Meetings and Societies

Physiological Congress

Notwithstanding a spectacular storm in the English Channel that caused cancellation of all sailings on the day preceding the congress and delayed a number of British and American scientists, the 20th International Physiological Congress opened as scheduled on 30 July at Brussels, Belgium. The following 4 days were devoted mainly to papers of physiological interest, with the fifth and last day oriented more specifically to pharmacology. Credit for the smooth functioning of the scientific sessions and the full and enjoyable round of free civic entertainments must be accorded chiefly to the renowned president of the congress, C. Heymans (Ghent, Belgium) and his able secretary, J. Reuse (Brussels, Belgium), as well as to the members of the organizing committee.

The size of the congress can be judged from the statistics: more than 2600 members from 43 different countries presented 967 communications in 74 separate sessions. In addition, 55 papers were given in 13 symposia, two special meetings were held, 31 films were shown in three sessions, and 29 exhibits were demonstrated. Although communications could be given in any language of choice, the language most frequently employed was English, followed by French and to a much lesser extent by German, and on occasion a translator was used.

Behind the cold statistics of the congress lies the story of successful cooperation among scientists from countries the world over, who were welded into a single concrete union for the brief space of a week. The advantages of such an international congress were perhaps best expressed by C. H. Best (Toronto, Canada), president of the International Union of Physiological Sciences, in his speech at the opening ceremony of the congress, which was attended by gracious Queen Elizabeth of Belgium: "One always learns of important advances which difficulties of language, or lack of time and energy to read the literature, have previously denied us. I have met for the first time many of those who have become my close friends and have gained some of my most interesting pupils through attendance at these International Physiological Congresses. Our vital concern for the advance of our subject and the intense and friendly interest which this must produce in colleagues throughout the world is the motivating force for all the activities of your Council. . . ."

The congress was distinguished by the interest shown in the higher functions of the nervous system and in behavioral patterns, which were treated very thoroughly, both from the physiological and from the pharmacological standpoint. Morning sessions were occupied with personal communications and films, and afternoon sessions were devoted to symposia. Because adequate coverage of nearly 1000 private communications is impossible without some injustice in picking a few papers for review out of a large number of high merit, principal attention has been paid to reporting symposia. In this way the direction of emphasis set by the program committee of the congress is more faithfully preserved, while the opportunity is reduced for the reviewer to yield to an unconscious tendency to report more fully on papers within his own sphere of interest.

On the first day of scientific sessions, three symposia were held simultaneously. One of these, under the chairmanship of Lord Adrian (Cambridge, England), dealt with neuronic inhibition and excitation. The first speaker, P. Fatt (London, England), described recent work on the membrane potential of the neuron and concluded that changes of the excitatory and inhibitory synaptic responses are due to two distinct changes in permeability of neuron membranes. W. Feldberg (London, England), speaking from the pharmacological standpoint, described experiments concerning the injection of drugs into the third ventricle and found changes in excitation resembling anesthesia, grand mal, and certain types of psychiatric disturbances. A. Fessard (Paris, France) gave an authoritative survey of the data available from electric records of single neurons, pointing out the diversity in the types of neurons in the central nervous system and the existence of many gaps in our present knowledge.

A symposium on the general physiology of cardiac muscle was opened by S. Weidmann (Berne, Switzerland), who gave a penetrating survey of the electrophysiology of single heart muscle fibers. C. M. Brooks (New York, U. S. A.) presented the theory that fibrillation originates from influences that exaggerate dissimilarities of heart cells or create localized states of hyperexcitability. A. Szent-Györgyi (Woods Hole, U. S. A.), in his colorful lecture on contraction in the heart muscle fiber, advanced the hypothesis that the water molecules in heart muscle are arranged in the same lattice structure as in ice.

