THE ANTHROPOLOGICAL SOCIETY OF WASHINGTON

The meeting of November 19, 1907, was addressed by Professor Marshall H. Saville, Columbia University, on "Archeological Researches on the Coast of Ecuador." Professor Saville, who has charge of the G. G. Heye expedition, plans to examine the antiquities of the entire region between Mexico and Peru, taking up in order the coast and interior valleys, and thus far, two seasons have been spent in western Ecuador, between the 4° south latitude and 1½° north latitude. Two cultures anciently occupied the coast; the Manabé, in the dry region of the south; and the Esmaraldas in the humid region on and north of the equator. The ruins of the former are situated on the slopes of forested foothills which are watered with night fogs that descend about midway on their flanks. The houses, which were light wooden structures capable of resisting earthquakes, were placed on terraces excavated from the hillsides resembling the trincheras of Mexico. The remains are a few slabs sculptured in bas relief and numerous great stone seats of U-shape resting on the back of a puma. Mounds occur in which skeletons and pottery are found. The remains of Esmaraldas are exposed on the sea bluffs and along the river banks. Enormous deposits of artifacts are found along the coasts for two hundred and fifty miles, and on the Atacamanes River are great deposits in the alluvium, showing on sections two lines of human remains, pottery, etc. In these deposits were upright tubes of pottery which were coffins. Numerous gold objects and some emeralds were found by the expedition. A remnant of the Caiapas Indians living in northern Ecuador, about sixty miles north of the town of Esmaraldas, were visited and photographed.

The thanks of the society were extended to Professor Saville for his interesting paper.

Walter Hough,
General Secretary

THE NEW YORK ACADEMY OF SCIENCES. SECTION OF BIOLOGY

On May 13, 1907, the section met at the American Museum of Natural History for an interesting session. The papers were as follows:

Brief Account of the Expedition to the Fayoum, Egypt: Professor Henry F. Osborn.

A summary of the valuable results of this expedition in search of *Palæomastodon* and *Arsinoitherium* was given and illustrated by a fine series of stereopticon views. A detailed account of the expedition has already been published in Science.[1]

The Supernumerary Chromosomes of Hemiptera: Professor Edmund B. Wilson.

In striking contrast to nearly all forms heretofore described, the genus *Metapedius* presents a considerable range of variation in the individual number of chromosomes, though the number is constant in each individual. The following numbers have thus far been observed in a total of 30 individuals (spermatogonia in the males, ovarian cells in the females). *M. terminalis,* males 22, 23, females 22, 25; *M. femoratus,* males 22, 23, 26, females 24, 26; *M. granulosus,* males 23, 26, 27 (?), females 26. The variation is thus seen to be independent of sex; and it is not a casual fluctuation within the individual, since the individual number is constant and in the male is definitely correlated with the number present in the maturation-divisions. Thus with 22, 23 or 26 spermatogonial chromosomes the first spermatogonial division shows, respectively, 12, 13 or 16 chromosomes—a relation shown constantly and in a large number of cells. Study of the conditions shown in the males leads to the conclusion that all individuals possess a fundamental or type group of 22 chromosomes that are always present and show the same general arrangement in the first division. To these may be added in certain individuals one or more "supernumerary chromosomes" which, like the idiochromosomes, differ in behavior from the others in failing to couple at the time of general synapsis, dividing as univalents in the first division where they appear smaller than the bivalents (as will be shown hereafter in photographs). Thus are explained the peculiar numerical relations above stated—

[1] N. S., Vol. XXV., No. 639, March 29, 1907.

e. g., 16 chromosomes in the first division include ten bivalents and six univalents (two idiochromosomes and four supernumeraries). In the second division the supernumeraries almost always unite with the idiochromosome-bivalent to form a compound element; and the facts indicate that the individual members of this complex may undergo an asymmetrical distribution to the spermatozoa, which probably gives the explanation of the variations observed in the somatic numbers of different individuals. The new proof given by the facts of the genetic identity of the chromosomes, and their possible bearing on certain phenomena of heredity, were indicated.

Variations in the Leaf Type of Liriodendron Tulipifera during a Season's Growth: Dr. L. HUSSAKOF.

The leaves were collected from a single tree during three successive summers beginning with 1904, and their variations in form statistically studied. During 1905 and 1906 "average samples" (about 500 leaves, representing all parts of the tree) were collected at intervals of about a month and systematically tabulated. It was found that at the end of May the six-pointed type of leaf constitutes over half the total foliage (.58 in 1905; .65 in 1906), and that the four-pointed type is totally absent. During the next month there is a remarkable growth of four-pointed leaves so that at the end of June they constitute over 50 per cent. of the total foliage. The six-pointed leaves become reduced to about 35 per cent. of the total. During the remainder of the summer these figures vacillate only within about 5 per cent. The leaves with 8, 10, 12 and 14 points were also studied; each makes up only a small per cent. of the total foliage, the last being very rare.

