News and Notes

Amino Acid Metabolism

A symposium on "Amino acid metabolism," the fifth in the series sponsored by the McCollum-Pratt Institute, was held at the Johns Hopkins University, 14–17 June. The first day of the symposium was devoted to a consideration of the general aspects of amino acid biosynthesis and utilization, following which more detailed discussions of the intermediary metabolism of individual amino acids took place.

The first session was opened by A. Meister, who presented a comprehensive summary of the various types of reactions that amino acids undergo, giving special consideration to the role and mechanism of transamination in amino acid interconversions. The general problem of amino acid transport was discussed by H. N. Christensen, together with the results of *in vitro* studies on the concentration of amino acids by ascites tumor cells. Investigations on the biosynthesis of certain microbial enzymes that are formed only in the presence of inducer substances were discussed by Speigelman. The evidence that he presented is consistent with the view that these proteins, at least in the special case examined, are derived almost entirely from the free amino acid pool. The presence of polypeptide intermediates in any appreciable concentration appears to be excluded. Of particular interest was the evidence that the biosynthesis of these enzymes occurs only during the simultaneous synthesis of nucleic acid. This discussion complemented that of Gale, who reviewed the research done in his laboratory on the synthesis of proteins from free amino acids by bacterial cell fragments. A most exciting aspect of this work was the discovery that protein synthesis in this *in vitro* system is stimulated strikingly by the addition either of a mixture of purine and pyrimidine bases or of a ribonucleic acid fraction isolated from the organism.

The second session, which dealt with the metabolism of glutamic acid, proline, ornithine, citrulline, and arginine, was opened by S. Ratner. He reported on various aspects of the urea cycle and considered in some detail the properties of the new intermediate, arginosuccinate, and the role of this key compound in nitrogen metabolism. The participation of N-acyl glutamic acid derivatives as coenzymes in the synthesis of citrulline from ornithine, CO_2, and ammonia, and the formation of compound X as an unidentified intermediate in this process, were subjects covered by S. Grisolia. In formal discussions that followed, E. L. Oginsky, H. Busch, M. Korzenovsky, and H. D. Slade presented evidence obtained independently that the enzymatic degradation of citrulline to ornithine, NH_3, and CO_2 is coupled with the phosphorylation of ADP to ATP.

Histidine, leucine, isoleucine, valine, and lysine intermediary metabolism was the subject of the third program. Results of studies with *Neurospora,* showing that various phosphate esters of imidazole derivatives are intermediates in the biosynthesis of histidine, were presented by B. Ames; the pathways of histidine degradation in animals and in some microorganisms were reviewed by H. Tabor. E. A. Adelberg summarized the evidence available from mutant studies and isotope experiments pertaining to the synthesis of leucine, isoleucine, and valine. Provocative theories on the biosynthesis of leucine were proposed by both Adelberg and S. Weinhouse. E. Work concluded the session with a paper on some comparative aspects of lycine metabolism, with particular reference to the role of diamino pimelic acid as an intermediate.

During the period devoted to sulfur-containing amino acids, J. Stekol reviewed the metabolism in these compounds and particularly emphasized the role of transmethylation in methionine metabolism. A general discussion of various other aspects of transmethylation reactions was included. The intermediary formation of cysteine-sulfinic and cysteic acids in the oxidation of cystein to sulfonyl pyruvate and the elucidation of the coenzyme requirement for the individual steps of the process were reported by T. Singer. Of special interest was the incidental report that a soluble succinic acid dehydrogenase preparation had been obtained as an outgrowth of this research.

In a session on the metabolism of glycine and serine, Weinhouse discussed the significance of acetic, glycolic, glyoxalic, and oxalic acids in the oxidation of glycine. A thorough review of research on the synthesis of serine from glycine and formaldehyde or formate was presented by S. Sakami. Highlighting this discussion was a summary of the interrelationship of various folic acid derivatives and their roles as coenzymes in serine biosynthesis and in one-carbon metabolism in general. C. S. Mackenzie outlined the pathway of N-methylglycine metabolism and presented evidence indicating that an active formaldehyde derivative is formed in the oxidation of the methyl groups of these substances. Brilliant studies on the condensation of glycine and a succinate derivative to form α-amino-β-ketoadipic acid, the subsequent conversion of the latter compound to δ-aminolevulinic acid, and finally the participation of these compounds in the biosynthesis of prophorins comprised D. Shemin's interesting paper. Based on the discovery of these new intermediates, Shemin postulated the existence of an intriguing new "succinate-glycine" cycle as an alternate pathway of oxidative metabolism.

The final session of the symposium was concerned with the metabolism of aromatic amino acids. B. Davis reviewed the evidence obtained from studies on *Escherichia coli* mutants and supplementary enzyme studies establishing the sequence of reactions involved in the synthesis of aromatic amino acids. Of particular interest was the recent discovery that prephenic acid is an intermediate in the conversion of shikimic acid

to phenylalanine. The steps involved in the enzymatic degradation of phenylalanine and tyrosine were presented by W. E. Knox. In the final paper of the symposium, A. Mehler discussed the biosynthesis and degradation of tryptophan.

The afore-mentioned reviews were all supplemented by formal discussions by other investigators, who presented the most recent developments in their laboratories. No less important were the well-chosen moderators of the sessions, I. C. Gunsalus, P. P. Cohen, H. K. Mitchell, Vincent Du Vigneaud, H. G. Wood, and R. Stanier, who directed the stimulating informal discussions after the scheduled papers.

W. D. McElroy and his associates are once again to be commended for their part in organizing this excellent symposium. The forthcoming published account of the proceedings, complete with a careful transcript of the informal discussions, will constitute an up-to-date and comprehensive source of information about the metabolism of amino acids.

E. R. STADTMAN
National Heart Institute, National Institutes of Health

Science News

On 4 Sept. in connection with the recent book entitled ***The Hydrogen Bomb—the Men, the Menace, and the Mechanism*** by James Shepley, chief of *Time* magazine's Washington bureau, and Clay Blair, Jr., *Time's* Defense Department correspondent, Norris E. Bradbury, director of the Los Alamos Scientific Laboratory, held his first press conference in 8 yr. A complete transcript of that conference, during which Dr. Bradbury charged "obvious falsehoods," has been issued, as has the statement from which the following material is abstracted.