In a symposium on the physiology of acid secretion by the stomach, E. J. Conway (Dublin, Eire) reviewed the mechanism of the electron transport involved in acid secretion, and B. Uvnäs (Stockholm, Sweden) reviewed the nervous and humoral control of this secretion. Uvnäs agreed with the accepted view that hydrochloric acid secretion is stimulated by gastrin via a route lying outside the stomach and presented new evidence that release of gastrin by the antrum is inhibited by the hydrochloric acid within the stomach, if this acid reaches the antrum. Thus if the intact antrum is protected from the acid content of the stomach, as may occur in surgery on human beings, a dangerous hypersecretion of gastric juice may result. Clinical experience suggests that the mucosa of the duodenal bulb may also secrete gastrin, explaining cases of persistent hypersecretion following an operation of gastric resection that leaves the duodenal bulb intact. In the same symposium, R. A. Gregory (Liverpool, England) reported that dietary fat may liberate a duodenal hormone that inhibits gastric secretion, in addition to its well-known reduction of gastric motility. The last speaker, K. M. Bykov (Leningrad, U.S.S.R.), reported that glands of the lesser curvature of the stomach are under the influence of the vagus, while glands of the greater curvature are innervated mainly by the sympathetic nerve, and through these two nerves the cerebral cortex exerts a powerful stimulating effect on gastric secretory cells. Observations of secretion in a dog with two pouches formed on the lesser and greater curvatures showed that gastric secretion is excited by the vagus when the dog is eating bread but by the sympathetic nerve when it is drinking milk. Although denervation of the pouches reduced secretion, administration of carbocholine and adrenaline restored normal secretion to food stimuli.

On the next afternoon, four symposia were held simultaneously. In the symposium on the initiation of the sensory discharge, the chairman, H. Schaefer (Heidelberg, Germany), summarized the problem apparent from the three

papers presented by asking how a few (2 to 10) quanta of light could arouse a process powerful enough to depolarize a membrane that is both far away and large in surface. The answer given by Schaefer was that a complicated multiplier process, biochemical in nature, may be involved in the primary process of vision; a similar explanation may also hold for mechanical receptors, for which the chemical structure of the membrane will be the dominant factor. Schaefer thought that purely electrophysiological methods for investigating cellular excitation were nearing the limit of their usefulness and biochemical methods were now required to uncover the root of the problem.

The first speaker of a symposium on the physiology of water and food intake, B. Andersson (Stockholm, Sweden), showed a film demonstrating the effect of stimulating the thirst center in the hypothalamus of the goat by means of electric signals supplied to implanted electrodes. After a time lapse as short as 5 seconds, the goat began to drink from a nearby tank of water and continued drinking until 2 or 3 seconds after the end of electric stimulation; thus a goat could be induced to drink up to 40 percent of its own body weight of water, which constitutes a toxic dose. Destruction of the thirst center permanently reduced or temporarily eliminated water intake, suggesting that the thirst center is an essential structure. J. R. Brobeck (Philadelphia, U.S.A.) presented evidence for the view that the medial hypothalamus is concerned with "satiety" while the lateral portions are responsible for "appetite." Thus medial lesions in all species studied, including man, lead to obesity, while destruction of the lateral regions in experimental animals produces fasting.

At the suggestion of the Academy of Sciences of Moscow, a special symposium on the structure and function of the brain was held, in which six workers from the U.S.S.R. participated. What apparently constituted the official standpoint of physiologists and pharmacologists from the U.S.S.R. was later obtained during a conversation with S. V. Anichkov (Leningrad, U.S.S.R.). This outlook is based on Pavlov's view that the nerve system is the controlling factor for all functions of the organism. According to this view, the organism should be studied as a whole and under conditions as close as possible to normal conditions of life rather than through resection or isolation of tissues or organs, though such latter studies are not necessarily contraindicated. Humoral factors are of interest, but are connected with nerve systems and cannot rightly be separated one from the other.

Another special symposium was held on the afternoon of 1 Aug. on the physiological effects of gravitational stress, a subject of particular interest to aeromedical research workers. The meeting had a truly cosmopolitan flavor, with ten speakers representing eight different countries. The reports included a paper by R. H. Goetz (Cape Town, South Africa) on the blood circulation of the giraffe, an animal that must pump blood to such vertical heights that it is to students of circulation what the whale is to Paul Dudley White.

The next afternoon and evening were set aside for sightseeing excursions to Ostend, Ghent, or Bruges aboard two trains hired specially for congress members. During daytime, conducted tours enabled members to see places of historic interest, visit museums and art galleries, indulge their hobby of photography, or shop for delicate Belgian lace. An evening spent in Ghent was especially memorable, for the narrow cobbled streets, the gilded municipal buildings, and the quaint canals were all floodlit for the occasion.

On the afternoon of 3 Aug., a symposium was held on the general physiology of striated and smooth muscle. The first speaker, A. F. Huxley (Cambridge, England), presented substantial evidence for the novel view that when a muscle fiber stretches or contracts the filaments of actin and myosin remain essentially constant in length but slip past one another in each zone where they overlap. The rival theory, currently widely accepted, holds that contraction is produced by the progressive folding or coiling of filaments. B. Katz (London, England) presented evidence for the hypothesis that the end-plate potential is due to a nonspecific increase in ionic permeability in the junctional region, in which the prevalent ions are simultaneously involved. Rounding out the session, E. Bülbring (Oxford, England) discussed microelectrode recordings of the responses of smooth muscle.

