wish you to take up the attitude that Blister Blight is not a pest of major importance. It is of such importance and will continue to demand our closest attention.

You have been frequently advised by the T.R.I. that the eradication of Blister Blight, for reasons which Dr. Gadd will put before you, is unlikely. But if we cannot eliminate the infecting spores, what other step is likely to be practicable? Taking a long term point of view, the only alternative is gradually to replace our more susceptible teas with varieties which have been found to be resistant to the disease. Many such bushes have been found. I have no doubt at all that search on estates would disclose very many more. Vegetative propagation provides the means of rapidly multiplying such resistant material and, in my opinion, this approach is likely very quickly to assume greater and greater importance.

The question of tea selection and vegetative propagation will no doubt come up for discussion tomorrow and we should be

glad to receive information as to the degree of success which has attended the search for bushes resistant not only to Blister Blight but also perhaps to other pests such as eelworm or Phloem necrosis.

I will now pass on to another quite different subject. During the war years and while the whole of the Ceylon crop was taken on contract, there was little incentive to consider refinements of manufacture and it was, perhaps, inevitable that quantity came to be considered the governing factor. Mr. Horne will tomorrow suggest to us no doubt the effect this has had on our Ceylon teas and I think a good many people in this room can make a shrewd guess as to the view he is like to take. The Industry, however, is now rapidly beginning to realize that in the no distant future buyers are going to be in a much stronger position than they are at present. Tea production is increasing; the Netherlands East Indies will not remain indefinitely on their present low scale of production and the tea acreage in East Africa is expanding. What is going to be the result? I suppose we may consider two possibilities — one that there will be a marked fall in tea prices or alternatively that Ceylon by the inherent quality and character of its teas will still be able to command a premium for these. It would be nice to believe that the latter is correct but past history, such as the slump in the early thirties, does not provide a very encouraging basis perhaps for undue optimism. We know by experience that prices can fall very rapidly but that costs of labour and of production generally fall far more slowly. I do not feel qualified to express any opinion as to the levels at which selling prices and costs of production may be stabilised under the conditions which I have suggested may develop in a

few years' time. It seems to me, however, to be a matter which might well receive more attention than appears to be the case at present.

This matter may appear to some of you to be somewhat outside my province but, in fact, it has an important bearing on the research policy of the Institute.

What contribution, if any, can the Institute perhaps make which may possibly help to bring down production costs. I think perhaps I may, at any rate, reasonably mention two subjects on which work is in fact already proceeding.

I have already referred to tea selection in relation to resistance to disease. But when this work was first begun before the war, that is before we had any reason to anticipate an invasion of Blister Blight, the chief object of the work was to discover planting matter of higher yielding capacity and capable of producing teas of at least equal quality. In agriculture generally, I do not need to remind you that in the case of almost every major crop immense improvements have been made by selection and genetical work which has enormously increased the value of the crop produced either by higher yields or by improvements in quality. For reasons into which I need not enter, seed selection in tea is not a practical proposition but the work already accomplished at St. Coombs by other methods has amply indicated that the general yield level of Ceylon teas could be very appreciably increased by the use of material obtained from bushes of tested high yield capacity and multiplied by methods of vegetative propagation. We do not perhaps particularly want to increase the overall crop of Ceylon tea, but if the same crop could be obtained from a smaller area of our better land, enabling us to abandon some of our more exposed

and eroded sites, usually situated on very steep land, and in consequence expensive to work, this would make a material contribution in reducing the cost of production. Such at any rate is the aim behind this work. This however is a line of work in which the co-operation of estates is very necessary. It is a commonplace with other crops that varieties that do excellently in one area often prove less suitable in other districts where conditions of soil and climate may be different. Moreover, it would be unwise for reasons which I have no time to develop at the moment, that planting material should be restricted to a single strain even supposing this were possible. As I shall indicate shortly we ourselves hope to extend this work to lower elevations and the more estates that take part the wider will be the basis of selection and the more chance there will be of finding bushes with the desirable combination of qualities for which we are seeking.

