

# Meetings and Societies

## Calorimetry

The 11th annual Calorimetry Conference was held at Johns Hopkins University, Baltimore, Md., on 14–15 Sept. 1956. Attendance at the conference reached a new peak; between 140 and 150 physicists, chemists, and engineers, representing academic, government, and industrial laboratories in the United States, Canada, Europe, and Australia, were present.

The third annual Hugh M. Huffman memorial lecture was given by Frederick D. Rossini (Carnegie Institute of Technology, Pittsburgh, Pa.). His address, "Chemical thermodynamics in the International Union of Pure and Applied Chemistry," gave in detail the origin and administrative organization of the union, together with its places of meeting, its personnel, and its functions.

Elliott W. Montroll (University of Maryland) presented an address on the "Theory of the frequency spectrum of solids." Montroll reviewed briefly the general theory of lattice vibrations and the spectrum obtained for a simple cubic lattice, assuming first, nearest neighbor interaction only, and then next-nearest neighbor interaction. He next considered the two-dimensional crystal and showed that such a structure is stable only at low temperatures. He concluded his address with a description of the effects of vacancies and isotopes in the lattice structure.

The concluding event of the 2-day session was an impressive address on guided missiles, illustrated with slides and motion-pictures, given by R. E. Gibson (Johns Hopkins Applied Physics Laboratories).

A summary of the 24 contributed papers presented at the conference is briefly as follows: The first three papers of the opening session were concerned with the properties of various low-temperature thermometers. The first, by J. G. Aston (Pennsylvania State University) described the use of the copper-constantan thermocouple as a means of establishing a laboratory temperature scale accurate to 0.1°K. Aston offered constantan wire to those interested in establishing such a scale, together with an electromotive force table which he

has constructed for the temperature interval between the oxygen and hydrogen points.

Very small single crystals (about 0.02 by 0.02 by 0.20 inch) of germanium containing a small amount of arsenic have been used as resistance thermometer elements for low-temperature measurements by J. E. Kunzler, T. H. Geballe, and G. W. Hull (Bell Telephone Laboratories). The crystals were mounted in a Teflon-lined cylindrical platinum capsule, about 0.125 inch in diameter and 0.5 inch long. The authors report that this resistance thermometer is unusually stable and that, after repeated cyclings between room temperature and the liquid helium region, the helium normal boiling-point (4.2°K) resistance is reproduced within 10<sup>-4</sup> degree. The resistance stability in the presence of a magnetic field is yet to be determined.

Carbon composition resistors used as resistance thermometers show appreciably less stability than "doped" germanium. However, J. R. Clement, R. L. Dolecek, and J. K. Logan (Naval Research Laboratory) have found that all the various resistance-temperature plots obtained for a given Allen-Bradley resistor may be superposed by proper re-scaling of the resistance and temperature axes. If curves of *different* resistors (1/10-, 1/2-, and 1-watt sizes) are compared, a universal function relating "scaled" resistance and "scaled" temperature can be defined with an accuracy which increases as the temperature is lowered below room temperature.

Following the papers on thermometry, W. DeSorbo (General Electric Research Laboratories) discussed the application of microcalorimetry to the kinetics of precipitation and solid-solid transformations. The effect of imperfections, particle size, and cold work on the  $\alpha$ - $\beta$  transformation in the Pb-Sn and Al-Cu alloys was presented.

The electronic heat capacity of Cu, of Cu-3-percent Zn, and Cu-1-percent Cd, was measured by J. A. Rayne and W. R. G. Kemp (Commonwealth Scientific and Industrial Organization, Sydney, Australia). Comparison of the  $\gamma$  values for the zinc and cadmium alloys suggest that the difference is not due to a valence electron effect but to the large dis-

tortion occurring around the cadmium atoms. It was suggested that similar effects could be responsible for the discrepancies of the  $\gamma$  values for many transition elements.

The specific heat of KBr and KI crystals about 5 mm on edge was measured over the range 2.5° to 270°K by W. T. Berg and J. A. Morrison (National Research Laboratories, Ottawa, Canada). The behavior of the Debye  $\theta$  with temperature, starting at the lowest temperatures, shows for KBr and KI an initial decline followed by a rise to a maximum in the region 70° to 120°K, and then a rapid decline. Less complete data on NaI and KCl also show the low-temperature dip. The values of the Debye  $\theta$  are in agreement with compressibility data.

The enthalpy of formation of solid alloys is being investigated calorimetrically by R. A. Oriani (General Electric Research Laboratory). Two calorimeters are used, one being a "dummy" to determine corrections and the other to determine the heat of solution of various alloys. The method consists in measuring the heat of solution of an alloy (Ag-Au and Cu-Ni systems studied) in molten tin and then that of the pure constituents. The difference is the heat of formation of the alloy. Measurements can be carried out up to 1000°C.