The talk was illustrated by charts and specimens.

Orthogenesis in Gastropods: Professor A. W. GRABAU. (Illustrated with lantern slides.)

No abstract of this paper has been received.

On October 14, 1907, the section met at 8:15 P.M., in the American Museum of Natural History. The evening was devoted to brief reports on summer work by members of the section. Among others the following members addressed the section: Professor W. M. Wheeler: "A Study of Ants in Switzerland"; Professor N. L. Britton: "Recent Explorations in Jamaica"; Professor H. E. Crampton: "A Second Journey to the Society Islands."

Professor E. B. Wilson also gave a brief account of the summer work at Woods Holl, and described some interesting experiments made by him on the structure of living cells.

Brief reports were also made by several other members of the section, after which the meeting adjourned.

On November 11, 1907, after a short business meeting, at which sectional officers for 1908 were elected, the following papers were read:

A Paleontological Trip to Northwestern Nebraska: Professor HENRY F. OSBORN.

Professor Osborn reported upon two excursions, during the seasons of 1906 and 1907, into the Lower Miocene beds of northwestern Nebraska, variously known as Arikaree, Harrison and Rosebud.

The recognition of these beds as containing fauna transitional between the Oligocene and Lower Miocene is due to the successive explorations of Hatcher, Barbour, Peterson, Matthew and Thomson. The lower division (Lower Harrison, Lower Rosebud) is somewhat more recent than the true Upper Oligocene of France. The upper division (Upper Harrison, Upper Rosebud) may also represent the beginning of the Miocene, and is sharply defined from the lower division by the absence of certain mammals and the presence of others. The formation as a whole is a very grand one, extending continuously over 200 miles east and west; varying in thickness from 1,200 feet in the west to 800 feet farther east. It is, in fact, one of the most extensive, most readily distinguished, and most definable of the Tertiary series, but it still awaits accurate definition and distinction, especially from overlying beds, partly owing to the fact that it has been embraced under the "Arikaree," which practically includes a considerable part of the Miocene series.

In the region of Agate, Sioux County, Nebr., the first discoveries of fossils were made by Mr. James H. Cook and his son, Mr. Harold Cook. This region has been especially explored by Carnegie Institute parties under Mr. O. A. Peterson and Mr. W. H. Utterback. The Monroe Creek, Lower Harrison, and Upper Harrison divisions are very distinctly separated from each other geologically and faunistically. The remarkable deposit known as the "Agate Spring Quarry" is about forty feet below the summit of the Lower Harrison and its fauna, and has been especially described by Mr. Peterson. This is on the same level as the Dæmonelix Beds of Barbour, and is characterized by the presence of *Moropus, Synedyoceras, Oxydactylus, Diceratherium* (smaller and larger species), *Parahippus, Blastomeryx, Dinohyus, Thinohyus* and *Promerycochœrus. Steneofiber,* a castoroid, is quite abundant and is frequently found in the Dæmonelix spirals. The origin of these spirals still remains a very difficult problem. The Upper Harrison is sharply defined by the appearance of the large *Merycochœrus* in the upper levels, by the presence of cameloids of three or four types. *Dinohyus* persists in the lower levels but disappears above.

A more exact determination of the geological and faunal characters of these beds will mark a great advance in our knowledge of the Tertiary series.

A fine series of lantern slides illustrated the paper.

The Ptarmigan—Living and Dead: Frank M. Chapman.

Both the distribution and color of ptarmigans are of special interest. In distribution, we have a circumpolar group extending its range southward on the Arctic Alpine summit of mountain ranges with isolated groups (for example, *Lagopus mutus,* in the Alps and Pyrenees, and *Lagopus leucurus,* in the Rocky Mountains of Colorado and New Mexico) occupying restricted areas at the south, which it is probable they reached at some time during the Glacial Period. The fact that the birds of these south Alpine islands are specifically like their representatives at the north indicates absence of differentiation since their isolation, and consequent great stability of color characters.

The ptarmigan's seasonal changes of plumage were described at length and were said to furnish one of the most conclusive proofs of the necessity for protective coloration known among birds.

Particular attention was called to the transitional autumn plumage which, in defiance of the laws of molt, is interpolated between the known summer plumage and the white winter plumage, to carry the bird from the end of the nesting season to the season of snowfall in October. If the winter plumage were to be acquired at the end of the nesting season, when molt is apparently a physiological necessity, the bird would be white before the coming of snow.