In a symposium on hypothermia, E. Neil (London, England) analyzed in detail the dangers of both respiratory and metabolic acidosis. To insure full recovery of *all* patients after circulatory arrest during hypothermia (26°C), a period of arrest no longer than 4 minutes was recommended. M. Schneider (Köln, Germany) stated that hypothermia leads to irreversible changes only if ice forms in the tissues, or if asphyxia occurs through respiratory or cardiac failure. According to Schneider, many of the adverse changes seen in hypothermia are due to lack of oxygen and could be avoided if oxygen consumption were maintained. The last speaker, J. Giaja (Belgrade, Yugoslavia), described work by Vidović on the effect of hypothermia on pregnancy in rats. Exposure to hypothermia early in pregnancy produced no visible ill effects, while at later stages the effects became progressively more adverse as term was approached.

Starting at a time when the other symposia were just concluding, a special symposium on quantitative drug antagonism turned into a marathon of endurance in the crowded lecture theater, with progressive attrition of the audience as the hands of the clock crept inexorably toward 7 o'clock. The first speaker, S. Loewe (Salt Lake City, U.S.A.), discussed further advances in the use of his isobolograms for depicting quantitative drug antagonism. J. H. Gaddum (Edinburgh, Scotland) stressed the possibility that a drug might produce its maximum effect when only a small percentage of receptor sites are saturated, a possibility that would upset some current theories of drug action by contradicting one of their basic assumptions. The next speaker, H. O. Schild (London, England), in general supported this point of view. E. J. Ariens (Nijmegen, the Netherlands) outlined different theories for the action of drug and antagonist on receptor to produce an effect and applied his theories to experimental data on cholinesterase inhibition. M. Nickerson (Winnipeg, Canada) discussed drug antagonism from the standpoint that receptor response is proportional to the number of sites occupied, with maximum response produced only when all receptor sites are occupied. In the last paper, M. Rocha e Silva (São Paulo, Brazil) presented evidence that the diffusion process is not responsible for the delay in recovery from the effects of drug antagonists. The symposium served to demonstrate a lack of universal agreement regarding the basic mechanism of drug antagonism.

In one of the two sessions held in the afternoon of the "Pharmacologists' Day," B. A. Houssay (Buenos Aires, Argentina) presided over a symposium concerning pharmacological actions on the hypothalamus and pituitary gland. In his report on the control of adrenocorticotrophic (ACTH) secretion by the pituitary gland, C. Fortier (Houston, U.S.A.) stressed that ACTH secretion in response to stress is possible in the absence of the adrenals and that the central nervous system is involved in many cases of ACTH discharge into the circulation. Evidence is accumulating that the action of the hypothalamus on the pars distalis of the pituitary is not conveyed by nerve fibers, but that some chemical agent is liberated in the hypothalamus and is conveyed to the pituitary by the portal vein system of the stalk. According to Fortier, it is not clear whether the site of the inhibitory action of corticoids on ACTH release is at the hypothalamic or at the pituitary level. G. W. Harris (London, England) concluded that thyroid func-

tion is governed by the level of TSH (thyroid-stimulating hormone) secretion by the anterior pituitary, which in its turn is regulated humorally by the hypothalamus via the hypophyseal portal system. The hypothalamic humoral factor apparently produces simultaneous release of both ACTH and TSH, while thyroxin acts on the hypothalamus as well as on the pituitary. The last speaker, S. E. de Jongh (Leiden, the Netherlands), discussed the regulation of gonadotrophin secretion that leads to ovulation. Stimuli that produce a release of gonadotrophic hormone may follow a nervous pathway that ends in the median eminence of the hypothalamus, releasing a humoral factor that is conducted to the pars distalis via the hypophyseal portal system. This view explains why certain substances that act either on the hypothalamus or on the pituitary can initiate or inhibit ovulation.

C. F. Schmidt (Philadelphia, U.S.A.), chairman of a symposium on psychopharmacology that concluded the formal meetings, summarized his impressions of the symposium in three points. First, there was general agreement that the reticular formation of the midbrain was closely linked with mental abnormalities and with the site of action of tranquilizing or psychoses-producing drugs; further study of this area of the brain would appear to hold particular promise at this time. Second, the symposium served to discredit some attractive biochemical possibilities, such as that serotonin may be a prominent factor in ataraxia or hallucinations. Third, the correlation between chemical structure and effects of psychoses-producing drugs now appears less definitive, and there is at present little prospect of explaining drug actions or spontaneous mental abnormalities in terms of a common chemical grouping.

