

"The Internal Secretion of the Pancreas," by W. G. MacCallum.

"Our Present Knowledge of Thyroid Function," by S. P. Beebe.

"Metabolism after Parathyroidectomy," by J. V. Cooke.

"Physiological Consequences of Total and of Partial Hypophysectomy," by Harvey Cushing.

Executive Session (Section K).

The officers and committee members for the coming year will be:

Chairman—Frederick G. Novy.

Sectional Committee—Charles Sedgwick Minot, vice-president, 1909–10; George T. Kemp, secretary, 1909–13; Graham Lusk (one year); Jacques Loeb (two years); Elias P. Lyon (three years); William G. Gies (four years); William H. Howell (five years).

Member of the Council—Thomas G. Lee.

Member of General Committee—Clarence M. Jackson.

G. T. KEMP,
Secretary

SECTION F

At the Boston meeting, Professor Jacob Reighard was elected vice-president for the next meeting; Professor F. I. Landacre, member of the council; Professor H. F. Nachtrieb, member of the sectional committee, and Professor E. L. Rice, member of the general committee.

Instead of the usual programs for the reading of technical zoological papers, a number of well-known zoologists cooperated in making general interest programs. The following lectures were delivered: Professor C. J. Herrick, "Evolution of Intelligence and its Organs"; Professor W. E. Ritter, "A Plea for Popular Zoology"; Professor Jacob Reighard, "The Nest-building Habits of some American Fishes" (illustrated); Dr. A. G. Mayer, "The Study of Natural History at the Tortugas Laboratory" (illustrated); Professor F. H. Herrick, "Illustrations of the Life and Instincts of Wild Birds" (illustrated); Dr. Daniel D. Jackson, "The House Fly as a Carrier of Disease" (illustrated by moving pictures furnished by Mr. Edward Hatch, Jr., of the Merchants' Association of New York, and exhibited by the Kleine Optical Co., of Boston); President David Starr Jordan, "Conservation of our Fisheries"; Professor W. E. Castle, "Recent Progress in Study of Heredity" (illustrated).

MAURICE A. BIGELOW,
Secretary

SOCIETIES AND ACADEMIES

THE TORREY BOTANICAL CLUB

The meeting of December 14, 1909, was called to order at the American Museum of Natural History, with President Rusby in the chair.

The announced paper of the evening, on "The Reclamation of the Desert of the San Bernardino Valley," was then presented by Dr. Rusby and illustrated by some seventy lantern slides. The following abstract was prepared by the speaker.

The distinctions between desert and arid regions were explained and that under discussion was defined as being arid rather than desert, for the most part, although the production of cultivated crops without irrigation was impossible. The first settlement established was a Moravian mission near the present western boundary of Redlands. This was afterwards purchased by the Mormons, who instituted local irrigation. The first extensive irrigation operations were employed by the town of San Bernardino, the present water supply of which is about 1,200,000 gallons, obtained by the deflection of Lytle Creek, besides a large amount from deeply driven wells. This water supplies not only the requirements of the city, but those of a large cultivated area.

San Bernardino is near the western mouth of the large, somewhat horseshoe-shaped valley, from the mountains about which all the water of the valley must come, except that which falls during the rainy season, and which varies from six to twelve inches in the different parts of the valley, the larger amounts falling successively nearer the mountains. The moisture brought by the Pacific winds is precipitated in crossing these mountains during the winter season only. At the greater elevations, 10,000 to 12,000 feet, it is deposited as snow; lower, in the form of copious rains, and in the valley itself is a more or less scanty rainfall. During this period, moisture is not carried to the great interior plain of Nevada, Utah, Colorado, New Mexico and Arizona, where a dry season then prevails. In the summer, conditions are exactly reversed, no rain whatever falling west of the mountains. It thus happens that the San Bernardino valley gets its natural water supply at a time when cultivation can derive the least benefit from it and the problem is presented of preserving the winter supply and distributing it during the summer. The highly successful operations in the western part of the valley demonstrated the existence of a most fertile soil of great depth, and showed that the sole requirement for a rich agricultural region was an