In late 1945 a small group of courageous and loyal scientists and technicians undertook to continue the postwar operation of the Los Alamos Scientific Laboratory. . . . In the face of an uncertain future . . . [and despite the] job offers from universities and industry [that] poured in upon them, . . . they stayed and built a laboratory that developed *every successful thermonuclear weapon that exists today*. . . . These deeds earned for the Los Alamos Scientific Laboratory the only Presidential Citation ever awarded to any laboratory for its extraordinary success in the development of both fission and fusion weapons, and its contribution to the collective security of the Nation and the free world. . . .

Thermonuclear work never stopped. Thermonuclear work grew as the Laboratory grew. . . . Although the thermonuclear program is referred to in every program of the Laboratory from 1945 on, some statements are of particular significance.

In a top secret letter to the Atomic Energy Commission dated December 9, 1949, three months after the Russian explosion, the Laboratory stated over the signature of N. E. Bradbury: "We propose to *augment* to the greatest extent possible the effort devoted to research on the problem of attaining a nuclear reaction involving the light elements. The goal of this effort will be an experimental test. . . ."

At every stage from 1946 to the present time, the fission and fusion programs—both in basic research and in practical application—were pursued with the maximum appropriate emphasis, with care, with precision, and with success. . . . The imputation of disloyalty to that now large group of scientists and technicians who are fundamentally responsible for every nuclear weapon, fission and fusion, that the United States has in its stockpile, who are responsible for the atomic weapons leadership that this country presently enjoys, and who are dedicated to the continuance of this leadership, is a tragic, if not malevolent, thing. The motives behind these accusations of Los Alamos are unclear; their bases are faulty and irresponsible information necessarily obtained from those who do not and cannot know the classified facts. . . .

Gordon Dean, former chairman of the Atomic Energy Commission, has prepared a review of the new book for the *Bulletin of the Atomic Scientists* in which he says that "It is a horrifying combination of little knowledge, outright untruths, and questionable motives. It is also, to put it mildly, a case of very bad reporting." Dean states that "the shocking, almost frightening, fact is that only one of the 16 men consulted by President Truman had been interviewed by the authors. . . . If it [the book] is accepted as a true account of America's struggle to achieve a thermonuclear weapon, it will be nothing short of a tragedy."

I. I. Rabi, chairman of the general advisory commission of the AEC comments: "A sophomoric science fiction tale to be taken seriously only by a psychiatrist . . . [the person responsible] should have either his head or his motives examined."

Hans Bethe, discoverer of the theory of thermonuclear fusion, says, "A vicious book . . . to list the falsehoods would make a book in itself."

Many U.S. scientists today are profoundly disturbed. The impact of governmental support of science to an extent that would have seemed incredible prior to the war, the demands for national security, and the inescapable involvement in the political turmoils inside the country and abroad unite to create pressures that seem to threaten the very existence of the free give-and-take of scientific argument. Can science flourish, no matter how richly endowed, when the expression of an opinion on scientific grounds may, if unpopular at the time or proved wrong in the event, subject the speaker to loss of support, to public vilification, maybe even to ostracism? In a remarkably open and unprejudiced presentation, Theodore H. White has discussed the current state of U.S. science in two articles in the *Reporter* [14 and 23 Sept.; see also *Science* **120,** 555 (8 Oct. 1954)]. His title, **"U.S. science: the troubled quest"** is exceedingly apt. His information on the subject is amazingly wide, and will undoubtedly add to the personal knowledge of almost any of us on the subject. His conclusions ought to be read not only by all American scientists but by all citizens who are affected—as who is not?

Scientists know that their own work, the inner harmony of their minds, is deeply affected by the mood of the society that nourishes them.

And it is this mood that is most discouraging. For U.S. science, in conscious struggle, has lifted itself finally out of the old once-valid tradition of American pragmatism into the realm of fundamentals, of the deep, pervasive contemplation of truths and theories that answer the everlasting whys and hows. Partly by accident, partly by calculated wisdom, it has been ushered into more power and authority than the community of science in any other country. And here it is trapped for it cannot stand alone, inviolate, in the political turmoil of the nation. . . .

Yet science's relations to security are not narrowly military. The Americans are engaged in a race with the Russians, as long as the two states exist, for dominance of the world. The Russian state, whose very essence is method, police, and security, nurses a science of great effectiveness but little ingenuity. It is derivative, far more than American science has ever been derivative, of other men's theories and insights born elsewhere. It is a science umbilically linked to espionage and parasitism on other men's fundamental work. In the race with this kind of science, U.S. science must start already handicapped. The power and the advantage that American science can give to America depend solely on America's ability to let imagination rove freely or wildly, awkwardly or arrogantly, even foolishly, wherever the mind wants to go.

No scientist this correspondent has talked to has claimed immunity from the obligations of good citizenship that rest upon others. Nor does any believe that in a strife-roiled world science can ignore the requirements of loyalty, or the dictates of secrecy where the fashioning of weapons is involved. No scientist, they point out, has ever been guilty of such a breach of security as the publication of the Oppenheimer report itself. Science concedes the need of the government to protect itself; what alarms it is the spreading of the limited military concept of security to the point where the true security and welfare of the nation are hurt. And when security spills over from the original area of weapons technology, where it is legitimate, into areas of biology, medicine and pure research, into the condition and temper of free men's minds, then the vitality of American science is eroded and the nation's health is undermined.

It is with a sense of helplessness that most scientists rest their case. Somehow, they insist, rules and procedures must be set up to safeguard security without crushing the inner essence of science which is creation, no matter how it expresses itself. But this, they say, is a task not for science to solve. It is a task for statesmen.—B. G.

Archeologists are excavating the **palace of King Edwin of Anglo-Saxon Northumbria,** built near Wooler, England, about A.D. 620. The excavators are working from aerial photographs showing the outline of the site in a grainfield. They expect to find foundations of an ancient church, a theater, and a fort, as well as the palace.

Although still in the category of pilot-plant development, General Electric's new **Irrathene 101,** an irradiated type of polyethylene plastic, is being produced in tape form. Like the conventional product from which it sprang, the material is tough, moisture resistant, and chemically inert; but unlike ordinary polyethylene, the new product does not "melt" until temperatures in excess of 350° are reached. In addition, it has outstanding resistance to stress-cracking in the presence of a broad range of commonly used chemicals. Bottles and dishes of this material, for example, have been found to retain their shape during sterilization, if the dishes are strain free originally. Not only does the toughening process allow such containers to stand up under steam-sterilization, but it also permits their use for packaging and storing a wide variety of chemicals, pharmaceuticals, and biological fluids, including blood plasma.

