News and Notes

Joint Statement by the Department of the Navy and the United States Atomic Energy Commission

One very essential condition for maintaining our national strength, whether for peace or for war, is that the research in the sciences which is basic to all technological progress be kept at a high level. Such research is now in progress in many universities, private research establishments, and other laboratories throughout the nation. By this research we add to our store of scientific knowledge and increase the number of highly trained persons available to the nation in time of need. The scientist in his laboratory and the research professor with his graduate students are performing a service which may make a critical difference to our country in the difficult years ahead.

In particular, the Department of the Navy and the Atomic Energy Commission consider a high level of basic research in the sciences essential to the continued progress of their respective programs.

DEPARTMENT OF THE NAVY
D. A. KIMBALL, *Undersecretary*
U. S. ATOMIC ENERGY COMMISSION
GORDON DEAN, *Chairman*

Hugh Huffman Memorial Calorimetry Conference

Daniel R. Stull

The Dow Chemical Company, Midland, Michigan

The Fifth Calorimetry Conference, designated as the Hugh Huffman Memorial Meeting in honor of the late Hugh Martin Huffman, who initiated and presided over the earlier meetings of the conference, was held at the Technological Institute of Northwestern University, Evanston, Illinois, on September 5. Sessions were attended by more than 65 representatives of approximately 40 university, industrial, and governmental laboratories in all parts of the U. S. The first speaker was George S. Parks, of Stanford University, who gave an interesting summary of Dr. Huffman's life.

George Furukawa, of the National Bureau of Standards, described the calorimetry program being carried out at the Bureau for the temperature range 1°–20° K. The purpose of this program is to improve, if possible, the precision of measurement to 0.1% and to investigate the electronic contribution to the heat capacity of superconductors and alloys of transition elements. More accurate as well as more sensitive thermometers are to be developed for the low-temperature range. The plans, under the direction of R. B. Scott and B. Kurrelmeyer, call for the more accurate determination of vapor pressure-temperature relation for hydrogen and helium on the thermodynamic scale, and the development of secondary thermometers. The calorimeter, which is under construction, will contain a helium thermometer, as well as a phosphor-bronze resistance thermometer to cover the helium range and a constantan resistance thermometer to cover the hydrogen range. It will have a capacity of approximately 100 ml of sample. Calibration above 20° K will be made with the gas thermometer. Allan C. Werner, of the Barrett Division, Allied Chemical & Dye Corporation, described the calorimetry from 25° to 300° C practiced by his company.

Dr. Furukawa also reported on the progress of the heat capacity measurements of the standard substances which will be issued by the Bureau of Standards. At the Third Calorimetry Conference, *n*-heptane, benzoic acid, and synthetic sapphire were selected as the standards for comparison of the heat capacity of calorimeters. *N*-heptane and benzoic acid are to be used in the temperature range of 10°–340° K, and the sapphire, 10°–1800° K. These materials are available in limited quantities free to qualified laboratories, with the stipulation that the calorimetric data be available to the Bureau for evaluation. The heat capacity measurements at the Bureau with sapphire and benzoic acid have been completed, and the data are now in the last stages of preparation for publication.

J. G. Aston, of Pennsylvania State College, presented a comparison of the adiabatic and isothermal calorimeters. He pointed out that both these methods of calorimetry are capable of equal precision, but that each method is best suited to particular types of measurement. The isothermal calorimeter is best suited to measure heat of combustion, heat of reaction, low-temperature heat capacity, heat of adsorption, and the heat capacity of gases, whereas the adiabatic calorimeter is best suited to measure the heat of reaction, low-temperature heat capacity, the heat capacity of solutions, and the heat of adsorption.

The afternoon session began with the business meeting, at which Daniel R. Stull was reelected chairman of the conference for another year. The group decided not to restrict the conference to low-temperature calorimetry, but to open it to problems of calorimetry at all temperatures, since all calorimetry is based on the same laws of heat flow. Discussion arose concerning the publishing of calorimetric data. Some of the members had encountered reluctance on the part of certain editors to include tables of experimental information.

