

instruments of radio; a classic series on the reflection, transmission and absorption of materials; the determination of the ratio of the electrical and magnetic units of electricity which gives the velocity of light; aeronautic instruments; a summary of some 40 new developments and improvements made in the bureau laboratories; aircraft engine radiators; causes and remedies for failures of railway materials; fire resistance; structural materials researches; chromium plating researches making possible the new notable art of plating this hardest of all metals; photography through fog; luminous efficiency of the firefly—a remarkable classic determination of this interesting quantity as basic standard data for research on artificial light production; basic colorimetry; properties of metals and alloys; measuring the heat of the stars, and hundreds of other topics of fundamental interest to scientists and technicians and of great concern to industry.

The new journal will contain, it is expected, scientific and technical research papers comparable in interests and importance with those already issued.

It is believed that this union of pure and applied science in one journal will tend to shorten the lag between the discovery of some new material or process in the laboratory and its application in industry.

The subscription rate is \$2.75 in the United States, Canada, Mexico or Cuba, and \$3.50 per year for other countries. The price of single copies is 25 cents domestic and 31 cents foreign. Remittances must be sent to the Superintendent of Documents, Government Printing Office, Washington, D. C., not to the Bureau of Standards.

#### THE GLASGOW MEETING OF THE BRITISH ASSOCIATION

As has already been noted here this year's meeting of the British Association for the Advancement of Science will be held in Glasgow, opening on September 5. From an article in the *London Times* the following is taken:

The president, Sir William Bragg, will give an address on "Craftsmanship and Science," reviewing in a wide, rather than technical, manner the relations between science and industry. Between 250 and 300 papers will be read, 26 being by women. The two evening discourses will be given by Professor E. A. Westermarck on "The Study of Popular Sayings," and by Professor F. G. Donnan, on "The Mystery of Life." Professor Donnan's address will be a study of the present position in biochemical research.

In the section dealing with mathematical and physical sciences, recent atmospheric researches in relation to flying will be dealt with by Mr. M. A. Giblett, of the Air Ministry, who will speak on "Wind Structure Research at the Royal Airship Works, Cardington." Discussions

will take place on the "Mechanism of Thunderstorms" and on the "Photographic Measurement of Radiation." A paper will also be read by Dr. R. A. Watson-Watt on the present knowledge of atmospherics in connection with wireless.

In Section B (chemistry), a series of discussions on current problems in chemistry—fermentation, light reactions and stereochemistry—will take place, followed by an exhibition of cinematograph films lent by Imperial Chemical Industries, Limited, Kodak, Limited, and Sir James Irvine. The Ardeer Factory of Nobel's Explosive Company and other factories will be visited.

In Sections D (zoology) and K (botany), there will be a discussion on a "Biological Investigation of British Fresh Waters." In Section F (economics), a discussion will be held, jointly with Section J (psychology), on the nature and present position of skill in industry; a discussion, jointly with Section M (agriculture), on the incidence of taxation in agriculture; and papers will be read on rationalization in industry.

In Section G (engineering), the presidential address, by Sir William Ellis, will be on the "Influence of Engineering on Civilization." A discussion, jointly with Section L (education), on school, university and practical training in the education of the engineer, will take place.

In Section H (anthropology), Sir Richard Paget will speak on "Evidence of the Nature and Origin of Human Speech" and Sir W. Flinders Petrie on his recent excavations in Southern Judea.

In Section K (botany), a special department of forestry will hold sessions throughout the meeting. Sir John Stirling Maxwell will give a lecture on "Forestry in Scotland, Past, Present and Future." The president of the section will be Professor Dame Helen Gwynne-Vaughan.

In Section L (education), the president will be Dr. Cyril Norwood, headmaster of Harrow. His address will be on "The Next Step in Education." There will be a discussion on "Broadcasting in Education," in cooperation with the B.B.C., opened by Sir John Reith. Sir William Bragg, Sir Oliver Lodge and others are expected to take part in this discussion, which will be followed by a demonstration in a model studio.

Receptions by the Lord Provost and the Corporation will be held in the City Hall, and by the local committee in the Kelvingrove Art Galleries. Entertainments by public bodies, the Chamber of Commerce, Corporation of Paisley, Royal Faculty of Physicians and Surgeons, Platform of the Trades House, Royal Technical College, Institution of Engineers and Shipbuilders, Glasgow and West of Scotland College of Domestic Science, Clyde Navigation Trustees (in connection with their annual inspection of the port and harbor of Glasgow) are also included on the program, in addition to a special service on Sunday, September 9, in the Cathedral of St. Mungo.