New evidence that **pasteurized milk** is just as nutritious as raw milk and that milk's food value does not change with the seasons is reported in a recent issue of the American Chemical Society's *Journal of Agricultural and Food Chemistry* by Conrad A. Elvehjem, chairman of the University of Wisconsin's department of biochemistry, and John N. Bixby, Arthur J. Bosch, and Arthur M. Swanson of the departments of biochemistry and dairy and food industries. Contradicting the results of some earlier experiments, the group's extensive tests with white rats show that neither pasteurizing nor homogenizing milk has an adverse effect on its nutritive qualities and that fresh milk is no less nourishing in winter than in summer.

The Atomic Energy Commission is advising public officials, stockmen, miners, and others in southwestern Utah and southern Nevada that it is preparing its Nevada Proving Ground for a series of **atomic tests** commencing early in 1955, probably about mid-February. The series will conform generally with those previously conducted in Nevada, including participation and support by the Department of Defense and Federal Civil Defense Administration.

The Royal Australian Air Force and the Commonwealth Scientific Industrial Research Organization will cooperate with the United States Navy in **rainmaking experiments** over Hawaii during the next few months. Hawaii is a natural laboratory for the study of warm clouds, which also occur almost daily in southeastern Australia. Tests in Australia have established that dropping dry ice into high cumulus clouds and spraying water droplets into the base of warm clouds will induce rain, but individual clouds must be treated and this is too expensive.

Another cloud investigation program is being conducted by the Air Force Cambridge Research Center of the Air Research and Development Command over the waters adjacent to Puerto Rico. Aircraft specially equipped with meteorologic sensing devices and modified radar will study the natural behavior of the cumulus clouds that are so prevalent in the area. A complete history of the life cycle of such clouds will be obtained, and the processes that lead to cloud growth, dissipation, and precipitation will be studied in detail.

A long-range research project for the chemical industry to provide readily accessible uniform data on the **physical properties of chemical compounds** has been announced jointly by the Carnegie Institute of Tech-

nology and the Manufacturing Chemists Association. The work will be directed by Frederick D. Rossini, head of the department of chemistry at the institute. Funds for the project will be contributed by the chemical industry, and the estimated $40,000 required for the first year of operation already has been subscribed.

A device to determine the **degree of pollution** of rivers has been developed at the Academy of Natural Sciences in Philadelphia. The instrument, believed to be the first of its kind, is about 2 ft long and consists of a series of glass slides on a Plexiglas frame supported by two floats. It can be used by industries to check the streams into which they discharge waste material.

The **nation's military research and development** program, together with the portions of the atomic energy program related to military use, now constitutes about half the research and development effort of the country. Donald A. Quarles, assistant secretary of defense for research and development, in making this estimate explained that the support provided by Congress for new weapons development and other investigations for military purposes is about $1.2 billions. This continues the peak level established during the Korean war for this purpose.

Scientists in the News

Northwestern University has announced the retirement, as professor emeritus of applied science, of **Paul E. Klopsteg,** director of research at the university's technological institute. Since 1951 he has been associate director of the National Science Foundation; during this period he has served as an adviser to Northwestern. Klopsteg will continue as chairman of the National Research Council's committee on artificial limbs, a post he has held since 1945.

Before joining Northwestern's faculty in 1944, Klopsteg taught at the University of Minnesota and held several posts in private industry. During World War I he was a development engineer with the U.S. Army ordnance department. He was a member of the board of governors of Argonne National Laboratory from 1947 to 1950, and in 1949–50 served as chairman of the board. In 1950 he was appointed a member of the security panel of the Atomic Energy Commission, and he is now a member of the commission's security review board. He is also a AAAS board member.

Author of several books and numerous articles, Klopsteg is past president of the American Association of Physics Teachers and of the Physics Club of Chicago. For 30 yr he was a member of the executive committee of the American Institute of Physics, and his 7 yr as chairman of that group encompassed the period of World War II.

Especially noted for his postwar achievements in the development of artificial limbs, Klopsteg in 1948 was awarded the medal of merit with Presidential citation for his work in that field and for service during World War II as chief of a division of the National Defense Research Committee and in other important governmental capacities. Other awards include the University of Minnesota outstanding achievement medal and the Modern Pioneers' award of the National Association of Manufacturers. He has honorary degrees from Northwestern and Wesleyan universities.

Donald L. Benedict, former assistant director of the engineering division at Stanford Research Institute, has been appointed director of physical sciences research. He will supervise all project work and institute-sponsored research in chemistry and chemical engineering, metallurgy, ceramics, biochemistry and physics.

In England, **Standish Masterman,** formerly assistant director of the Supply Ministry's guided missile research program, has been transferred to a civil engineering job in the ministry because of the discovery that he once was a Communist.

On 30 Sept. the 1954 Albert Lasker awards of the American Public Health Association were presented to **Leona Baumgartner,** New York City health commissioner, best known for her improvement of health conditions for new babies and their mothers as well as children generally; **John F. Enders** of Harvard Medical School whose work is contributing to the conquest of mumps, measles, and polio; **Edwin B. Astwood** of Tufts Medical College, for the medical control of overactive thyroids; jointly to **Alfred Blalock** and **Helen B. Taussig,** Johns Hopkins University, and **Robert E. Gross,** Harvard Medical School, well known for "blue baby" and "ductus" operations to correct congenital heart defects; and, in a group award, to the **Streptococcal Disease Laboratory,** Armed Forces Epidemiological Board, Francis E. Warren Air Force Base, Cheyenne, Wyo., under the directorship of Charles H. Rammelkamp, Jr., of Western Reserve University.

Fred W. Stewart of the Memorial Center for Cancer and Allied Diseases, New York, will deliver the fifth Augustus B. Wadsworth lecture in the Division of Laboratories and Research, New York State Department of Health, Albany, on 28 Oct. He will speak on "Wadsworth and Ewing: problems that would interest them today."

Pol Duwez, professor of mechanical engineering at California Institute of Technology, has terminated his association with the Jet Propulsion Laboratory and will devote all his time to teaching and research at the institute.

George S. Field of Ottawa, physicist, chief of Division "A" for the Canadian Defence Research Board, and scientific adviser to the chief of the Naval Staff, has been selected to serve in the United Kingdom as scientific adviser to the Air Ministry.

Sloan E. Jones, entomologist and former branch manager and consultant for a southwestern agricultural chemical company, has been named head of the U.S. Department of Agriculture's pink bollworm research laboratory at Brownsville, Tex. **A. J. Chapman,** a USDA entomologist, will be assistant head of the laboratory.

