

PROPAGATION RESEARCH

Dr. J. S. YEATES

A. Long-range Investigations

CO₂ as an Aid in Rooting of Cuttings.—Very definite and positive results have been obtained showing that with cuttings of carnation Otaki Pink better rooting was obtained when the cuttings were supplied with an excess of CO₂. The concentration was raised to approximately 2.5 per cent. at about 8.30 a.m. and 4.30 p.m. each day. The light was approximately three-quarters of the strength of full light from the sky at any time.

Another series of experiments was designed and demonstrated (a) that an increased dry weight of the cutting occurred, (b) that the effect of CO₂ was extra to that produced by rooting hormones applied at the base of the cutting, and (c) the effect of sugar applied at the base of the cutting is additional to that produced by (a) and (b).

B. Short-range Investigations

Rooting of Azalea mollis.—Of the cuttings rooted in the previous year, some hundreds of the most vigorous were boxed up, but less than 5 per cent. survived the winter. During the past summer further work was done on the rooting of cuttings, but in view of the above difficulty we have made initial tests of methods of grafting.

Rhododendrons.—Considerable attention has been given to various methods of propagating these plants—different methods of grafting, rooting of cuttings, and media for the growing of seedlings.

Rooting-hormones.—Continual experiments are under way to test the effects of different hormones, proprietary and otherwise, on the rooting of a wide range of cuttings. The recently published work of Van Overbeck, in which application of sucrose, arginine, and indole-butyric acid aided rooting, prompted tests of the method on cuttings of azalea and of daphne. So far no success has been attained.

Attempts were also made to promote better rooting of *Coleus* cuttings by spraying the parent plants with weak solutions of the weed-killer 2-methyl-4-chloro-phenoxyacetic acid. A wide range of concentrations was used and cuttings were taken at different intervals after spraying. Although more rapid rooting was promoted by these treatments (some cuttings had roots before removal from the parent plant), after a period of some weeks cuttings from unsprayed plants were the most advanced.

DRAINAGE RESEARCH

Mr. A. W. HUDSON

Experimental Work.—Continuous records of outflows were obtained from experimental mole drains pulled at three different depths and from tile drains "backfilled" in five different ways. Records from the mole drains continue to confirm the belief that shallow moles are more effective initially, but that they deteriorate more rapidly. Information over a further period will be necessary from the tile drains to determine whether limited increases in efficiency from tile drains blinded with straw, stones, &c., will justify the expense involved.

Investigation of the Value of the "Roteho" Tile-trench-digging Machine for Practical Farm Draining.—In September, 1946, this machine, imported by Massey College with the aid of a grant from the Department of Scientific and Industrial Research, was demonstrated (some 1,700 people attended), and has since been in continuous operation draining land on which ex-servicemen are being settled. Experience with it indicates—

- (a) That for satisfactory and efficient utilization a machine of this type should be under the ultimate direction and supervision of an individual trained and experienced in drainage operations.