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#### SCIENTIFIC NOTES AND NEWS

DR. T. H. MORGAN, of the California Institute of Technology, has been elected a foreign corresponding

member of the Vienna Academy of Sciences. Other corresponding members elected are: Sir Ernest Rutherford, professor of experimental physics in the University of Cambridge; Dr. Johan A. H. Hammar, professor of anatomy in the University of Upsala, and Sir Jagadis C. Bose, the plant physiologist of the University of Calcutta.

ON the occasion of the third general assembly of the International Astronomical Union, the honorary doctorate of the University of Leiden was conferred on M. H. Deslandres, director of the Astrophysical Observatory at Meudon, and on Dr. K. F. Küstner, director of the University of Bonn.

THE University of Heidelberg has conferred an honorary doctorate on Dr. Sven Hedin, the distinguished Swedish explorer.

ON the occasion of the recent dedication of the Research Institute for Psychiatry at Munich, the Kraepelin gold medal was presented to Dr. Oskar Vogt, director of the Kaiser Wilhelm Institute for the Study of the Brain.

DR. JOHANN WANNER, of the University of Bonn, has been elected a corresponding member of the Paleontological Society of America.

THE New York branch of the American Pharmaceutical Association has awarded the Remington medal to Charles H. LaWall, Phar.D., dean of the Philadelphia College of Pharmacy and Science, for his book entitled "Four Thousand Years of Pharmacy."

DR. F. D'HERELLE, discoverer of the bacteriophage, and until recently directeur du Service Bacteriologique du Conseil Sanitaire, Maritime et Quarantenaire d'Egypte, who was recently appointed professor of bacteriology at Yale University, will lecture in Denver at the University of Colorado School of Medicine in October. Dr. D'Herelle is still in Paris convalescing from an illness contracted in Egypt.

MATTHEW W. STIRLING, of Berkeley, California, appointed chief of the Bureau of American Ethnology as successor to Dr. J. Walter Fewkes, took charge of the bureau on August 1. Dr. Alexander Wetmore, acting secretary, introduced Mr. Stirling to the members of the bureau, who assembled in the main office for that purpose.

AT the third general assembly of the International Astronomical Union, which was held at Leiden, from July 5 to 13, under the presidency of Professor W. de Sitter, director of the observatory, there were present three hundred astronomers representing

twenty-seven nations. Sir Frank Dyson, astronomer royal of England, was elected president, and vice-presidents were elected as follows: Dr. Frank Schlesinger, director of the Observatory of Yale University; M. H. Andoyer, professor of astronomy at the Sorbonne, Paris; Dr. Georgio Abetti, Italy; Dr. N. E. Nörlund, professor of mathematics in the University of Copenhagen, and Dr. F. Nušl, professor of mathematics in the Technical Institute at Prague. The next congress will be held in the United States.

AT the last convention of the American Society of Clinical Pathologists held in Minneapolis, Minnesota, on June 8, 9 and 11, the following officers were elected: *President*, Dr. Frank W. Hartman, Detroit; *President-elect*, Dr. J. H. Black, Dallas, Texas; *Vice-President*, Dr. Charles R. Drake, Minneapolis; *Secretary-Treasurer*, Dr. H. J. Corper, Denver; *To the Executive Committee*, Dr. A. H. Sanford, Rochester, Minnesota; Dr. John A. Kolmer, Philadelphia; *To the Board of Censors*, Dr. Ernest Scott, Columbus, Ohio; Dr. B. W. Rhamy, Fort Wayne, Indiana.

DR. FRED W. STEWART, assistant in pathology in the Rockefeller Institute, has been appointed associate pathologist at the Cornell University Medical School and assistant pathologist at the Memorial Hospital for Cancer and Allied Diseases.

DAVID H. MADSEN, state fish and game commissioner of Utah, has been appointed superintendent of the new migratory-bird refuge authorized at Bear River Bay, Great Salt Lake, under the Bear River migratory bird refuge bill approved by President Coolidge. He is president of the Western Association of Game Commissioners and has been prominently identified with the conservation of wild life.

