# News and Notes

## Association for Research in Nervous and Mental Disease

Robert G. Grenell

*Department of Psychiatry, University of Maryland Medical School, Baltimore*

*Patterns of organization in the central nervous system.* The organizers of this two-day meeting (New York, December 15–16) presumably wished the program to encompass the entire range of central nervous system electrophysiology—a heroic task, the accomplishment of which would, and did, necessitate a fair measure of rushing and a relatively small measure of discussion. (The latter, however, is not unusual at meetings of this association, during which it is customary for audience participation to be kept minimal.) The discussions, with a few exceptions, were primarily concerned with the finer details of neural pathways and physiological mechanisms, about which a fair amount is already known. It was most interesting that correlation of anatomy and physiology played a predominant role in the program, one of the most notable studies of this type being that of Jerzy Rose, on the cortical projection of the reticular complex of the thalamus—a projection (which differs from the more familiar thalamic projection) on a large part of the cerebral mantle, if not on the entire neocortex.

The papers were presented in four sessions: special reflexes, the motor cortex and descending pathways, cerebellar organization and projection, and ascending pathways and highest level integrating systems. Each of these groups presented a wealth of detailed material, new observations, and unsolved problems, some of which cannot be fully appreciated until they appear in book form and are studied carefully. Following each session an attempt was made to summarize the status of our knowledge in that area, in the light of the observations presented. Perhaps at future meetings manuscripts will be available to the summarizers far enough ahead of time to allow for some preparation.

It became apparent rather early in the meeting that many of the ideas as to basic facts about the nervous system—ideas expounded as classical truths in the textbooks—would have to be markedly revised, and many concepts altered. There has been too great a tendency toward oversimplification of theory in the central nervous system at all levels from the spinal cord up. The representation of the simplest reflex in the spinal cord as the "typical" reflex arc does not convey the fundamental point—that, to explain the elements of a spinal reflex, we cannot use a single path. As pointed out by Dr. Denny-Brown, we must have overlapping, capacity for summation, etc. No one impulse in one afferent produces a response of only one impulse in one efferent fiber. Analyses of various reflex patterns were given by Drs. Lloyd, Bernhard, Hines, and Magladery; a certain amount of agreement in their findings was apparent, but many points are still unclarified and confused. Although one can separate a monosynaptic (fast-fiber, related to the myotatic unit) from a multisynaptic (slow-fiber) system and arrive at a partial explanation of regulatory mechanisms (i.e., regulation of synergic and antagonistic activity, mechanisms of facilitation and inhibition, etc.), the exact functions of certain fibers and fiber-cell interrelationships still remain to be determined. As pointed out by Dr. Magladery (as a result of his beautiful studies on spinal reflexes in man), some people who seem to have no *recordable* monosynaptic response get around pretty well. There is also evidence to show that monosynaptic and multisynaptic arcs may have certain fundamental functional differences—they may be not only separate systems, but also reciprocal. A note of progress was struck by the work of Kuffler and Hunt on the efferent nervous control of muscle spindle discharge. They have demonstrated a system of fine fibers that are concerned with response to muscle tension increments. A large part of the spinal cord and ventral root outflow is confined to the regulation of afferent discharges. Some of the complexity of the motor proprioceptive organs thus begins to be unraveled. Following deep sensibility to the higher levels of the central nervous system, Mountcastle reported on afferents (not cutaneous) in muscle nerves which conduct directly to the cerebral cortex—high-velocity fibers (from bone, periosteum, and deep connective tissue to the thalamic nuclei) primarily to somatic areas 1 and 2, as well as some to area 3. Group I fibers go to the cerebellum.

Studies of brain stem, cerebellum, subcortical and cortical structures and integrations point primarily to certain basic patterns established in the nervous system, and to problems of consciousness. Cerebral cortical mapping in animals and man has revealed further details of sensory and motor "localization." Penfield appears to have evidence in man for a sensory field on the medial wall of the hemisphere. Woolsey and his colleagues have carefully investigated patterns of localization in precentral and supplementary motor areas of the rat. As in the monkey, in the motor area there is a representation of the whole animal. The usual diagram in the texts showing head and trunk areas separated by the arm area is not correct. Premotor lesions of the past have presumably involved removal of parts of three motor areas: 6 ax of the precentral motor area, arm area, and pupillary area of 6 on the dorsal surface.