George Guthrie, of the U. S. Bureau of Mines, described the machine computation of resistance versus temperature tables for platinum resistance thermometers from 15° to 90° K. Julian M. Sturtevant, of Yale University,

explained a new calorimetric method for measuring heats of reactions. A twin calorimeter has been designed specifically for measuring heats and rates of liquid phase protein reactions. The calorimeters contain only 30 ml of solution each, and are of metallic (tantalum) construction insofar as possible, to minimuze thermal lags. They are supported within an aluminum jacket, the temperature of which is automatically held equal to the mean of the calorimeter temperatures. The temperature difference between the calorimeters is measured by resistance thermometers in an alternating current bridge. The results obtained indicate that endothermic or exothermic reactions having half times between 3 minutes and several hours can be handled, provided the heat effect is large enough. With reactions having half times of the order of several minutes, satisfactory measurements can be obtained with a total heat absorption or evolution of as little as 0.0008 calorie per ml of reacting solution. The precision of measurement of the heat effect of this magnitude appears to be of the order of a few percent for a process with clean-cut kinetics. Rate constants comparing favorably in accuracy with those yielded by other methods are obtained.

Frederick C. Schmidt, of Indiana University, described a liquid ammonia calorimeter (next to water, anhydrous liquid ammonia is the best of the common ionizing solvents for salts). A liquid ammonia calorimeter designed by C. A. Krause and improved by Professor Schmidt has been in use for some 20 years. The calorimeter is adiabatic, and the measurement of the heat effects depends upon the heat of vaporization of liquid ammonia. Heats of solution and reaction have been measured close to the boiling point of the solvent, and the heat effects of the rapid processes are determined by measuring the amount of gas evolved by the heat of reaction. Corrections for the change in the heat content of calorimeter and solution are made from the "calorimeter constant" and the specific heat of the solution.

Edgar F. Westrum, Jr., of the University of Michigan, described an adiabatic semimicro calorimeter, developed at the Argonne National Laboratory, in which the entropy and low-temperature heat capacities of neptunium dioxide were measured. This adiabatic semimicro calorimeter for measuring low-temperature capacities of 0.01 mole samples of neptunium compounds employs only liquid helium and liquid nitrogen as refrigerants for measurements in the range 4°–320° K. Temperature measurements were made with a strain-free platinum resistance thermometer which was an integral part of the calorimeter.

Phillip N. Andress, of the Rubicon Company, described a 6-dial thermo-free potentiometer for low-voltage thermocouple measurements. This instrument has ranges from 0 to 111,111.0 mv in steps of 0.1 mv, and 0 to 11,111.10 mv in steps of 0.01 mv. The limits of error are, for the high range, 0.01% of the reading plus 0.1 mv, and for the low range, 0.01% of the reading plus 0.02 mv. Thermal electromotive forces are less than 0.01 microvolt. Malcolm Dole, of Northwestern University, described an automatic adiabatic calorimeter that had been developed with the cooperation of W. P. Hetinger, Jr., N. R. Larson, and J. A. Wethington, Jr. This calorimeter has been set up for the measurement of specific heats and heats of transition of solid high polymers. Randolph C. Wilhoit, of Northwestern, discussed the use of a watt-hour meter in conjunction with this calorimeter. A specially constructed Sagimo watt-hour meter capable of measuring power to 0.1%, from 20% to 150% of full load, was used. The pointer on the watt-hour meter reflects a light beam to a photoelectric cell which turns the power into the calorimetric heater for an integral number of revolutions of the pointer shaft, each revolution corresponding to 51.61 cal/rev ± 0.25%. Mr. Wilhoit also described the effects of 60-cycle harmonics on the behavior and accuracy of the meter and reported having discovered harmonics as high as the 28th in the source of heating power that was being used.

