entirely. The differences of stem length between control and treated groups also began to diminish after the sixth day, and by the end of the tenth day no apparent differences between the two groups of seedlings were to be found. The data are statistically significant. It is striking to note the transitory effect of heteroauxin, the action being confined chiefly to the early phase of the grand period of growth with the dosage used directly upon the soil.

TABLE I

COMPARATIVE GROWTH OF STOCK SEEDLINGS (*Matthiola incana*) TREATED WITH β-INDOLYL ACETIC ACID WITH UNTREATED CONTROL SEEDLINGS. STEM LENGTH IN MM.

Day	Control seedlings	Treated seedlings
1	16.0 ± 0.2	16.0 ± 0.5
2	17.0 ± 0.5	21.0 ± 0.5
3	19.0 ± 0.5	26.5 ± 0.0
4	19.5 ± 0.0	30.5 ± 0.4
5	25.5 ± 0.0	38.0 ± 0.0
6	29.0 ± 0.1	40.0 ± 0.5
7	30.0 ± 0.4	41.0 ± 0.2
8	35.0 ± 0.4	43.0 ± 0.3
9	43.0 ± 0.3	45.0 ± 0.3
10	46.0 ± 0.1	48.0 ± 0.1
11	50.0 ± 0.1	51.0 ± 0.0

When localized areas on young healthy plants were repeatedly treated with heteroauxin a definite symptom complex was observable, the speed and intensity of the responses varying with the concentration and amount of the heteroauxin solution used. The sequence of events was, first, a bending away from the treated area due to accelerated growth in the treated region shown in stems, petioles and leaves. Next, swelling due to cell enlargement was observable in and about the treated regions in one to two days. Finally a slight blanching accompanied by proliferation became noticeable, while the stems and petioles continued to increase in thickness. Root primordia appeared a few days later and then gradually developed into anatomically normal roots. At this stage stems had doubled in thickness, become bronzed and sometimes fissured due to excessive growth of medullary tissues. These results confirm those obtained by Hitchcock,[2] using indole-3-n-propionic acid in somewhat greater concentrations on tomato, African marigold, tobacco, dahlia and buckwheat.

The fact that the hormone-like β-indolyl acetic acid occurs in a wide variety of animal tissues (lung, thyroid, thymus, pancreas and gonads) as well as plant tissues (fungi, bacteria and angiosperms) suggests that it may have a common function especially in relation to cellular metabolism. It seems especially important to meristematic and mitotic activity related to differentiation.

W. F. LOEHWING
L. C. BAUGUESS

STATE UNIVERSITY OF IOWA

SCIENTIFIC APPARATUS AND LABORATORY METHODS

RECONDITIONING APHIDS FOR STUDY

IN 1903 W. T. Clarke, of the University of California, published an article in the *Canadian Entomologist*[1] in which he described a number of new and well-known species of aphids. His work was of the pioneering, fundamental type and was quite typical of the times. Some of his specimens were mounted in balsam on microscopic slides, and these were subsequently lost or destroyed, so that no authentic types remained. This loss has resulted in much confusion in the study of the California Aphididae in recent years. Attempts have been made to restore certain of the species named by Clarke, but these efforts have been based largely upon conjecture and circumstantial evidences only. I have had occasion to discuss the probable identity of his types with Clarke, whom I knew well for the last ten years of his life, but his long divorcement from the study of insects had erased any distinct recollections which might serve to reestablish his species. In 1930 I discovered in the attic storeroom of Agriculture Hall a small box containing some thirty small homeopathic vials of aphids bearing labels in the handwriting of Clarke. This find was extremely interesting and important to me, but careful examination revealed a sad state of affairs. Although the corks appeared to be tight, the liquid preservative had disappeared completely from all except two or three vials containing only the common, well-known woolly apple aphis, *Eriosoma lanigerum* (Hausmann). The specimens in the dry containers appeared as mere dust composed of finely shattered bits of legs, antennae, wings and other body fragments. In spite of the fact that one of these vials contained *Aphis mori*, marked "types," and some other material which might prove to be cotypes of Clarke's lost species, I was convinced that no real information could be salvaged from the find. Nevertheless, the collection was preserved *in toto*. More recently in clearing aphids in KOH for microscopical study it was found that dried specimens were not only restored to much of the original form, but were also rendered clear and partly transparent. Accordingly, all the vials containing the Clarke specimens were filled with a 10 per cent. solution of KOH and set aside for seven days. To my satisfaction I discovered that what appeared to be a mass of fragments was composed of aphids, many of which were in

[1] *Can. Ent.*, 35: 247–254, 1903.

