ALDERMAN, of Tulane University in New Orleans, a man of letters,—two leaders in the advancement of education in the South, advocates of schools and colleges of every grade, and their zealous promoters.

NICHOLAS MURRAY BUTLER, whose enthusiasm, energy, and knowledge of the principles and methods of Education have given him distinction throughout the land and have led to his promotion to the presidency of Columbia University in the city of New York.

HENRY SMITH PRITCHETT, astronomer and geodesist, who went from his home in Missouri to distant lands, now to observe an eclipse, now a transit, who has been the distinguished head of the United States Coast Survey, and is now the head of a vigorous foundation in Boston, the Massachusetts Institute of Technology.

I present to you the two representatives of learning and scholarship in 'the new world beyond the new world,' a Grecian and a student of Natural History, BENJAMIN IDE WHEELER, President of the University of California,—an idealist worthy to represent the aspirations of Berkeley, and DAVID STARR JORDAN, the naturalist, who has led in the organization of the Stanford University, chiefs of two harmonious institutions, one of which was founded by private bounty, the other by the munificence of a prosperous State.

As this roll began with Harvard it ends with Yale. I present to you finally one of the strongest and most brilliant of this strong and brilliant company,—ARTHUR TWINING HADLEY, a writer and thinker of acknowledged authority on the principles of finance and administration, the honorable successor of Timothy Dwight as President of Yale University.

THE CHICAGO MEETING OF THE AMERICAN PHYSIOLOGICAL SOCIETY.

THE American Physiological Society held its fourteenth annual meeting at the University of Chicago, December 30 and 31, 1901. Notwithstanding the fact that the Society had hitherto met only in the East, there was a large attendance of members, and great interest was shown in the proceedings. The following new members were elected, making the total membership ninety-seven: Harvey B. Cushing, A.M., M.D., Associate in Surgery, Johns Hopkins University; Joseph Erlanger, M.D., Instructor in Physiology, Johns Hopkins University; Martin H. Fischer, M.D., Associate in Physiology, University of Chicago; Arthur W. Greeley, A.M., Assistant in Physiology, University of Chicago; E. Mark Houghton, Ph.C., M.D., Lecturer on Experimental Pharmacology in the Detroit College of Medicine; H. S. Jennings, Ph.D., Assistant Professor of Zoology, University of Michigan; Waldemar Koch, Ph.D., Assistant in Pharmacology, University of Chicago; David J. Lingle, Ph.D., Instructor in Physiology, University of Chicago; Elias P. Lyon, Ph.D., Assistant Professor of Physiology, University of Chicago; E. Lindon Mellus, M.D., Baltimore; George B. Wallace, M.D., Instructor in Pharmacology, University and Bellevue Hospital Medical College, New York. The Council for the past year was reelected, viz., Professors R. H. Chittenden, W. H. Howell, Frederic S. Lee, W. P. Lombard and W. T. Porter. The Council subsequently reelected as president Professor Chittenden, and as secretary and treasurer Professor Lee.

The scientific program was an unusually full one, thirty-two papers being presented. A considerable number of demonstrations, especially of new apparatus, were also made. Only a very brief outline of the program can be indicated here.

The Relation of Blood-plates to the Increase in the Number of Red Corpuscles at High Altitudes: Professor G. T. KEMP, University of Illinois.

The red corpuscles and the blood-plates were counted at Paris, and found to number, respectively, 4,800,000 and 457,000 per cubic millimeter. Seventy-two hours later,

the final twenty-four hours of which were spent at Görner Grat, Switzerland, the respective numbers were 7,000,000 and 1,206,900. The plates had thus increased much more than the red corpuscles. The predominance of plates of large size was very striking; the number of small red corpuscles was much greater than is seen in normal blood. The whole appearance suggested the *crise hématoblastique* of Hayem. The most careful search, however, failed to reveal plates colored by hæmoglobin.

Some New Observations on Blood-plates: Professor G. T. Kemp and O. O. Stanley.

