

THE PRINCIPLES OF BRINGING NEW CLEARINGS INTO BEARING IN THE LOW-COUNTRY

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I have chosen as the subject of this paper "The Principles of Bringing New Clearings into Bearing in the Low-Country" as this appears to me to be not only one of the most important matters in the low-country, but also one of the most controversial ones. Moreover, taking the long term view, it is no exaggeration to say that the type of frame subsequently developed, and hence the shape, spread, yield and even the life span of the tea bushes is dependent to a very large extent on the treatment they receive in the first few years of their lives; apart from these far-reaching effects, the immediate advantages to be gained by bringing new clearings into bearing in the shortest possible space of time should be obvious to everyone.

Before considering the practical details of each method, I will just outline briefly some of the main principles involved. All the various methods and their variations fall naturally into two main groups — namely, those in which the knife is used, and those in which it is *not* used. In deciding between these two groups, the principal points at issue are :—

(1) Is there any relationship between the method adopted and the incidence of shot-hole borer ?

(2) Is the incidence of wood-rot likely to be affected ?

and (3) Are the subsequent frames and number of flushing points (and hence yields) comparable ?

With regard to shot-hole borer incidence, Mr. Austin has made some preliminary counts which tend to support the view that in the districts where shot-hole borer is serious — and this applies to nearly all the low-country districts above about 500 feet — the incidence in new clearings is at the worst from about the third year onwards, regardless of whether the plants have been centred or not; no comparative figures are, however, available and detailed information on this point will be collected this year.

Regarding the incidence of wood-rot, the story is very different. Although wood-rot is likely to remain one of the most serious problems in the low-country, owing to the necessity for the periodical pruning of tea bushes, its incidence can be controlled prophylactically, and in particular by avoiding the use of the knife as far as possible.

In further explanation of this, I would point out that all exposed unprotected pruning cuts form ideal points of entry for numerous wood-rotting fungi. If the cut is in thin wood, there is a good chance that callus growth will cover the cut surface before these wood-rotting fungi can do any damage; cuts into thick wood, however, naturally take very much longer to callus over and even if they do subsequently heal over perfectly (which usually they don't) it is quite likely that the fungi have not only already gained entrance but started active growth; in this case nothing can be done to stop their slow insidious spread in the interior of the stem except to remove the affected portion by a further cut lower down the stem, with further obvious disadvantages. In view of the fact that in the operations under review the main stem

of the tea bush is concerned (as opposed merely to a branch) we feel justified in opposing on principle the use of the knife in new clearings on all wood above, say, the thickness of a thin pencil.

The third point I raised, namely, are the subsequent frames and number of plucking points (and hence yields) comparable, brings me to a rather more detailed description of the various systems now in common use.

Considering first the low secateuring method, this usually involves making 4 cuts at intervals of 9-12 months — typically at 2", 4", 6" and 10". Although the secateuring method (by which the stem is cut half or three-quarter way through only) is a considerable advance on the old time "clean centre" in that the risk of casualties is not nearly as great, it nevertheless does involve exposing thick wood, which, in the fast growing high rainfall areas, is often as much as an inch in diameter. The risk of fungal infection on those exposed surfaces can be minimised if they are painted over immediately with a special durable preparation (such as pruning wax), but I have yet to see any new clearings where this precaution has been taken. Also it inevitably means that the entire growth put on the previous year — often as much as 5-6 feet high — is lost, although of course its maintenance functions are utilised temporarily towards the development of new shoots. The result is that bushes treated in this way are not usually brought into bearing inside 4 years, and sometimes even 5 years; it cannot be denied, of course, that a low branching habit is induced, and an estate in the dry zone where this method is adopted reports yields of 186 lbs. in the fourth year, rising to 931 lbs. in the fifth.

Before leaving this subject, I would just like to show this photo of wood-rot, (not illustrated) though I hasten to add that it has not necessarily developed to these proportions solely as a result of a low centre in its youth. Other things have, of course, contributed to it — for instance it was probably collar pruned at some time in its life — but it does illustrate the damage that can be done by wood-rot right down in the main stem. Note that even at this stage it is still supporting a number of miserable branches round the periphery, but such bushes are of course nothing more than moribund passengers.