abundant water supply. It was recognized that a town located at the eastern end, or top of the valley would be nearer the mountain supply and that its subterranean streams would be nearer the surface. The town of Redlands was therefore plotted, about twenty-two years ago, in an absolutely arid region. These calculations turned out to be perfect and the town of Redlands is now one of the most beautiful in the world, and surrounded by one of the most fertile of regions. Series of pictures illustrated the arid conditions which antedated irrigation, and were contrasted with others showing the rich orchards, vineyards and other cultivated tracts of the present day. Land previously absolutely worthless now yields rich dividends on a valuation of from one thousand to two thousand dollars per acre. Other pictures illustrated the snow-capped summits of winter, the humid, forest-clad slopes and the gradually changing flora of the descent to the plain. The Coniferæ of these mountains are of exceptional interest, because of their rarity or limited distribution. The very peculiar branch-system of *Pinus Sabiniæ*, unlike that of any other pine, was well illustrated by several slides. It was remarked that the two fine characteristic specimens of this species exist in the Pinetum of the New York Botanical Garden. Other Coniferæ illustrated, besides many other forest species, were *Pinus Coulteri*, *Heyderia decurrens*, *Abies concolor* and *Pseudotsuga macrocarpa*.

The peculiar problems affecting the conduct of the water to the plains and its distribution to the consumer, arising from the tendency to loss through seepage and phenomenal evaporation, the legal questions arising in regard to water rights, the necessity of governmental regulation of water supplies, the methods of estimating the requirements of various crops, under different conditions, and the methods of measurement and sale of the water were discussed.

A large number of illustrations were presented showing the methods of applying water to the orchards and vineyards. Others illustrated typical fruit trees, in flower and fruit, fruit gathering, drying and packing. Many slides of very great beauty represented the street planting of trees and other methods employed to beautify the cities and their suburbs.

PERCY WILSON,
Secretary

THE PHILOSOPHICAL SOCIETY OF WASHINGTON

THE 674th meeting was held on January 15, 1910, Vice-president Rosa in the chair. The

evening was devoted to hearing the address of the retiring president, Mr. C. K. Wead, on "Music and Science."

The speaker gave a brief sketch of the development of music, pointing out that rhythm is its most important feature; instrumental and vocal rhythm being entirely independent. Association, and combination of sounds for beauty of form, modulation and tonality were briefly explained. As regards expressiveness the musician does not attempt to put the music expression into thought.

Musical scale was defined, and the principles involved in the scales of various nations and periods were explained, among which Helmholtz's harmonic series was mentioned. No preeminent usage to fix a natural scale exists, our scale not following any law of a vibrating body. The four stages in the development of the musical scale were described. The phonograph is expected to be of importance in the study of native music.

THE 675th meeting was held on January 29, 1910, Vice-president Fischer presiding. Two papers were read.

The Sixteenth International Geodetic Conference:

Mr. O. H. TITTMANN, of the Coast and Geodetic Survey.

The speaker gave a brief historical sketch of the origin and organization of the International Geodetic Association. The general conferences, according to present arrangements, take place triennially, the place for holding them is selected from several invitations officially extended by the delegates from various countries.

The sixteenth conference was held in London and Cambridge pursuant to an invitation by the British government, and its sessions began in London on September 21 and ended in Cambridge on September 29, the session being opened by addresses of welcome by Minister of War Haldane and by Sir George Darwin.

All but four of the twenty-two signatory powers were represented, and among those of the western hemisphere besides the United States and Great Britain were Mexico, Chili and Argentina. This is the first conference at which Canada was represented, and the speaker indulged the hope that the progress of geodesy in Canada will be such that its reports will hereafter furnish important contributions to the triennial conference.