John C. Melcher, of the Leeds & Northrup Company, traced the development of their new precision resistance recorder from the time of its description by D. R. Stull in 1945 until its trial by the Physical Research Laboratories of The Dow Chemical Company. As described by Albert J. Williams, Jr., the instrument will record d-c resistance continuously over the range 0–100 ohms with sensitivity of 0.001 ohms. Accuracy of measurement is 0.02% of the absolute resistance value, which is equivalent to 0.05° C with nominal 25-ohm platinum resistance thermometers. Changes in temperature can be read to 0.01° C. The temperature range of such a 25-ohm platinum thermometer is from 12° K to 500° C. Ice point to steam point in 36 sec is typical response requiring both slide wire and decade operation. The accuracy is comparable to the G-1 laboratory-type Mueller bridge, but sensitivity is not as good (0.001 ohm, compared to 0.0001 ohm). Inspection of the instrument by members of the conference followed the adjournment.

Scientists in the News

The National Bureau of Standards recently received the following visitors from abroad: **Ake Ekelund** and **Olle Sturen,** Swedish Standards Association, Stockholm; **Frederic Fournier,** Overseas Territories Scientific Research Bureau, Paris; **J. B. Le-Poole,** Institute of Technology, Delft; **Hubert Moulinier,** Agronomic Institute, Seaboard Division, Bingerville, Ivory Coast, French West Africa; **Claude S. Moureaux,** Institute of Research, Madagascar; **Jan Ollner,** Swedish Electrotechnical Commission, Stockholm; and **A. van Rossem,** Delft.

Bentley Glass, of the Department of Biology, The Johns Hopkins University, left last week for Germany, where he will spend two months as a scientific consultant attached to the Science Research Branch of the Office of the High Commissioner.

Shinkishi Hatai has resigned as representative of the Science Council of Japan on the Pacific Science Council. He is succeeded by **Koji Hidaka,** professor of physical oceanography at Tokyo University.

Ford M. Milam, formerly head of the Department of Agronomy at the cooperative station between the U. S. government and the republic of El Salvador, has joined the Indian Council of Agricultural Research,

New Delhi, to assist with the coordination and improvement of agricultural research in that country. Mr. Milam is an employee of the OFAR.

Philip N. Powers, personnel adviser to the AEC, is now with the National Security Resources Board, where his job is to draft advice to President Truman on utilization of scientific personnel during partial or total mobilization.

John W. Streeter, formerly of Vassar College, has been appointed assistant director of the Fels Planetarium and assistant associate director in charge of astronomy and seismology of the Museum of the Franklin Institute.

Charles H. Wilson, vice president of Corpus Christi College, Oxford, England, has been appointed visiting professor of political science at Ohio State University. Dr. Wilson will teach during the winter and spring quarters.

Meetings

Student bodies in medical schools of the U. S. will send delegates to a meeting in Chicago, December 28–29, to draft a constitution for the **Student American Medical Association.** The meeting will be held in the AMA headquarters, and the organization will be affiliated with the AMA. Walton Van Winkle, Jr., secretary of the AMA Committee on Research, is serving as temporary executive secretary of the student association during its preorganization period.

Mount Sinai Hospital's tenth series of Wednesday evening lectures on **Recent Advances in Surgery** is being presented at the hospital's Blumenthal Auditorium at 8:30 P.M. The program is as follows: Dec. 20, Frederick A. Coller, Ann Arbor, "Use and Abuse of Parenteral Fluids in Surgery;" Jan. 3, Julian Johnson, Philadelphia, "Cardiac Resuscitation;" Jan. 17, Jacob Fine, Boston, "Effect of Vascular Integrity of the Gut;" Jan. 24, Brian Blades, Washington, D. C., "Aneurysms and Arteriovenous Fistulas of the Lung;" Feb. 7, Willis J. Potts, Chicago, "Surgical Treatment of Congenital Heart Disease;" Feb. 21, Frank L. Meleney, New York, "Importance of Laboratory Data in the Treatment of Surgical Infections by Antibiotics;" and March 7, Claude S. Beck, Cleveland, "Operation for Coronary Artery Disease."

At the 33rd annual meeting of the **National Malaria Society,** in Savannah, Ga., November 6–10, the following officers were elected for 1951: president, Justin M. Andrews, Atlanta; president-elect, W. H. W. Komp, Bethesda, Md.; vice president, E. L. Bishop, Chattanooga; and secretary-treasurer, S. W. Simmons, Savannah.

