

show that, although the bloods of various animals may be mixed, they may be detected and differentiated. The final paper, by W. J. Kent, is on 'The Colors of the Crayfish': red may be caused by exposure to sunlight or by environment, but all other colors are the result of environment and are protective in their nature.

The Osprey for September contains the 'Song Birds of the Kissimmee Valley, Florida,' by Wm. Palmer, 'A Visit to Otter Rock, Pacific Ocean,' by A. G. Prill; 'Notes on the Blue Grosbeak, *Guiraca caerulea*,' by John W. Daniel, Jr.; the tenth instalment of 'William Swainson and His Times,' by Theodore Gill; a second paper on 'The Cage Birds of Calcutta,' by Frank Finn; and the eighth and final chapter of 'The Osprey or Fishhawk: Its Characteristics and Habits,' by Theodore Gill. An editorial on 'Work and Worry for the Classicists' shows some of the numerous troubles in store for those zoologists who propose to abide by the decision of the majority, in regard to nomenclature, at the last international zoological congress.

The Plant World for October contains the second part of 'Notes on Trees of Cuba,' by Valery Havard; 'Some Interesting Cases of Plant Distribution,' by John M. Holzinger; 'The Knubble, Advice to Beginners in Botany,' by Walter Deane; and many briefer articles and notes on current literature. The supplement on the 'Families of Flowering Plants,' by Charles L. Pollard, is devoted to a continuation of the descriptions of the families of the order Sapindales.

The American Museum Journal for October should be in demand by ornithologists, for it has for supplement a twenty-four-page 'leaflet' devoted to the Bird Rock Group recently placed on exhibition. This is by Mr. Chapman, and is admirably illustrated by reproductions of the group and of the real Bird Rock whose bird life it so well represents. The *Journal* proper contains notes on the summer's work of the various field parties of the Museum, and on the recent acquisitions.

Journal of Physical Chemistry, October. 'On the First Plait in van der Waals's Free Energy

Surface for Mixtures of Two Substances,' by Ch. M. A. Hartman (Physical Laboratory, Leiden). This contains a review of the investigations referring to binary mixtures and a bibliography. 'A New Proof of the Formula $d = \frac{.02 T^2}{L}$,' by Felix Lengfeld. 'The Influence of Electrical Waves on Chemical Action,' by Felix Lengfeld and James H. Ransom. 'On the Dielectric Constants of Pure Solvents,' by Herman Schlundt. The work of Dr. Schlundt was carried out under the supervision of Professor Kahlenberg, of the University of Wisconsin, and while a number of new examples have been found which follow the Nernst-Thomson rule, that the greater the dielectric constant of a solvent the greater is its dissociating power, some striking exceptions have also been found, from which it is argued that the rule is inadequate.

SOCIETIES AND ACADEMIES.

CALENDAR.

The American Association for the Advancement of Science. A meeting of the council will be held at the Quadrangle Club, University of Chicago, on the afternoon of January 1. Section H (Anthropology) will meet at the Field Columbian Museum, Chicago (December 31 and January 1). The next regular meeting of the Association will be held at Pittsburg, Pa. (June 28 to July 3). A winter meeting is planned to be held at Washington during the convocation week of 1902-3.

The American Society of Naturalists will hold its annual meeting at the University of Chicago (December 31 and January 1). In conjunction with it will meet the Naturalists of the Central States and several affiliated societies, including The American Morphological Society (beginning on January 1; The American Physiological Society (December 30 and 31); The American Psychological Association and the Western Philosophical Association (December 31 and January 1 and 2); The Society of American Bacteriologists (December 31 and January 1), and The American Association of Anatomists (December 31 and January 1 and 2).

The American Chemical Society will meet at the University of Pennsylvania, Philadelphia (December 30 and 31).

The Society for Plant Morphology and Physiology will hold its fifth annual meeting at Columbia University, New York City (December 31 and January 1 and 2).

SECTION OF ASTRONOMY, PHYSICS AND CHEMISTRY OF THE NEW YORK ACADEMY OF SCIENCES.

THE Section met on the evening of November 4.

Dr. S. A. Mitchell gave a very interesting report of the recent Eclipse Expedition to Sumatra. Numerous lantern slides were exhibited, showing the arrangement of the apparatus at the different stations. The paper is given in full in SCIENCE.

Professor William Hallock gave a report of some recent work on underground temperatures.

Dr. L. Boroschek gave an account of some work he had undertaken in connection with Dr. Tufts on the absorption of light by some dyes of the fluorescein group. The dyes studied were fluorescein and a number of its nitro-derivatives. It was stated that Hewitt and Perkins (*Journal Chem. Soc.*, 1900, page 1324) claim that a double symmetrical tautomerism furnishes a satisfactory explanation for the fluorescence of fluorescein, and that in the case of dinitro- and tetra-nitro fluorescein this tautomerism is inhibited by a secondary tautomerism between the nitro and hydroxyl groups when in ortho position to each other. It was found that the mononitro-fluoresceins, obtained by condensing the 3-nitro- and the 4-nitro-phthalic anhydrides with resorcin, in which the nitro group is on a different benzol nucleus from the hydroxyl groups, show no fluorescence in alkaline solutions. According to the theory of Hewitt and Perkins alkaline solutions of such dyes should fluoresce. Photographs of the absorption spectra of alkaline solutions of the dyes were taken, and it was found that the substitution of nitro groups displaces the prominent absorption band of fluorescein towards the red end of the spectrum and increases the absorption in the ultra-violet. The absorption of light in the visible spectrum was studied by means of the flicker photometer.