The cerebral cortical pattern is apparently redupli-

cated in the cerebellar cortex, the anterior lobe and paramedian lobule corresponding to the somatomotor cerebral cortex. The functions of the uvula and paraflocculus are still unknown, but may be olfactory.

Too little attention has been paid in the past to the correct parameters for physiological stimulation in cortical mapping. These problems must be taken into account and more attention paid to such things as tissue impedance, current, wave form, duration, and frequency. John Lilly stressed the fact that, if these factors are not fully understood, large errors will result, and the stimulation may be to the white matter instead of the gray.

Studies of Penfield, Jasper, Magoun, and their colleagues point anew to the "highest levels" of the central nervous system being subcortical. The highest centers may be at diencephalic and mesencephalic levels. Penfield has suggested the use of the term "centrencephalic" system—a system responsible for the integration of function of the two hemispheres, and containing (*a*) a mechanism used to record man's current perceptions and (*b*) a mechanism used in integration, acquired skills, and the recollection of past experience. Evidence suggests (as pointed out by Jasper) that the cortical sensory areas, for example, may be only a relay station in, perhaps, a thalamo-cortico-thalamic system. Simple arrival of impulses at the sensory cortex is not enough to explain conscious sensation, nor does the strength of a stimulus always explain its dominance in consciousness. Neurophysiology has thus begun to remove consciousness from the cortex, where it was placed for want of evidence for its residence in any other area. This point was further stressed in the report of Dr. Magoun on the ascending reticular activating system. According to his observations, stimulation of an area that runs through most of the length of the brain stem in the central core (and especially the rostral portion) will result in desynchronization of the electroencephalogram. Stimulation can reproduce the cortical sleep-waking pattern. These pathways appear to be related to the ventromedial thalamus, which may be the primary thalamic area related to desynchronization of the electroencephalogram.

Dr. Lashley's closing paper, on the functional interpretation of anatomic patterns, discussed certain spatial and temporal coordinates in integration. The previous papers had demonstrated that some basic anatomic, as well as psychiatric, problems have infiltrated into neurophysiologic research. Lashley's discussion showed that the neurophysiologist must also be prepared to take psychological factors and problems into his awareness.

It was unfortunate that time did not allow any discussion of metabolic patterns of organization as well as structural areas.

## Scientists in the News

**Robert T. Baldwin,** of the Chlorine Institute; **Harry B. McClure,** of Union Carbide and Carbon Corporation; **John E. McKeen,** of Chas. Pfizer & Company, Inc.; **Richard D. Hoak,** of the Mellon Institute; and **Robert C. Swain,** of the American Cyanamid Company, have been appointed to the advisory board of *Industrial and Engineering Chemistry* and *Chemical and Engineering News,* publications of the American Chemical Society.

**Howard P. Barss** has retired after 17 years of service on the staff of the Office of Experiment Stations, USDA, as an administrator of Federal-grant fund research at state experiment stations and specialist in botany and plant pathology. From 1915 to 1933, Mr. Barss was head of the Department of Botany and Plant Pathology at Oregon State College.

The Genetics Society of Japan, under the presidency of H. Kihara, of Kyoto University, in celebrating the fiftieth anniversary of the rediscovery of Mendel's law, has conferred honorary memberships upon the American geneticists **A. F. Blakeslee, W. E. Castle,** and **H. J. Muller,** "in appreciation of their outstanding contributions to the science of Genetics." Honorary memberships were also conferred upon seven European geneticists: **L. Cuénot, H. Federley, O. Renner, O. Rosenberg, R. C. Punnett, E. Tschermak,** and **O. Winge.**

**Robert T. Bower,** formerly associated with the Bureau of Applied Social Research at Columbia University, has been appointed director of the Bureau of Social Science Research of The American University, Washington, D. C.

**John B. Brown,** of the Ohio State University physiological chemistry faculty, has been appointed director of the university's Institute of Nutrition and Food Technology. A university faculty member since 1924, Dr. Brown succeeds **Thomas S. Sutton,** chairman of the agricultural biochemistry department, who resigned the directorship last fall when he was named assistant dean of the College of Agriculture.

**Fred R. Cagle** has been made professor of zoology and chairman of the Graduate Department of Zoology, and **Royal D. Suttkus** has been appointed assistant professor of zoology (ichthyology), at Tulane University.