Paul B. Christensen, vice president and chief engineer of Merchants Refrigerating Company, New York City, became president of the **American Society of Refrigerating Engineers** on December 6. Installation ceremonies, conducted by retiring president John G. Bergdoll, Jr., were one of the concluding events of the 46th annual meeting of the Society, held in New York, December 3–6. Other officers for 1951 are: vice presidents, Edward Simons, consulting engineer, San Francisco, and Richard C. Jordan, University of Minnesota; treasurer, Donald K. Tressler, recently appointed scientific director of the Quartermaster Food & Container Institute, Chicago.

The **American Society of Naturalists** has elected the following officers for 1951: Paul C. Mangelsdorf, of Harvard, president; B. P. Kaufmann, Carnegie Institution, vice president; Donald F. Poulson, of Yale, treasurer. Bentley Glass will continue as secretary for 1951–52. The society has recently assumed editorial control of *The American Naturalist,* and a subscription to that journal is included in the dues at a special reduced rate.

Thomas H. Chilton, technical director of the development engineering division of E. I. duPont deNemours & Co., was elected president of the **American Institute of Chemical Engineers** at its 43rd annual meeting in Columbus. William I. Burt, B. F. Goodrich Chemical Co. was elected vice president; and Stephen L. Tyler and C. R. DeLong, both of New York, were re-elected secretary and treasurer, respectively.

A symposium on **Metabolic Disturbances during Surgical Care** will be held January 12, at 10 A.M., in Wilson Hall, the Administration Building, National Institutes of Health, Bethesda, Md. Sponsored by the Surgery Study Section, under the chairmanship of Frederick A. Coller, of the University of Michigan, the symposium will include leading U. S. investigators in the field of experimental surgery. Visitors are invited to attend and participate in the discussion.

NRC News

A new **Food Protection Committee** has been established in the Food and Nutrition Board of the National Research Council. J. L. St. John, chairman of the Department of Agricultural Chemistry, State College of Washington, is on leave to serve as executive secretary, with offices at the council. The new committee will be concerned with correlating research and information on problems of food safety arising from the use of chemicals in growing crops, processing of food, and packaging and preservation of food. H. E. Longenecker, dean of the graduate school, University of Pittsburgh, is chairman. Other members are: W. J. Darby, Vanderbilt University Medical School; George C. Decker, Illinois State Natural History Survey Division; Donald E. H. Frear, Pennsylvania State College; C. E. F. Guterman, New York State Agricultural Experiment Station; Elliott A. Maynard, University of Rochester; L. A. Maynard, Cornell University; George L. McNew, Boyce-Thompson Institute for Plant Research; R. B. Smith, Jr., Medical College of Virginia; and Dr. St. John. To aid the new committee, an eleven-man industrial advisory committee has been appointed to represent chemical companies, food processors, drug manufacturers, and meat packers. In addition four subcommittees, on pesticides, toxicology, food technology, and chemistry, have been formed.

The proceedings of the **Conference on Primary Scientific Publica-**

tion, held last February under the auspices of the NRC, are available without charge from the chairman's office. The two-day conference, convened to discuss the problem of improving the publication and utilization of the results of scientific research, was attended by officers of technical societies, scientific journals, printers and publishers, industrial laboratories, and government agencies supporting research. Discussion was recorded on such topics as the responsibilities of investigators, educators, and sponsors of research toward publication; the needs of journals for financial assistance; cooperation between research institutions and journals to reduce publication costs; and government policy toward support of primary publication as a result of the large numbers of scientific papers now originating in government laboratories. The possibilities of reducing publishing costs by cooperative editorial and business arrangements, by ownership of printing facilities, and by the use of alternatives to letterpress printing were examined; increased income through advertising or by page charge assessments against authors or sponsors was also discussed. Finally, the conference considered the relation between research journals and other forms of publication such as government reports and house organs, and the question of defining primary publication.

Deaths

Nils Gustaf Hörner, of the Geological Institution, Uppsala, Sweden, died November 21 at the age of 54. An authority on Quaternary geology and geomorphology, he had made several trips to Asia, being geologist with Sven Hedin from 1929 to 1933.