A new adiabatic calorimeter for measurement in the range 40° to 500°C was described by E. D. West (National Bureau of Standards). Objectives in the design were 0.1-percent reproducibility, easy change of sample without disrupting measuring circuits, and sufficient automatic control (shield temperatures) so that one person can make measurements. The objectives were apparently very well realized in the standardizing tests and in the measurements thus far carried out.

The details of a calorimeter for measurements on the alkali metals in the 2° to 20°K range was presented by F. D. Manchester (National Research Council, Ottawa). This was followed by the description of a "semiadiabatic" calorimeter (environment kept at temperature near to that of the calorimeter) by J. E. Kunzler (Bell Telephone Laboratories).

D. H. Andrews (Johns Hopkins University) then opened a session devoted to automatic calorimetry by describing the equipment, methods, and results of the Hopkins automatic calorimeter. This unit was designed to measure the heat capacity of pure liquids, as well as binary and ternary mixtures, over the range 0° to 50°C. The method of continuous heating is used, featured by a programmed servo control. The relative accuracy of measurements on diphenylmethane and diphenylether was found to be 0.02 to 0.03 percent.

A completely automatic adiabatic calorimeter covering the range from helium temperatures to 330°K, and under development for about 10 years, was described by D. R. Stull (Dow Chemical Co.). The calorimeter fits in the experimental cavity of a Collins helium cryostat, needs slight manual attention up to about 40°K, and is completely automatic in operation and recording from 40°K to room temperature. Time for a full run may be as long as 80 hours.

A panel consisting of D. H. Andrews (chairman), D. R. Stull, E. D. West, and G. T. Furukawa concluded the automatic calorimetry session by a panel discussion, which included participation from the floor.

The second day's session was opened by a paper on direct calorimetric measurements of the heat of vaporization of liquid He<sup>3</sup> by D. W. Osborne, B. M. Abraham, and B. Weinstock (Argonne National Laboratory). Data taken over the range 1.2° to 2.1°K were used to calculate more accurate values of the entropy of the liquid. The measured heats of vaporization were considered accurate to 0.2 percent. The entropy value of the liquid at 1.5°K was found to be  $2.60 \pm 0.03$  calories per mole, per degree. The virial data of Keller and the vapor pressure-temperature relation for He<sup>3</sup> were indirectly confirmed.

Using an improved experimental arrangement, H. C. Kramers (Leiden University) remeasured the specific heat of liquid He<sup>4</sup> below the  $\lambda$  point. Above 0.7°K the data are unchanged from the earlier values. Below 0.6°K both the older values and the present data follow the  $T^3$  law, but the numerical data are now in excellent agreement with Landau's theory, using a velocity of sound at 0°K of 240 meters per second. The current measurements give  $C_v = 0.0204 T^3$  joules per gram, per degree.

R. P. Hudson, (National Bureau of Standards) surveyed his recent measurements on absolute temperature determinations below 1°K using chromium methyl-ammonium alum. Previous measurements on this salt were made by Gardner and Kurti. The results show that the reproducibility from specimen to specimen varies, and  $S/R$  measurements give different values at different times. Thus entropy-temperature values must be determined individually for each salt specimen.

E. Ambler (National Bureau of Standards) discussed the possibilities of using dielectric, ferroelectric, and magnetic hysteresis losses as a means of supplying heat uniformly throughout the body of paramagnetic salts at temperatures below 1°K. He concluded that none of these methods appear useful.

L. D. Roberts, J. W. T. Dabbs, and

G. W. Parker (Oak Ridge National Laboratory) reported an investigation of the Schottky anomaly in the specific heat of U<sup>235</sup>O<sub>2</sub>F<sub>2</sub>, arising from the coupling of the nuclear electric quadrupole moment to the electric field of the U-O bonding orbitals. The work was done to assist in the interpretation of the anisotropy of  $\alpha$  particles and fission fragments from nuclei aligned by virtue of this type of coupling.

Measurements made in the Clarendon Laboratory, Oxford, of the specific heat of 14 transitional metals and 10 non-transition elements over the temperature range 1° to 20°K were described by N. M. Wolcott, Naval Research Laboratory). The variation of the Debye  $\theta$  with temperature was given, together with a discussion of the electronic specific heats.

A graphical method for evaluating the heat capacity of a specimen from its temperature response in the after-heating period was presented by J. S. Kouvel (General Electric Research Laboratory). The applicability of the method where there are appreciable time-lags owing to thermal gradients in the specimen or to characteristics of a galvanometer was indicated. Data on the specific heat of a magnetite crystal at liquid helium temperatures, obtained by this method, concluded the paper.