A recently developed modification of this system appears worthy of trial — namely to ring-bark the stem at about 2" from ground level. The few plants I have seen treated in this way had reacted by throwing out numerous low side branches very quickly, and moreover the inch wide ring had completely callused over from top to bottom, rendering the severance of the original portion unnecessary.

Another variation is to dispense with one or more centerings, depending on the number of branches that have already been induced — this having the obvious advantage of shortening the time required to bring the bushes into bearing.

Coming now to the other series of methods by which new clearings are brought into bearing without the use of the knife. These methods have the great advantage that there is no set-back in growth and no wastage, so that bushes can be brought into bearing in 2½ to 3 years, which represents a very considerable saving in time and money.

Considering firstly the method known as "layering" pioneered and developed by Mr. Bean of Ederapolla Estate; in this system (Fig 1) the young plants are bent over when they reach pencil thickness *i.e.*, at about a year or 18 months old; the bark on the underside at the point of layering should be scraped so as to stimulate root growth, and the ground lightly forked; the layered stem or branch is then covered with earth for several inches, and held down by a forked stick or two crossed sticks. If this is done correctly, a very rapid growth of new shoots is induced along the stem, as well as a dense subsidiary root system at the point of layering. The



Fig. 1.

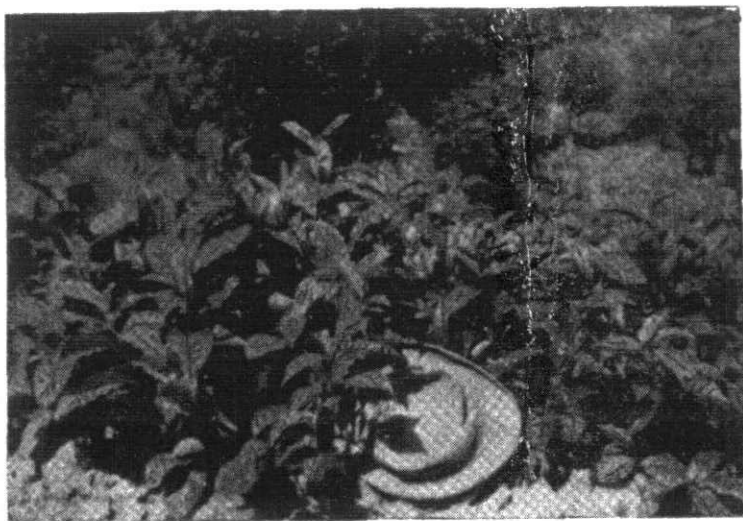


Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.
(Left.)

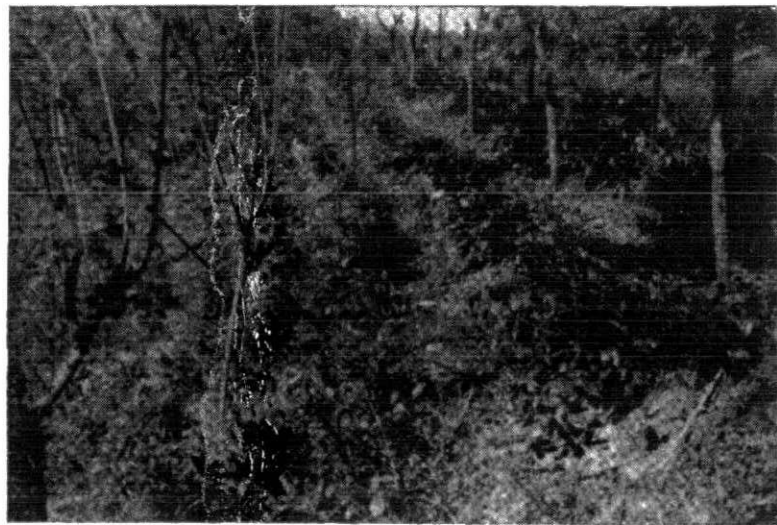


Fig. 7.