THE position of assistant curator in the Division of Mammals, of the U. S. National Museum, made vacant by the appointment of the late Ned Hollister as superintendent of the National Zoological Park in 1916, has been filled by the appointment of Mr. Remington Kellogg. Mr. Kellogg is a graduate of the University of Kansas. From 1916 to 1920 he was connected with the University of California. In 1920 he became associated with the Biological Survey, U. S. Department of Agriculture, as an assistant biologist, and in 1924 was promoted to associate biologist.

PROFESSOR W. H. OVER, curator of the museum at the University of South Dakota, has been called to Lincoln, Nebraska, to appraise a large collection of Indian relics. This collection was formerly owned by an Indian and was loaned to the State of Nebraska for the museum. Following the owner's death, the

heirs and the state agreed upon Professor Over as the man to appraise the collection preparatory to its being sold to the state.

At the request of Dr. Stephen T. Mather, director of the National Park Service, Department of the Interior, arrangements have been made for Vernon Bailey, chief field naturalist of the Bureau of Biological Survey, to join a party of scientific men who will undertake to correlate the present animal and plant life of the Grand Canyon National Park, Arizona, with geological formations and fossil remains of the former life of that region.

It is announced in *Terrestrial Magnetism* that F. P. Ulrich, of the Sitka Magnetic Observatory, left early in June for the interior of Alaska to make field magnetic observations and especially to reoccupy repeat-stations. He is using a power-launch and expects to ascend several of the rivers to the north of the Yukon so as to establish some repeat-stations farther north than any now existing. During his absence the routine work of the observatory will be done temporarily by R. H. Paddock, of the Sheldon-Jackson School at Sitka, under the administrative direction of Lieutenant H. A. Cotton, who is commanding the steamer *Explorer* based at Sitka during the present field season.

R. R. BODLE, who has been engaged in field magnetic work for the U. S. Coast and Geodetic Survey in the western states since April 7, has been relieved by Professor S. A. Deel, who will continue the work during the summer.

DR. EDWIN P. CHURCHILL, professor of zoology in the University of South Dakota, has during the past three summers carried out a survey of the fish found in the lakes and rivers of the state. This was completed in July and the collections have been deposited in the university, where the work of identification will be carried out and the material arranged for publication.

DR. LLOYD T. JONES, of the department of physics of the University of California, has been granted a year's leave of absence in order to introduce to the industry the flange weld, which he has recently shown eliminates the difficulties encountered in the girth welds of large diameter pipe lines. The method also reduces the cost of welding.

GEORGE A. PLIMPTON, senior member of the firm of Ginn and Company, who has probably the largest mathematical library of manuscripts and early printed books in the world, sailed for Europe on August 8. Mr. Plimpton has been invited to read a

paper on his library before the International Mathematical Congress, which meets at Bologna, Italy, the first week in September.

PROFESSOR LOUIS C. KARPINSKI will represent the University of Michigan at the International Mathematical Congress at Bologna. Professors Rainich and S. Timoshenko, of the University of Michigan, are also to be in attendance. Professor Karpinski is presenting a paper on "Early French Algorithms," Professor Rainich one on a phase of relativity and Professor Timoshenko will speak on work in mechanics.

ARTHUR PAUL JACOT, of the Shantung Christian University, Tsinan, is spending several weeks of July and August in the Inner Diamond Mountains, Chosen, collecting micro-arthropoda and making a preliminary survey of the fauna and flora.

DR. SVEN HEDIN has asked the Swedish Government to make a grant of 750,000 crowns for an extension of his expedition in Asia, urging that scientific opportunities like the present will not be available ten years hence.

DR. FREDERICK L. HOFFMAN will address the students of aeronautics of the New York University, under the auspices of the Guggenheim Foundation, on August 15, on the results of his recent transcontinental air journey, during which he traveled approximately seven thousand air miles. On his return from the West Coast, he made a stop-over in the Navajo country to assist the Bureau of Indian Affairs in connection with the Navajo census. He will address the International Congress of Americanists in September on "Navajo Population Problems."

DR. CRESSY L. WILBUR, formerly director of vital statistics of the New York State Department of Health, died on August 9, aged sixty-three years. Dr. Wilbur, a native of Michigan, was chief statistician on the Federal Census Bureau before entering the New York State service in 1914. He drafted the vital statistics law, first adopted by Pennsylvania, which has become the pattern for similar legislation throughout the country. He also drafted the United States standard certificate of death, which is in general use throughout the world.