A study of the factors affecting the heat capacity of molecular lattices below 50°K was considered by Ruth Aranow (Johns Hopkins University). In this instance calculations were made on paracylene, and these were checked against experimental measurements made at Johns Hopkins. Contributions to the internal energy were considered from (i) intramolecular vibrations, (ii) torsional motions, and (iii) lattice vibrations. An empirical fit with the experimental data required that the vibrations be coupled in the crystal.

Observation of unusual effects of impurities on the thermal properties of *l*-decene and *cis*-decahydronaphthalene were described in a paper by J. P. McCullough, J. F. Messerly, and Guy Waddington (U.S. Bureau of Mines). These consisted of two different heat-capacity curves and two different melting-point curves for the former substance, while the number for the latter substance was three. These effects were considered to be due to the different distribution of impurities in the sample.

Three techniques used in combustion calorimetry involving volatile solid samples were presented by W. N. Hubbard, D. W. Scott, W. D. Good, and Guy Waddington (U.S. Bureau of Mines). These may be described briefly as the glass-ampoule method, the covered-glass-dish method, and finally the plastic (Mylar)-bag method.

J. L. Margrave (University of Wisconsin)

sin) measured the heat of reaction of four fluorine compounds by means of bomb calorimetry and from the measurements determined the heat of formation of CF<sub>4</sub>, C<sub>2</sub>F<sub>4</sub>, CH<sub>2</sub>CF<sub>2</sub>, ClO<sub>3</sub>F, and several other carbon-fluorine-chlorine compounds.

A résumé of work on the temperature scale being carried on at the National Bureau of Standards was given by C. W. Beckett. E. R. Prosen (National Bureau of Standards) reported on the use and availability of standard calorimetric samples.

The closing paper of the conference consisted of a correlation of spectral and thermodynamic data on cyclohexane, by T. J. Mathia and J. B. DiGiorgio (Johns Hopkins University).

Edgar F. Westrum, Jr. (University of Michigan), the retiring conference chairman, presided at the business meeting. The incoming conference chairman is Henry A. Boorse (Barnard College, Columbia University). Donald H. Andrews (Johns Hopkins University) was voted chairman-elect, and Darrell W. Osborne (Argonne National Laboratory) was elected a director to serve for 2 years.

In conclusion, it was agreed that the incoming chairman should investigate the possibility of having the "doped" germanium thermometers described by Kunzler made available for further tests in the various low-temperature laboratories.

HENRY A. BOORSE

Barnard College, Columbia University, New York, N. Y.

## Nuclear Reactions

The International Conference on Nuclear Reactions met in Amsterdam, 2-7 July, under the sponsorship of UNESCO, the International Union of Pure and Applied Physics, and the Netherlands Physical Society. Conference participants numbered approximately 500, with the following countries represented in strength: the Netherlands, 150; the United Kingdom, France, and the U.S.A., 70 each; the U.S.S.R., 27; Norway, Sweden, Denmark, Italy, and Germany, 20 each; Yugoslavia and Belgium, 10 each. One or more physicists were also present from Czechoslovakia, Poland, Hungary, East Germany, Spain, Israel, Finland, Japan, India, Argentina, and Mexico.

The session topics and invited speakers were as follows: General introduction (H. A. Bethe); Particle reactions at low energies (R. F. Christy, P. C. Gugelot, T. Huus, D. J. Hughes); Theoretical models of low-energy processes (V. F. Weisskopf, A. Bohr, H. A. Bethe); Capture and photoreactions (P. M. Endt,

D. H. Wilkinson); Stripping and pickup reactions (J. R. Hoyt, J. Horowitz); High-energy scattering (E. Segrè, L. Van Hove); Fission, spallation, heavy-ion acceleration (J. H. Fremlin, J. A. Wheeler); Concluding remarks (L. Rosenfeld).

The conference discussion centered on the following problems: the description of nuclear scattering by the optical model; the reconciliation of the independent-particle and collective descriptions of nuclear structure, and the theoretical justification of the independent-particle model (IPM); the competition between mechanisms of direct interaction and compound nucleus formation in nuclear transformations.

The review of work on the optical model (Van Hove) and various contributed papers testified to the remarkable success of this simple model in the description of nuclear scattering over a broad range of energies and atomic weights. The bulk properties of the nucleus—for example, the refractive index and opacity of nuclear matter—are now rather well determined by the comparison of optical calculations with scattering data up to 1 Bev. It is most satisfying, moreover, to report that these bulk characteristics can be derived from the properties of the elementary nucleon-nucleon interaction (Brueckner, Bethe, Skyrme).