I. Frank Tullis, Memphis specialist in internal medicine, has been appointed to succeed the late Conley Hall Sanford as professor of medicine and chief of the division of medicine at the University of Tennessee College of Medicine.

Ernest Bueding, former associate professor of pharmacology at Western Reserve University, has assumed his duties as professor and head of the department of pharmacology at Louisiana State University. His work will include research on enzymes in relation to drug action.

Two executives of the Westinghouse Electric Corp.'s atomic power division, **John W. Simpson** and **John T. Stiefel,** have been appointed project managers in a realignment of the organization. Simpson becomes manager of the pressurized water reactor project, the reactor for the nation's first atomic powered electric generating station to be built at Shippingport, Pa. Westinghouse is building this reactor for the Atomic Energy Commission; the electric generating portion of the contract plant will be fulfilled by the Duquesne Light Co.

Stiefel becomes manager of the submarine thermal reactor project, which includes the building of the atomic engine for the first atomic submarine U.S.S. *Nautilus* and the land-based prototype of this engine that is now in operation at the Atomic Energy Commission's Reactor Testing Station in Idaho.

Jerome S. Horton, who has been in charge of ecologic and soil-moisture studies at the San Dimas Experimental Forest of the California Forest and Range Experiment Station near Glendora, has succeeded **Howard W. Lull** as officer in charge of the Vicksburg Infiltration Project of the U.S. Forest Service's Southern Forest Experiment Station. Lull has been transferred to the Northeastern Forest Experiment Station, Upper Darby, Pa., where he will be chief of the division of watershed management research.

Theodore Rasmussen, until recently professor of neurological surgery at the University of Chicago, has joined the staff of McGill University and the Montreal Neurological Institute as neurosurgeon and professor of neurology and neurosurgery.

Walter E. Loomis, professor of plant physiology at Iowa State College, has returned from a stay in Mexico where he served as a consultant on weed control problems with the Rockefeller Foundation and also studied coffee production methods.

Sir Alexander R. Todd, professor of organic chemistry at the University of Cambridge, England, has accepted an appointment as Arthur D. Little visiting professor of chemistry at Massachusetts Institute of Technology for the current semester. He will deliver a series of 20 lectures on "Selected topics in natural product chemistry."

At the 57th annual meeting of the American Society for Testing Materials **Sam Tour,** president of Sam Tour and Co., Inc., was honored by an award of merit "for long and fruitful service to the Society extending over many technical fields and administrative phases, for work on test methods, and especially for contributions to the metals and corrosion fields." Tour's participation in ASTM's activities started 33 yr ago.

Lloyd Russell Newhouser, a captain in the U.S. Navy whose work in plasma fractionation and whole blood distribution in World War II made him nationally known, retired last week after more than 30 yr of service. He goes to Miami, Fla., to head the Dade County Blood Bank. **Cecil L. Andrews,** also a captain, succeeds him as director of the professional division in the Bureau of Medicine and Surgery.

William H. Adolph has recently returned to this country, after 3 yr as professor of nutrition at the School of Medicine of American University of Beirut, Lebanon, where he organized a nutrition research unit. Plans are now under way to expand this laboratory to serve a larger Near East area. The new nutrition unit is to be affiliated with both the School of Agriculture and the School of Medicine of American University. Adolph was formerly associated with Yenching University and the Peking Union Medical College and has had a prominent part in organizing nutrition research and teaching programs overseas.

A portrait of the late **Aldo Leopold,** naturalist and wildlife expert and professor of wildlife management at the University of Wisconsin, was presented to the university during the recent meeting in Madison of the American Ornithologists Union. The portrait was comissioned by 27 of Leopold's former students and by Mrs. Leopold.

Walter J. Reppe, former vice president and director of I. G. Farbenindustrie A.G., and now research director of Badische Anilinund Soda Fabrik, West Germany, has arrived in this country to serve as Koppers visiting professor of chemistry at Carnegie Institute of Technology, under a grant from the Koppers Co. Reppe is well known for his development of acetylene processing methods.

Leonard J. Ortino, for the past 4 yr project engineer for International Business Machines at Poughkeepsie, N.Y., has joined the special products department of the Beckman division, Beckman Instruments, Inc., as chief mechanical engineer.

Theodor Philipp Haas, botanist at the Philadelphia College of Pharmacy and Science, has recently returned from a visit to Cuba, Costa Rica, and Panama where he studied tropical plants.

Paul A. Smith has retired from the Coast and Geodetic Survey, U.S. Department of Commerce, after an association of 30 yr. Prior to retirement he was on a special assignment to the Assistant Secretary of Defense for Research and Development. Smith was graduated with a degree in civil engineering from the University of Michigan in 1924 and joined the Survey that same year. During his career he has performed various assignments in hydrographic and geodetic surveying in the interior and along the coasts of the United States, Alaska, and the Philippine Islands, progressing through the various ranks until he reached that of captain. He served for an extended period in the Washington office as chief of the aeronautical chart branch and assistant to the director of the Survey. He has held various special assignments, including technical advisor, Department of Justice, Mare Island Litigation; delegate of the U.S. Government and of the National Academy of Sciences to the International Geographical Congress, Amsterdam; chairman of the aeronautical charts subcommittee of the Air Coordinating Committee; and chairman of the Department of Commerce Science Committee.

Smith was a leader in establishing the International Civil Aviation Organization. In this connection he served as U.S. representative on the council of ICAO, with the temporary rank of rear admiral and personal rank of minister, heading the U.S. Mission to ICAO. He held other important assignments in this field over a period of 9 yr, including delegate to seven sessions of the annual assembly of ICAO, and member of various committees and working groups of ICAO.

Among his outstanding accomplishments are the introduction of plastic sheets in cartography; development, with the U.S. Air Force, of plans and specifications for world aeronautical charts; cooperation with industry in the development of fluorescent paper for aeronautical charts; research on submarine canyons off the Atlantic Coast of North America and the Congo; the investigation of the topographic character of the submarine relief of the Pacific coastal areas, and also the navigational values of the application of topographic contouring to hydrographic surveys and nautical charts. In addition, he made contributions to the development of principles for the propagation of sound in sea water and the practical application of these principles to hydrographic surveying.

Smith was awarded the 1954 Department of Commerce gold medal for outstanding service. He is a recipient of the Washington Academy of Science award and a citation by the University of Michigan for outstanding contributions to the field of engineering. He is well known for his papers on hydrographic and geodetic surveying, cartography, submarine physiography, transmission of sound in sea water, and international civil aviation.