The amount of light transmitted by equal thicknesses of solutions of different concentrations was measured for the different dyes. A relation was thus obtained between the absorption of light and the concentration of the dye. The work is still in progress. F. L. TUFTS,

Secretary.

SECTION OF ANTHROPOLOGY AND PSYCHOLOGY OF THE NEW YORK ACADEMY OF SCIENCES.

THE first sectional meeting of the season was held on October 28, Professor Farrand in the chair. The names of Robert MacDougall and J. E. Lough were proposed for membership.

Professor J. McK. Cattell made a brief report regarding psychology at the Denver meeting of the A. A. A. S.; and Professor G. G. MacCurdy, of Yale University, reported on anthropology at that meeting, and in addition described the explorations that are being carried on in the Mesa Verde of southwestern Colorado by the Colorado Cliff Dwellings Association.

Professor Franz Boas described the facilities for anthropological study in Berlin, as observed by him in a recent visit. Within the last 20 or 30 years, the anthropological equipment of Berlin has progressed enormously. The museum now contains better East Indian collections than can be found in England; and it is strong in nearly all departments, notably so in American and especially South and Central American anthropology. Fifty scientific workers are engaged on these collections, and 16 of these are at work on American subjects. Besides the museum, there are several other institutes in Berlin, such as the Anatomical Institute of Waldeyer and the Pathological Institute of Virchow, in which anthropological work is done.

The leader of German anthropology is Virchow. He disbelieves in the study of the variation of the whole body, and insists that only the study of the variation in the individual cells of the body can lead to fruitful results.

Reports of summer field work were presented by H. H. St. Clair, 2d, on his work in Wyoming and Oregon, and by William Jones, on his work in Iowa and Oklahoma. The work of Mr. Jones was carried on among the Sauks and Foxes, a people of Algonquin stock. One band of this

people is located in central Iowa, and another in Oklahoma. Both bands practice similar customs, live in much the same way, wear the same kind of dress, show similar physical types, and, with the exception of certain differences in idiom, and with the exception that the Iowa band have a slower, more deliberate pronunciation, they speak the same tongue. The Iowa band is the more conservative, and among them the law of the clans still holds. The education of the children is accomplished not by instruction but by imitation. The older boys imitate the men, and the younger boys imitate the older ones; and similarly with the girls. The life of the children is but a smaller edition of the life of the older people. R. S. WOODWORTH,

Secretary.

TORREY BOTANICAL CLUB.

At the meeting of the Club on November 12, the first paper was by F. S. Earle, on '*Asco-corticium* in North America,' correcting the current nomenclature as to this genus, details of which will shortly appear in print.

The second paper, by Dr. Britton, 'Remarks on the Flora of St. Kitts, British West Indies,' was a sketch of his recent observations there, with copious series of herbarium sheets, and of fruits and other specimens in alcohol. Scarcely any botanical work had been done on St. Kitts previous to its exploration by Dr. Britton and Mr. John F. Cowell last summer. In all they collected about 3,500 herbarium specimens, representing perhaps half of the flora. Many tree-ferns were brought which are now making good growth, and a great number of cacti which are already on exhibit in the succulent house of the New York Botanical Garden.

Dr. Britton spoke in particular of the great interest attaching to that purely tropical flora, its aspect wholly dissimilar from that of our Atlantic coast except only in the presence of the introduced Horseweed, *Leptilon*. St. Kitts is a volcanic mass, formed of a rugged central mountain rising to about 4,000 feet, dissected by radiating gorges which reach to the sea, and wholly surrounded by a fringe of arable land on the shore. Steep ravine-sides 300 feet deep were often completely covered with a prodigious growth of tree-ferns; there were four or five spe-

cies in the ravines and one or two more in the denser forests; some reached a height of 50 feet; another was chiefly prostrate. A good number of the filmy ferns were found; perhaps ten; and many *Gleichenias* at high altitudes, where ferns constitute the chief flora. No *Equiseta* were found; among the Lycopods, a species of *Psilotum* on tree-trunks, some large and handsome *Selaginellas*, and three *Lycopodiums* occur, of which one conspicuous species was known to the negroes as 'Staghorn.' The grasses number 30 or more, the largest a *Gynerium* known as Wild Cane or Dumb Cane. Guinea-grass, *Panicum maximum*, is the only source of hay. Sedges were few, for there is little standing water (except a littoral salt-marsh); only a little pond near a mountain summit at 3,500 feet, and a little lake in the bottom of the old crater of the volcano, Mt. Misery. *Sclerias* with saw-edged leaves were quite abundant and form an obstacle on mountain-trails.

