A NOTE ON THE VEGETATIVE PROPAGATION OF TEA.

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The tea plant (*Camellia Theae*) is propagated commercially by one of two methods—by seed or by layers. The former method is by far the most commonly employed, being used in all the tea districts of the world. In China and Formosa propagation by layering is also undertaken. The bulk of the information available upon the method of layering comes from Formosa, where the planters consider that, in spite of the large difference in cost compared to propagation by seed, the method is justified by the fact that only by layering can the characteristics of the parent be transmitted unchanged in the whole of the resulting population. This attitude has not changed since 1904, when Kingsford and Bamber [1] stated that about 70 per cent of the tea in Formosa was propagated by layers, the cultivators considering that the continuance of the special characteristics of their oolong teas could only be ensured in this way.

The method used is quite simple; the ground around the parent bush being ploughed up, the lower branches of the bush are bent down, twisted sharply near their origin and buried, the upper part of the branch bearing the leaves being left above the soil. Movement is prevented by pegging down with slips of bamboo. The young plants are severed from the mother bush, and put out in the plantation six months or more after the layering operation.

These methods are found to be most successful with the "China jât" type of bush. The broad leaved "Assam jât" is found to root less readily by this method.

While the commercial use of this method is likely to be small, owing to the high cost of propagation, the clonal propagation of tea has a considerable bearing upon research work upon the crop. The size of an experiment, and consequently the number of experiments which can be carried on simultaneously, is controlled by the variability of the crop upon the area selected for experiment. This is made up of two portions, that due to differences in the soil within the experimental area and that due to differences between bushes. The removal of the second portion by the use of uniform vegetatively propagated plants will result in a large reduction in variability. The careful selection of seed-bearers which has been practised by estates producing tea seed has resulted in far more uniform types being produced than was the case earlier in the history of tea planting.

Nevertheless, this is not sufficient and resort must still be made to vegetative propagation if uniform experimental areas are sought. The usefulness of grafting and budding for this purpose is contingent upon a successful method for obtaining uniform stocks, since seedling raised stocks are likely to produce large variations in the character of the scion worked upon them. The methods requiring investigation are therefore propagation by cuttings, layering and stooling.

Propagation by hardwood cuttings has not been found to be successful, the percentage of success being only in the neighbourhood of 5 per cent when planted out in open nursery beds. The use of hardwood cuttings has been reported to have had successful results on an estate near Nagoda and from specimens kindly supplied to us by the Superintendent (Figure I) it is evident that successful establishment has occurred. The use of soft-wood cuttings has been tested by Tunstall [2] who reared them in a glass propagator and who obtained 53 per cent of rooted cuttings after six months. This method would appear to be very promising for rapid multiplications of selected bushes.

Layering is a much slower and more expensive method, since it can only be performed on large shoots and the number of suitably situated branches in a bush is limited. It possesses the advantage of providing initially larger plants than do soft-wood cuttings. The normal twisting or nicking of the layered stem at the point where rooting is desired is necessary to encourage the formation of shoots, omission to do so resulting in very disappointing results. The advantage of this method is that it enables the more rapid production of a number of grown bushes of a clone, from which an abundant supply of soft-wood cuttings could be obtained. Stooling has similar advantages.

A further method of obtaining a limited number of identical plants is by splitting the young plant or seedling. If seed is allowed to germinate until stem and root are just discernible, it is possible to split the young plant in such a way that one cotyledon remains attached to each section (Fig. II). The halves grow and develop normally and by this means pairs of identical plants can be obtained.