Among the most entertaining features of the congress were the film sessions, in which high standards of competency and ingenuity were displayed; unfortunately space permits mention of only a few of many memorable films. O. G. Edholm *et al.* (London, England) answered the question on what to do in a shipwreck that leaves one clinging to a piece of driftwood in cold water miles from shore: the best bet is to hang on quietly, perhaps giving an occasional kick or two. According to Edholm, the real killer in cold water is loss of body temperature, aided and abetted by exhaustion. A thin person loses body temperature fast in cold water if he remains inactive, but even faster if he swims about, because the heat generated passes into the water and is lost. A fat person on the other hand is insulated by his thick layer of subcutaneous fat and therefore loses heat much more slowly if he remains still, or not at all if he swims about; yet, because of the danger of exhaustion, he also should remain relatively inactive. In a film entitled "Physiology on Mount Everest," L. G. C. Pugh *et al.* (London, England) stated that partly owing to the physiological advances made in the successful expedition on Mount Everest in 1953, within three succeeding years all the six highest peaks in the world have now been climbed. One of the advances has been the realization that acclimatization for 3 to 4 weeks at altitudes up to 18,000 feet is necessary to shake off infectious diseases brought out in this environment as well as to obtain physiological adjustment. A fluid intake as high as 3 to 4 liters per day is required, and because of loss of appetite most of the calories should be given in liquid form. The best oxygen device to date has been a lightweight (aluminum) open-circuit breathing apparatus, while the special multilayer clothing and the camping equipment developed to withstand the bitter cold and high winds have fulfilled essential requirements for success. In part of their film regarding physiological problems on a polar expedition, H. E. Lewis and J. P. Masterton (London, England) explained that the Eskimo's igloo is a most efficient shelter because of the wonderful insulation provided by myriads of tiny pockets of air trapped within the frozen snow.

At the closing dinner, the president of the congress announced that the next International Physiological Congress is scheduled to be held in 1959 at Buenos Aires, Argentina, under the distinguished chairmanship of B. A. Houssay. At my table, scientists from widely separated lands joined in the toast "to the banishment of all frontier-barriers in science." A universal feeling of good will was also reflected by the official speakers, who expressed their satisfaction with the success of the congress.

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Semiconductors and Phosphors

An international conference on semiconductors and phosphors was held in Garmisch-Partenkirchen near Munich, Germany, 27 Aug.–1 Sept. The conference was sponsored by the International Union of Pure and Applied Physics with the support of UNESCO. It was the third international conference on semiconductors; the first was held at Reading, England, in June 1950, and the second was held at Amsterdam, the Netherlands, in June 1954. The careful preparation of the organizational committee, consisting of W. Gerlach, G. Joos, H. Maier-Leibnitz, M. Schön, and H. Welker, contributed greatly to the success of the conference. The conference was attended by about 460 scientists from 18 different countries. About 90 papers, including summarizing reviews as well as communications of new work, were presented.

The field covered by the papers was outlined by W. Schottky (Erlangen) in a keynote address. A number of papers dealt with the introduction of crystal imperfections. The incorporation of foreign atoms, as related to the lattice defects, the carrier concentration, and the composition of the surrounding gas, was discussed in a paper by Kröger and Vink (Philips, Eindhoven). Similar problems were discussed by Riehl (Techn. Hochschule, München) in connection with luminescence in ZnS and other II-IV compounds. The energies of foreign ion incorporation in ionic crystals was considered by Brauer (Osram, Augsburg). Crystal defects produced in the growth of semiconductor crystals was discussed by Billig (Aldermaston, England), and experiments on the generation of dislocations by thermal stress were reported by Penning (Philips, Eindhoven). The effects of lattice defects produced by irradiation with high-energy particles were reported by Fan and Lark-Horovitz (Purdue University) for a number of semiconductors and by another paper dealing with the effect of alpha-particles on silicon *p-n* junctions (P. Günther and G. Köhl).

Investigations of various properties of semiconductors were reported. Drift mobility of carriers and magnetoresistance were studied for different substances. Carrier lifetime and trapping, photoconductivity, and photoelectromagnetic effect were subjects of several papers. Semiconductors besides Ge, Si, and the III-V compounds were studied. Among these are SiC, Bi_2Te_3, and new ternary compounds—that is, $HgIn_2Te_4$ and various II-IV-V_2 compounds of chalkopyrite structure, such as $CdSnP_2$.