Several papers hinted at a union of the apparently incompatible independent-particle and collective models of the nucleus, based, respectively, on the assumptions of weak and strong forces between nucleons. The level scheme of aluminum, for example—a nucleus usually regarded as outside the domain of the collective description but suitable for application of the independent-particle model—was reported (Gove, Litherland, Paul, Almqvist, Bartholomew, Bromley) to be given with comparable accuracy by both models. The nuclear photoeffect, on the other hand, most often considered from a collective viewpoint, may also be interpretable by independent-particle transitions (Wilkinson).

Some advances were reported in attempts to provide a theoretical foundation for the successes of the independent-particle model. Bethe described investigations (Brueckner, Bethe) of the nuclear many-body problem which seem to bear out earlier suggestions that, although nuclear forces are known from nucleon-nucleon scattering experiments to be quite strong and the independent-particle model is based on the assumption of weak forces, the validity of this model can still be understood as a consequence of the Pauli principle, which weakens the effective nucleon-nucleon interaction by suppressing collisions in the nuclear interior, acting here just as

it does in metals, in which the mean free paths of conduction electrons are enormously increased beyond classical estimates by the suppression of electron-ion collisions.

Little progress was indicated in the longstanding effort to understand the competition between direct interaction and compound nucleus formation. The mechanism of direct interaction appears to play an important role in reactions at surprisingly low energies, where compound nucleus formation had been thought to occur exclusively, but the circumstances in which one mechanism or the other will dominate are still obscure. Experimental studies of helium-3 reactions may be especially useful in this connection (Holmgren, Johnston, Geer, Wolicki, Almqvist, Bromley, Ferguson, Gove, Litherland, Paul).

Delegates from the Western nations were especially interested in the Soviet contributions to low-energy physics. The activity of the Soviet theorists in this field is apparently extensive, but one gains the impression that their experimental effort is substantially smaller than that of the United States and Western Europe, in contrast to the extraordinary activity of U.S.S.R. scientists in the high-energy field.

ROBERT JASTROW

*Naval Research Laboratory,  
Washington, D.C.*

### Pan American Cytology Congress

Physicians planning to attend the First Pan American Cancer Cytology Congress should confirm their reservations at an early date. The congress, first of its kind ever held, is scheduled for the Eden Roc Hotel, Miami Beach, 25–29 Apr. Supported by a grant from the Department of Health, Education and Welfare of the U.S. Public Health Service, the congress is attracting medical practitioners and surgeons, cytologists, pathologists, and cancer research scientists from the western hemisphere. The U.S. Department of State has mailed invitations to the health ministries of 21 nations of the Pan American area on behalf of the organizing committee of the congress.

The program will provide the latest advances in the application of cytology in early cancer diagnosis and in research. There will be clinical papers and extensive participation by basic research scientists who work on such related phases of cancer as radioisotopes, genetics, electron microscopy, immunology, and leukemias. The theme of the meeting will be "Cancer protection through early detection."

The Pan American Cancer Cytology Congress is sponsored by the Southern Society of Cancer Cytology, the Cancer

Cytology Foundation of America, Inc., N.Y., the University of Miami, and the Cancer Institute at Miami. Inquiries should be sent to the secretary of the congress, Dr. George Gey, Johns Hopkins University, Baltimore, Md.

### Bioclimatology and Biometeorology

The International Society of Bioclimatology and Biometeorology will hold its first scientific congress in Vienna, Austria, 23–27 Sept. 1957. There will be sessions on general, phytological, zoological, human, and cosmic bioclimatology. Those interested in submitting papers or in attending the congress should write to Dr. S. W. Tromp, Hofbrouckerlaan 54, Oegstgeest (Leiden), Holland.

### Italian Physical Society

The Italian Physical Society is organizing the Third International Conference on Ionization Phenomena in Gases, thus continuing the series of conferences initiated by A. von Engel at Oxford in 1953 and followed up by A. B. Dorgelo at Delft in 1955. The third conference will be held in the building of the "Fondazione G. Cini" in Venice from 11 to 15 June 1957.

The subjects to be discussed are divided into the following four general sections: (i) "Fundamental processes in ionized gases," (ii) "Mechanism and properties of various types of discharges," (iii) "Nuclear reactions in discharges; contraction mechanisms, neutron production, etc.," and (iv) "Technical and instrumental questions; applications."

Every section will include general surveys and short communications on the various topics. English will be the preferred language. The proceedings of the conference will be published in the supplement of *Il Nuovo Cimento*. Those who wish to attend the conference should write before 15 Mar. to the general secretary, Prof. Ugo Facchini, Laboratori CISE, Via Procaccini 1, Milano, Italy.