Warfield Garson, who recently received an M.P.H. degree from the Johns Hopkins University School of Hygiene and Public Health, has been appointed chief, venereal disease control section, State Board of Health, Raleigh, N.C. He replaces **W. G. Simpson,** now a Public Health Service regional consultant in the Dallas, Tex., office.

Benjamin F. Greene, Jr., an electronics engineer at the Air Force Cambridge Research Center, has been awarded a Department of the Air Force commendation for exceptional performance of duties. Greene led a team of specialists through 5 yr of secret work to develop the VOLSCAN system, a system of air traffic control that automatically selects and guides planes to landings at busy airports.

DeWitt Stetten, Jr., for several years chief of the division of nutrition and physiology of the Public Health Research Institute of New York, Inc., has been appointed associate director in charge of research at the National Institute of Arthritis and Metabolic Diseases, Bethesda, Md. Dr. Stetten will direct the institute's integrated program of fundamental research and clinical investigations into problems related to the several forms of arthritis and to such metabolic diseases as diabetes, vitamin deficiencies, gout, obesity, and disorders of the blood, bones, and liver.

Recent appointments to the research staff of the General Electric Research Laboratory, Schenectady, N.Y. are as follows: metallurgy, **David W. Lillie,** former chief of the metallurgy and materials branch of the U.S. Atomic Energy Commission's division of research in Washington, D.C., **William E. Tragert, Robert E. Keith,** and **Richard A. Swalin;** electron physics, **Raphael Littauer,** formerly of Cornell University, and **Wilbur Lakin;** chemistry, **Harold A. Dewhurst,** formerly of the Canadian Atomic Energy Project, and **George L. Gaines, Jr.;** mineralogy, **R. C. DeVries** of the U.S. Geological Survey.

Vaden W. Miles of the Wayne University physics department has accepted an appointment as visiting professor in general education in the physics department at Harvard University for the year 1954–55.

Richard Tredgold, former assistant lecturer in physics at the University of Nottingham, Nottingham, England, has been appointed research associate in the physics department of the University of Maryland, where he will serve as leader of the solid state theory research group under Ralph D. Myers, director of the group. The unit is supported by the Office of Scientific Research of the U.S. Air Force Air Research and Development Command.

Calvin L. Dickinson, American Potash and Chemical Corp. advisory engineer at Trona, Calif., has been named director of engineering there.

William W. Buechner, associate professor of physics at Massachusetts Institute of Technology in charge of the Office of Naval Research Van de Graaff Generator Group there, has been named a director of High Voltage Engineering Corp., New York. The firm makes supervoltage x-ray and other radiation producing machines used in medical therapy, industrial radiography, radiation sterilization, and in nuclear and industrial research.

Jerry W. Martin, former assistant professor of marketing and transportation and lecturer in management at the University of Texas, has become management consultant on the staff of Darell Boyd Harmon and Associates, Austin, Tex., industrial consultants in education, human performance, and research and design in the school field.

Samuel Richman, for 8 yr chief of radiological service at McGuire Veterans Hospital, Richmond, Va., has resigned to conduct a private practice in radiology in Greensboro, N.C.

The Illuminating Engineering Society has presented its 1954 gold medal to **Erwin F. Lowry** of Salem, Mass., manager of the lighting engineering laboratories of Sylvania Electric Products, Inc. Lowry received the honor for "making original and significant contributions to the development of the fluorescent lamp, especially in cathode design for gas filled tubes."

Charles J. Kensler, pharmacologist and biochemist, and former member of the faculty at Cornell University, has joined the staff of Arthur D. Little, Inc. He will organize and expand the biology department to offer increased research services in the field of pharmacology, biochemistry, toxicology, enzymology, nutrition, and industrial hygiene.

The British Institution of Radio Engineers has announced that **Rear-Admiral Sir Philip Clarke** is to be the next president of the institution.

W. Kenneth Clark has been appointed assistant medical and scientific director of the American Cancer Society. For the last 3 yr, as chief of the division of cancer control of the Pennsylvania Department of Health, Clark has worked to establish tumor clinics throughout the state to obtain statistics on cancer and to promote professional education among campaigners against the disease.

Meetings

The 5th annual meeting of the **Animal Care Panel** will be held 1–2 Dec. in Thorne Hall on the Chicago campus of Northwestern University. The program will be ready for distribution in October and may be obtained by writing to Robert J. Flynn, Secretary, Animal Care Panel, Box 299, Lemont, Ill.

The 64th meeting of the **Tennessee Academy of Science** will be held in Nashville on 26–27 Nov. at George Peabody College. Frederick T. Wolf of Vanderbilt University, vice president of the academy, is both general and program chairman, and C. S. Chadwick of Peabody is chairman of the arrangements committee.

"Public health problems in rural areas" was the subject for technical discussions at the **7th World Health Assembly.** Interest in the topic dates back to the Health Organization of the League of Nations. The assembly designated A. Stampar as the general chairman for the technical discussions and E. Braga, C. K. Lakshmanan, and J. Heng Liu as the three group chairmen. "Public health units in rural areas," "Rural sanitation," and "Zoonoses" respectively were chosen for separate discussions by each of the groups. An expert engaged by the secretariat and a corresponding member of the secretariat assisted at the sessions. The experts were F. Brockington, M. Petrik, and K. F. Meyer; members of the secretariat were C. K. Chu, R. N. Clark, and M. Kaplan.

The following documents were prepared to serve as a basis for consideration: "Background to rural health" by A. Stampar; "Development of health units in rural areas" by F. Brockington; "Rural sanitation" by M. Petrick; "Zoonoses in their relation to rural health" by K. F. Meyer; "Demographic and health statistics relating to urban and rural areas" by S. Swaroop. A selected bibliography on rural hygiene was also prepared by the secretariat.

Six sessions totaling 12¼ hr were allotted to the discussions. Over-all attendance was in excess of 100, and the average attendance at each meeting of the three groups was Health Units, 47; Sanitation, 21; and Zoonoses, 21.