The effect of electron-phonon interaction in thermal conduction and thermoelectricity was discussed in two papers, one of which, by Herring (BTL), gave a comprehensive treatment of the subject. Various effects of elastic strain on the conductivity of semiconductors were discussed by Keyes (Westinghouse). A paper on the magnetic susceptibility of semiconductors was given by Busch (Zürich).

Recent progress in the study of surface states in Ge and Si was reviewed by Bardeen (University of Illinois). Other papers on surface phenomena dealt with surface states in PbS, electron emission from Ge following bombardment by high-energy electrons, and so on.

In the field of phosphors, the transport of excitation energy was discussed by Kallmann (New York University) for

liquid organic systems and by Hoogenstraten (Philips, Eindhoven) for inorganic crystal phosphors. Several papers were concerned with luminescence and its quenching in ZnS and CdS phosphors containing different activators. Nonsulfide phosphors were reviewed by Henderson (Thorn Electrical Industries).

Concerning electroluminescence, the mechanism of the effect was discussed by Klassens (Philips, Eindhoven) for sulfide phosphors suspended in a binder. Destriau and Domerque (Laboratoire de Luminescence, Paris) reported experiments showing the absence of a voltage threshold. Photo emission accompanying breakdown and recombination processes in silicon were reported by McKay (BTL) and Haynes (BTL), respectively. Electroluminescence in other semiconductors was also reported.

There were theoretical papers on various problems, including statistics of trapping by Landsberg (University of Aberdeen), Zener effect and impact ionization by Franz (Universität, Münster). On the more practical side, Spenke (Siemens-Schuckert, Pretzfeld), talked about the preparation and properties of silicon power rectifiers, and several other papers dealt with *p-n* junctions in Ge and Si.

The papers will be published in a special volume to appear early in 1957.

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Meeting Notes

■ A proposed merger will highlight the national convention of the Association of Technical Writers and Editors and the Society of Technical Writers at the Hotel Statler, New York, 15–16 Nov. The merger proposal, if adopted, would bring together 1000 members of TWE and 500 members of STW in the largest national organization of specialists in technical communications.

More than 1000 members from both groups are expected to attend. The program, on the theme "What is expected of technical writers," includes papers by 20 technical editors, librarians, illustrators, and educators. Principal sessions will cover improved technical writing performance, producing and organizing technical literature, publications problems, instructional manuals, and industrial and government technical writing.

■ A 2-day conference on undergraduate mathematics curriculum, sponsored jointly by the National Science Foundation and Hunter College, was held recently at Hunter under the direction of Mina Rees, dean of faculty. The meeting, which was attended by mathematicians from both endowed and publicly supported colleges, was called as a result of recommendations by the Subcommittee on Undergraduate Colleges of the Committee on Survey of Research Potential and Training in the Mathematical Sciences. The committee operates under a National Science Foundation grant to the University of Chicago. G. A. Hedlund, chairman of the mathematics department, Yale University, is chairman of the subcommittee. Other members are H. W. Brinkman, Swarthmore College; W. L. Duren, University of Virginia; A. G. Gleason, Harvard University; J. G. Kemeny, Dartmouth College; K. O. May, Carleton College; Leon W. Cohen, National Science Foundation.

The colleges represented were selected on the basis of their having an active program for meeting current demands for more adequate mathematical training. Participants reported on their programs and methods, which were then discussed by the conference. The results of the two days of deliberation will be issued in the form of a report that will be widely distributed, so that new ideas on undergraduate mathematical instruction can be made available to the whole community of mathematics.

■ A search for high-school students who are capable of filling this country's need for scientists and engineers was planned at a Joint Program for Technical Education, sponsored by the Columbia School of Engineering, at Arden House, Harriman, N.Y., 30 Oct.–2 Nov. The program was supported by the Hebrew Technical Foundation of New York. The conference was the first of a series planned to work out ways in which engineering schools and colleges can help science departments of high schools.

Principals and guidance counselors from a pilot group of 25 schools in the New York area have been invited to meet with representatives of engineering schools, liberal arts colleges, and professional and industrial groups to devise machinery for increasing the number of students going on to higher technical education. Talks and papers presented by manpower, teaching, and testing experts set the pattern for workshop discussions. The discussions and the speeches will be published.

The specialists who addressed the conference included Howard A. Meyerhoff, executive director of the Scientific Manpower Commission; Charles C. Cole, Jr., assistant dean of Columbia College; Paul Brandwein of Teachers College and author of *The Gifted Student as Future Scientist*; Frank H. Bowles, director of the College Entrance Examination Board; Henry Chauncey of the Educational Testing Service, Princeton, N.J.; and Sherwood R. Mercer, program chairman of the School of Engineering's first Combined Plan Conference.