### Humanist and Ethical Union

The second Congress of the International Humanist and Ethical Union will be held in Conway Hall, London, England 26–31 July. Lord Boyd Orr, president of the congress, Julian Huxley, H. J. Muller, and J. Bronowski, among others, will speak on the general theme "Mankind now." Meetings and discussions are open to those interested. For further information write to: Stanton Coit House, 13 Prince of Wales Terrace, London W 5, England. Applications must be received by 31 May.

## Interamerican Congress of Psychology

The Fourth Interamerican Congress of Psychology, sponsored by the Interamerican Society of Psychology, was held at the University of Puerto Rico, 26-30 Dec. 1956. The central theme of the congress, "The psychology and psychopathology of group behavior," was discussed in a series of nine symposia (based on the presentation of 64 research reports and surveys).

Sponsorship, in addition to that afforded by the Interamerican Society, was also given to the Congress by the University of Puerto Rico and by the Puerto Rican Psychological Association. The delegates included representatives from Canada, Puerto Rico, the United States, Mexico, Brazil, Venezuela, and Colombia.

The officers elected for 1957 at the business meeting of the congress are as follows: Otto Klineberg, Columbia University, U.S.A.; pres.-elect, Guillermo Davila, National University, Mexico; v. pres., Gustave M. Gilbert, Michigan State University, U.S.A.; sec.-gen., Werner Wolff, Bard College, U.S.A.; exec. sec., Samuel Pearlman, Brooklyn College, U.S.A.; treas., Robert B. Malmo, McGill University, Canada. The 1957 meeting of the society will be held, according to present plans, at the National University of Mexico, Mexico City, in December.

## Wildflower Pilgrimage

The Seventh Annual Wildflower Pilgrimage will be held in the Great Smoky Mountains National Park at Gatlinburg, Tenn., 24-27 Apr. Field trips and motorcades will be led daily by park naturalists, trained botanists, and photographers. In addition to wildflowers, one trip will feature mosses and ferns. There will be morning bird trips and illustrated lectures in the evening. For further details write to the Department of Botany, the University of Tennessee, Knoxville.

## IRE Affiliate Plan

The Board of Directors of the Institute of Radio Engineers, at its January meeting, adopted a plan which will permit qualified non-IRE members to become affiliated with certain of the IRE professional groups without first having to join the IRE itself. Adoption of the affiliate plan is regarded as one of the most important changes that has been made to the IRE structure in its 45-year history.

In effect, the IRE is extending the

specialized services of its 24 professional groups to every field of engineering and science, in order to provide more effectively for the rapidly spreading influence of electronics in every branch of scientific and technological life. The affiliate plan is expected to be especially beneficial in the field of medical electronics, for it will permit medical doctors and biologists who ordinarily would not be interested in joining the IRE to participate in the activities of the IRE Professional Group on Medical Electronics.

## Pan American Ophthalmology Plans New York Meeting

The Pan American Association of Ophthalmology and the National Society for the Prevention of Blindness will meet in New York 7-10 Apr. The joint meeting will have headquarters at the Hotel Statler.

Addresses of welcome will be given by Frank B. Berry, Assistant Secretary of Defense for Medical Affairs, Washington, D.C., representing the United States Government, and by Major General Dan C. Ogle, Surgeon General of the U.S. Air Force. Also, Mason H. Bigelow, president of the National Society for the Prevention of Blindness, and Brittain F. Payne, president of the Pan American Association of Ophthalmology, will greet the delegates on behalf of their respective organizations.

William L. Benedict, Rochester, Minn., executive secretary-treasurer of the American Academy of Ophthalmology and Otolaryngology, is scheduled to speak for the ophthalmologists of the United States, and Moacyr E. Alvaro, São Paulo, Brazil, executive director of the Pan American Association, for those of Latin American countries.

The scientific program will include three symposia on official themes, addresses by representatives of ophthalmological societies of South and Central America, Mexico, and Cuba; free papers; motion pictures; scientific exhibits; and surgical clinics. The three special symposia and the moderators are as follows: "Diseases of the ocular fundus," George N. Wise, New York; "Ophthalmic surgery," John H. Dunnington, New York; and "Therapeutics in present-day ophthalmology," Irving H. Leopold, Philadelphia.

John M. McLean, New York, is arranging the program of papers; Wendell L. Hughes, Hempstead, N.Y., the motion pictures; J. Gordon Cole, the surgical clinics; and Gerald Fonda, Short Hills, N.J., the scientific exhibits. All ophthalmologists are invited to the congress. Hotel reservations should be made direct with the Hotel Statler, New York.

