

Achillea millefolia, a few *Mammillarias*, tops of *Datura* with stems and pods, dried gourds, bunches of unknown herbs wrapped in corn husk, bunches of the pepper tree (*Schinus molle*), bunches of dried roots, sea beans (*Mucuna*), hoofs of a deer, ears of a donkey dried, stuffed birds, carapace of a turtle, dried alligator with skin removed, armadillo skins and other remedies too numerous to mention. I returned again and again to this market and always found it a source of information and amusement.

Mexico is a very rich and virgin field for ecological study and is yet an unworked field. Similar observations in other regions have been made by Dr. Eugene Warming, of the University of Copenhagen, several years ago in Venezuela; at Lagoa Santa, by Dr. Scott, who explored the Cape region of South Africa, in the Kalahari desert; by Professor Stahl in Java, and last year in Mexico; and by Professor Trelease, of the Missouri Botanical Garden, on the Yuccas of the southwestern United States and northern Mexico.

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BOTANY AT THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

SECTION G organized on Monday, August 9th, at 12 m., with about 18 persons in attendance, the Vice-President and Secretary both being in their places. After the election of 3 fellows to serve on the Sectional Committee further elections were postponed till the following morning, when the full organization was completed. The attendance on the meetings ran up each day to about 50, except during the Vice-Presidential address, when the room was crowded with about 150 people. The list of new officers elected for the Section is found elsewhere in this JOURNAL, and need not be repeated here.

Two invitations given to the Section were

quite generally accepted by its members; the one being to a visit of inspection to the immense pharmaceutical laboratory of Parke, Davis & Co., in Detroit; the other being to a trolley ride and entertainment by Mr. Joseph Berry, of Grosse Pointe, where the fine grounds, extensive gardens and conservatories were greatly enjoyed.

During its session the Section was honored with a brief visit from Professor H. Marshall Ward, of Cambridge University, England.

The papers read numbered a total of 26. Several of the older botanists usually in attendance at the meetings of the Association were absent, and there was, therefore, a predominance of younger members; the quality of papers was, however, good, the most of them being narrative of original research on the part of their authors.

The preliminary program has already been published in SCIENCE (pp. 222-223 above), and the following papers were subsequently entered:

'On a New and Improved Self-Registering Balance,' by Dr. Alex. P. Anderson.

'The Correlation of Growth under the Influence of Injuries,' by Dr. C. O. Townsend.

'The Botanical Collection of the Cornell Arctic Expedition of 1896,' by Professor W. W. Rowlee and K. M. Wiegand. [Read by title.]

'Description of *Bacillus Phaseoli* n. sp., with some Remarks on Related Species,' by Dr. Erwin F. Smith.

'On the Nature of Certain Pigments produced by Fungi and Bacteria, with special reference to that produced by *Bacillus solanacearum*,' by Dr. Erwin F. Smith.

Since the address of the Vice-President on 'Experimental Morphology' has been published in full in this JOURNAL, comment need not be given here, except to say that the address, illustrated by lantern-slides was a collaboration of results of many botanists in experimental morphology, and was full of suggestion for future research in this direction.

Professor Davis' paper on the variation of

Trillium grandiflorum was accompanied by numerous dried specimens presenting the most remarkably monstrous forms. There were forms without the usual leaves, but in which all the floral organs except stamens were transformed into green foliage; acaulescent forms, forms with petioles 12 cm. to 15 cm. long, petiolated sepals and petals, forms with doubled sepals and petals, and forms without any stamens or pistils. In one locality in eastern Michigan over 400 monstrous individuals were collected. Of all organs the stamens vary least; they usually contain pollen. The pistils are commonly without true ovules, bearing leafy outgrowths instead. The author did not attempt to explain the teratology, but suggested that it might be propagated by fertilizing normal forms with pollen from the monstrous ones. In the discussion which followed the reading of the paper, Dr. Smith reported making a similar collection of the same species near the same locality and reporting it in the *Botanical Gazette* fifteen or more years ago. The Vice-President queried whether a preceding burning over with fire might not call forth the teratological forms. It was stated, however, by several present that such forms had been found where fire had not occurred for many years. Mr. Day reported a constant variety from Goat Island, Niagara River. Professor Britton had had no reports of these variations from the Appalachian region.