Cleveland's Museum of Natural History, in collaboration with the Arctic Institute of North America, will sponsor a 3-day meeting in Cleveland during the second week of November. The purpose is to provide research people with information of **industry's needs in the Northlands.**

On the invitation of Otto Struve, and with the support of the National Science Foundation, an **Astronomy Teachers Conference** was held at the Leuschner Observatory, University of California, Berkeley, from 12 Aug. to 11 Sept. The purpose of the conference was to inform a group primarily interested in the teaching of astronomy of some of the recent advances in the field. The two principal lecturers were Bart J. Bok of the Harvard College Observatory, who spoke on the "Structure of our galaxy," and Armin J. Deutsch of the Mount Wilson and Palomar Observatories, who discussed "Problems of the sun and the physics of the stars." Peter van de Kamp of Sproul Observatory, Paul Herget of Cincinnati Observatory, and Struve gave shorter courses in their fields of interest. C. D. Shane, director of the Lick

Observatory, addressed the group on the "Distribution of the extragalactic nebulae." Edward Teller of the department of physics at Berkeley spoke on the "Origin of cosmic rays." In addition, 23 other participants, chiefly drawn from the Berkeley astronomical department and the Lick Observatory but including several conference members, spoke on a wide range of topics. There was a total of 57 lectures.

Several informal discussion periods were devoted to problems of teaching astronomy, elementary textbooks, and intermediate textbooks. It was generally agreed that strong efforts should be made to encourage qualified authors to write intermediate texts, especially on practical astronomy. Other activities of the conference included visits to the Lick Observatory, the Mount Wilson and Palomar Observatories, the Morrison Planetarium in San Francisco, and to the Radiation Laboratory on the Berkeley campus.

The National Science Foundation, the American Society of Biological Chemists, and the Division of Biological Chemistry of the American Chemical Society, acting jointly, will award individual grants to defray partial travel expenses for a limited number of scientists who will attend the 3rd **International Biochemical Congress** to be held in Brussels, Belgium, 1–6 Aug. 1955. Applications will be considered in two groups: those from scientists under 40 yr of age (about 20 grants); and those from more senior scientists (about 5 grants). Primary consideration in the selection will be scientific merit, but preference will be given to those who have not previously attended an international scientific congress or studied in Europe, and to those who are unable to attend without the aid of a grant. Application blanks may be obtained from the National Science Foundation, Washington 25, D.C. *Completed forms must be received by the Foundation before 3 Jan. 1955.*

The **British Association for the Advancement of Science** has announced that future annual meetings will be held in Bristol in 1955, in Sheffield in 1956, and in Dublin in 1957.

The 3rd **International Congress of Nutrition,** held under the auspices of the International Union of Nutritional Sciences, has recently concluded at Amsterdam. Over 360 delegates from 30 different countries attended, and some 67 communications were presented. The following officers were elected: hon. joint presidents, H. Dam (Copenhagen) and B. C. P. Jansen (Amsterdam); chairman, E. J. Bigwood (Brussels); sec.-gen., Leslie J. Harris (Cambridge, England). It was decided to hold the 4th International Congress in Paris in 1957.

A conference on **silicosis and occupational chest diseases** jointly sponsored by the McIntyre Research Foundation of Toronto, Canada, and the Saranac Laboratory of Saranac Lake, N.Y., has been scheduled for 7–9 Feb., 1955, at Saranac Lake. These two organizations have for many years been conducting research along parallel lines, and the papers to be read in the five sessions will all report on original work conducted or sponsored by them. In addition there will be presentations of guest lecturers.

Anthony J. Lanza, formerly director of the Institute of Industrial Medicine and now emeritus professor of industrial medicine at New York University-Bellevue Medical Center, will be chairman of the conference. Business arrangements and reservations will be handled by Norman R. Sturgis, Jr., of the Saranac Laboratory. Physicians, scientists, and businessmen concerned with problems of occupational chest diseases in all parts of the United States, Canada, and foreign countries are invited to attend.

The **American Psychosomatic Society** will hold its 12th annual meeting in Atlantic City, 4–5 May, 1955. This meeting will be immediately preceded by those of the American Society for Clinical Investigation and the Association of American Physicians, and will be followed by the meeting of the American Psychoanalytic Association.

The program will emphasize investigations in the theory and practice of psychosomatic medicine as applied to adults and children in all of the medical specialties, and contributions in psychophysiology and ecology. Abstracts for 20-min papers should be submitted in duplicate *by 1 Dec.* to the chairman of the program committee, Lawrence S. Kubie, 551 Madison Ave., New York 22.

The annual meeting of the **American Association of Physics Teachers** will be held 27–29 Jan. 1955 in conjunction with the annual meeting of the American Physical Society in New York. Columbia University is no longer able to provide for the societies, and arrangements are being made with hotels. Those wishing to present papers should send titles and abstracts to R. R. Palmer, Beloit College, Beloit, Wis., *before 1 Dec.* It is hoped to allow more than the traditional 10 min for some of the contributed papers when such additional time is requested.

The 4th annual **Eastern Joint Computer Conference and Exhibition,** sponsored by the American Institute of Electrical Engineers, the Institute of Radio Engineers, and the Association for Computing Machinery, will be held in Philadelphia, 8–10 Dec. The theme of the conference will be "Design and application of small digital computers." Information may be obtained from the Eastern Joint Computer Conference, P. O. Box 7825, Philadelphia 1.

The 2nd science congress of the **Pan Indian Ocean Science Association** was held at the University of Western Australia, Perth, 17–24 Aug., under the auspices of the Commonwealth Government of Australia and the Australian National Research Council, and under the leadership of H. J. Bhabha of India, president, and A. P. Elkin of Sydney, president-elect. It was attended by some 40 delegates representing Australia, Burma, Ceylon, France, India, Madagascar, Malaya,

Netherlands, Pakistan, and Portugal, and several representatives of scientific and research organizations, for example, UNESCO. There was a total registration of nearly 400 persons, including many students from overseas now studying in Australia under the Colombo Plan. J. W. Wells, professor of geology at Cornell University, attended as a guest representing the National Research Council. The meeting was an unqualified success from all standpoints, largely owing to the long planning by A. D. Rose, honorary secretary.

The regular sessions of the sections of physical sciences, biological sciences, geological sciences, agricultural sciences, economics, education, the social sciences, geography and oceanography, and human ecology, resulted in more than 200 papers and reports, many of them arising from interim investigations suggested at the 1st congress in Bangalore, India, in 1951. Many proposals were made for new or further studies to be reported on at the next congress, which will meet in Madagascar in 1957 with J. H. Millot as organizing secretary.

The objects of the association are (i) to discuss and promote concerted action in regard to scientific problems specially affecting the countries around the Indian Ocean, and to make recommendations to the countries concerned when necessary, and (ii) to strengthen the bonds of friendship among all the peoples in the Indian Ocean area.

Society Elections

Sigma Delta Epsilon: pres., Emily Wolff, Wellesley College; 1st v. pres., Elva Shipley Meyer, University of Wisconsin; 2nd v. pres., Irene Corey Diller, Institute for Cancer Research, Philadelphia; sec., Mary Gojdics, Barat College; treas., Teresa Cohen, Pennsylvania State University.

