should exceed a certain limiting quantity. If there is not enough material available or if for anatomical reasons the material can not reach a bud the latter will be prevented from growing.

6. We do not wish to discuss the nature of the substances which cause the growth, but it is important to know that the leaves will form no shoots or only very few if kept in the dark. Six pairs of leaves from the same node were suspended in moist air, one leaf of each node in the dark, one in the light. After one month the six leaves in the dark (weighing 11.65 gm.) had produced only 3 etiolized shoots weighing 0.016 gm., while the six sister leaves in the light (weighing 8.03 gm.) had produced 24 normal shoots, weighing 0.544 gm. The shoot production in the light was therefore more than thirty times as great as that in the dark. This may mean that the material from which the new shoots are produced in a leaf is itself to a large extent a product of or dependent upon the assimilatory activity of the leaf. The root formation did not seem diminished in the dark, and at first it seemed even enhanced.

JACQUES LOEB

SOCIETIES AND ACADEMIES

THE BOTANICAL SOCIETY OF WASHINGTON

THE 117th regular meeting of the Botanical Society of Washington was held in the assembly hall of the Cosmos Club, at 8 P.M., January 2, 1917, President T. H. Kearney presiding.

The program was devoted to the subject of Plant Introduction, under which the following papers were presented:

The Need of More Foreign Agricultural Exploration (illustrated): DR. DAVID FAIRCHILD.

Dr. Fairchild called attention to the need of more foreign exploration and to the fact that up to the present time a comparatively small amount of money had been expended on this important work. The most successful type of agricultural exploration is that carried on by men interested in particular crops. The need of studying the methods of agricultural production in foreign countries, some of the more important recent introductions, and the difficulty in getting people to adopt new foods were emphasized.

The Wild Relatives of Our Crop Plants; Their Value in Breeding; How to Secure Them (illustrated): MR. WALTER T. SWINGLE.

The usefulness of the wild relatives of our crop plants in securing such desirable qualities as hardiness, earliness or lateness of blooming or of ripening, disease resistance, extra vigor, etc., were pointed out. As an example, the desert kumquat of Australia, which does not resemble closely in general appearance true Citrus, was found to be a most desirable plant for the successful breeding of hardy and drought-resistant citrous fruits. Mr. Swingle stated that a properly digested technical knowledge of the wild relatives of our cultivated plants is an indispensable foundation for all efficient plant introduction and plant breeding.

The Introduction of Foreign Plant Diseases: MR. R. KENT BEATTIE.

Mr. Beattie separated all diseases of economic plants into two groups: (1) Those which have passed from native plants to the introduced hosts; (2) those which have been introduced, such as citrus canker and chestnut-bark disease. Diseases are brought in on diseased crop plants introduced for commercial use or for scientific purposes, or the spores may be carried in on plants not affected by the disease. Commercial-plant introductions are inspected usually by entomologists and fungus diseases are often not detected. The material imported by the U. S. Department of Agriculture undergoes rigid inspection and retention in case any diseases are suspected. During the year 1916 the Federal Horticultural Board found on the material imported by the U. S. Department of Agriculture 157 different diseases.

The Protection and Propagation of Plant Introductions: DR. B. T. GALLOWAY.

Dr. Galloway called attention to the rapid change in public sentiment in the matters of plant sanitation and hygiene and to the need of a constructive policy in adequately protecting our crop plants, and at the same time not closing the doors to the development of new crop industries. He also discussed a number of the problems confronting the Office of Seed Plant Introduction.

THE 118th regular meeting of the Botanical Society of Washington was held in the assembly hall of the Cosmos Club, at 8 P.M., February 6, 1917. Forty-four members and fourteen guests were present.

Dr. B. T. Galloway, Mr. Charles F. Deering and Professor W. D. Crocker were elected to membership.

The program of the evening was devoted to the subject of "The Relation of Plant Succession to Forestry and Grazing."

Mr. C. G. Bates discussed the natural regeneration of forest stands in the climax formations of the Rocky Mountain region and called attention especially to the temporary control of the subclimax following such a disturbance as cutting. In practical management of forests the distinct problems in kind and degree of cutting can be met by the application of an intimate knowledge of the range of conditions under which succession takes place.

Two types of succession in the forests of Oregon and Washington were described by Dr. J. V. Hoffman. The first type is dependent upon the production of seed by remaining seed trees. This type advances into an unoccupied area at the rate of 150 to 300 feet during each generation, and the resulting forest is composed of trees of unequal age. In the second type the seeds produced by the old stand retain their viability when the forest is destroyed and germinate to form a new forest of the same type and of even-aged trees.

Mr. A. W. Sampson called attention to the importance of studies of succession in the management of range lands of the Forest Service. Certain species appear early and others late in the succession which leads to the development of the climax or ultimate type. From the record of the time of appearance or disappearance of these species it is possible to determine whether the pasture is being properly or improperly used. In the latter case changes in the management can be initiated which will retain or favor the reestablishment of desirable plants.

The revegetation of badly over-grazed areas in the Santa Rita Mountain district of Arizona was discussed by Mr. E. O. Wooton. When such areas were protected small weedy annuals and annual grasses were first to enter, followed by short-lived perennial grasses, and these in turn by long-lived perennial grasses and a few species of perennial herbs and low undershrub. Fire was found to be the principal factor in preventing shrubs from replacing the grasses.

The papers were discussed by Mr. G. A. Pearson, Mr. J. T. Jardine, Dr. David Griffiths, and Dr. H. L. Shantz.

H. L. Shantz,
Corresponding Secretary

ANTHROPOLOGICAL SOCIETY OF WASHINGTON

The 509th meeting of the society was held in the lecture room of the Carnegie Library on March 19. At this meeting Dr. Fay-Cooper Cole, of the department of anthropology, Field Museum of Natural History in Chicago, delivered a lecture on "The Pagan Tribes of the Philippines."

Dr. Cole first described the peopling of the islands, and the intermingling of peoples which has resulted in the present population. The pigmy blacks or Negritos were held to be the aboriginal inhabitants of the islands. The invading peoples are believed to have come in several waves, the earliest of which appears to have been composed of a people who were physically allied to the Polynesians. These were followed by successive invasions of primitive Malays. The effects of movements of alien peoples and beliefs was also outlined. Traces of the Hindu-Buddhist movement are evident in the folk-lore, while the great effects of the introduction of Mohammedism and Christianity are a matter of historic record.

The greater part of the evening was devoted to a description of the most fundamental facts of the religious, social and economic life of three pagan tribes—the Bagobo of southern Mindanao and the Bontoc Igorot and the Tinguian of northern Luzon. The Bagobo live on the lower slopes of Mt. Apo, in whose lofty summit a host of spirits are supposed to dwell. The people also believe in a class of powerful spirits which inhabit the realms of the earth. The Igorot and Tinguian, living in a rugged country, have terraced the mountain sides for the cultivation of rice, and have developed an elaborate system of irrigation. Until recent years both the last-named tribes have been ardent head-hunters, but the motive for taking the skull, as well as its final disposition, differ in the two districts. These tribes resemble each other in language and physical type but differ in political organization and in the construction of dwellings.

Frances Densmore,
Secretary

Errata: In making up the article on the Industrial Fellowships of the Mellon Institute, by Dr. R. F. Bacon, published in the issue for April 27, pp. 399 to 403, two errors occurred. The footnote on p. 402 should read: "The system of industrial research founded by the late Dr. Robert Kennedy Duncan was initiated at the University of Kansas, and later transferred to the University of Pittsburgh." The name of William A. Hamor, M.A., assistant director, should have been included among the officers of administration.