The other direction in which developments may assist in reducing the cost of production is tea manufacture, particularly perhaps in relation to rolling and withering. Much interest has already been aroused by developments in rolling methods and Mr. Lamb will be dealing with this question tomorrow. Elimination of withering, if possible, would of course constitute a notable advance in tea manufacture. A considerable amount of work has already been carried out by the Institute with this aim in view. It was perhaps unfortunate that, for causes outside our control, an undesirable degree of publicity was given in the Press and elsewhere to these preliminary experiments which have necessarily been so far of an exploratory nature. There is every indication that good liquoring teas can be produced, with a great saving in cost, by such methods; the difficulty is to

combine this with a more or less conventional appearance of the made tea. Many people may perhaps consider that too much stress is laid on appearance. For practical purposes however we have to face the fact that this character is demanded. It would, I must admit, be an understatement merely to say that the preliminary experiments made by the Institute using unwithered leaf were not received with enthusiasm by the Trade! All the same, further consideration has, I think, led some of those who were most critical to modify their views to some extent as to the possibilities of such developments.

Be that as it may, experimental work of such a nature is, in my opinion, an essential duty of the Institute. We must not merely play safe but adopt a progressive and imaginative policy in regard to research and I can assure you, gentlemen, that in spite of earlier discouragements in these particular experiments, investigations on these lines are to continue.

I must now pass from these technical matters to say a few words about future developments of a more general nature.

When the Institute was founded, the research cess was fixed at 10 cents per 100 pounds of tea exported. This was increased to 14 cents in 1934 and has remained at this figure ever since. Naturally, however, the cost of running the Institute has increased very materially indeed and there are urgent demands for an extension of our activities. The salary scales of all grades of the staff have had to be substantially raised while, as you are all fully aware, costs of materials, buildings and so forth may be roughly taken as about three times those prevailing before the war. In these circumstances an increase in the cess was inevitable. The Board of the Institute has given this matter very close attention

and has reviewed in detail the Institute's requirements in the immediate future. The results of this enquiry showed that a cess of 25 cents per 100 pounds of tea exported was essential. A request that this increase should be brought into effect received, I am glad to say, the full support of the Ceylon Association in London, the Planters' Association of Ceylon and the Low-Country Products' Association. We are also indebted to the Hon'ble the Minister for Agriculture and Lands for the sympathetic consideration he gave to our case. An amending Ordinance was passed by Parliament in December and, with effect from the beginning of this month, the cess has been collected at the higher rate. I do not for a moment believe that you will consider a charge of a quarter-of-a-cent per pound as an excessive premium to pay for scientific research for the Industry.

In considering future expenditure, one major item to which the Board had already agreed in principle, concerns the setting up of a Sub-Station in the Low-Country. A very considerable sum of money has now been allocated for this purpose. The Sub-Station is likely to be located in the Kalutara area, and it is intended that this shall be under the charge of a member of the Senior Scientific Staff who will be responsible for experimental and advisory work generally in the Low-Country.

In preparation for this development we completed arrangements several months ago for the recruitment of a suitable senior officer and we congratulated ourselves when an officer particularly suited for this appointment, by virtue of his wide general experience of tea and personal qualities, accepted the post. This officer was expected to join the staff this month. With dismay, however, we received information only last month that he could not after all take up

the post. We are therefore left with the very difficult task of finding another man. This is a very great disappointment and must inevitably cause some delay in implementing our plans.

Facilities for a training in research methods are shortly to be provided by the Institute for three research students, i.e., for men already possessing a scientific degree, if suitable men can be found. Such training will be provided without any commitment on the part of the Institute that the men concerned will necessarily be absorbed on the T.R.I. Staff, though it is possible, so far as the near future is concerned, that there will be vacancies to be filled.

This brings me now to the question of staff which is causing us grave anxiety.

At the end of the war we lost two of our Senior Staff, Mr. King and Dr. Bond. The post held by the latter was filled by the appointment last year of Mr. Kemp. In July last year, however, Dr. Tubbs resigned to take up an appointment in England and, as you are no doubt aware, Dr. Eden is leaving us next week to organise tea research work in Kenya and Dr. Gadd retires at the end of March. The loss of these three officers with their long service and experience is of course a disaster of the first magnitude. They have all been outstanding in their respective spheres of work and their departure creates, as you will readily appreciate, a position of very great difficulty.

