News and Notes

Curare and Anticurare Agents: A Symposium

A CONFERENCE on curare and anticurare agents, held June 21–22, 1951, under the sponsorship of the New York Academy of Sciences, was organized by John A. Aeschlimann. Klaus Unna served as chairman, and E. D. Goldsmith, chairman of the Section of Biology of the academy, opened the meeting with a review of the history of the curare compounds, contrasting the early use of curare as an arrow poison with its clinical use today. Elmer L. Sevringhaus indicated that the mode of action of curare agents and their antagonists requires further elucidation, and the need for a suitable antidote was emphasized.

Recent advances in the pharmacology of curare were reported by A. R. McIntyre, A. L. Bennett, and C. Hamilton. *d*-Tubocurarine has an immediate excitatory action followed by depression. It also paralyzes autonomic ganglia, whereas decamethonium does not. New synthetic curariform agents may be divided into three classes: blocking agents like *d*-tubocurarine, depolarizing agents like decamethonium, and intermediary types like succinylcholine. Neostigmine is an effective anticurare agent in the early phases of paralyses by *d*-tubocurarine, but it is ineffective in excess curarization. Tetraethylammonium is still effective in the latter state. According to David F. Marsh, 16 alkaloids from calabash curare have been examined pharmacologically. Toxiferine I, which has only one quaternary nitrogen, has a much higher potency than *d*-tubocurarine in mice and dogs. C-curarine I and toxiferine I have a blocking action essentially free of side effects. James D. Dutcher reported on the isolation and identification of alkaloids in *Chondodendron tomentosum*. Besides *d*-tubocurarine, the extracts contained *d*-chondrocurarine and *l*-tomentocurarine.

A paper on the curarization of denervated muscle was presented by L. W. Jarcho, B. Berman, C. Eyzaguirre, and J. L. Lilienthal, Jr. *d*-Tubocurarine, decamethonium, and acetylcholine can stimulate and depress various functions of skeletal muscle, and the predominant effect depends on the test object and experimental conditions. There may thus be more than the two classes, the curarelike agents and the acetylcholinelike agents. W. D. M. Paton discussed the pharmacology of decamethonium, which Paton and Zaimis, and Barlow and Ing had earlier shown to be a powerful neuromuscular blocking agent. In the present paper, the differences between decamethonium and *d*-tubocurarine blocking action were discussed. Decamethonium blocks by depolarizing the end plate, whereas *d*-tubocurarine blocks by raising the threshold of the end plate to acetylcholine; decamethonium has a stimulant action on skeletal muscle, whereas *d*-tubocurarine does not stimulate. A muscle paralyzed by decamethonium is inexcitable by direct electrical stimulation, but the muscle paralyzed by *d*-tubocurarine remains excitable. The neuromuscular block produced by decamethonium is stable and not reversed by such antidotes to *d*-tubocurarine as neostigmine and *m*-hydroxyphenylalkyl ammonium compounds. The latter substances add to the depolarizing action of decamethonium, but they counteract the threshold-raising action of *d*-tubocurarine. Large differences in sensitivity to the two types of blocking agents are exhibited by various species of animals, as well as by various muscles within an animal.

Edwin J. de Beer and co-workers reported on synthetic drugs influencing neuromuscular activity. Ester groups substituted in the carbon chain of decamethonium decreased the potency and duration of the blocking action. Amide linkages reduced potency still further, but these compounds potentiated the action of the esters. The 4-stilbazoline derivatives were strong blocking compounds, and this action was antagonized by the 2-stilbazoline derivatives, which are also antagonists of decamethonium. James O. Hoppe described a new series of synthetic curarelike compounds. The most active compound in rabbits and dogs was Mytolon chloride—2,5-bis(3-diethylaminopropylamino)-benzoquinone-bis-benzyl chloride. Mytolon resembles *d*-tubocurarine in its effect on the frog rectus, antagonism to decamethonium, potentiation by ether, and, to a certain extent, antagonism by neostigmine. It resembles decamethonium in its acute toxicity in the rat. The compound has anticholinesterase activity about one fourth that of neostigmine. It stimulates parasympathetic ganglia but has no effect in sympathetic ganglia and no vasodepressor effects.

Daniel Bovet, who is considered the father of synthetic curarelike agents, submitted a manuscript on the relationships between chemical constitution and curarelike activity. Dr. Bovet did the original work on Flaxedil and succinylcholine, establishing the fact that many synthetic compounds having two or more quaternary nitrogens have high potency. He proposed the term "pachycurare" for those agents which resemble *d*-tubocurarine and Flaxedil, and "leptocurare" for those related to decamethonium and succinylcholine. The pachycurares block acetylcholine in mammals, whereas leptocurares have a depolarizing action and a reciprocal antagonism in muscle. Pachycurares produce paralysis in birds, whereas the leptocurares produce contracture and convulsions. On frog muscle, pachycurares antagonize acetylcholine, but the leptocurares produce a contraction like that of nicotine or acetylcholine. Flaxedil, the pharmacology of which was presented by Walter F. Riker, Jr., and W. Clarke Wescoe, blocks the neuromuscular junction in a manner similar to that of *d*-tubocurarine and it is about one third as potent. The blocking action is antagonized by 3-hydroxyphenyltrimethylammonium bromide, and replacement of the ethyl radicals with methyl radicals reduces the neuromuscular, as well as the vagal, blocking action.

