solution, which quickly flocculates, is diluted to volume and filtered.

To 1 to 5 ml is added 1 ml of 2,4-dinitrophenylhydrazine, half-saturated in N. HCl. After 10 minutes 10 ml of 2 N. NaOH are added and the solution diluted to 25 ml and read in the Klett-Summerson[4] photoelectric colorimeter using the green filter number 52. The blank value (zero time of incubation) is subtracted and the amount of keto acid is read from a calibration curve in order to calculate the content of d-amino acid.

With the more slowly reacting amino acids longer time of incubation or decreasing amounts of the unknown solution have made it possible to obtain maximum values, as shown by the following recoveries. With 10 micro mols of d-alanine 98 per cent. was recovered as pyruvic acid in one hour and with 10 micro mols of d-phenylalanine 85 and 98 per cent. were recovered in 3 and 4 hours, respectively. Using only 5 micro mols of the latter a value of 103 per cent. was obtained in 3 hours of incubation.

The method described has proven particularly useful in determining the unnatural amino acids in various biological materials such as tissue hydrolysates and urine even in the presence of large amounts of members of the levo series. The acyl derivatives in urine have also been readily determined after submitting the samples to a preliminary hydrolysis. Its successful use in other instances and with other amino acids is dependent only on the formation of a stable keto acid and the ability of this keto acid to yield a colored 2,4-dinitrophenylhydrazone in alkaline solution. Other aspects of the use of this method and the results obtained will be described in detail elsewhere.

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A NEW METHOD OF PLANT PROPAGATION[1]

A NEW method of rooting plant cuttings without sand, peat, soil or other solid media has been under investigation since early January of this year. Based on the principle that cut stems suspended in the very moist atmosphere of a specially constructed box can develop perfectly normal roots, the method has already given promising results.

The experimental boxes are approximately 3 feet tall, 2 feet wide and 1 foot deep. Each box has a glass front and back; the former is set in grooves so that it can be opened to permit air circulation, and the latter is kept closed but enables observation of root development and of the moisture content in the back of the box. One-inch square removable shelves, made of ordinary builder's lath, are placed in a horizontal position about half-way in the box. A half-inch opening is left between shelves, and vertical wooden strips are nailed on the sides of the box in front of the shelves to hold the shelves in place. A large piece of sheet rubber, with holes of the size of the cuttings to be inserted, is fitted securely immediately behind the shelves. The rubber functions to confine the moisture in the back of the box where it is most needed and to keep the cuttings in place. A water trough in the upper back part of the box from which strips of absorbent cloth are suspended, supplies the moisture necessary to maintain the high humidity.

Successful rooting of a number of popular ornamentals, including Achyranthes, begonia, chrysanthemum, coleus, geranium, perennial phlox, ivy and Philodendron was achieved by this method in less than three weeks. Such plants were then successfully transplanted to soil in pots and have continued to develop normally. Dormant hardwood cuttings were placed in similar boxes in late January and early February. Vigorous roots developed in 6 to 8 weeks on *Hydrangea grandiflora, Deutzia crenata* and *Philadelphus coronarius*. These plants were also successfully transplanted to soil and have continued to grow normally.

In all the experimental boxes thus far used, root development was greatest in the vicinity of high moisture content and was either poor or entirely absent in those parts of the boxes where the atmosphere was relatively dry. With improvements in methods of maintaining a saturated atmosphere in the vicinity of the cut stems in the back of the box, this new method promises to be useful not only to commercial growers but also to the amateur propagator. The special type of box in which the present investigations were conducted is tentatively called the "Rutgers Aero-propagator."

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[4] The author is indebted to Mr. R. J. Bott of the Will Corporation for the loan of an extra Klett-Summerson photoelectric colorimeter for the purpose of working out this method.

[1] Journal Series paper of the New Jersey Agricultural Experiment Station, Rutgers University, department of plant pathology.

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