RESTING THE TEA BUSH.

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The advent of a scheme of restriction has made the various methods of reducing yield the subject of wide-spread interest, everyone seeking to prepare in advance the scheme which will prove most advantageous in his particular district and conditions. Some estates may consider it advisable to buy the export permits of other less favourably situated estates and so continue normal production. Others will manufacture a fraction of their potential yield, while some may cease production completely. The two latter classes will seek to combine restriction with measures that will improve the health of their bushes.

An obvious method of reducing yield is to cease plucking certain portions of the estate. The "resting" of the tea in this way has definite effects upon the growth of the bush, and it is advisable to understand these in order that the process may be applied in such a way as to produce the greatest possible beneficial effects upon the health of the tea, and thereby, indirectly, upon the capital value of the estate.

The tea bush, as normally cultivated, manufactures in its leaves the food necessary for its life and growth. This is done by the absorption of carbon-dioxide from the air, and its subsequent manufacture into materials that can be used to build new tissues, by the aid of the cells in the leaf containing the two green pigments, collectively known as chlorophyll. The uses to which the manufactured material is put are diverse. Some is used immediately to maintain the tissues of the leaf, some is translocated to other organs of the plant that are in need of food, while the balance above the daily requirements of the bush is laid down as reserve material which may be drawn upon when required.

When bushes are left unplucked, it will be noticed that during favourable weather, new shoots are produced which may grow to a length of eighteen inches or more before growth ceases and they become "bhanji". A shoot then remains in that apparently dormant condition until the surrounding environment stimulates a fresh burst of growth. But it must not be assumed that the shoot is "dormant" in the sense that trees of temperate climates become dormant in winter. The young shoot is initially produced at the expense of that fraction of the food, manufactured by the leaves already upon the bush, that would have been stored as reserve had it not been diverted for building the shoot. As the leaves borne upon it expand they commence the process of manufacture, and thereby bear a portion of the burden of producing new leaves and stem at the apex of the shoot. When the shoot ceases active elongation, the whole of its manufactured material, save that required for its maintenance, becomes available for the remainder of the bush, the main bulk in all probability being laid down as reserves. The operation of plucking alters this state of affairs considerably. The removal of the two leaves and a bud before the leaves have reached maturity has two results. Firstly, the bush is deprived of return for the material expended in their production, and secondly, it is stimulated to produce another young shoot, which is in turn removed. It is obvious that the rate of production of new reserves must be reduced by this process, and were it not for the activities of the leaves that are left upon the bush in plucking, the bush would eventually perish of inanition.

The foregoing account also shows that in the forcing climate of low elevations in Ceylon, the rapid production of flushes of new shoots must place a heavier burden upon the manufacturing leaves of the bush than is the case in the climate of higher elevations where yield is less. In consequence, a bush at a low elevation has less chance of accumulating a satisfactory reserve before the next pruning than has one situated at a higher elevation. The economic effects of this difference only become visible when pruning is undertaken, the outstanding difference between high and low elevations being the amount of dieback that occurs at the latter, whereas it is almost entirely absent at the former. This has been shown to be

due to the fact that at low elevations the reserves accumulated during a pruning cycle may not be large enough to supply the material for the production of new shoots from the pruned frame.

To what extent can restriction be utilized to obviate this state of affairs? An obvious method would be to ensure that more manufacturing leaves were left upon the bush, thereby enhancing the ability of the bush to accumulate reserves. This end might be obtained by plucking to, say, two full leaves above the fish leaf instead of one. The method is, however, open to the serious practical objection that the height of the bush would increase far too quickly, especially in the case of high jât bushes with long internodes. It cannot therefore be regarded as a satisfactory solution.

A second and more promising method is to rest the bush before pruning. This enables the bush to accumulate reserves in the manner already described for an unplucked bush. Poor areas and those that are known to suffer considerably from dieback at pruning should be rested for at least three months, the period decided upon for healthier areas being dependent upon the amount of restriction that is necessary. By employing this method, damage to the frame of the bush after pruning is avoided, but it is open to the objection that it is the leaf from the oldest areas that is being discarded. The average age from pruning of the fields in plucking need not, however, be seriously altered provided that resting after pruning is also adopted.

Resting before pruning is carried out for a different purpose from that for which resting after pruning is used. The former enables the death of portions of the old frame to be avoided, while the latter results in better growth of the new stems that are formed after pruning. The thickening of the lower portion of a woody stem is closely correlated with the growth of the apex and of the lateral branches. Therefore any process checking the free growth of a shoot will retard the thickening of its stem. Tipping is the first of a series of checks that is applied to the shoots throughout the plucking cycle. As a result, the thickness of the new stems produced upon a bush that is tipped and plucked in the normal manner is smaller than upon a bush that is rested after pruning. It was found

at St. Coombs that resting bushes for four months after the normal time of tipping resulted in an increase of 36 per cent in the weight per unit length of stem over that found for a normally treated bush, the measurements being made at the end of the period of resting. It will be seen that the two methods of resting are in reality complementary, each contributing to the production and maintenance of a sound and healthy frame.

The application of one or both of these methods to the weak bushes in otherwise healthy fields will be of benefit, although naturally no great restriction of crop will result from this alone. It should also be noted that in cases where severe methods of pruning are considered necessary for the renovation of the frames of the bushes in poor areas, restriction provides an opportunity to rest such areas before and after pruning more thoroughly than has been possible in the past.

In the case of estates having areas of young tea that have not been pruned, there will be a temptation to delay the operation longer than would normally be done. Such a procedure obviates the immediate expense of pruning, but it involves the centring of thick stems at a later date. This may be expected to result in damage, resulting from the infection of wounds by disease organisms, that will more than offset the temporary saving made. It is advisable to continue the normal methods of producing a spreading frame until the stage is reached at which the area would normally be brought into bearing. If the areas are then rested, the bushes can be brought into production whenever required, and in addition they will possess vigorous spreading frames capable of producing a high yield. Were the operations of centring and frame formation delayed, valuable time would be lost in bringing the area into production.

Where it is considered advisable to throw a whole estate out of production, it is desirable to spend rather more than the normal on the pruning of each field as it becomes due. Snags, knots and unhealthy branches can then be removed more thoroughly than has been possible on the reduced votes that have been current latterly. Having performed as thorough measures of bush sanitation as can

be afforded, the prolonged resting which follows will enable the formation of good new wood upon a basal frame which is in a much healthier condition than would have been the case had no cleaning up been done.