THE Duke of Buccleuch, on August 3, unveiled a memorial to the great engineer, Thomas Telford, which has been erected at Midnock, Westerkirk, Dumfriesshire, upon an eminence overlooking the Megget Water and the Esk. Telford was born in a shepherd's small cottage on land close to the site of the memorial. In the village of Westerkirk a handsome library has been erected and equipped out of funds left for the pur-

pose by Telford. The proposal to erect this memorial originated with the Eskdale and Liddesdale Archaeological Society at Langholm, which invited the Institution of Civil Engineers—of which Telford was the first president—to join with them.

THE U. S. Civil Service Commission, Washington, D. C., announces a competitive examination for senior toxicologist for which applications must be on file not later than September 5. The examination is to fill vacancies in the bureau of chemistry and soils of the department of agriculture, for duty in Washington or in the field. The salary ranges from \$4,600 to \$5,200 a year.

THE American Museum of Natural History entertained on August 11 about thirty of the foreign delegates to the fourth International Congress of Entomology, to be held at Cornell University from August 12 to 18. A meeting of the entomological societies of New York and Brooklyn followed the dinner.

THE summer meeting of the American Society of Plant Physiologists will be held at Purdue University, Lafayette, Indiana, on September 4 and 5. A program of short papers covering investigations being conducted at Purdue University will be given the afternoon of September 4. Field trips are planned for September 5, including visits to the experimental orchards, fertility and corn breeding plots. C. L. Porter, West Lafayette, Indiana, is chairman of the local section.

AN anonymous gift of £10,000 has been made to the Animal Diseases Research Association of Scotland at Aberdeen, the income to be used for strengthening and increasing the research staff.

THE non-magnetic survey yacht, *Carnegie*, arrived at Reykjavik, Iceland, on July 20, having encountered head-winds for several days during the passage from Hamburg. The vessel left Reykjavik on July 27, and according to a wireless message despatched on August 3 was at that time proceeding with a fair wind at a point 200 miles southwest of Cape Farewell, headed toward Newfoundland. All the investigations were being carried on according to program and the new plankton-catcher of the model devised by Dr. Pettersson, which was taken on board at Hamburg, was reported as operating successfully. The next port of call will be Barbados, British West Indies, where the vessel is expected to arrive early in September.

THE American Chemical Society announces the winners of the six prize scholarships in the essay contest, established through the gift of Mr. and Mrs.

Francis P. Garvan, in memory of their daughter, Patricia. Each of the winners will receive a scholarship, covering tuition, and \$500 yearly, for four years. Edward Gregg, of Las Cruces, N. M., was awarded a Yale scholarship for his essay, "The Relation of Chemistry to National Defense." John B. Rae, of Providence, received a Yale scholarship for his essay on "The Relation of Chemistry to Agriculture or Forestry." Ruth Leslie, of Bonham, Texas, a Vassar scholarship for an essay on "The Relation of Chemistry to the Enrichment of Life." Paul Miceli, of New London, a Yale scholarship in the group whose theme was "The Relation of Chemistry to Health and Disease." Sylvia Simon, of Trenton, a Vassar scholarship in the group whose topic was "The Relation of Chemistry to the Home." Esther Lane, of Bisbee, Arizona, a Vassar scholarship in the group dealing with "The Relation of Chemistry to the Development of an Industry or a Resource of the United States."

THE Service Memorial Institute building, recently completed on the campus of the University of Wisconsin, will be ready for occupancy in the fall. Besides allowing expansion of courses in medicine and providing proper research, library and laboratory facilities, the building will centralize many departments allied to medicine and give needed space in several buildings now housing these departments. The building consists of five stories, a basement and a superstructure, built in the form of the letter H, and connected with the Wisconsin General Hospital. The east wing has on the first floor a memorial room and a reading room and offices for the medical school and medical extension libraries. The main book stacks for these libraries are in the basement of this wing. Space is available for 50,000 volumes. In the basement there will be a special plant for making radium emanation.

CONCERTED efforts are to be made in twenty countries before the League of Nations Assembly meets in September to provide treaties prohibiting the hunting of migratory birds after the first of March each year, according to Dr. T. Gilbert Pearson, president of the National Audubon Societies, who has just returned from the World Conference for Bird Protection in Geneva. The birds for which protection is sought especially, he said, are wild ducks, geese, European migratory quail, which hatch in north and central Europe and fly to Africa each winter, skylarks and thrushes.