The order of procedure of the conference was briefly outlined. The special reports refer to the

progress of triangulation, variation of latitude, deflections of the zenith, gravity observations and mean sea level determinations and leveling.

Some of the interesting topics discussed were mentioned, among which was the great progress made in the Cape to Cairo triangulation; base measurements with tapes, the use of which was so ably defended by the Americans as against the use of wire; the variation of latitude observations, especial attention being given to the method formulated by Dr. Ross and submitted by the speaker, for observing latitude photographically at Gaithersburg, Md. Dr. Hecker reported briefly on the gravity measures made in the Black Sea, with special reference to getting data and of testing the agreement between the theoretical effect of the velocity of the ship when going in an easterly or westerly direction on the observed intensity of gravity. Baron Eötvös gave an account of investigations with his torsion balance or gravity variometer, for determining the curvature of equipotential surfaces of the geoid.

One of the most important papers read at the conference was by Hayford on the reduction of gravity observations, the main feature of his method being that isostasy is taken into account, and the topographic correction is applied for the whole earth's surface. The methods and results contained in this paper elicited the following flattering comment from Dr. Helmert that "the Americans were to be congratulated on having introduced a new epoch in geodesy."

Many courtesies were extended to the delegates through Sir George Darwin acting as the representative of Great Britain and the University of Cambridge, and as a distinguished and hospitable citizen.

Some Apparent Variations of the Vertical Observed at the Cheltenham Magnetic Observatory: Mr. J. E. BURBANK, of the Coast and Geodetic Survey.

The paper discussed some changes of level of the piers on which the Omori seismograph has been mounted at the Cheltenham Magnetic Observatory. The instrument was first operated in the variation observatory where there is no diurnal range of temperature and the annual range is only about 2° to 3° C.

With falling external temperature, as in cold waves, the top of the W.-E. pier moved toward the east and the top of the N.-S. pier toward the south; with rising temperature there was reverse movement.

The W.-E. pier showed a distinct diurnal oscil-

lation of level on all clear days. Shortly after sunrise it began to tip toward the east, reaching its maximum east deviation about 10 A.M., then it tipped toward the west reaching its maximum west deviation about 4 P.M., and then slowly returned to its normal position. This diurnal oscillation was superposed on the changes of level due to external temperature changes. This tilting of the pier began at an earlier hour in summer than in winter and the range varied greatly on different days, depending apparently on the intensity of the solar radiation. The range of motion was greatest in winter and had a yearly average of about one second of arc. The N.-S. pier did not show any appreciable diurnal variation of level.

These results are in good accord with similar observations made at Potsdam and Wilhelmshaven, Germany, both as regards the nature and magnitude of the diurnal oscillation of the level.

In October, 1907, the seismograph was moved to a new location on a massive concrete pier in a small house about one hundred yards southeast of its former location. When the external temperature rises this pier tips towards the southeast, oppositely to the pier in the variation house. There is a diurnal variation of level in the W.-E. direction but no appreciable change in the N.-S. direction.

This oscillation begins as a tilt towards the east about 10 to 11 A.M., and reaches a maximum east deviation about 4 to 5 P.M., and then returns slowly to the normal position; it appears only on clear days. The range is about the same as in the former location, but during clear winter weather when the nights are very cold the combined effect of the solar radiation and the external temperature changes may give an apparent oscillation as great as three seconds of arc. In mild summer weather when the temperature changes are small the oscillation rarely exceeds a half second of arc.

Sudden heavy downpours of rain cause this concrete pier to tip towards the northeast by an amount in some cases as great as three or four seconds of arc. When the ground is very dry before the rain, the pier receives a semi-permanent set and does not recover its former position for several days, if at all. When the ground is already partly saturated the pier recovers its former position more rapidly.

This tilting of the pier is undoubtedly local, as it did not appear on the records obtained in the variation house.