Mr. Wiegand reported variations in the form of fruit in closely related species of *Galium*. In some species the fruit is saucer-shaped, in others cup-shaped, and in others the edge of the cup is so narrowly constricted as to leave but a pore connecting the hollow interior with the exterior.

Professor Bessey reported the progress of the Botanical Survey of Nebraska. The Survey was organized in 1892 by the Botanical Seminar of the University of Ne-

braska, since which time it has brought together more than 10,000 specimens; published 'Reports I., II., III. and IV.'; published 'Parts I., II. and XXI.' of the 'Flora of Nebraska.' The total number of species known to the State is about 3,400.

This same author considered the question of the retreat of trees from Nebraska plains, concluding that none are known to be receding, while several species, such as the bur-oak and the pines, are advancing.

Dr. Bessey also described the foot-hill vegetation of western Nebraska. The foot-hill region is an elevated plain 1,200 meters above sea-level, upon which are Pine Ridge on the north, 1,500 meters above sea-level, and Cheyenne Ridge on the south, 1,700 meters above sea-level. Upon Cheyenne Ridge occur considerable bodies of trees, mostly pines, with red-cedar, box-elder and others. The Box Butte plains are covered with a uniform grass-formation.

Mr. J. H. Schuette's extensive paper on wild and cultivated roses of Wisconsin was read in brief abstract by Professor Bessey, who expressed himself as of the opinion that the author should make a wider study of native roses in the United States before publishing.

Professor Beal's paper, denominated 'How Plants Flee from their Enemies,' consisted in the citation of numerous examples of plant distribution as affected by hostile external conditions.

The 'Bacteriosis of Carnations,' as reported by Mr. Woods, is not due to a bacterial disease, as has been supposed, but to the punctures of aphides and thrips. The cells affected become cedemic, collapse and give a whitish sunken spot. The dead tissue may subsequently become infested by bacteria and fungi.

Dr. Erwin F. Smith reported the corroboration of Wakker's claim that a certain disease of the hyacinth is caused by a bac-

terium. The author was able to produce the disease by inoculation in healthy plants. Owing to the care with which the Hollanders inspect their exportations the disease is unknown in this country.

Dr. Smith described another bacterium, *Bacillus Phaseoli*, with related species, showing that this organism is a serious disease of garden and field beans. Thermal and cultural relations were shown, likewise drawings, photographs and macroscopical preparations, all aiding in the identification of the species.

The same author discussed the relations of the brown color of humus soils to the pigment produced by *Bacillus solanacearum*, suggesting that this coloration of soils may be due to the action of bacteria in splitting up the carbohydrates of the humus. The isolated pigment will not serve as nutrient material for bacteria.

Mr. C. A. Peters' report of the formation of the reproductive organs of *Drosera* showed some details of pollen-origin and structure differing from those in most dicotyledons.

Dr. Schlotterbeck reported that according to his study the appendage to the seed of *Melampyrum pratense* is not a strophiole, nor a caruncle, nor an arillus, each of which has been claimed, but is a part of the endosperm which becomes constricted off from the rest during development. The same author has found the nucellus of *Croton Tiglium* protruding far out of the micropyle, the only other similar case known being that of *Croton flavens*.

In the development of the pollen of the common milkweed, *Asclepias cornuti*, Professor Spalding reported the work of Miss Langdon as showing some errors in the published account by Corry, especially regarding the origin of the pollen-mother-cells and the outer wall of the pollinia. Peculiar changes in the protoplasm of the tapetal cells were also discussed with ref-

erence to their physiological significance. In the discussion which followed, the question arose as to what cells are to be denominated pollen-mother-cells in this plant—whether the cells that by division into four give rise to the pollen-grains, or whether these four daughter-cells themselves are the pollen-mother-cells.