A HEADQUARTERS forest for the Allegheny Forest Experiment Station has been established at Camp Ockanickon near Medford, N. J. An agreement has

been signed by the chief of the Forest Service and the trustees of the camp for the use of certain areas as the headquarters experimental tract of the Federal research men. This will be one of a number of centers of field work which will be developed in time by the Allegheny Experiment Station in New Jersey, Pennsylvania, Delaware and Maryland. The Camp Oekanickon tract consists of about 500 acres, owned jointly by the county Y. M. C. A.'s of Burlington, Camden, Gloucester and Monmouth. On it are two artificial lakes, one of which already has been developed for recreational purposes. The agreement gives the experiment station the use for a period of years of the land lying back from the lakes.

### UNIVERSITY AND EDUCATIONAL NOTES

DR. R. C. WALLACE, professor of geology and mineralogy in the University of Manitoba, will take up his work as president of the University of Alberta on September 1. Dr. Wallace succeeds Dr. H. M. Tory.

DR. R. S. MULLIKEN has been appointed an associate professor in the department of physics at the University of Chicago.

HENRY E. STARR, assistant professor of psychology at the University of Pennsylvania, has been appointed professor of psychology at Rutgers University.

RECENT promotions at Harvard University include that of Dr. H. H. Plaskett to be associate professor of astrophysics, Dr. E. D. Churchill to be associate professor of surgery, Dr. I. J. Walker to be clinical professor of surgery, and Dr. Channing Frothingham to be associate clinical professor of medicine.

DR. EDWIN P. LEHMAN, of the Washington University Medical School, St. Louis, has been appointed head of the department of surgery and gynecology in the University of Virginia.

EDWARD ANDERSON, instructor in steam and gas engineering at the University of Wisconsin, has been appointed assistant professor of mechanical engineering in charge of courses in metallography and heat treatment at the University of Nebraska.

DR. E. A. POHLE, of the University of Michigan, has been appointed head of the department of radiology at the University of Wisconsin.

DR. JOHN F. NORTON, associate professor in the department of hygiene and bacteriology of the University of Chicago, has resigned.

T. C. VANTERPOOL has been appointed assistant professor of biology at the University of Saskatchewan.

M. E. FAURÉ-FREMIET has been appointed professor of comparative embryology in the Collège de France to succeed the late M. Henneguy.

BARON DR. KITASATO, dean of the Keio Medical College and chief of the college hospital, has retired and is to be succeeded in the college by Dr. T. Kitashima.

### DISCUSSION

#### AN X-RAY EXAMINATION OF THE ANHYDROUS $\text{Na}_2\text{SO}_4\text{-Al}_2(\text{SO}_4)_3$ SYSTEM

THERE has been some discussion recently as to nature of the anhydrous product, commonly called sodium aluminium sulfate, that is obtained by the high temperature evaporation of an aqueous solution containing equal molar proportions of sodium and aluminium sulfates. The product is said to differ considerably from a mechanical mixture of anhydrous sodium and aluminium sulfates, especially in that it is less hygroscopic. It became of interest to determine whether this difference was due to different physical conditions, such as particle size, to the solid solution of one salt in the other, or to actual compound formation.

A sample of the substance in question was prepared by evaporating to dryness a solution containing equal molar quantities of the two salts and heating the resultant solid to 400° C. During the evaporation the temperature was kept near the boiling point so that there was no possibility of alum formation. An X-ray diffraction pattern made of the powdered substance with molybdenum  $K\alpha$  radiation was entirely different from those of the anhydrous sodium or aluminium sulfates and showed no lines characteristic of either. A series of ten samples were prepared in the same manner, using various proportions of the two salts. Those considerably richer in aluminium sulfate than the first showed lines of aluminium sulfate superimposed on the pattern of sodium aluminium sulfate. The positions of the lines of the latter were unaltered. Those samples containing an excess of sodium sulfate gave the pattern of sodium aluminium sulfate together with some new lines not due to sodium sulfate. The position of the sodium aluminium sulfate lines was again unchanged. It was noted also that the position of the new lines was independent of the relative concentrations of the two components.

These observations seem to establish conclusively that sodium aluminium sulfate is a definite compound and not a mechanical mixture or a solid solution of one salt in another. A mechanical mixture of the two substances would have given the pattern of one superimposed upon the other. A solid