R. L. FARIS,
Secretary

THE CHEMICAL SOCIETY OF WASHINGTON

THE 195th meeting was held at the George Washington University Lecture Hall on Thursday evening, January 13, 1910, President Failyer presiding. The attendance was forty-two. The report of the treasurer was read, showing a balance of \$162 on hand. The secretary reported that during the past year the society had lost 71 members and had received 65 new members. The society granted a waiver of jurisdiction to the American Chemical Society over all of Virginia, except within a radius of twenty-five miles from Washington. Twenty-nine of the members lost to the society during the past year were within this jurisdiction. The total membership was reported as 240. Twenty-three papers were read during the year, fourteen of which were scientific and nine technical in character.

The following papers were read:

"Nitrification in Soils," by K. F. Kellerman, E. R. Allen and I. G. McBeth.

"Availability of Iodophenin in the Separation of Acetanilid and Acetphenetidin," by W. O. Emery.

"The Translocation of Plant Food during the Germination of Wheat," by J. F. Breazeale and J. A. LeClerc.

Dr. Kellerman showed that the modern viewpoint is that the soil must be considered alive, a matrix supporting various definite groups of microorganisms, and suggests the possibility that bacteriological diagnoses may determine the crop-producing power of different soils and the causes thereof. Although this work is yet in its infancy, during the last few years it has been shown that the action of the different groups, and especially the nitrifying bacteria in soil samples, correlates fairly well with the productiveness of the soils under field conditions.

Dr. Emery showed that it was possible to determine phenacetin in the presence of acetanilid.

In the last paper, Mr. Breazeale showed that during germination the little plantlet absorbed 96 per cent. of the nitrogen, potassium and phosphorus within the first ten days of germination, but that the potassium was absorbed at a much faster rate than were the nitrogen and phosphorus.

President Failyer appointed V. K. Chesnut chairman of the committee on communications, and C. L. Alsberg, chairman of the entertainment committee.

J. A. LECLERC,
Secretary

THE AMERICAN PHILOSOPHICAL SOCIETY

ON the evening of January 21 President Nichols, of Dartmouth College, was to have addressed the American Philosophical Society, but in consequence of an attack of grip, was unable to be present. Dr. W. W. Keen, therefore, took his place, reading a paper on "Modern Antiseptic Surgery and the Rôle of Experiment in its Discovery and Development." He described the lamentable condition of surgery prior to Lister's epoch-making discoveries, then quoted chiefly from Lister the experiments both chemical, bacteriological, and finally those upon animals which gave Lister such a convincing proof of the value of his method that he then tried it upon man. Lister began with compound fractures, passing through abscesses, accidental wounds and finally making extensive purposeful wounds, *i. e.*, operations on the human body. This was followed by a statement of the condition of surgery at the present time, as contrasted with the pre-Listerian days.

The paper is one of the series being published by the Council on the Defense of Medical Research of the American Medical Association and will be published in full hereafter in the *Journal* of the American Medical Association.

On the evening of February 5 Professor Francis G. Benedict, of the Carnegie Nutrition Laboratory in Boston, read a paper on "The Influence of Mental and Muscular Work on Nutritive Processes." The paper described a series of metabolism experiments with a respiration calorimeter at Wesleyan University, Middletown, Conn. The influence of the sustained mental effort accompanying the taking of regular college mid-year examinations was studied. Twenty-two men spent three hours inside the chamber, during which time the water vaporized, carbon dioxide produced, oxygen consumed and heat produced were carefully measured. Compared with twenty-two control tests with the same individuals no changes in the gross metabolism attributable to mental effort were noted. A professional bicycle rider using a special form of bicycle ergometer inside the respiration chamber showed that mechanical efficiency of man was about 21 per cent. The resting energy output of 92 calories per hour was raised during severe exhausting work to over 600 calories per hour, of which 116 calories were transformed into effective work.

The Nutrition Laboratory of the Carnegie Institution of Washington in Boston is equipped with special apparatus for studying similar problems in metabolism.