Society of Protozoologists: pres., Lowell E. Noland, University of Wisconsin; v. pres., Alfred M. Elliott, University of Michigan; treas., William F. Diller, University of Pennsylvania; sec., Norman D. Levine, University of Illinois.

Massachusetts Society for Research in Psychiatry: pres., Rudolph Kaldeck; v. pres. Daniel H. Funkenstein; sec.-treas., Max Rinkel.

American Society for Horticultural Science: pres., E. S. Haber, Iowa State College; v. pres., M. B. Davis, Central Experimental Farm, Ottawa; sec.-treas., Freeman S. Howlett, Ohio Agricultural Experiment Station, Wooster.

American Association of Colleges of Pharmacy: pres., Joseph B. Burt, University of Nebraska; v. pres., Chauncey I. Cooper, Howard University; sec.-treas., R. A. Deno, University of Michigan; pres.-elect, Linwood F. Tice, Philadelphia College of Pharmacy and Science.

American Microscopical Society: pres., Theodore L. Jahn, University of California, Los Angeles; 1st v. pres., Robert W. Pennak, University of Colorado; 2nd v. pres., Clifford O. Berg, Ohio Wesleyan University; sec., C. J. D. Brown, Montana State College.

The Combustion Institute: pres., Bernard Lewis; v. pres., H. C. Hottel; treas., Stewart Way; sec., Glenn C. Williams.

Education

The 14th annual **Science Talent Search,** conducted by Science Service and supported by the Westinghouse Educational Foundation, was launched on 23 Sept. with an invitation to seniors in 27,000 public, private, and parochial schools throughout the country. Students will compete for 40 scholarships, totalling $11,000, and a 5-day visit to Washington. Honorable mention status will go to 260 others.

The **Polytechnic Institute of Brooklyn** and **New York University's College of Engineering** are celebrating centennials this year. Both organizations are planning special programs that will bring together scientists, engineers, and scholars from many parts of the world.

Ground-breaking ceremonies at the site of the new **Saint Mary's College Science Hall** (Winona, Minn.) were held on 17 Sept. The three-story building, which has an adjacent auditorium with a seating capacity of 235, is expected to be ready for occupancy in about a year.

An affiliation between the University of Pennsylvania School of Veterinary Medicine and the New York Women's League for Animals has been announced. A new **Institute for Veterinary Research** is to be set up in New York in association with the Ellin Prince Speyer Hospital, which the League has maintained for 40 yr. New construction is planned, and a board of scientific advisers has been appointed that will function under the chairmanship of Geoffrey W. Rake, research professor of microbiology in medicine in both the School of Medicine and the School of Veterinary Medicine of the University of Pennsylvania.

Konrad Z. Lorenz, departmental director, Max-Planck-Institut für Verhaltensphysiologie, Schloss Buldern über Dülmen, Westfalen, Germany, will deliver the three Edward K. Dunham lectures at the Harvard Medical School, Boston, on the general subject of the approach to behavior study from the viewpoint of comparative phylogenetics: 25 Oct., "Innate motor patterns"; 27 Oct., "Innate releasing mechanisms"; 29 Oct., "The organization of innate behavior." On 1 Nov. he will give a fourth lecture, "The problems of expression movements and ritualization," under the auspices of the Harvard departments of biology and psychology.

William Guild, a retired real estate man from New England and a hobby scientist, has set up an effective program for helping Florida school children understand the natural wonders around them. Believing that **encouragement at the grade-school level** is the way to solve the shortage of young people choosing scientific careers, Guild started the Science Center in a St. Petersburg junior high school. Through it youngsters learn the scientific approach—and its satisfactions—by studying such subjects as crabs, caterpillars, telephones, snakes, insects, and methods of crime detection.

The program aroused the interest of 170 teachers and their 6400 pupils. During the first year they completed 543 projects loaned by the center. At the first annual science fair in St. Petersburg this past spring, attended by 11,200 people, 65 percent of the 300 exhibits were from grade schools.

Through Guild's efforts, assistance has come to the center from many directions. The University of Florida supplied a large quantity of demonstration equipment; and the University of Miami, Florida State University, the State extension service, the local telephone company, the Florida State Museum, and the Florida State Geological Survey, all provided scientific material in the form of literature, exhibits, and so forth. Guild has largely financed the center himself; now he is looking for a foundation grant to develop a statewide organization. He hopes to bring "Science is Fun—See it—Touch it—Do it Yourself" to grade school pupils all over Florida and indeed throughout the United States.

Five years of study in the Massachusetts Institute of Technology department of **naval architecture and marine engineering** will lead, under a new course, to two degrees awarded simultaneously: the B.S. in naval architecture and marine engineering, and a new master's degree, the M.S. in shipping and shipbuilding management.

The University of Miami School of Medicine will sponsor a symposium on **Industrial Medicine,** 3–4 Dec. The meeting will be cosponsored by the Industrial Council of the American Medical Association, the American Academy of General Practice, and the Liberty Mutual Insurance Co. For information address the meeting chairman, William B. Deichmann, Department of Pharmacology, University of Miami School of Medicine, Coral Gables, Fla.

Funds for **Wayne University's new medical library** were assured with the recent announcement of a $175,000 grant from the Helen L. DeRoy Foundation. Named in honor of Mrs. DeRoy, the new structure will be built at the north end of the medical campus in downtown Detroit. The gray brick, one-story building will have 29,000 ft² of floor space and will be able to accommodate 150,000 volumes and hundreds of current periodicals.

Available Fellowships and Awards

The **Lalor Foundation,** through a grant to the **Marine Biological Laboratory,** Woods Hole, Mass., is offering a limited number of postdoctoral fellowships in biochemistry, biophysics, and physiology, designed primarily for young scientists desiring to work not less than two consecutive months during the summer on investigations for which the opportunities provided at Woods Hole are particularly appropriate. The stipend is intended to cover laboratory fees, travel, and living expenses. *Completed applications should be received by 15 Dec.* Further information may be secured from the Director, Marine Biological Laboratory, Woods Hole, Mass.

Attention is called to the fact that **Fulbright scholarships** for graduate study abroad are open to professional persons not now engaged in college or university study. Any U.S. citizen between the ages of 18 and 35 with a bachelor's degree is eligible for these awards. Applicants must be at the predoctoral level. *1 Nov. is the closing date* for applications for the 1955–56 academic year. Candidates-at-large may apply directly to the Institute of International Education, 1 E. 67 St., New York.