Aroids are very conspicuous, and in great quantity, but only about eight species; two of *Anthurium*, climbing trees, two of *Philodendron*, one with perforated leaves; one *Dieffenbachia*; and a species known as Elephant's Ear, forming great masses, with leaves sometimes five feet long.

Only two palms were found, one, a *Bactris*, reaching 30 feet; two *Commelynas*; three or four *Tillandsias*; a *Dioscorea* with remarkable purple leaf, now growing in the propagating house; about sixteen orchids; and one gymnosperm, a *Podocarpus*, abundant high up, and known as 'wild rosemary tree.' Among higher plants the pepper peppers, the Papilionaceæ and allies, the *Euphorbia* and *Melastoma* families, are numerous. The Compositæ are numerously present, but chiefly as weeds; a handsome new purple-flowered *Eupatorium* was found on the top of Mt. Misery, forming a shrub, and eight to ten feet high. The alligator-pear, *Persea Persea*, is quite abundant. There are four species of *Ficus*, a wild cherry, a *Viola*, etc. A raspberry occurred in a mountain pasture at 2,000°. Among the more peculiar were the *Cecropia*, with white under surfaces of leaves, *Marcgravia* climbing appressed to trees to the height of 50 feet, and *Hillia*, interesting from its large lustrous white flowers.

The results of Dr. Britton and Mr. Cowell's expedition bid fair to prove of high economic importance aside from their scientific value. The expedition owed much to the kind assistance of the planters, who detailed their negroes and horses for the service of the explorers. Without such aid, it would have been difficult to penetrate the forest belt, through which trails had first to be cut.

Further remarks were added by Dr. Underwood regarding a dodder in tops of trees in Porto Rico; by Mr. J. H. Barnhart, on an epiphytic *Utricularia* among the specimens from St. Kitts exhibited; by Mr. F. S. Earle, on the few fungi collected; and by Mrs. Britton, on the other cryptogams, which numbered 81, and included a *Vittaria* prothallium.

EDWARD S. BURGESS,
Secretary.

ANTHROPOLOGICAL SOCIETY OF WASHINGTON.

THE 321st meeting of the Society was held on November 5. Professor W. H. Holmes read a paper on the 'Discovery of Human Relics and the Bones of Extinct Mammals in a Sulphur Spring, Indian Territory,' an abstract of which will be published in *SCIENCE*. This paper was discussed by Dr. W. J. McGee, Jos. D. McGuire, F. W. Hodge, Francis La Flesche and others.

Miss Alice C. Fletcher gave an account of 'The Inauguration of the New Department of Anthropology, University of California,' through the munificence of Mrs. Phoebe A. Hearst. For ten years Mrs. Hearst has been gathering museum material, spending fifty thousand dollars a year on its acquisition and looking forward to a time when the collections might be housed in a museum building. Last summer the project took form, resulting in the establishment of the Museum at the University of California with a handsome endowment, the details of which appeared in *SCIENCE*, October 18, 1901.

WALTER HOUGH.

DISCUSSION AND CORRESPONDENCE.

THE GEOGRAPHICAL DISTRIBUTION OF FISHES.

IN *SCIENCE* for November 1, Professor A. E. Ortmann offers some very interesting notes on

my paper (in *SCIENCE*, October 11) on the geographical distribution of fishes. On the points raised I may add a word.

1. There is little or nothing in the present relations of the fish fauna of Japan to that of the Mediterranean to suggest a former connection through a warmer climate to the northward. The forms common to the two regions are chiefly of Indian and rather deep water distribution. One curious anomaly occurs, the existence of a second species of the large trout, *Hucho*, in Japan, the other known species being in the Danube.

2. The views of Dr. Ortmann as to the faunas separated by the Isthmus of Suez and the Isthmus of Panama seem to agree with those expressed by me. Of course, from the standpoint of ichthyology, no one could say when either oceanic connection actually existed. That is a matter for geologists.

3. The fish fauna of the Cape of Good Hope is imperfectly known, that of the southeastern coast of Africa still less. It is certain, however, that some tropical or semitropical genera do pass this barrier at present. In other ages the Cape might conceivably have been less of a barrier through less extension or through warmer climate at its extremity. This again rests with the geologists.

4. I am willing to accept the theory of the former extension of the continent Antarctica on geological grounds, and the known distribution of *Galaxias* would be explained by it. But the case of *Galaxias* would not of itself prove such extension, and the value of zoological evidence in such cases is easily overestimated.

DAVID STARR JORDAN.

PREGLACIAL DRAINAGE IN SOUTHWESTERN OHIO.

TO THE EDITOR OF *SCIENCE*: In his reply (November 15) to Mr. Miller's criticism of my papers on preglacial drainage conditions in the vicinity of Cincinnati, Professor Tight should have added that every one of the smaller streams mentioned by Mr. Miller, in proof of his theory, is of *postglacial* origin and consequently has no bearing on the question.

A view up and down the Ohio from the hill-top at either Madison or Leavenworth, Indiana,