Lawrence Paul Wehrle, 63, associate professor of entomology and associate entomologist in the Agricultural Experiment Station of the University of Arizona, died in Tucson October 23 of a heart attack. Dr. Wehrle had been in the department for 20 years and was interested primarily in the study of scales and aphids.

Eugene Gardner, co-discoverer of the meson, died November 26 of beryllium poisoning incurred during work on the wartime atomic bomb project. Dr. Gardner, who was 37, had been seriously ill since 1945.

Carol Gray Montgomery, of the Physics Department of Yale, and a specialist on cosmic rays, died December 3 of a heart attack. He was 41. During World War II he worked at MIT's radiation laboratory and also was active in the development of radar.

Clifton A. Woodrum, president of the American Plant Food Council, and a member of Congress from Virginia for 23 years, died October 6. He was 63.

Miscellaneous

The directors of **Central Scientific Company** have elected Harris M. Sullivan vice president and director of research and development. Dr. Sullivan has been with Cenco since 1944 as assistant director of research.

Paul J. Ernst, Physics Department, Temple University, Philadelphia, won first prize in the black-and-white division of the **Fourth Annual International Photography-in-Science Salon** for his print "Ultrasonograph of Pseudo-Standing Waves in front of an Ultrasonic Lens." First prize winner in the color division was Leonard F. Belanger, of the University of Ottawa, for his print "P-32 Radioautograph of a Growing Tooth."

Other winners in the black-and-white division were: Second prize, James B. Saunders, National Bureau of Standards, for his print "Precise Topography of Optical Surfaces;" third prize, J. A. Van Allen, J. J. Hopfield, and H. E. Clearman, Applied Physics Laboratory, The Johns Hopkins University, Silver Spring, Md., for their print "Ultraviolet Solar Spectrum from V-2 Rocket;" honorable mention, T. Brzeski, Polish University College, London; F. M. Cain and J. O. Mack, Carnegie-Illinois Steel Corporation Research Laboratories, Pittsburgh, Pa.; Philip O. Gravelle, The Gravelle Laboratory, South Orange, N. J.; K. Grube, L. W. Eastwood, and N. E. Winchester, Battelle Memorial Institute, Columbus, Ohio; and J. J. Hopfield, Applied Physics Laboratory, The Johns Hopkins University.

In the color division, the following also won awards: Honorable mention, Cecelia Mezowicz Ronai, General Foods Corporation Central Laboratories, Hoboken, N. J.; and Francis L. Shubert, Battelle Memorial Institute.

Judges in this unique competition for scientists and photographers, sponsored by THE SCIENTIFIC MONTHLY and the Smithsonian Institution, were A. Aubrey Bodine, of the Baltimore Sunday *Sun* (for photography); Walter F. Jeffers, of the Department of Botany, University of Maryland (for the natural sciences); Howard A. Meyerhoff, administrative secretary, AAAS (for metallurgy and the earth sciences); Merle Tuve, director, Department of Terrestrial Magnetism, Carnegie Institution (for the physical sciences); and Ralph W. G. Wyckoff, scientist director of the National Institutes of Health (for the medical sciences).

The prints will be on exhibition at the Annual Meeting of the AAAS in Cleveland, Ohio, December 26–30, and at the U. S. National Museum, January 3–31, after which they will go on tour of important scientific institutions in this country.

January Meetings

American Institute of Electrical Engineers (Winter). Hotel Statler, New York. Jan. 22–26.

American Library Association (Midwinter). Edgewater Beach Hotel, Chicago. Jan. 20–Feb. 3.

American Society for Surgery of the Hand. Palmer House, Chicago. Jan. 26.

Highway Research Board (Annual). Washington, D. C. Jan. 9–12.

Institute of the Aeronautical Sciences (Annual). Astor Hotel, New York. Jan. 29–Feb. 1.

Society of Automotive Engineers (Annual). Hotel Book-Cadillac, Detroit. Jan. 8–12.

World Power Conference. New Delhi, India. Jan. 10–15.