The experiments of Dutjen have been repeated, and his statement corroborated, viz., that the plates exhibit amœboid movements when examined in proper media. From preparations made from the blood of animals, into whose circulation methylene blue had been injected, and examined by Dutjen's method, and from others studied by Macallum's method for the detection of phosphorus, the authors conclude that the plates consist of nucleo-proteid existing as granules scattered through the clear mass (of protoplasm?), which is capable of exhibiting amœboid movements.

Notes on the Physiology of the Circulatory System in the Hagfish, Polistotrema stouti: Professor C. W. Greene, University of Missouri.

The California hagfish possesses three well-developed hearts, the systemic heart, the portal heart and the caudal heart. The systemic heart is different from that in all craniate vertebrates so far examined, in that it possesses no regulative nervous system. The portal heart also is devoid of such a system. The caudal heart propels blood from the great lateral subcutaneous sinuses into the caudal vein. It was proved that these sinuses normally contain blood, and not lymph alone. The blood of the hagfish has a concentration very close to that of the sea water in which the animal lives. The lowering of the freezing point of hagfish serum is 1.934° C.—1.992° C., while that of sea water in Monterey Bay is 1.945° C.

The Mechanism of Fibrillar Contraction of the Heart: Professor W. T. Porter, Harvard.

On Further Experiments on the Importance of Sodium for the Heart-Beat: Dr. D. J. Lingle, University of Chicago.

Heart stimulants like caffein can not make strips of muscle from the ventricle contract, unless sodium chloride is present. A recovery from the standstill induced by sodium chloride alone occurs in oxygen gas and in solutions containing hydrogen peroxide, as well as in various salt solutions. Heart strips placed first in a solution of sodium chloride, and then transferred to oxygen gas contract as long and as well as they do in a solution of calcium or other salts.

On the Prolongation of the Life of Unfertilized Eggs of the Sea-urchin by Potassium Cyanide: Professor Jacques Loeb, University of Chicago, and Mr. Lewis.

Death is an active process due to enzyme action. Fertilization greatly retards it. In the eggs of the sea-urchin brief treatment with certain salts, such as potassium cyanide, acts like fertilization to retard the mortiferous processes.

The Action of Alcohol on Muscle: Professor Frederic S. Lee, Columbia, and Dr. William Salant.

A frog's muscle which has absorbed a moderate quantity of ethyl alcohol will contract more quickly, relax more quickly, perform a greater number of contractions in a given time, and do more work than a muscle without alcohol, while the onset of fatigue is at the same time delayed. In

larger quantities alcohol is detrimental, diminishing the whole number of contractions, inducing early fatigue and diminishing the amount of work that the muscle is capable of doing, even to the extent of doing away entirely with contractile power. In moderate quantities the alcohol is, at least temporarily, beneficial; in larger quantities poisonous. After-effects have not yet been studied.

The Excretion of Lithium: Mr. C. A. GOOD. (Presented by Professor A. R. Cushny, University of Michigan.)

Lithium chloride injected hypodermically in poisonous doses is excreted in large quantities by the alimentary tract. It is here that the chief symptoms of poisoning arise.

On the Question whether Dextrose is Produced from Cellulose in Digestion: Professor GRAHAM LUSK, New York University.

The feeding of cellulose in the form of paper to diabetic goats does not cause an increase of sugar in the urine; therefore, dextrose is not a product of the digestion of cellulose.

Experiments on the Relation Between the Spleen and the Pancreas: Professor L. B. MENDEL, Yale, and L. F. RETTGER.

These experiments were performed on dogs, and show that the extract of the spleen aids the transformation of the zymogen of the pancreas into trypsin. Similar results were obtained both within the living body and outside. The observations support the Schiff-Herzen hypothesis.

The Role of the Cell Nucleus in Oxidation and Synthesis: R. S. LILLIE. (Presented by Professor W. T. Porter, Harvard.)

