

PLANT PROPAGATION RESEARCH

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CO₂ as an Aid in the Rooting of Cuttings.—Positive results have been obtained with cuttings of *Coleus blumei* and of carnation, Otaki Pink, by artificial increase of CO₂ in the atmosphere surrounding the leaves of the cuttings.

Cuttings were grown in sand in an enclosed section of a glazed propagating-frame inside a glasshouse. Both the glass of the propagating-frame and of the south-facing glasshouse were kept as nearly as possible clear of shading. In spite of this, the light intensity on the cuttings was approximately one-quarter of full daylight. The CO₂ was brought twice daily to a concentration of 2.5 per cent. (at 9.00–9.30 a.m. and at 2.30–3.00 p.m.). The frame was left open during the night. From sunrise until 9.00–9.30 a.m. the cuttings had only the normal atmospheric CO₂.

The effects of the CO₂ were shown by a definitely greater amount of root, and in the case of *Coleus* by considerable elongation of the internodes and much earlier commencement of flowering. These results are strikingly similar to those obtained by American workers investigating the effects of long versus short day periods.

Rooting of Azalea mollis.—Some two thousand five hundred cuttings were inserted and the results have been examined to see exactly what factors influence the rooting of cuttings. These factors appear to be :—

- (1) The genetical type of the parent bush. These plants should correctly be called *Azalea mollis* hybrids. According to the proportions of other species in the parent plant, rooting appears to be easier or more difficult. A preponderance of *Azalea flavum* (pontica) seems in general to aid easy rooting.
- (2) *The Stage of Ripening of the Wood.*—The results show that in general the rooting percentage is much higher with “soft” cuttings than with ripe ones. Their description as soft is a somewhat vague one, and therefore the following criteria have been used to distinguish “ripeness” or “softness”: (a) the stage of development of the terminal bud (in ripe cuttings this is well developed); (b) in less ripe cuttings, the number of leaves at the apex which are still not expanded (the larger number of unexpanded leaves indicates a softer cutting); (c) the term “very soft” is used where there is an indefinite number of leaves not expanded.
- (3) *Date of taking Cuttings in relation to Flowering Date of Bush.*—Considerable attention was given to this aspect, on account of the importance attached to it by some very successful overseas workers. At the period six to eight weeks after flowering, which is considered best overseas, we find shoots in widely different stages of ripeness, and their ability to root varies accordingly. While the suggested period after flowering may thus include the time when the maximum number of shoots are in the best stage of ripeness, yet it is still necessary to select them on the basis of ripeness or softness.
- (4) *Hormone Effects.*—Although the past season’s work was concerned mainly with finding the best stage at which to take cuttings, some experience was gained also of the use of hormones as an aid to *Azalea mollis*. In this case, too, the lack of uniformity from bush to bush weakens the value of averages. Both indolebutyric acid and naphthaleneacetamide in solutions of 1 in 20,000 or stronger used for twenty hours caused basal damage to the cuttings. Concentrations of 1 in 30,000 and 1 in 40,000 gave sufficient promise to merit more thorough trials. A proprietary talc-dust hormone preparation which became available at the end of the season was also tried.

Minor Investigations on Cuttings of Commercial Importance.—Daphne: Since this is one of the most profitable cutting crops in New Zealand—largely for export in normal times—it was considered worth-while to test the effects of various factors on its successful rooting. The trials were made in a propagating frame kept at approximately