The Institute and the Tea Industry in general owe an immense debt to the three officers I have mentioned whose work has left an indelible mark on estate practice in Ceylon. The Chairman in his remarks tomorrow will no doubt be referring to their services but I cannot let

this opportunity pass without acknowledging my own personal obligation to them for their exceptionally loyal service to myself as Director. You will no doubt be interested to hear that Dr. Tubbs has settled down to an interesting and responsible post in the United Kingdom. Dr. Eden, whose last public appearance in Ceylon this will be, is about to apply the somewhat esoteric methods of his statistical approach to tea experimentation to the tea industry in Kenya; while Dr. Gadd after a long and productive term of service in the East hopes, I think, to sit back and relax, or at least to enjoy a change of occupation from laboratory to domestic chores.

All three officers and their families leave us with our very good wishes and we trust they will find happiness and satisfaction in their new spheres of activity.

Temporary arrangements had been made for assistance in the running of our Pathological Division after Dr. Gadd's departure. These unfortunately have now proved fruitless as we have just heard with great regret of the death just before Christmas of the officer concerned.

On the other hand we have been fortunate in securing a highly qualified officer to succeed Dr. Tubbs. Mr. Portsmouth arrived in Ceylon on Monday and is with us here today when I hope he will have the opportunity of becoming known to many of you.

You will appreciate, gentlemen, that the position I have described is going to make things very difficult in the immediate future. The advisory work of the Institute continues to increase by leaps and bounds and in dealing with this and cognate matters I shall for sometime need your patience and forbearance which I am confident I shall receive in full measure.

In conclusion, I must add a few words on another matter which, though not in one way a direct responsibility of the Institute as such, continues to occupy much of my personal attention. I refer to fertiliser rationing. I certainly did not anticipate in 1942 when I was asked to organize fertiliser rationing in Ceylon that this would continue for several years after the war. It is disappointing that the question of nitrogen supplies is still so difficult. Every effort has been made, and will continue to be made, to secure a larger allocation for Ceylon and in this connection I must acknowledge the assistance I receive from the Controller of Imports and the Ceylon Government. I am glad to say there is now a prospect of a small increase in Ceylon's nitrogen quota for the present year but the future prospects are still very obscure. In this connection I should say that though we receive considerably less nitrogen than we would wish, Ceylon has been treated not ungenerously. In fact, apart from India, Ceylon has been receiving a bigger percentage of the ammonium sulphate available for export from the United Kingdom than any other country.

As regards phosphoric acid, no difficulty is anticipated. Potash supplies have, however, been temporarily cut off owing to the disturbed conditions in Palestine but supplies of a rather lower grade are beginning to come forward from Europe.

The nitrogen coming forward is not all in the form of ammonium sulphate. This fact, together with the different grade of potash just referred to, will necessarily involve some alteration in the bulk and composition of the mixtures issued. I know this causes some confusion but in the circumstances it is unavoidable. I think such confusion will be reduced if you remember, taking the tea mixture as an example,

whether the mixture is a 370 lb. mixture or a 430 lb. or any other figure, the amount of nitrogen remains the same. In the bulkier mixtures this simply means a rather larger application is required.

Some people again are under the impression that when, for example, a 370 lb. mixture is issued, this means that the rate of application to be made is 370 lb. per acre. This is quite a mistake. The actual allocation of nitrogen per acre is of course the figure shown in your fertiliser permit.

I trust the rationing scheme has been of some use in securing an equitable division of such manurial supplies as have been available. I will only add that, such

success as has been achieved is in a very large measure due to the very fine co-operation we have received from the Fertiliser Firms and, as regards distribution, I must also extend my very cordial thanks to all those who have so kindly assisted me by acting as District or Station Organisers.

THE CHAIRMAN: I am not for the moment going to invite any questions on the paper that has just been read by Dr. Norris for the reason that most of the technical points to which he referred will receive further mention in the later papers and can be discussed then.

I will now ask Dr. Gadd to address the Meeting.