**L. F. Curtiss,** of the National Bureau of Standards, has received a Fulbright Award as a research scholar at the University of Aligarh, India. Dr. Curtiss will collaborate with **P. S. Gill,** dean of science of the University of Aligarh, in an expedition into the Himalayas, where it is planned to measure the neutron component of cosmic rays up to altitudes of approximately 20,000 feet.

**Leon J. De Merre,** former director of research for Biophysics Laboratories, Inc., Los Angeles, has been

appointed to the position of biologist with the Army of Occupation in Japan.

**M. J. S. Dewar,** of Courtauld's, Ltd., Maidenhead, Eng., formerly of Oxford University, will be at the University of Notre Dame during March and April as P. C. Reilly Lecturer in Chemistry. He will deliver a series of lectures on "Recent Developments in Theoretical Organic Chemistry."

Following 41 years of service, **William Fondiller** has retired from the Bell Telephone Laboratories. Mr. Fondiller trained in City College (New York) and Columbia University, entering the Physical Laboratory of the Bell System in 1909. An inventor, he directed the development of transmission apparatus and the investigation of the properties of materials, and since 1943 he has been in charge of the Laboratories' general staff.

**M. Mason Guest** has accepted appointment as professor of physiology at the University of Texas Medical Branch, Galveston. Dr. Guest comes to Texas from Wayne University College of Medicine, Detroit, where he has been associated with the Department of Physiology since 1946.

**Irvine T. Haig,** director of the Southeastern Forest Experiment Station in Asheville, N. C., will shortly leave the Forest Service to join the Food and Agriculture Organization of the United Nations, with headquarters in Rome. Dr. Haig will be in charge of research and technology for the Division of Forestry and Forest Products of FAO. He will be succeeded at the Asheville station by **Elwood L. Demmon,** present director of the Lake States Forest Experiment Station in St. Paul.

**Donald B. Harris,** formerly executive assistant to the director of research of Collins Radio Co., Cedar Rapids, Iowa, has been named technical assistant to the president of Airborne Instruments Laboratory, Mineola, N. Y.

**John Laurence Kask** has been made Chief, Section of Research and Development, Pacific Oceanic Fishery Investigations at Honolulu. Dr. Kask succeeds **Milner B. Schaefer,** who left Honolulu in December for San Diego to become director of investigations of the newly formed Inter-American Tropical Tuna Commission. Dr. Kask has been the chief biologist of the Fisheries Division of FAO in Washington, D. C., since 1948.

**Joseph B. Koepfli,** Caltech chemist, has been named Science Adviser in the Department of State. Dr. Koepfli, on leave from the Institute, will assist in developing the department's international science program.

The National Bureau of Standards entertained the following visitors recently: **Carel Koning,** Netherlands Aeronautics Research Laboratory, **Hendricus J. van der Maas,** Netherlands Aircraft Development Board, **Herman van Genderen,** Department of Pharmacology, National Institute of Public Health, Netherlands; **C. G. Holland-Martin,** British Tabulating Machine Co., London; and **E. Suarez del Real,** Universidad Nacional, Mexico, D. F.

**M. J. Lighthill,** of Manchester University, will tour the U. S. during March and April, lecturing at centers of aerodynamic research, on various phases of the applied mathematics work going on at Manchester.

**Daniel Mazia** has joined the faculty of the Department of Zoology of the University of California at Berkeley.

**Wilson G. Smillie,** professor of public health and preventive medicine at Cornell University Medical College, has been elected president of the New York Tuberculosis and Health Association. **Myron I. Borg, Jr.,** was elected to the newly created post of president-elect. Mr. Borg's selection places him in line for election to the presidency in 1953.

**William C. Steere** is now on the faculty of the Biology Department at Stanford University. Formerly head of the Botany Department at the University of Michigan, he succeeds **Gilbert Morgan Smith,** who retired last summer after 25 years on the university's biology faculty. Dr. Steere headed the Botany section at the Alaskan Science Conference held in Washington, D. C., Nov. 9–11. In 1949 he was a botanist attached to a U. S. Geological Survey expedition to the U. S. territory, and in 1948 he took part in an expedition to northern Canada. During 1942–44 he was senior botanist of the Foreign Economic Administration in Colombia and Ecuador. In 1932 he was a member of the University of Michigan-Carnegie expedition to Yucatan. Dr. Steere's particular field of interest is bryology, and he is editor in chief of the *Bryologist,* official journal of the American Bryological Society.