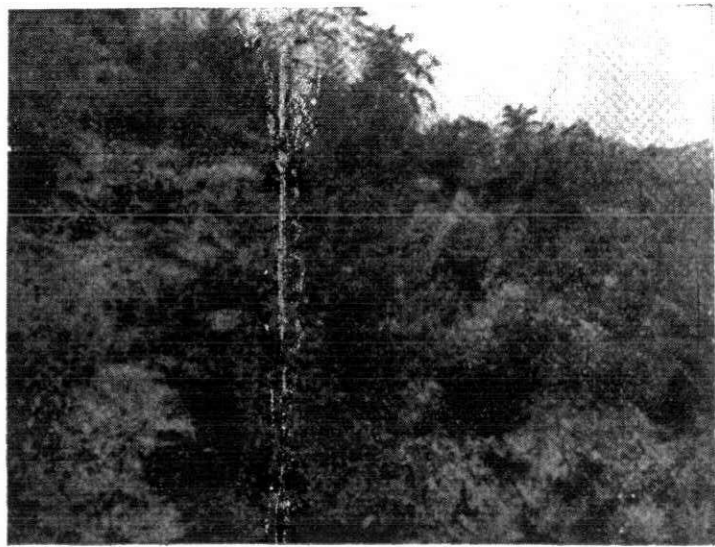


Fig. 8.

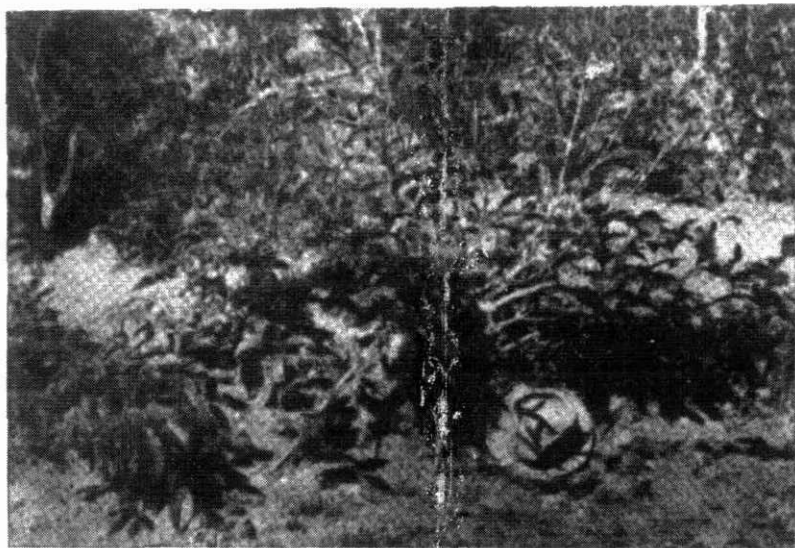


Fig. 9.



Fig. 10.

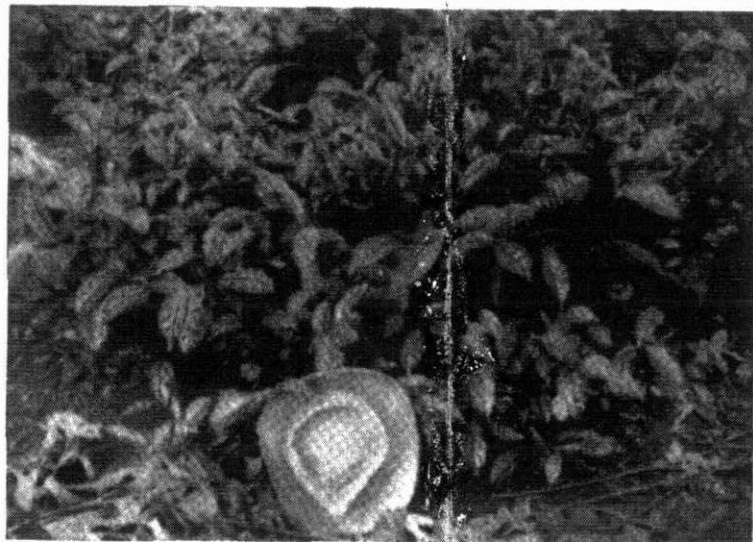


Fig. 11.



