some indication that other inorganic compounds may stimulate root growth in cuttings. The author's work gives further strong evidence that callus and root growth is independent of the rest period and that only the buds assume the resting condition. Immature twigs were caused to absorb cane sugar which increased root development. Mature twigs, however, were but slightly benefited. When the base of cuttings were placed in sugar solution for a short time, the terminal bud of the twig failed to develop in a normal manner and the lower buds formed shoots instead. The author believes that many of the practices commonly followed by greenhouse and nursery men in the propagation of plants by cuttings are explainable on the basis of better aëration. The discussions of the literature are comprehensive and critical.—CHARLES O. APPLEMAN.

Vegetation of Newfoundland.—In contrasting the divergent floras of different parts of Newfoundland, FERNALD[14] bases his explanation of their differences upon the hypothesis that "the presence or absence of varying degrees of available lime or of other bases in the soil is more fundamental in determining plant distribution than are even considerable differences of temperature and humidity."

The calcareous and at the same time the most fertile portion of the island is along the west shore, where the ordinary observer would be surprised to find the indigenous flora of the warmest and most fertile region of the island composed very largely of species of high northern distribution, such as *Juncus triglumis*, *Saxifraga oppositifolia*, *S. aizoides*, *S. caespitosa*, *Salix vestita*, *Dryas integrifolia*, and *Lesquerella arctica*. These FERNALD explains as being from the calcareous habitats of the arctic archipelago and the Canadian Rockies, the lime being hostile to the plants of the siliceous adjacent mainland. The eastern part of the island, the central tundra district, and the southwest corner, in spite of the fact that they are cold, bleak, and barren, are populated mainly by plants of the southern Atlantic coast region, with an addition of some like *Calluna vulgaris* and *Pedicularis sylvatica* from the acid soils of western Europe.

Maps of the distribution of a dozen species give graphic demonstration of the remarkable distribution of some of the more important plants and serve to make the evidence in the support of his hypothesis the more convincing.—GEO. D. FULLER.

Physiological rôle of glucosides in plants.—Continuing his investigations on the physiological rôle of glucosides in plants, COMBES[15] has made the interesting discovery that a given glucoside is not toxic to a plant which naturally

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[14] FERNALD, M. L., The contrast in the floras of eastern and western Newfoundland. Amer. Jour. Bot. 5:237–247. *pls.* 3. 1918.

[15] COMBES, RAOUL, Recherches biochemiques experimentales sur le rôle physiologique des glucosides ches les vegetaux. Rev. Gen. Botanique 30:226–237, 245–257. 1918.

produces it, but is very toxic to plants belonging to a species in which the glucoside is not naturally found. The toxic glucoside, when added to Knop's culture medium in which the plants are grown, produces very marked abnormal changes in the morphology of the roots, resulting also in a very stunted growth of tops. It appears that we have here another group of substances, the individuals of which possess a constitution sufficiently characteristic of the species in which they are found that when they are applied to individuals belonging to nonrelated species they produce abnormal responses. The author has not yet found that glucosides will furnish carbohydrate food for plants when they are grown in a carbon dioxide free atmosphere, as has frequently been found to be the case with glucose.

Those wishing to germinate seeds and grow seedlings under aseptic conditions will be interested in the detailed descriptions of the apparatus and procedures employed in growing his plants. An excellent review of the mass of literature on the subject and a survey of glucosides in plants will be found in the earlier papers of this series.—CHARLES O. APPLEMAN.

Physiology of fungi.—DUGGAR, SEVERY, and SCHMITZ[16] have undertaken a study of the comparative nutrient value of some of the decoctions ordinarily used in the preparation of culture media for fungi. The decoctions which were prepared on the basis of 50 gm. of dry matter to a liter of water were made from bean, sugar beet, prune, potato, turnip, cornmeal, apple, mangold, celery, carrot, and salmon. The standard decoctions were employed alone and in combination with sugar and various mineral nutrients. It was found that in their nutrient value the decoctions are very dissimilar for different fungi. The addition of sugar in most cases increases the yield, but the addition of sugar with nitrate and phosphate gives a very much greater yield than the addition of any of these substances alone. It is pointed out also that the standardization of the decoctions on Fuller's scale leaves them differing widely in hydrogen ion concentration. This work brings out the fact that little is really known of the nutrient value of plant decoctions, which it appears are generally deficient in nutrients and require the addition of considerable "fertilizer" to produce the greatest growth of fungi.—H. HASSELBRING.

Maps of rainfall and crop plants.—Among the recent publications of the United States Department of Agriculture there are two at least of decided interest to ecologists and plant geographers. The first is a rainfall map of the United States[17] embodying the data from not less than 3600 stations. The precipitation is given in inches and the map is in 8 shades of blue. An interesting insert map gives the rainfall from April 1 to September 30, and exhibits a

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[16] DUGGAR, B. M., SEVERY, J. W., and SCHMITZ, H., Studies in the physiology of fungi. Ann. Mo. Bot. Gard. 4:165–173; 279–288. 1917.

[17] KINCER, JOSEPH B., Atlas of American agriculture. Advance sheet 1: Precipitation. U.S. Dept. Agric. Weather Bur. 1917.

Appleman, Charles O . 1919. "Physiological Role of Glucosides in Plants." *Botanical gazette* 67(1), 101–102. https://doi.org/10.1086/332409.

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