**John B. Truslow,** for four years assistant dean of the Columbia University College of Physicians and Surgeons, has been appointed dean of the Medical College of Virginia's medical school.

**Philip R. White** has tendered his resignation as senior member and head of the Department of General Physiology at the Institute for Cancer Research in Philadelphia.

**Harvey A. K. Whitney,** formerly chief pharmacist at the University of Michigan Hospital, has been added to the faculty of the Wayne University College of Pharmacy to administer a recently instituted program through which graduates in pharmacy may obtain a year of on-the-job specialized training as hospital pharmacists.

**George B. Wislocki,** professor of anatomy at the Harvard Medical School, on nomination of the Council, was recently elected to honorary membership in the Anatomical Society of Great Britain and Ireland.

## Colleges and Universities

The **University Center of Georgia** has recently awarded a research grant to Joseph P. La Rocca, professor of pharmacy, and Woodrow R. Byrum,

professor of pharmacology, of the University of Georgia School of Pharmacy, for pharmacological studies on new compounds related to chloral hydrate. This will be a joint project of the Pharmacology and Pharmaceutical Chemistry departments.

An intensive training course for physicians, nurses, and sanitary engineers who have been assigned to public health work in Burma, Thailand, Indo-China, and Indonesia by ECA began last month at the **Harvard School of Public Health,** under the direction of Hugh R. Leavell.

**Pennsylvania State College** has inaugurated a graduate course in chemistry that will consist of a series of lectures by visiting chemists. Guest speakers so far scheduled include H. A. Laitinen, P. W. Selwood, A. H. Corwin, F. A. Matson, R. T. Arnold, P. J. Flory, H. P. Gregor, F. H. Westheimer, H. I. Schlesinger, G. W. Morey, P. M. Doty, J. C. Bailar, and K. A. Folkers.

A large collection of reptiles, amphibians, and fishes, gathered over a period of some 35 years by Percy Viosca, Jr., Henry B. Chase, Jr., and by various collectors employed by the Southern Biological Supply Company of New Orleans, has been donated to **Tulane University.** The collection covers the southern Gulf drainage area, notably the Louisiana section, and is of importance to the solution of taxonomic and distributional problems relating to the regional fauna. The specimens will be incorporated in the research collections of the Department of Zoology.

The **University of Wisconsin** has purchased the Dennis I. Duveen chemistry library for $50,000. The collection includes the Latin alchemical works of Geber, Lull, Dee, Kelley, and Maier; significant writings of Paracelsus, Glauber, Boerhaave, and others; books by Becker and Stahl, founders of the phlogiston theory; and writings of important French, English, and German chemists during the period when the foundations of modern chemistry were laid.

Edmund W. Sinnott, director of Yale's Division of the Sciences, has announced the opening of the **Geochronometric Laboratory,** a new research center to provide accurate dating of events during the past 15,000 years. The carbon 14 method of age determination, developed by W. F. Libby and his associates at the University of Chicago, will be checked and refined as it is employed in dating archaeological remains. The work will be directed by an advisory board headed by Richard F. Flint, and including Wendell C. Bennett (anthropology), G. Evelyn Hutchinson (zoology), Henry L. Kraybill (physics), George A. Kubler (history of art), and Henry C. Thomas (chemistry). Edward S. Deevey, Jr., assistant professor of biology, is director of the laboratory.

A new program, to be administered by the Department of Mathematics, and leading to the degree of Master of Arts or Doctor of Philosophy in Statistics, has been initiated at the **University of Illinois.** The course will include both statistical theory and its application to a specific field.

The Department of Statistics, **Virginia Polytechnic Institute,** will hold a special summer session August 1–19 for graduate students, and for research workers and technicians in government and industry, on statistics in economics and engineering. For details write the Department of Statistics, Virginia Polytechnic Institute, Blacksburg, Va.