## Ninth Pacific Science Congress

The Science Society of Thailand has invited the National Research Council and, through it, scientists and representatives of institutions in the United States, to participate in the Ninth Pacific Science Congress. This congress will be held in Bangkok from 18 Nov. to 9 Dec. 1957, under the auspices of the Government of Thailand and the Science Society of Thailand. The National Research Council is the representative of the United States in the Pacific Science Association, which has been responsible for the eight previous Pacific Science Congresses, the first of which was held in 1920.

Several members of the NRC Pacific Science Board who have visited Bangkok have been informed that the Organizing Committee for the congress would welcome a large delegation of U.S. scientists to take part in the planned symposia, as well as the general scientific program of the congress. The Pacific Science Board is anxious that the full measure of this country's scientific cooperation be extended to help assure the success of the Thai organizing committee's plans. Secretary general of the congress is Charng Ratanarat, Department of Science, Ministry of Industry, Bangkok.

The Eighth Pacific Science Congress was held in the Philippines in 1953, with 123 U.S. participants. During the 4 years that will have elapsed between the Manila congress and the one to be held in Bangkok, active scientific work in many disciplines has been under way in various parts of the Pacific. Much of this work is related to the subjects discussed and the recommendations adopted by the eighth congress. The cooperative activities of the International Geophysical Year will also be well under way.

Authors will be given 10 minutes to present their papers, with an extension of not more than 10 minutes for discussion. Abstracts for contributed papers should not exceed 400 words. Papers as well as abstracts in final form must be delivered to the Organizing Committee *not later than 1 Aug.*

Manuscripts must be typewritten double-spaced, and an English translation must be submitted, for all papers will be duplicated in English. Members of the congress who will not be able to attend in person may send only one paper; this must be read to the congress by a member designated by the author.

For further information and a copy of the preliminary program, which lists the 18 organizing chairmen, write to the executive director of the Pacific Science Board, Dr. Harold J. Coolidge, National Academy of Sciences-National Research Council, Washington 25, D.C.

## Radiation Research

The annual meeting of the Radiation Research Society will be held at Rochester, N.Y., 13-15 May. In addition to submitted papers, there will be two symposia: one concerned with radiation genetics and the other with radiation chemistry. There will also be a series of invited lectures, the topics and speakers to be announced later. Those desiring to report original research on radiation effects, or desiring attendance information, should communicate with the secretary of the society, Dr. A. Edelmann, Nuclear Science and Engineering Corporation, Post Office Box 10901, Pittsburgh 36, Pa.

## Curare

An International Symposium on Curare and Curare-like Agents will take place in Brazil 5-17 Aug. The organizing bodies are UNESCO, the Conselho Nacional de Pesquisas (National Council of Research, Brazil), the Academia Brasileira de Ciencias, and the Universidade do Brasil, Rio de Janeiro. The congress is being held under the patronage of the President of the United States of Brazil.

Meetings will be held between 5 and 10 Aug. at the University of Brazil and will consist of a series of reports and communications on (i) the ethnographic problems concerning South-American curares, (ii) the botanical origin of the active principles of curares, (iii) the chemistry of the curarizing alkaloids, (iv) synthetic curares, (v) physiology of neuromuscular transmission and mechanism of curarization, (vi) pharmacological properties, (vii) clinical applications of curares.

A number of specialists in these different fields have already promised their participation. During the second week, from 11 to 17 Aug., a visit to Manaus (Instituto Nacional de Pesquisas de Amazonia) and to Belem (Instituto Agronomico do Norte) will be arranged for the participants.

The official languages of the symposium are Portuguese, English, French, and Spanish. The papers presented will subsequently be published by UNESCO and the Paterno Foundation of the Istituto Superiore di Sanita, Rome, Italy.

Correspondence should be addressed to Prof. C. Chagas, Instituto de Biofisica, Universidade do Brazil, 450 Avenida Pasteur, Rio de Janeiro. Europeans should write to Prof. Daniel Bovet, Istituto Superiore di Sanita, 299 Viale Regina Elena, Rome, or to Prof. P. B. Carneiro, Délégation du Brésil, UNESCO, 19 Avenue Kléber, Paris 16ème, France.

## Society Elections

■ Chicago Natural History Museum: pres., Stanley Field; 1st v. pres., Hughston M. McBain; 2nd v. pres., Walter Buchen; 3rd v. pres., Joseph N. Field; treas., Solomon A. Amith; sec. and dir., Clifford C. Gregg; asst.-sec., John R. Millar.

■ American Association of Petroleum Geologists: pres., Graham B. Moody; v. pres., Byron W. Beebe; sec.-treas., William J. Hilseweck.