All the changes in plumage, it was asserted, were accomplished by actual feather loss and growth, no basis being observed for the theory of change of color in the individual feather.

The paper was illustrated with specimens and a series of slides showing the White-tailed Ptarmigan and its haunts on the summits of the Canadian Rockies in Alberta.

The Distribution of the Juncos, or Snow Birds, on the North American Continent: Dr. Jonathan Dwight, Jr.

The birds of the genus *Junco* are widely distributed, occupying in the breeding season the whole of Canada, the higher parts of the Appalachian, Rocky and Coast ranges of mountains, and the pine forests of Mexico and Central America. They fall quite naturally into several large groups that differ widely in plumage and are also farther divisible into lesser groups that possess characters more or less intermediate. Intergradation between the various forms seems to be complete and one view is to consider them all geographical races of one species, but a view more in harmony with the apparent facts, is to recognize several of the groups as species and to consider the intermediates either as hybrids or as races, or perhaps as both. A blackheaded junco, for instance, would seem to be specifically distinct from a red-headed bird, because each possesses

a character not found in the other, while mere color variations, attributable to climatic conditions, point to geographical races.

Whether Mendelian principles will or will not explain the complicated plumage characters of the juncos, here at least there seems to be a promising field for experimental research to supplement the facts derived from field study.

The paper was illustrated by a large series of specimens brought together by Dr. Dwight for his investigations, and representing collections in all parts of the country.

The meeting then adjourned.

ROY WALDO MINER,
Secretary of Section

THE TORREY BOTANICAL CLUB

THE club met at the American Museum of Natural History on November 12, 1907. The meeting was called to order by Dr. J. H. Barnhart. Dr. E. B. Southwick was elected chairman. In the absence of the secretary, Miss W. J. Robinson was elected secretary *pro tem.* Eleven persons were present.

The following scientific program was presented:

Demonstration of Regeneration in Drosera: WINIFRED J. ROBINSON.

Miss Robinson observed regeneration in the leaves of plants of *Drosera rotundifolia* which she had under observation for experimental purposes, at the propagating house of the New York Botanical Garden, in August, 1907. Young plants appeared upon old and apparently dead leaves which were attached to the plant and were at first thought to be seedlings which had penetrated the leaf tissue in their growth. Sections showed that this was not the case but that the young plant grew from the cells of the old tissue which had remained in an embryonic condition. No formation of callus was observed. Regeneration occurred with equal facility from blade or petiole of the leaf or from the flower stalk. The first leaves of the young plant bear no tentacles, but later leaves are exactly like those of the parent plant. The roots appear after the stem has attained some size and are at first diageotropic, but later bend toward the substratum.

Drosera is not mentioned in recent literature upon regeneration but Spencer in his "Principles of Biology," 1867, referred to the subject as a matter of common knowledge. Naudin recorded the appearance of a bud upon the upper surface of the leaf of *D. intermedia* in *Ann. Sci. Nat.*, II., **14**: 14, *pl. 1, fig. 6,* 1840. Planchon gave his observations upon certain "monstrous flowers" of *D. intermedia* in *Ann. Sci. Nat.*, III., **9**: 86, *pl. 5 and 6,* 1853. His observations were verified by various later writers. The most extended study of regeneration in *D. rotundifolia* was made by Nitschke, professor at Westphalia, whose investigations were printed in the *Bot. Zeit.* **8**: 239, 237, 245, 1860. He studied plants in the bogs and observed that the age of a plant could be determined by the successive rings of young plants about it.

Photographs of regenerating plants and of sections showing relation of the regenerating tissue to the parent plant were shown, also specimens in alcohol, demonstrating the origin of young plants from petiole and blade of leaf and from the flower stalk.

Notes on Tumboa (Welwitschia): NORMAN TAYLOR.

After a short account of the history and synonymy of *Tumboa Bainesii* (*Welwitschia mirabilis*), a general description of the mature plant was given. Attention was called to the peculiar characters of *Tumboa,* which is exogenous in the two cotyledons and the 2–4-merous perianth, endogenous in the parallel-veined leaves and six stamens, angiospermous in the general structure of the flower, and gymnospermous in the naked ovule and typical "cone" flowers.

Particular mention was made of the seedling, of which there are two now growing at the New York Botanical Garden. In germination the two ligulate cotyledons appear first above the soil, followed by the two nepionic leaves, at first erroneously supposed to develop into the only two leaves that the plant ever has during the conjectural one hundred years of its life, but this interpreta-