A Conference on Science, Technology and World Resources is being held this week on the Evanston campus of **Northwestern University** as part of its year-long centennial observance. Kingsley Davis, Joseph Spengler, and Irene Taeuber will speak on World Population; Paul Galtsoff, E. C. Stakman, William Warne, and J. Russell Whitaker, on Food Resources; Frank Notestein and Dennis Fitzgerald, on World Needs and Resources; Norris Rakestraw, John B. Sullivan, Thomas S. Lovering, and Walter Murphy, on Material Resources. Farrington Daniels, Lawrence Hafstad, Homer H. Lowry, and Robert E. Wilson will discuss Energy Resources, and Paul Sears, Warren Thompson, and Palmer Putnam will attempt to answer the question "Can Science and Technology Meet Population Demands on World Resources?"

## Meetings and Elections

Eight national advisory health councils to the Public Health Service met for their second joint session in Washington, D. C., on February 17 to review general policy. Particular attention was given to the allocation of grants for research and for hospital construction as they relate to civilian defense, and maintenance of a volume of basic research sufficient to meet future national scientific needs. Participating in the conference were the **Federal Hospital Council** and the **National Advisory Councils on Arthritis and Metabolic Disease, Neurological Diseases and Blindness, Cancer, Dental Research, Health, Heart,** and **Mental Health.**

The **National Society for Medical Research** reelected Anton J. Carlson president, and Andrew C. Ivy secretary-treasurer, at its annual meeting on February 11. The board of directors approved two new projects: the publication of a book summarizing the contributions of animals to medical progress and the welfare of human beings, and the production of a series of 13 television films based on visits to outstanding scientific institutions in this country.

**The Mathematical Association of America** met at the University of Florida on December 30 and elected the following officers: president, Saunders MacLane; second vice president, Jewell H. Bushey; members of the Board of Governors, H. S. M. Coxeter and B. W. Jones. L. M. Graves, first vice president, and H. M. Gehman, secretary-treasurer, will continue in office. The Chauvenet Prize, which is awarded every

three years, went to Mark Kac, of Cornell, for his paper on "Random Walk and the Theory of Brownian Motion."

Paul de Haen has been elected president of the **Parenteral Drug Association.** Other 1951 officers are: vice president, S. B. Bradshaw; secretary, Max Gold; and treasurer, Stanley Halley. Arthur D. Herrick will continue as executive director and general counsel. The association has opened its membership to individuals, as well as corporate firms, and has removed the distinction between active and association members. Mid- and Far-Western sections are also being set up.

**Tau Beta Pi,** national engineering honor society, has elected E. R. Moore president, and T. C. Hanson, vice president. Executive Council members remain the same as last year.

The **Tennessee Academy of Science** met at Johnson City December 8–9 and elected the following officers: Carl Tabb Bahner, president; Carl K. Seyfert, vice president; Arlo I. Smith, secretary; and Moffat G. Boyce, treasurer. The Tennessee Junior Academy of Science met in conjunction with the state academy, which also organized a Collegiate Section.

## NRC News

Two new reports of the NRC "Nuclear Science Series" are now available without charge to active workers in the field: No. 9, ***Relative Isotopic Abundances of the Elements,*** by K. T. Bainbridge and A. O. Nier; and No. 10, ***Recent Applications of Electron Multiplier Tubes,*** by James S. Allen. Report No. 9 gives for each element all the published determinations of isotopic abundances, and includes the observer, year, method, and ion source, as well as the reference. In each case, an "adopted value" is given for the isotope. Report No. 10 considers recent applications of the electrostatically focused electron multiplier tube to problems requiring the measurement of very small currents or the counting of single ions or electrons. The report includes sections on the nature of secondary emission and on the statistical fluctuations in the emission. Requests for the reports should be directed to the NRC Division of Mathematical and Physical Sciences, 2101 Constitution Ave., Washington 25, D. C.

The James Picker Foundation has awarded two fellowships and one grant in radiological research, on recommendation of the **NRC Committee on Radiology.** The fellowships were awarded to Frederick G. Sherman, Brown University, who will study the effects of ionizing radiations on enzyme activities of microorganisms at the University of Stockholm, under George Hevesy; and to Halvor Vermund, University of Minnesota, who will study the effects of x-irradiation on incorporation of radiophosphorus into intracellular constituents of transplanted mouse mammary carcinoma, with K. W. Stenstrom, C. P. Barnum, and R. A. Huseby. The grant was made to the Zoophysiological Laboratory, University of Copenhagen, to enable Hilde Levi to carry out autoradiographic studies of α- and soft β-emitters in animal tissue.