■ The fall meeting of the American Society for Pharmacology and Experimental Therapeutics will be held 8–10 Nov. in French Lick, Ind., according to an announcement made by Harold C. Hodge, secretary.

Forthcoming Events

November

29–1. Florida Acad. of Sciences, 21st annual, Tampa. (R. A. Edwards, Geology Dept., Univ. of Florida, Gainesville.)

30. American Rheumatism Assoc., Bethesda, Md. (E.F. Hartung, 580 Park Ave., New York, N.Y.)

30–1. Oklahoma Acad. of Science, Stillwater. (D. E. Howell, Entomology Dept., Oklahoma A. & M. College, Stillwater, Okla.)

30–1. Tennessee Acad. of Science, Murfreesboro. (D. Caplenor, Dept. of Biology, Peabody College, Nashville 4, Tenn.)

December

2. American Acad. of Dental Medicine, 11th mid-annual, New York, N.Y. (A. Reiner, 114–01 201 St., St. Albans 12, N.Y.)

2–7. Radiological Soc. of North America, Inc., annual, Chicago, Ill. (D. S. Childs, 713 E. Genesee St., Syracuse 2, N.Y.)

3–8. International Cong. on Rockets and Guided Missiles for Continental and Telecommunications Connections, Paris, France. (Assoc. for the Encouragement of Aeronautical Research, rue de Courtly 1, Paris 7e.)

5. Recent Advances in the Chemistry of Natural Products, 8th annual Ciba Foundation Lecture, London, England. (G. E. W. Wolstenholme, 41 Portland Place, London, W.1.)

5–7. Instrumentation Conf., 2nd, Inst. of Radio Engineers, Atlanta, Ga. (M. D. Prince, Engineering Experiment Station, Georgia Inst. of Technology, Atlanta.)

6. Amino Acid Imbalance in Nutrition, Assoc. of Vitamin Chemists, Chicago, Ill. (M. Freed, Dawe's Laboratories, Inc., 4800 S. Richmond St., Chicago 32.)

6–7. American Astronautical Soc., 3rd annual, New York, N.Y. (N. V. Petersen, AAS, 516 Fifth Ave., New York 36.)

6–8. American Phytopathological Soc., annual, Cincinnati, Ohio. (G. S. Pound, Dept. of Plant Pathology, Univ. of Wisconsin, Madison.)

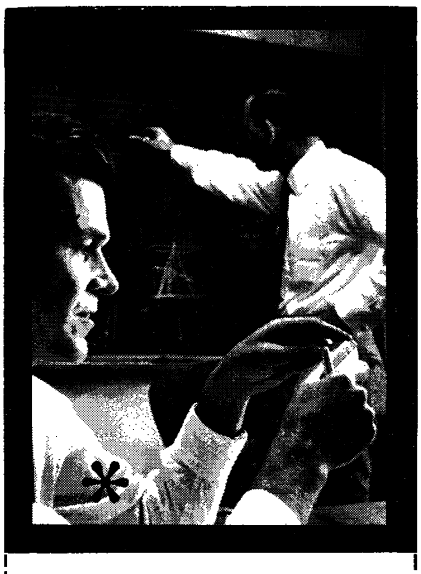
6–8. Potato Assoc. of America, annual, Cincinnati, Ohio. (W. J. Hooker, Dept. of Botany and Plant Pathology, Michigan State Univ., East Lansing.)

6–9. American Psychoanalytic Assoc., New York, N.Y. (J. N. McVeigh, APA, 36 W. 44 St., New York 36.)

7–8. Association for Research in Nervous and Mental Disease, annual, New York, N.Y. (R. J. Masselink, 710 W. 168 St., New York 32.)

8–11. American Acad. of Optometry, annual, Houston, Tex. (C. C. Koch, 1506 Foshay Tower, Minneapolis 2, Minn.)

9–12. American Inst. of Chemical En-



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gineers, annual, Boston, Mass. (F. J. Van Antwerpen, AICE, 25 W. 45 St., New York 36.)

9–12. American Soc. of Agricultural Engineers, Chicago, Ill. (J. L. Butt, ASAE, St. Joseph, Mich.)

10–12. American Nuclear Soc., winter meeting, Washington, D.C. (ANS, P.O. Box 963, Oak Ridge, Tenn.)

10–12. Eastern Joint Computer Conf., New York, N.Y. (J. R. Weiner, Remington Rand, Inc., 315 Fourth Ave., New York, N.Y.)