■ Society of Economic Paleontologists and Mineralogists: pres., Richard V. Hollingsworth, Paleontological Laboratory, Midland, Tex.; past pres., Robert R. Shrock, Massachusetts Institute of Technology; v. pres., Stuart A. Levinson, Humble Oil and Refining Company; sec.-treas., Samuel P. Ellison, Jr., University of Texas, Austin.

■ American Physical Society: pres., Henry D. Smyth, Princeton University; v. pres., Jesse W. Beams, University of Virginia; treas., S. L. Quimby, Columbia University; sec., K. K. Darrow, New York, N.Y.

■ Oklahoma Academy of Science: pres., D. E. Howell, Oklahoma Agricultural and Mechanical College; sec., J. Teague Self, University of Oklahoma; sec.-treas., Philip Smith, University of Oklahoma School of Medicine; asst. sec.-treas., Don E. Mitchell, Continental Oil Company.

■ Society for the Advancement of Criminology: pres., Richard O. Hankey, Law Enforcement Training College; sec.-treas., William Dienstein, Fresno State College, Fresno 4, Calif. The vice presidents are John P. Kenney, David McCandless, and Donal E. J. MacNamara.

## Forthcoming Events

### March

22-23. Heart: Law-Medicine Problem, Cleveland, Ohio. (O. Schroeder, Jr., Law-Medicine Center, Western Reserve Univ., Cleveland 6.)

23-28. American Soc. of Tool Engineers, 25th annual, Houston, Tex. (R. Gebers, 10700 Puritan, Detroit 38, Michigan.)

24-27. American Assoc. of Dental Schools, annual, Atlantic City, N.J. (M. W. McCrea, 42 S. Greene St., Baltimore 1, Md.)

25-28. American Acad. of General Practice, 9th annual scientific assembly, St. Louis, Mo. (M. F. Cahal, AAGP, Volker Blvd. at Brookside, Kansas City 12, Mo.)

25-29. International College of Allergy, 3rd symposium, London, England. (W. Kaufman, 540 Brooklawn Ave., Bridgeport 4, Conn.)

25-29. Western Metal Exposition and Congress, 10th, Los Angeles, Calif. (W. H. Eisenman, 7301 Euclid Ave., Cleveland 3, Ohio.)

26-28. Mechanisms for the Development of Drug Resistance in Microorganisms, Ciba Foundation Symp. (by invitation), London, England. (G. E. W. Wolstenholme, 41 Portland Pl., London, W.1.)

26-28. Weather Radar Conf., 6th, sponsored by American Meteorological Soc., Cambridge, Mass. (K. C. Spengler, 3 Joy St., Boston 8, Mass.)

27-29. American Power Conf., 19th annual, Chicago, Ill. (R. A. Budenholzer, Illinois Inst. of Technology, 35 W. 33 St., Chicago 16.)

27-29. Effects of Radiation on Materials, colloquium, Baltimore, Md. (Office of Naval Research, Glenn L. Martin Co., Baltimore 3.)

27-29. National Committee on Alcoholism, annual, Chicago, Ill. (Miss E. Jensen, NCA, 2 E. 103 St., New York 29.)

### April

1-2. Industrial Engineering Conf., West Lafayette, Ind. (K. E. Glancy, Div. of Adult Education, Purdue Univ., West Lafayette.)

1-4. American Assoc. of Petroleum Geologists, 42nd annual, St. Louis, Mo. (R. H. Dott, AAPG, Box 979, Tulsa, Okla.)

1-4. International Anesthesia Research Soc., cong., Phoenix, Ariz. (A. W. Friend, Wade Park Manor, Cleveland 6, Ohio.)

1-4. Society of Economic Paleontologists and Mineralogists, annual, St. Louis, Mo. (C. P. Ellison, Jr., Dept. of Geology, Univ. of Texas, Austin.)

1-5. Assoc. of American Geographers, annual, Cincinnati, Ohio. (B. W. Adkinson, Reference Dept., Library of Congress, Washington 25.)

2-3. Future Developments in Food Preservation, symp., Kansas City, Mo. (Food Symposium, Midwest Research Inst., 425 Volker Blvd., Kansas City 10.)

4-5. Dietary Fats—Helpful or Harmful, 3rd annual nutrition conf., Detroit, Mich. (A. H. Smith, Wayne State Univ. College of Medicine, Detroit 7.)

4-6. American Rocket Soc., spring, Washington, D.C. (A. G. Haley, 1735 De Sales St., NW, Washington 6.)

5-6. American Mathematical Soc., New York, N.Y. (J. H. Curtiss, AMS, 190 Hope St., Providence 6, R.I.)

7-10. Pan American Assoc. of Ophthalmology, 4th interim cong., New York, N.Y. (B. F. Payne, 17 E. 72 St., New York 21.)