NRC has appointed a **Committee on Radiation Biology** to revise and expand the standard reference work, *Biological Effects of Radiation,* originally prepared under the auspices of an earlier committee on radiation and published by McGraw-Hill in 1936. The new treatise will be published in three volumes now being prepared by subcommittees on high-energy radiation, ultraviolet radiation, and visible radiation. Alexander Hollaender is chairman of the over-all committee and will edit the work; B. P. Kauffmann is chairman of the subcommittee on high-energy radiation, and Sterling Hendricks of the subcommittee on visible radiation.

## Manpower

On February 12 the New York *Times* released the results of a survey of 100 representative colleges and universities, disclosing the prospect of an average cut of 15% in teaching staffs in educational institutions throughout the country. The excuse given by administrators for such drastic action is the assumed drop in student enrollments, with some institutions anticipating declines of 25% (Stevens, Dartmouth) to 40% (Rochester, Syracuse). A sober review of the actual situation is given on page 3 (advertising section) of this issue of SCIENCE. There may be a drop of 20%, but, even if it be granted that veteran enrollment has declined during the past two years and will be reduced to 250,000–275,000 in 1951–52, how many institutions have returned to that normal situation in which faculty members are carrying a reasonable teaching load, and departments are not compelled to use advanced students to give elementary instruction?

Ralph Himstead of the **American Association of University Professors** points out some dire consequences of indiscriminate faculty dismissals. Some should be obvious. Departmental and interdepartmental teams will be destroyed, and institutions will make themselves ineligible to provide well-rounded training for men in the Armed Forces or men deferred for additional college work. The science departments will no longer have groups of scientists competent to handle research contracts.

**The American Council on Education** offers an analysis of enrollment prospects (February 16) that is in some respects even more optimistic than Dael Wolfle's analysis in this issue of SCIENCE. Certainly the college administrators must be well informed about the probabilities, and the meaning of the New York *Times* survey is something different than appears on the surface. Retrenchment against shrinking enrollments and rising costs is an evident need. That Congress may provide too little too late is a possibility that is offset by the willingness of the Armed Forces and Selective Service to provide temporary solutions to the student problem. Fear that the law of averages may not apply to individual institutions is bound to

cause misgivings and even panic, but may it not be that this is at least in part an effort to prod Congress into quick and sane action to keep our institutions of learning efficient and intact at a time when they are most needed? If it is anything else, the nation may well be alarmed; but, whatever it is, college faculties can look forward to a dismal spring of uncertainty, and the public may wonder whether the maintenance of our scientific and technological superiority may not be hanging in the balance.

## Miscellaneous

The American Medical Association has formed the **American Medical Education Foundation** to raise funds from the medical profession to aid medical schools. The AMA contributed $500,000 to the fund. The foundation's board is composed of representatives from the AMA Board of Trustees and Council on Medical Education and Hospitals, and the president, secretary, and treasurer of the AMA.

As part of the **National Blood Program,** greatly intensified medical research to develop more effective means for collecting, preserving, and using blood and its fractions, and more knowledge of the medical value of the various components of blood has been launched by the Federal government, medical schools, and other non-Federal institutions. The various organizations concerned include the Red Cross, the National Research Council, the Federal Civil Defense Administration, the Departments of Agriculture and Defense, the National Bureau of Standards, various independent blood banks, and state agencies. To start this research program, which will be administered by the National Heart Institute of the National Institutes of Health, $600,000 has already been allocated as part of the National Blood Program's first-year's requirement. Funds from all sources to be spent during the first year of intensified research will total $2,000,000.

WHO and FAO have established 12 **brucellosis research centers,** three of which are in the Western Hemisphere: in Argentina, Mexico, and at the University of Minnesota, where Wesley W. Spink, professor of medicine, is the director. The centers will coordinate information on the control of brucellosis in animals and in man, further research, and exchange personnel for training and research.

