

agricultural college of the present day must not only teach the students whom they can draw into their class-room, but they must also gather out of the realms of the unknown the materials to complete the new science of agriculture on which the scheme of education rests; they must organize and bring into successful operation a whole system of education from the common schools to the university department of research; they must overcome the prejudices and traditions of a most conservative constituency; they must create and develop into active and permanent life a public sentiment which shall result in the adequate equipment and maintenance of a comprehensive system of agricultural education. It is, indeed, a great burden which rests upon the shoulders of this board of trustees, this youthful president and this learned faculty.

But the encouragements to strenuous activity in this cause are also great, for already mighty forces are allied to push on this enterprise. The United States government has pledged itself to the permanent financial support of the agricultural colleges and experiment stations, and is giving them besides the active aid of its great Department of Agriculture. The state of New Hampshire is backing this work with its public revenues, and this building testifies that the state regards the agricultural college as one of its permanent institutions. The workers in the cause of agricultural education here have also those incitements to high endeavor which come from the consciousness of belonging to a great system of institutions, that throughout the length and breadth of the union, and in all the civilized countries of the globe, are competing in generous rivalry for the advancement of fundamental interests of mankind. And what is most significant and stimulating is the sympathetic and active aid of rapidly increasing hosts of intelligent farmers and other public-spirited citizens who

individually and through their organizations are helping to make the agricultural college what it should be, and develop a system of agricultural education which shall ere long reach every man, woman and child on the 5,000,000 farms of the United States.

A. C. TRUE.

U. S. DEPARTMENT OF AGRICULTURE.

SCIENTIFIC JOURNALS AND ARTICLES.

The American Naturalist for October opens with the first of a series of papers on 'Adaptation to Aquatic, Arboreal, Fossorial and Cursorial Habits in Mammals,' the present one being on 'Aquatic Adaptations,' by Raymond C. Osburn. Edwin G. Conklin has a paper on 'Amitosis in the Egg Follicle Cells of the Cricket,' concluding that it is an accompaniment of cellular senescence. Edward W. Berry describes 'New Species of Plants from the Matawan Formation' and O. P. Hay has 'Some Remarks on the Fossil Fishes of Mount Lebanon, Syria.' The concluding paper, by R. W. Shufeldt, is 'On the Osteology and Systematic Position of the Kingfishers.' The number contains the Quarterly Record of gifts, appointments, retirements and deaths.

The Popular Science Monthly for November has articles on 'The Renaissance of Science,' by Edward S. Holden; 'Life in Other Worlds,' by F. J. Allen; 'The New West Point,' by William J. Roe, and a plea for 'A Laboratory for the Study of Marine Zoology in the Tropical Atlantic,' by Alfred G. Mayer, the Tortugas being the locality suggested with Jamaica as a possible alternative. David Starr Jordan discusses 'The Parent Stream Theory of the Return of Salmon,' showing that the evidence is not in favor of it, and J. A. Fleming contributes the sixth of his papers on 'Hertzian Wave Wireless Telegraphy.' Allan McLaughlin shows 'The Bright Side of Russian Immigration,' and Norman Lockyer treats of 'The Influence of Brain-power on History,' presenting arguments for the national support of universities.

The Museums Journal of Great Britain for October contains articles on 'The British Association' and 'The Mannheim Conference on Museums as Places of Popular Culture,' and the concluding portion of the address of the president, which is illustrated by a number of plates. E. M. Holmes has an article on 'The Preservation of Natural Colours in Dried Plants.' There is the customary number of important notes concerning various museums and museum matters.

SOCIETIES AND ACADEMIES.

THE NATIONAL ACADEMY OF SCIENCES.

THE academy held its autumn meeting at Chicago on November 17, 18 and 19. The event was of special importance owing to the fact that the academy has not hitherto met west of the Atlantic seaboard. Chicago has recently become one of the chief scientific and educational centers of the country, and, apart from the program of papers, there was much to interest the visiting members. The members of the academy were very generously entertained by the president and other officers of the University of Chicago and by the director of the Yerkes Observatory. Mr. Alexander Agassiz presided, and the following program was presented:

T. C. CHAMBERLIN: 'Preliminary Report on the Agassiz Data relative to Underground Temperatures at the Calumet and Hecla Mine.'

C. E. DUTTON: 'The Velocities of Earthquake Vibrations and their Significance.'

A. P. MATHEWS: 'The Relation between Solution Tension and Physiological Action of the Elements.' Introduced by C. O. Whitman.

S. W. WILLISTON: 'On the Distribution and the Classification of the Plesiosaurs.' Introduced by T. C. Chamberlin.

C. O. WHITMAN: 'The Evolution of the Wing-Bars in Pigeons.'

CHAS. B. DAVENPORT: 'Evolution without Mutation.' Introduced by C. O. Whitman.

J. MCK. CATTELL: 'The Measurement of Scientific Merit.'

J. STIEGLITZ: 'Stereoisomeric Nitrogen Compounds.' Introduced by A. A. Michelson.

CHARLES BASKERVILLE: 'On the Recent Investigations of the Rare Earths in the Laboratory of

the University of North Carolina' (by title). Introduced by Ira Remsen.

E. E. BARNARD: 'Some Peculiarities of Comets' Tails, and their Probable Explanation.' Introduced by George E. Hale.

EDWIN B. FROST: 'Stars of the Orion Class.' Introduced by George E. Hale.

GEORGE E. HALE: 'On the Nature of the Solar Floculi.'

GEO. C. COMSTOCK: 'The Relation of Stellar Magnitude to Stellar Distances.'

A. A. MICHELSON: 'Spectra of Imperfect Gratings.'

STEPHEN MOULTON BABCOCK: 'The Relations of Weight and Energy.' Introduced by Charles R. Van Hise.

C. S. SLICHTER: 'The Propagation of Ground Water Waves.' Introduced by Geo. C. Comstock.

WILLIAM H. BREWER: 'Biographical Memoir of Sereno Watson.'

CHARLES R. VAN HISE: 'The International Geographical Congress and a Geophysical Laboratory.'

THE ACADEMY OF SCIENCE OF ST. LOUIS.

At the meeting of October 19, 1903, when, for the first time, the academy met in its new building, Professor Nipher gave a verbal abstract of the results of his paper on the 'Law of Nebular Contraction,' which has just been published in the *Transactions*. He also remarked that the molecular conditions in nebulae of different gases were being examined, and some very interesting results are at once evident. If a series of nebulae of various gases have the same mass internal to the same radius, the average molecular velocities would be the same for all gases. The velocity which would enable a molecule to escape from the nebula is 2.71 times the average molecular velocity, and this ratio is constant for all parts of the nebula. If the entire solar system formed the core of such a nebula, and the mass of the solar system extended to Neptune's orbit, the density at that distance from the center of the nucleus would be less than that in a Crookes tube. This opens up some very interesting questions concerning the history of such a mass. It would appear that such a gravitating mass would lose some heat by the escape of the more rapidly moving molecules, as well as by radiation.