New Experiments on Allantoin Excretion: Professor L. B. MENDEL, Yale.

Rectal injections of thymus gland substance in dogs were followed by characteristic excretion of allantoin in the urine. The diet was free from constituents yielding purin. Vegetable nucleic acids and nucleates from wheat germs experience transformations in metabolism comparable with those obtained from nucleins of animal origin. Allantoin and uric acid are excreted in noticeable quantity. Other physiological actions were studied after the introduction of nucleic acid into the circulation.

Studies on Diuresis: Dr. J. T. HALSEY, McGill.

Nussbaum's experiments on the circulation in and the function of the frog's kidney have been repeated, and it has been found that in the kidney in which the renal arteries have been tied some glomeruli are still supplied by the blood. In such cases the blood supply is so small that such glomeruli may be considered as physiologically negligible quantities. It seems a necessary conclusion that the substances which are excreted by the kidney under these conditions are excreted by the epithelium of the uriniferous tubules.

An Unrecognized Feature of Diuresis: Professor A. R. CUSHNY, University of Michigan.

The author's experiments had led to a conclusion somewhat the opposite of that of the preceding paper. Excretion occurs in the uriniferous tubules, but chlorides and water are excreted there much more readily than sulphates, phosphorus or urea.

The Physiological Effects of the Electrical Charge of Ions, and the Electrical Character of Life Phenomena: Professor JACQUES LOEB, University of Chicago.

The author has found that the stimulating power of chemical substances varies directly with the valence of the substance. The paper reviewed also some of the

author's previous work in the light of recent discoveries, and maintained that vital phenomena, in general, are caused by the electrical charges of ions.

The Nature of Nerve Stimulation, and Alterations of Irritability: Professor Albert P. Mathews, University of Chicago.

The irritability of nerve protoplasm varies inversely with the stability of the hydrosol state of its colloids. Stimulation is gelation, and is brought about by negative electrical charges. Chemical stimulation is really an electrical stimulation due to the charges which the ions bear. Negative charges stimulate, positive charges prevent stimulation. The nerve impulse is due to a progressive precipitation of colloids by negative charges, the negative charges being regenerated by the precipitation of each succeeding mass of colloids. The negative variation, in other words, stimulates each successive segment of the nerve, and is regenerated by the change it produces in the colloids. Anæsthetics prevent precipitation. It is not the valence, in ultimate analysis, which produces stimulation, but the movement of the charge, chemical stimulation being thus identical with stimulation by light.

The Effect of Potassium Cyanide and Lack of Oxygen on the Fertilized Eggs of the Sea-urchin, Arbacia: Professor E. P. Lyon, University of Chicago.

During each cleavage of the egg (tested to the third), there is a period of slight resistance to potassium cyanide and to lack of oxygen, followed by a period of much greater resistance. The period of least resistance comes about ten minutes after fertilization, and almost immediately after each succeeding cleavage.

Experiments with Zygadenus venenosus: Professor Reid Hunt, Johns Hopkins.

The author has made a chemical and physiological study of this poisonous plant. He has isolated an alkaloid or a mixture of alkaloids having most of the chemical and physiological characteristics of veratrine.

Demonstration of the Glands in the Oviduct of the Fowl: Professor A. R. Cushny, University of Michigan.

Four varieties of glands have been found, secreting, respectively, albumen, the soft membrane, the hard shell, and, apparently, mucus. The last variety has been hitherto undescribed. They are interposed between those secreting albumen and those secreting the soft membrane.

An Attempt to Obtain Regeneration of the Spinal Cord: Dr. Percy M. Dawson and Edwin N. Riggins, Johns Hopkins.

The animal, a young bitch, was nursed with the greatest care for one hundred and twelve days after the operation. Although the healing was *per primum,* with very little formation of scar-tissue, there was never any conclusive clinical evidence of conscious sensation, or of voluntary motion in the parts of the body supplied by the cord posterior to the section.