## Recent Deaths

**George Russell Agassiz** (88), zoologist, Dedham, Mass., Feb. 5; **William D. Andrus** (54), surgeon, Bronxville, N. Y., Jan. 20; **Francis M. Baldwin** (66), biologist, Los Angeles, Feb. 2; **Luther L. Bernard** (69), sociologist, State College, Pa., Jan. 24; **Roswell S. Britton** (53), mathematician, New York, Feb. 2; **Paul P. Bushnell** (51), educator, at sea, en route from Afghanistan, Jan. 3; **Arthur B. Coleman** (57), chemist, Norwood, Ohio, Jan. 31; **Hanson K. Corning** (90), anatomist, New York, Feb. 7; **Winnifred P. Davis** (85), physician, Cambridge, Mass., Feb. 17; **William McLeish Dunbar** (55), architect, Coconut Grove, Fla., Feb. 3; **William S. Eichelberger** (86), astronomer and mathematician, Buffalo, N. Y., Feb. 3; **Lloyd W. Fisher** (53), geologist, Lewiston, Maine, Jan. 30; **Owen B. French** (85), astronomer, Cleveland, Feb. 2; **R. B. Fudge** (50), horticulturist, Jacksonville, Fla., Feb. 6.

**Lyman Gilmore** (74), inventor, Nevada City, Cal., Feb. 19; **Otto C. Glaser** (70), biologist, Northampton, Mass., Feb. 7; **Alfred S. Goodale** (75), botanist, Northampton, Mass., Feb. 16; **Paul J. Hanzlik** (65), pharmacologist, San Mateo, Cal., Feb. 1; **Napoleon B. Heller** (87), mathematician, Germantown, Pa., Jan. 31; **Gilbert L. Hicks** (63), optometrist, Naperville, Ill., Feb. 15; **Frank A. Hornaday** (71), physician, Washington, D. C., Feb. 9; **Arthur T. Jones** (74), physicist, Northampton, Mass., Feb. 8; **Lynds Jones** (86), zoologist, ornithologist, and ecologist, Oberlin, Ohio, Feb. 11; **Karl M. Kaufmann** (78), archaeologist, Frankfort, Germany, Feb. 10; **Caroline H. Lefevre** (82), gynecologist, Shoreham, L. I., Feb. 15; **Jacques Lewis** (50), pediatrician, Miami Beach, Fla., Jan. 29; **William Livingston** (55), physician, New York, Feb. 5; **Alfred L. Loebenberg** (61), chemical engineer, on a train en route from Boston to New York, Jan. 27; **Francis J. Ludwig** (46), biologist, Philadelphia, Feb. 16.

**Martin Mayer** (75), authority on tropical diseases, Caracas, Venezuela, Feb. 17; **Ralph Wendell Mitchell** (58), physician, New York, Feb. 9; **Withrow Morse** (70), biochemist, Tuckahoe, N. Y., Feb. 10; **Vassili P. Mosolov** (63), agricultural scientist, Moscow, Feb. 11; **Berthold F. Nieder** (62), government research worker, Natick, Mass., Feb. 16; **Theodore K. Oates** (82), physician and surgeon, Martinsburg, W. Va., Feb. 3; **Helen C. Putnam** (93), gynecologist, Providence, R. I., Feb. 3; **Daniel L. Rich** (71), physicist, Ann Arbor, Mich., Feb. 15; **Sievert A. Rohwer** (62), entomologist, Washington, D. C., Feb. 12; **Stanley L. Schauss** (42), electrical engineer, Newark, N. J., Jan. 24; **Vernon Scheidt** (46), psychologist, Baltimore, Jan. 18; **William Schleif** (82), physician, Philadelphia, Jan. 26; **J. Murray Scott** (45), endocrinologist, Philadelphia, Dec. 29; **William T. Shanahan** (72), authority on nervous diseases, Eggetsville, N. Y., Jan. 26; **Ralph Shanno** (52), heart specialist, Philadelphia, Feb. 14; **Carleton Simon** (79), criminologist and psychiatrist, New York, Feb. 18; **Louis B. Spinney** (81), physicist, Ames, Iowa, Jan. 25; **Albert Stals** (70), physician and statesman, Capetown, South Africa, Feb. 5; **Robert C. Stanley** (74), metallurgist and industrialist, Dongan Hills, S. I., Feb. 12; **John A. Sweeney** (55), cardiologist, Philadelphia, Feb. 15.

**Robert T. Thompson** (36), professor of medicine, Cincinnati, Ohio, Jan. 22; **Cecil V. Usborne** (70), inventor and naval officer, London, Jan. 31; **S. I. Vavilov** (60), physicist, Moscow, Jan. 25; **H. C. Williamson** (63), obstetrician and gynecologist, New York, Feb. 1; **Edward I. Wolfe, Jr.** (56), physician, Forty Fort, Pa., Feb. 16.