[2] Hitchcock, Contributions Boyce Thompson Inst., 7: 87, 1935.

a fair state of completeness. When thoroughly washed in distilled water, treated with acetic acid to remove all traces of the potash, dehydrated in alcohol and mounted in euparal or balsam on microscopic slides, the specimens proved to be quite adequate for the determination of the species. In the case of certain specimens the antennae, in particular, were often fragmentary, but a series of individuals revealed all the important characters necessary in classification. Thus it is possible to reestablish beyond doubt and to preserve permanently a considerable number of Clarke's species. The material thus reconditioned is sufficient to form the basis for a fairly complete report on the Clarke collection, which is in preparation and will be published later.

It has occurred to me that this experiment might prove valuable to curators of entomological collections who may now be in possession of fragile insect types which are in danger of destruction. Thus remnants of aphids mounted on points may be safely transferred to permanent slide mounts, where they are available for convenient study without danger of mutilation.

Permanent slide mounts of years' standing may also be reconditioned by first removing the balsam by submerging the slides in xylene or in Carlson's solution[2] consisting of ninety parts of xylene and ten parts of n-butyl alcohol. The opaque specimens may then be cleared in KOH as aforementioned, washed, dehydrated and remounted. With reasonable amount of care the individual insects may be restored to new slides in perfect condition if the work is done under a binocular microscope. Very transparent specimens are rendered more distinct by staining with magenta red or fuchsin, previous to or following dehydration. Especially are the wax-producing species improved for study because of the wax glands and pores, which may prove valuable characters in classification, as they are rendered more easily discernible under the microscope. The writer is subjecting lots of all species collected to the above described treatment and is finding that all forms, light and dark, are greatly improved thereby.

E. O. ESSIG

UNIVERSITY OF CALIFORNIA

AN ELECTRICAL REMEDY FOR TREE BORERS

THE writer recently rigged up a magneto as an amusement device for a pair of growing youngsters, with which they could give mild shocks to themselves and other youngsters of the neighborhood. Later, having heard of the method of driving earthworms out of the ground by electric current, the magneto was turned to this use. When a pair of steel rods wired to the magneto were thrust into wet ground about six inches apart and the crank turned, the earthworms came crawling out. Still later, when the writer was engaged in the laborious task of digging elm-borers out of a tree with a pocket knife, the idea came of turning the magneto to use for this job. When two nails were driven into the bark a few inches apart in the affected area, the nails attached to the magneto and the crank turned, the elm-borers came out in a few seconds. Subsequent digging in the electrically treated bark proved that the borers had vacated 100 per cent.

The system is much less laborious than digging out the borers and far more amusing. A magneto somewhat more powerful than the writer's would no doubt be quite valuable to orchardists and commercial tree surgeons.

VICTOR H. SCHMIDT

KANSAS CITY, MISSOURI

AN IMPROVED METHOD OF PREPARING DISTRIBUTION MAPS

THE distribution of species is commonly represented by means of black dots on outline maps. Such maps can be very easily prepared by punching the dots out of black gummed paper (such as lantern-slide binding-tape) with an ordinary ticket punch and sticking them on the map. This method is quicker, produces more uniform results and photographs better than when the dots are drawn in with ink. By using various sizes and shapes of punches different dots may be made for different varieties and species. Open circles can be produced by gluing a small white circle in the center of a larger black one.

LESLIE HUBRICHT

MISSOURI BOTANICAL GARDEN
ST. LOUIS

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[2] J. Gordon Carlson, SCIENCE, n. s., 81: 365, 1935.