10–12. North Central Weed Control Conf., 13th annual, Chicago, Ill. (O. C. Lee, Agricultural Extension Service, Purdue Univ., Lafayette, Ind.)

12–14. European Assoc. of Exploration Geophysicists, Milan, Italy. (B. Baars, Carel Van Bylandtlaan 30, The Hague, Holland.)

13–15. Texas Acad. of Science, annual, Brownwood, Tex. (G. C. Parker, Texas A.&M. College, College Station.)

19. Arctic Branch, Alaska Div., AAAS, College Alaska. (Miss C. Juedes, Box 47, College.)

26–31. American Assoc. for the Advancement of Science, annual, New York, N.Y. (R. L. Taylor, AAAS, 1515 Massachusetts Ave., NW, Washington 5.)

The following 55 meetings are being held in conjunction with the AAAS annual meeting.

AAAS Academy Conference (L. Taylor, West Virginia Univ., Morgantown). 29–30 Dec.

AAAS Cooperative Committee on the Teaching of Science and Mathematics (M. Meister, Bronx High School of Science, New York 68). 27 Dec.

AAAS-Gordon Research Conferences (W. G. Parks, Univ. of Rhode Island, Kingston). 27 Dec.

Alpha Chi Sigma (H. G. Seavey, 30 Church St., Room 340, New York 7). 28 Dec.

Alpha Epsilon Delta (M. L. Moore, 7 Brookside Circle, Bronxville, N.Y.). 29 Dec.

American Assoc. of Clinical Chemists (A. E. Sobel, Jewish Hospital of Brooklyn, Brooklyn 16, N.Y.).

American Assoc. of Hospital Consultants (E. D. Barnett, School of Public Health, Columbia Univ., New York 32.)

American Assoc. of Scientific Workers (R. J. Rutman, 6331 Ross St., Philadelphia 44, Pa.). 29 Dec.

American Astronomical Soc. (J. A. Hynek, Harvard College Observatory, Cambridge 38, Mass.). 26–29 Dec.

American Documentation Inst. (J. Hilsenrath, National Bureau of Standards, Washington 25). 27–29 Dec.

American Educational Research Assoc. (A. G. Wesman, Psychological Corp., 522 Fifth Ave., New York 36). 29 Dec.

American Meteorological Soc. (R. J. Roth, Crop-Hail Insurance Actuarial Assoc., 209 W. Jackson Blvd., Chicago, Ill.). 28 Dec.

American Museum of Natural History (G. Reekie, AMNH, Central Park West at 79 St., New York, N.Y.). 26 Dec.

American Nature Study Soc. (R. L. Weaver, Univ. of Michigan, Ann Arbor). 26–30 Dec.

American Philosophical Assoc., Eastern Div. (J. Wild, Harvard Univ., Cambridge 38, Mass.). 27 Dec.

American Psychiatric Assoc. (B. Pasamanick, Ohio State Univ., Columbus 10). 28–29 Dec.

American Soc. of Hospital Pharmacists (G. E. Archambault, U.S. Public Health Service, Washington 25). 29 Dec.

American Soc. of Range Management (F. G. Renner, Soil Conservation Service, U.S. Dept. of Agriculture, Washington 25). 28 Dec.

American Statistical Assoc. (R. E. Johnson, Western Electric Co., New York 7).

Association for Computing Machinery (J. P. Nash, Univ. of Illinois, Urbana).

Association of American Geographers (P. M. Stern, Conservation Foundation, 30 E. 40 St., New York, N.Y.).

Astronomical League (H. B. Davidson, 812 Park Ave., New York 21.)

Conference on Scientific Editorial Problems (J. G. Adashko, Ford Instrument Co., Long Island City, N.Y.). 26–28 Dec.

Conference on Scientific Manpower (T. J. Mills, National Science Foundation, Washington 25). 26 Dec.

Ecological Soc. of America (M. F. Buell, Rutgers Univ., New Brunswick, N.J.). 26–30 Dec.

Entomological Soc. of America (P. W. Oman, Plant Industry Sta., Beltsville, Md.). 27–30 Dec.

Genetics Soc. of America (A. W. Pollister, Columbia Univ., New York 27). 28 Dec.

History of Science Soc. (Miss P. Kibre, Hunter College, New York, N.Y.). 27–29 Dec.

Institute of Mathematical Statistics (Miss E. Scott, Univ. of California, Berkeley 4).

International Council for Exceptional Children (M. H. Fouracre, Columbia Univ., New York 27). 26 Dec.