Grants and Fellowships Awarded

The **Upjohn Co.** has announced the following research grants:

University of Illinois. H. E. Carter, department of chemistry. Chemistry and preparation of antibiotics, $9000.
University of Illinois. D. Gottlieb, department of horticulture. Research on antibiotics, $6000.
University of California. J. Halstead. Vitamin B-12, $3000.

The **Harvard University School of Public Health** has announced the award of 14 postgraduate scholarships to prospective public health leaders. The scholarships are the first to be granted by the school since its inception 41 yr ago. The scholarship program grew from surveys which showed an acute lack of qualified public health specialists within the United States and in foreign countries.

The 14 persons, 8 women and 6 men, who have received the scholarships were selected from 74 applicants. The recipients and their former affiliations are J. R. DuBois, assistant supervising nurse, Saranac Lake, N.Y.; R. L. Bragg, Pine Ridge Indian Hospital, S.D.; O. Calabi, Harvard School of Public Health; T. T. Woo, Army Medical Corps, Ft. Belvoir, Va.; N. J. Wilson, director of health education, Upper Columbia Conference of Seventh-Day Adventists, Spokane, Wash.; E. Rose, public health nursing consultant, University of Pennsylvania; T. A. Montgomery, California State Department of Public Health; D. O. Jones, instructor, Ohio State University; P. Fry, who has been a Fulbright fellow in the Cook Islands; M. C. Egan, New York State Department of Health, B. Y. Akerren, Institute of Bacteriology,

Goteborg, Sweden; R. S. Young, Dental Clinic, Hong Kong and Kowloon Trades Council; J. M. Vasey, St. Thomas' Hospital, London; M. E. Thomas, Freetown, Sierra Leone, British West Africa.

In the Laboratories

Fabric Research Laboratories, Inc., Boston textile research and consulting organization has broken ground for a new 16,000 ft² laboratory and office building in Dedham, Mass. The organization engages in research, development and consultation for the textile, paper, leather, elastomer, and plastics industries. Its current staff numbers 40 scientists and engineers under the direction of Walter J. Hamburger.

In its potash mine in Carlsbad, N.M., the **Potash Co. of America** is extending the present conveyor system to a total length of approximately 7¼ mi, making it the longest conveyor system in the U.S. It will operate 1000 ft underground in a potash ore seam about 4 ft thick. Mining machines will extract the ore and deposit it on shuttle-type conveyors which automatically transfer it by intermediate belts to the main line or "mother" belts. The potash will then be carried more than 5 mi to a 3000-ton underground storage pocket from which it will be withdrawn as needed by a special rotary plow feeder and delivered to a vertical skip hoist by additional belt conveyors. The conveyor system when completed late in 1955 will consist of 45 units linked together to carry the material in a continuous flow from the mining area to the refinery.

The **Fairchild Engine and Airplane Corp.,** Hagerstown, Md., is planning a new main engine division plant and turbine test laboratory. The structure will have 400,000 ft² of working area covering more than 80 acres. The building will replace the Farmingdale factory now occupied by the Fairchild engine division, which was recently sold to the Republic Aviation Corp.

Miscellaneous

The American Association of Physics Teachers is undertaking the production of a book of ***Advanced Undergraduate Experiments in Physics,*** as a memorial to the late Lloyd William Taylor. Some 100 physicists have already contributed experiments and suggestions. Despite this fine response, there doubtless are other interesting and illuminating experiments that should be included in this book to give them wider circulation and thereby to enrich the instruction in advanced physics courses.

Although primary responsibility for the book belongs to A.A.P.T. members, contributions are cordially invited from all physicists and from colleagues in other sciences, outside the United States as well as inside. All fields of physics are represented. Informally written notes, or laboratory instruction as used by students, are quite satisfactory, since the editors must put all material into publishable form. To be of use this material must reach the editors *not later than 1 Mar., 1955.* It may be sent to T. B. Brown, The George Washington University, or to the appropriate section editors: *mechanics,* R. H. Bacon, 405 Bedford Rd., Pleasantville, N.Y.; *heat,* R. L. Weber, Pennsylvania State University; *acoustics,* L. R. Weber, Colorado State College; *electricity, magnetism, and electronics,* M. C. Harrington, Drew University; *optics,* H. A. Nye, Cornell University Aeronautical Laboratory, Buffalo, N.Y.; *atomic physics and spectra,* S. C. Brown, Massachusetts Institute of Technology; *radioactivity and nuclear physics,* R. R. Palmer, Beloit College.

The U.S. Civil Service Commission has announced a **clinical psychologist examination** for positions having salaries of from $5940 to $10,800 a year. Appropriate education and experience are required; no written test will be given. Applications will be accepted by the U.S. Civil Service Commission, Washington 25, D.C.

Necrology

Milton A. Cross, 79, mechanical engineer and inventor, Detroit, Mich., 25 Sept.; **David Fishkind,** 59, chemist and production manager of the Verona Chemical Co., Newark, N.J., 27 Sept.; **Roderick V. Grace,** former clinical professor of surgery at Columbia University, New York, 27 Sept.; **James F. Henegan,** 57, dentist, pioneer anesthesiologist, and lecturer, New York, 26 Sept.; **Irving H. Osborne,** 77, retired chief engineer for the Federal Shipbuilding and Dry Dock Co., Jersey City, N.J., 27 Sept.; **Edith M. Patch,** 78, author and retired head of the department of entomology at the University of Maine Agricultural Experiment Station, Orono, Me., 28 Sept.; **George W. Riley,** 87, pioneer osteopath and former president of the American and New York State Osteopathic Associations, Pittsburgh, Pa., 25 Sept.; **Walter F. Rittman,** 70, pioneer in the field of chemical engineering of petroleum and former head of the engineering department of Carnegie Institute of Technology, Pittsburgh, Pa., 26 Sept.; **George H. Shull,** 80, former president of the American Society of Naturalists, associate editor of *Genetics,* developer of hybrid corn, professor emeritus of botany and genetics at Princeton University, Princeton, N.J., 28 Sept.; **James E. Waddell,** 60, former electronics engineer for the Signal Corps and physicist at the Johns Hopkins University Laboratory of Applied Physics, Silver Spring, Md., 23 Sept.

Erratum. W. H. Price *et al.* [*Science* **120**, 457 (17 Sept. 1954)] inadvertently failed to state that the major part of the work described was carried out under contract No. DA-18-064-CML-2365 with the Chemical Corps, Biological Division, Camp Detrick.