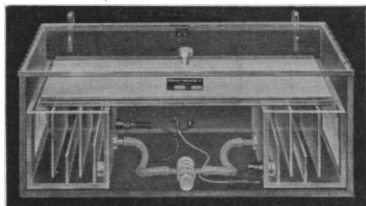
7-12. American Chemical Soc., Miami, Fla. (A. H. Emery, ACS, 1155 16 St., NW, Washington 6.)

8. Phi Lambda Upsilon, Miami, Fla. (T. B. Cameron, Dept. of Chemistry, Univ. of Cincinnati, Cincinnati 21, Ohio.)

8-10. American Soc. of Mechanical

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Engineers, spring, Birmingham, Ala. (C. E. Davies, ASME, 29 W. 39 St., New York 18.)

8-12. Food Bacteriology, internatl. symp., Cambridge, England. (Dr. Mossel, Central Inst. for Nutrition Research T.N.O., Catharijnesingel 61, Utrecht, Netherlands.)

8-12. Surface Activity, 2nd world cong., London, England. (Congress Secy., 14 Belgrave Sq., London, S.W. 1.)

9-10. Industrial Electronics Education Conf., annual, Chicago, Ill. (E. A. Roberts, Armour Research Foundation, Illinois Inst. of Technology, Chicago 16.)

10-12. Nuclear Instrumentation Conf., natl., Atlanta, Ga. (H. Kindler, Instrument Soc. of America, 313 Sixth Ave., Pittsburgh, Pa.)

10-13. Conference on Embryology and Experimental Morphology, Cambridge, England. (D. R. Newth, Dept. of Zoology, University College London, Gower St., London W.C. 1.)

11-13. American Assoc. of Pathologists and Bacteriologists, annual, Washington D.C. (E. A. Gall, Cincinnati General Hospital, Cincinnati 29, Ohio.)

11-13. Southwestern Inst. of Radio Engineers Conf. and Electronics Show, 9th annual, with 2nd National Simulation Conf., Houston, Tex. (F. C. Smith, Jr., Box 13058, Houston 19.)

12-13. Colorado-Wyoming Acad. of Science, annual, Fort Collins, Colo. (O. W. Olsen, Colorado A.&M. College, Fort Collins.)

12-13. Eastern Psychological Assoc., annual, New York, N.Y. (G. G. Lane, Dept. of Psychology, Univ. of Delaware, Newark.)

12-13. New Orleans Acad. of Sciences, New Orleans, La. (A. Welden, Dept. of Biology, Newcomb College, New Orleans, La.)

12-14. American Assoc. for Cancer Research, Chicago, Ill. (H. J. Creech, Inst. for Cancer Research, Fox Chase, Philadelphia 11, Pa.)

12-14. American Assoc. of Physical Anthropologists, annual, Ann Arbor, Mich. (J. H. Spuhler, Dept. of Human Genetics, Univ. of Michigan Medical School, Ann Arbor.)

12-14. American Soc. of Human Genetics, annual, Ann Arbor, Mich. (E. J. Gardner, Dept. of Zoology, Utah State College, Logan.)

12-14. National Speleological Soc., Natural Bridge, Va. (Mrs. M. McKenzie, 1407 Hickory Ct., Broyhill Park, Falls Church, Va.)

13. Society for the Scientific Study of Religion, spring, New York, N.Y. (W. C. Clark, Hartford School of Religious Education, Hartford 5, Conn.)

13. South Carolina Academy of Science, annual, Columbia (Miss M. Hess, Box 114, Winthrop College, Rock Hill, S.C.)

14-16. Telemetering Symposium, natl., Philadelphia, Pa. (A. S. Westneat, Jr., Applied Science Corp., Box 44, Princeton, N.J.)

14-20. American Physiological Soc., Chicago, Ill. (M. O. Lee, APS, 9650 Wisconsin Ave., NW, Washington 14.)

(See issue of 15 February for comprehensive list)

## EQUIPMENT NEWS

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Science does not assume responsibility for the accuracy of the information. All inquiries concerning items listed should be addressed to Science, Room 604, 11 W. 42 St., New York 36, N.Y. Include the name(s) of the manufacturer(s) and the department number(s).

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■ **PHOTO PRINTER** utilizes electronic control in "dodging" negatives during printing. A brilliant spot of light projected from a flying-spot-scanner cathode-ray tube produces the exposure. The spot scans the negative and the printing material. Variations of density in the negatives are sensed and evaluated in electronic circuits that compare the light value provided with the optimum for the printing material. This information is fed back to control the intensity of the printing beam, thus automatically correcting the exposure of each small sample area of the negative. Application to improving interpretability of x-ray photographs, for example, is apparent. (Norden-Ketay Corp., Dept. S164)