Attempts to divide the young seedling up into even larger numbers are being made, but such attempts must be made before the radicle is more than five millimetres long. On older seedlings the best results have been obtained by cutting back 9-12 months old

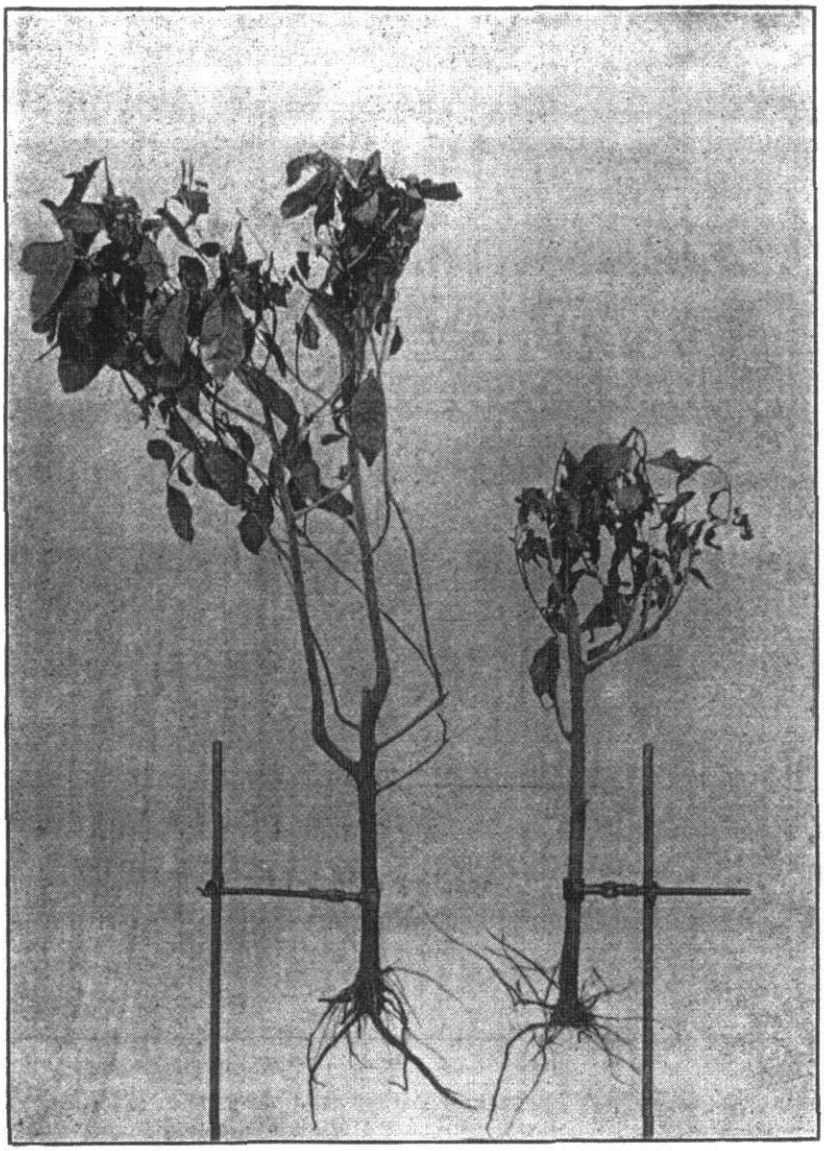

Fig. I

Rooted Cuttings from Nagoda Group.

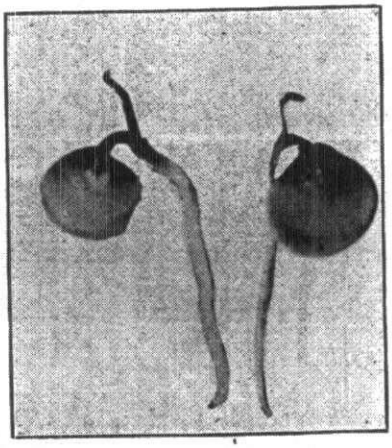

Fig. II

A seedling split into halves.

seedlings to one inch of stem and dividing into four or more fragments. Great care must be taken in such work to maintain the fragments in a saturated atmosphere. The rooting medium that is being used is washed sand.

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REFERENCES.

(1) Kingsford, A. C. and Kelway Bamber, M.—*Report on the Tea Industries of Java, Formosa and Japan*, 1907, p. 2.

(2) Tunstall, A. C.—A note on the propagation of Tea by Green Shoot cuttings.—*Quarterly Journal, Indian Tea Association*, 1931.