Fig. 12.



Fig. 13.



Fig. 14.

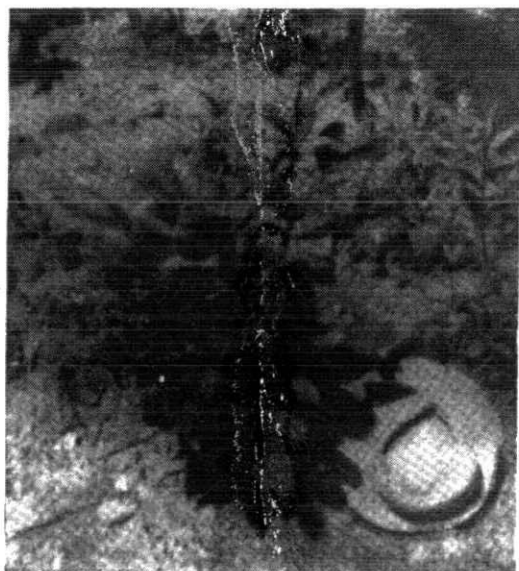


Fig. 15.
(Left.)

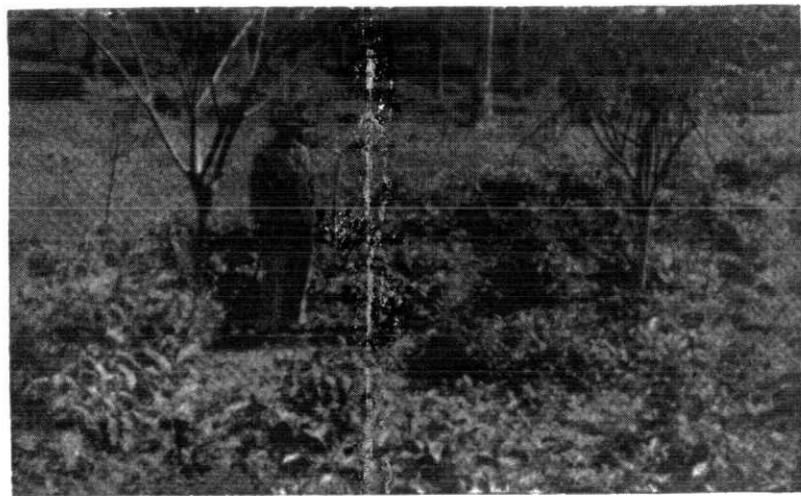


Fig. 16.

intention is not, however, to produce a separate plant, so the portion beyond the point of layering should on no account be cut off, as it will not develop properly as a separate entity.

At the next stage, 6 months later, there is a choice of two operations — either low cut-across or, preferably, a second layering and this photo (Fig 2) shows the dense continuous mass of shoots produced by a second layering (in herring bone fashion) which also helps to increase the lateral spread.

The final stage occurs at about 28 months (Fig 3) when the bushes are ready to receive either a cut-across at 10", or alternatively they may be merely tipped at 12"-15". At about 30 months they are brought into plucking and here (Fig 4) is a typical bush from the 1948 clearing — *i.e.*, 4½ years old — showing some of the shoots developed by layering now thickening up into a good sturdy frame.

The next photo of a 1948 V.P. clearing (Fig 5) illustrates the very fine cover of tea that can be produced; actual yield figures for this field are as follows — 3rd year (*i.e.*, 30-42 months) 425 lbs. per acre; 4th year 535 lbs. per acre (seedlings) compared to 690 lbs. per acre (V.P. area); while in the current year 11-1200 lbs. per acre are confidently expected (at least from the V.P. area).

This method is applicable to a wide range of low-country conditions, but it is pre-eminent on steep slopes where the hedge type of formation produced forms such an impenetrable barrier to soil erosion that a series of terraces are built up in a remarkably short space of time. This photo (Fig 6) shows a 1950 clearing where the soil was fairly good — already the natural terraces are forming, and the next photo (Fig 7) shows a 1948 clearing on very poor soil, where the terraces are by now well formed.