International Union for the Study of Social Insects, North American Section (T. C. Schneirla, American Museum of Natural History, Central Park West at 79 St., New York, N.Y.). 26–27 Dec.

Mountain Lake Biological Sta. (B. D. Reynolds, Univ. of Virginia, Charlottesville).

Mycological Soc. of America (L. S. Olive, Columbia Univ., New York 27). 26 Dec.

National Acad. of Economics and Political Science (D. P. Ray, George Washington Univ., Washington, D.C.). 27 Dec.

National Assoc. for Gifted Children (Miss A. F. Isaacs, 409 Clinton Springs Ave., Cincinnati, Ohio).

National Assoc. for Research in Science Teaching (N. Washton, Queens College, Flushing 67, L.I., N.Y.). 27 Dec.

National Assoc. of Biology Teachers (J. Breukelman, State Teachers College, Emporia, Kan.). 26–30 Dec.

National Assoc. of Science Writers (J. E. Pfeiffer, New Hope, Pa.).

National Geographic Soc. (W. R. Gray, NGS, 16 and M Sts., NW, Washington 6). 29 Dec.

National Speleological Soc. (Brother G. Nicholas, LaSalle High School, Cumberland, Md.). 29 Dec.

New York Acad. of Sciences (R. F. Nigrelli, New York Zoological Soc. and

M. Kopac, New York Univ., Washington Sq., New York, N.Y.). 29 Dec.

Philosophy of Science Assoc. (C. W. Churchman, Case Inst. of Technology, Cleveland, Ohio). 29–30 Dec.

Pi Gamma Mu (B. H. Williams, Industrial College of the Armed Forces, Washington 25). 26 Dec.

Scientific Research Soc. of America (D. B. Prentice, Yale Univ., New Haven, Conn.). 26–27 Dec.

Sigma Delta Epsilon (C. Chandler, Boyce Thompson Inst. for Plant Research, 1086 N. Broadway, Yonkers 3, N.Y.).

Sigma Pi Sigma (M. W. White, Pennsylvania State Univ., University Park).

Society for the Advancement of Criminology (D. E. J. MacNamara, New York Inst. of Criminology, 2109 Broadway, New York, N.Y.). 29 Dec.

Society for the Advancement of General Systems Theory (L. von Bertalanffy, Mt. Sinai Hospital, Los Angeles 48, Calif.). 29–30 Dec.

Society for the Study of Evolution (H. Lewis, Univ. of California, Los Angeles 24). 27–29 Dec.

Society of General Physiologists (A. Shanes, National Institutes of Health, Bethesda, Md.).

Society of Systematic Zoology (R. E. Blackwelder, Box 500, Victor, N.Y.). 27–30 Dec.

Society of the Sigma Xi (T. T. Holme, Yale Univ., New Haven, Conn.). 27 Dec.

Society of Vertebrate Paleontology, annual (J. T. Gregory, Peabody Museum of Natural History, Yale Univ., New Haven, Conn.). 28–30 Dec.

Torrey Botanical Club (David Keck, New York Botanical Garden, Bronx Park, New York 58). 26–27 Dec.

United Chapters of Phi Beta Kappa (C. Billman, PBK, 1811 Q St., NW, Washington 6). 27 Dec.

27–28. Fluid Mechanics in Chemical Engineering, American Chemical Soc., Lafayette, Ind. (W. E. Ranz, Dept. of Engineering Research, Pennsylvania State Univ., University Park.)

27–28. Linguistic Soc. of America, Philadelphia, Pa. (A. A. Hill, Box 7790, University Sta., Austin 12, Tex.)

27–29. American Mathematical Soc., 63rd annual, Rochester, N.Y. (J. H. Curtiss, AMS, 80 Waterman St., Providence 6, R.I.)

27–29. American Physical Soc., Monterey, Calif. (W. A. Nierenberg, Univ. of California, Berkeley 4.)

27–29. Western Soc. of Naturalists, annual, Goleta, Calif. (D. Davenport, Santa Barbara College, Goleta.)

27–30. American Economic Assoc., annual, Cleveland, Ohio. (J. W. Bell, 629 Noyes St., Evanston, Ill.)

27–30. American Finance Assoc., annual, Cleveland, Ohio. (G. E. Hassett, Jr., New York Univ., 90 Trinity Place, New York 6.)

28. Society for the Advancement of Criminology, annual western, Fresno, Calif. (W. Dienstein, Fresno State College, Fresno.)

28–29. American Folk-Lore Soc., annual, Santa Monica, Calif. (MacE. Leach, Bennett Hall, Univ. of Pennsylvania, Philadelphia 4.)

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