The Formula for Determining the Weight of the Central Nervous System in Frogs of Different Sizes: Professor H. H. Donaldson, University of Chicago.

It was shown that in the case of the bull-frog and leopard frog, the weight of the central nervous system (brain and spinal cord) was a function of the body-weight and length of the frog, combined.

If the weight of the central nervous system (in milligrams) $=N$;
length of the entire frog (in millimeters) $=L$;
weight of the body (in grams) $=W$;
and the constant coefficient $=C$;
then:

$$N\,1\,(\sqrt[4]{L}\log W)\,C.$$

In the case of the bull-frog $C=30$.
In the case of the leopard-frog $C=27.5$.

The Chemical Analysis of the Brain: Dr. W. KOCH, University of Chicago.

This paper was a preliminary report on the chemical analysis of nervous tissues, including methods for preparing cerebrin, cephalin and lecithin, in sufficient quantity for subsequent work.

The Study of Metabolism in a Case of Lymphatic Leukæmia: Dr. YANDELL HENDERSON, Yale.

In a typical case of lymphatic leukæmia, with the white corpuscles at 300,000 and the red corpuscles only 2,500,000, there was no increase in the excretion of nuclein decomposition products (uric acid and P_2O_5). The pathological condition, therefore, seems to be due, not to an increased nuclein metabolism, in general, but to a diminished katabolism. As nearly all the leukocytes are lymphocytes, this seems to be due to an arrest in their development—*i. e.*, they are not transformed, as normally, into other forms of white cells.

The Mode of Action of Certain Substances on the Colored Blood Corpuscles, with Special Reference to the Relation between So-called Vital Processes and the Physico-Chemical Structure of the Cells: Professor G. N. STEWART, Western Reserve University.

On the Surface Action of Metals: Professor F. G. NOVY, University of Michigan.

The author has studied with Professor Freer the conditions favoring the formation of organic peroxides. In Nef's method of preparing benzoyl acetyl peroxide, the reagents, benzaldehyde and acetic anhydride, are mixed with sand and exposed in a thin layer to the action of air, with the result that auto-oxidation takes place, and the peroxide is formed. That this change is one of surface action was demonstrated in various ways. If a strip of paper is introduced into the mixture, the yield of peroxide is increased by more than 200 per cent. Strips of cloth and various metals were tested in like manner, and gave similar results, showing that the rate of formation of this peroxide depends on surface action, and varies within wide limits with the kind of surface employed.

Demonstrations of apparatus for teaching and for research were made by Professors W. P. Lombard, University of Michigan; W. T. Porter, Harvard; W. S. Hall, Northwestern University; Graham Lusk, New York University and Bellevue Hospital Medical School; and G. P. Dreyer, University of Illinois.

FREDERIC S. LEE.

SCIENTIFIC BOOKS.

TWO NEW WORKS ON MOSQUITOES.

A Monograph of the Culicidæ, or Mosquitoes, mainly compiled from the collections at the British Museum from various parts of the world, in connection with the investigation into the cause of malaria conducted by the Colonial Office and the Royal Society. By FRED V. THEOBALD, M.A., F.E.S., London. Printed by order of the Trustees of the British Museum. 1901. 3 vols. Pp. 424, 391, pl. 37+5, text figures 318.

Mosquito Brigades and How to Organize Them. By RONALD ROSS, F.R.C.S., D.P.H., F.R.S. London, Geo. Philip & Son. 1902.

The literature of mosquitoes is becoming enormous. The number of scientific papers published about these insects in the last three years has been very great and is increasing almost daily. It is safe to say, however, that two books which will be greeted with the greatest pleasure by thousands of people who have become interested in the mosquito question are those the titles of which have just been given.

When the Royal Society, at the request of the Right Honorable Joseph Chamberlain, appointed a committee to cooperate with the officials of the Colonial Office in the investigation of the causes of malaria and the possibility of controlling that scourge of tropical lands, one of the first steps of the committee was to secure the services of Mr. F. V. Theo-