Dr. Anderson reported the discovery of stomata on the bud-scales of *Abies pectinata*. What gives peculiar significance to this discovery is the fact that heretofore stomata have been thought never to occur on the bud-scales of Gymnosperms.

The paper by the same author on the comparative anatomy of normal and diseased organs of *Abies balsamea* showed differences in structures of leaves of the lateral and erect branches; the presence of 2 to 6 resin canals in the bud-scales from which the resin, exuding through fringing hairs, spreads in a layer 1 to 3 mm. thick over the scale; the formation of resin-vesicles in the primary cortex by the growth of the epithelial lining to the resin canals.

Dr. Townsend's paper on the correlation of growth and injury narrated experiments with seedlings, larger plants and with *Phycomyces nitens*. The injuries were given by excising parts of the plant, or by incisions. In *Phycomyces* there was a sudden retardation of growth after cutting, and the normal rate was regained after 30 to 60 minutes. In higher plants there ensues on severe injury a gradual retardation, followed by a gradual regain of normal rate, a period of acceleration sometimes preceding. In seedlings, especially, a rather slight injury caused an acceleration in 6 to 24 hours, with a subsequent fall to the normal rate. The distance through which the injury may influence the rate of growth may amount to several hundred millimeters. The amount of variation in rate of growth may equal 80 % of the normal rate.

'The Mechanism of Root Curvature'

is a vexed question. Professor Spalding reported work done in his laboratory from which it would appear that not only one side of the root is concerned in producing the bending, but both sides. As a result of numerous experiments it is concluded that the effect of the stimulus is not altogether, as has been supposed, on cell-membranes, nor upon the activity of protoplasm in manufacturing osmotic material, but is manifested in a molecular change in the protoplasm by which it becomes more permeable to water. The tense membranes consequently contract, shortening the side that thus becomes concave. It is claimed that, at the same time, the effect of the stimulus is to increase the length of cells on the side becoming convex. An important difference between this theory and its predecessors is that this proposes to utilize the tensions usually existing in straight roots to account for the curving.

The action of a cellulose dissolving enzyme extracted from cotyledons of seedlings of *Lupinus albus* was described by Professor Newcombe.

Professor True's paper on the toxic action of phenols on plants aroused considerable commendation and discussion. It has been known quite generally that plants are very sensitive toward certain substances, so sensitive that they may be used as tests for certain compounds diluted far beyond the capacity for identification by the usual chemical means. A study of the toxic action of the group of substances known as phenols has shown that living organisms respond in a definite manner to substances having a definite constitution, the reaction of the protoplasm being thus far governed by chemical laws. Electrolytic dissociation of the molecules into ions plays a subordinate rôle in the physiological action of these compounds, the undissociated molecules, therefore, determining to a large degree the physiological properties of the substances.

Certain radicles seem to have specific properties when introduced into the molecule, modifying the toxic value of the same.

Dr. Hart sought to prove that the acidity of the juice of *Arum* is not due, as claimed, to the mechanical action of the raphides. He exhibited preparations of the extracted juice which had been filtered and still preserved its acidity. He described also a series of experiments upon himself, detailing the physiological effects of the administration of the juice.

Dr. Anderson described a self-registering torsion balance—an improvement over the one previously described by him. This instrument will record the increase or decrease in weight of any object that can be placed upon the balance, changes of .5 gm. being sufficient to make a record.

In joint session of Sections F and G, Professor Osborn and Professor Poulton presented a theory harmonizing to some extent Darwinism and Lamarckism, which is published in the present number (page 583) of SCIENCE.

FREDERICK C. NEWCOMBE,
Secretary Section G.

ANTHROPOLOGY AT THE TORONTO MEETING
OF THE BRITISH ASSOCIATION.

SECTION H was perhaps the best attended of all sections of the Association, the large West Hall of the University of Toronto, where the sessions were held, being filled on several occasions, while on Wednesday, August 25th, when the joint discussion with Section C (Geology) took place, standing room was at a premium. The chairmanship of Sir William Turner, the celebrated anatomist, who presided with grace, dignity and a broad-minded discrimination that won the admiration of all who were privileged to present papers or to take part in the various discussions which arose, was a