An interesting development of this technique is now being tried — again by Mr. Bean — on an area of old tea (Fig 8) previously yielding only 300 lbs. per acre. Rather than abandon this area entirely, it was rested in February, 1951 and layered in October 1952, (Fig 9) making use of whatever good, red wood had developed in the meantime. It was re-supplied at the same time, but the soil is so poor that only about 30% were successful; it will of course, be some time before the success or otherwise of this type of experimental layering can be assessed, but it shows promise and may well be a sound method of saving areas with marginal yields from complete abandonment, or serve as an alternative to replanting.

The next method, pioneered and developed by Mr. Perkins of Rye Estate, consists in bending over and pegging down the plants flat on the ground, when they reach pencil thickness. Again, a phenomenally rapid and abundant growth of new shoots comes away — a factor of great importance in V.P. multiplication plots; If care is taken to get the stems absolutely flat on the ground and not "looped" the new shoots definitely tend to concentrate at or very near the collar, as shown in this photo (Fig 10) of a December 1949 bush (*i.e.*, just 3 years old). In fact this tendency was so marked on some of the fields examined on Rye that I was tempted to suspect that they must have been secatured, which I was nevertheless assured had not been done. Note also the original bent over stem on the left — no sign of it atrophying, and although some planters prefer to have this part off there does not seem to be any point in removing it. The next step, at 24-28 months is a cut-across at about 15 inches, and the bushes are brought into bearing at about 30 months. This photo (Fig 11) shows a more typical bush from the same clearing (*i.e.*, just over 3 years old. The next photo (Fig 12) gives a general view of the December 1949 clearing, just coming into bearing at 3 years, having received a serious setback owing to the drought last year.

Fig 13, of a bush just over 4 years old, shows the type of development that can result from this treatment; note particularly the thick well-developed

spreading frame, most of whose branches originate at or near the collar. The next photo ((Fig 14)) shows a general view of the same clearing (i.e., December 1948), whose yields were as follows :- 30-42 months, 415 lbs ; 4th year, 350 lbs. (a serious drought year) and 5th year confidently expected to yield 1,000 lbs. per acre if weather conditions are normal ; judging by the fine continuous sheet of tea, this estimate appears fully justified.

I now come, lastly, to the method known as " thumb-nail " pruning. As its name implies this method involves typically the breaking off of the tips of the young shoots, or at the most a cut into wood of thin pencil size. It is open to several variations as follows :—

(1) The tips of the young plants are pinched off at 3, 6, and 9 months, typically at 4", 6" and 8". The bushes are then either rested for the next 2½ years or so to allow the frames to thicken up or the " pinching off " process may continue — this of course amounting to a light pluck, from which purely nominal yields are obtained. In the Kandy district, where this system finds favour, the bushes are ready for a cut-across at about 3 years and the 1946 clearing shown in this photo (not illustrated) yielded 520 lbs. in its 4th year and 785 lbs. in its 5th year.

A slight variation now adopted on this same estate involves giving only one thumb-nail prune at 18", when the bushes are 24" high ; this represents a considerable saving in labour, and appears to give comparable results.

(2) The other main variation involves " pinching off " the tips of the plants at about a year old (taking care to leave 4-5 leaves), and here we see (Fig 15) a well-branched plant 18 months old on an estate in the K.V. just about ready for a centering at 10". At about two years old another centering is given at about 14", and at 2½ years — the stage shown in the photo (Fig 16) — the bushes are ready for tipping. No definite yield figures are available for this method, but a yield of 5-600 lbs. is anticipated in the first year of plucking in the 1950 clearing shown — plucking starting at 28 months.

I would add that the " thumb-nail " pruning method is the one that should be adopted when making a preliminary selection of V.P. clones, since only by this system can the natural branching characteristics of each individual clone be assessed. Should it be desirable to retain poor branching clones, or should some seedlings fail to respond to " thumb-nail " pruning, " bending-over " usually produces the desired results.

I would emphasise, in conclusion, that none of the yield figures given for the various methods are strictly comparable, since they have of necessity been collected from estates in all parts of the low-country ; they do, however, provide some indication of the results that can be obtained with each, and the question of which is the best I leave to your own judgment.