The comparative pharmacological properties of anticurare agents such as acetylcholine, neostigmine, 3-hydroxyphenyltrimethylammonium bromide (Ro 2-2561), 3-acetoxyphenyl trimethylammonium bromide (Ro 2-2017), and phenyltrimethylammonium bromide were described by Wescoe and Riker. All these compounds have both stimulating and depressing actions at the neuromuscular junction, but the relative potency in each respect varies greatly with the test object and the experimental conditions. The anticurare activities of neostigmine, Ro 2-2561, and Ro 2-2017 are equal in cats, but neostigmine has much greater cholinergic activity. These compounds act by displacing curare from its site of action by direct competition.

Lowell O. Randall reported on synthetic curarelike agents and their antagonists. Tensilon chloride (3-hydroxyphenyldimethylethylammonium chloride) is a specific anticurare agent that lacks the cholinergic effects of neostigmine. It is antagonistic to *d*-tubocurarine, dimethyl *d*-tubocurarine, Flaxedil, and dihydro-β-erythroidine, but not to decamethonium or Mytolon. In a new series of bipiperidine derivatives, the substitution of aromatic groups on the nitrogen atoms converted Tensilon-irreversible agents of the decamethonium class to Tensilon-reversible agents of the tubocurarine class.

Harold R. Griffith, who was the first to use curare in anesthesiology, has since studied mephenesin, decamethonium, *d*-tubocurarine, dimethyl *d*-tubocurarine, Flaxedil, and Win 2747 (Mytolon chloride) and has found them to be reasonably safe and effective as anesthetics, although all these drugs occasionally produce unusual reactions. The evaluation of curarizing drugs in man was discussed by Klaus R. Unna and E. W. Pelikan, who reported good agreement between the potency of various agents as measured in unanesthetized man, and as recognized by anesthesiologists. Decamethonium is about five times as potent as *d*-tubocurarine; dimethyl-*d*-tubocurarine two and one-half times, and Flaxedil one fifth, as potent as *d*-tubocurarine. The three drugs are also shorter in duration than *d*-tubocurarine. Dimethyl-*d*-tubocurarine and Flaxedil depress respiratory muscles less than *d*-tubocurarine, but decamethonium depresses them as much, or more.

A. O. Console discussed the clinical use of *d*-tubocurarine in surgery; in manipulative procedures such as intubation; in convulsive and electroshock procedures to soften the convulsions; and in spasticity and other neuromuscular dysfunctions. In conditions of muscle spasm, it is desired to filter out abnormal impulses without loss of voluntary power. The use of Mytolon chloride in anesthesiology was presented by Frances F. Foldes, who believes it is the agent of choice for production of muscular relaxation in major abdominal operations. The anesthetic course was found smoother, and the incidence of operative complications was less than with any other muscle relaxants studied. J. F. Artusio and co-workers reported on a quantitative study of *d*-tubocurarine, Flaxedil, and a series of trimethyl- and dimethylethylammonium compounds in anesthetized man. The dose-response of *d*-tubocurarine is not predictable on a mg/kg basis, whereas that of Flaxedil is. Ether potentiated the action of *d*-tubocurarine, but not of Flaxedil. Both drugs showed cumulative action. Flaxedil had vagolytic action at all doses. The anticurare agents Ro 2-2017, Ro 2-2561, and Ro 2-3198 (Tensilon) were effective antagonists to tubocurarine and Flaxedil. Multiple doses were effective, and there was no accumulation. The only side action was a transient cardiac slowing, which was abolished by atropine.

Klaus Unna served as chairman of the four sessions of the conference, which was well attended.

L. O. RANDALL
Hoffmann-La Roche, Inc.

E. D. GOLDSMITH
New York University College of Dentistry and
Office of Naval Research, New York

Scientists in the News

Paul B. Beeson, of Atlanta, has been appointed Ensign professor of medicine and successor to **Francis G. Blake** as chairman of the Department of Internal Medicine at Yale. Dr. Blake died Feb. 1, while on leave as civilian director of Army Medical Research. Dr. Beeson has been chairman of the Department of Medicine of the Emory University School of Medicine since 1946. In his new position he will also be physician-in-chief of the University Service in the Grace-New Haven Community Hospital.

C. H. Best, of the University of Toronto, has been named president and will preside at the XIX International Physiological Congress, which will meet in Montreal Aug. 31–Sept. 4, 1953.

Frederic Bonnet, pioneer in the development and utilization of rayon, will receive the Harold De Witt Smith Memorial Medal, awarded for outstanding accomplishment in the field of textile fiber science and utilization. The medal was endowed in 1949 by the Fabric Research Laboratories, Boston, Mass., and is given at intervals of not less than one year by Committee D–13 on Textile Materials of the American Society for Testing Materials. Dr. Bonnet has been director of the Standards Department, American Viscose Corp., and since 1946, when he retired, consultant and technical adviser to the president.

Konrad J. K. Buettner, research fellow in bioclimatology at the Air Force School of Aviation Medicine, has accepted a position in the Department of Engineering of the University of California at Los Angeles. A native of Hannover, Germany, Dr. Buettner studied physics and geophysics at the universities of Erlangen, Hannover, and Goettingen. During the war, Dr. Buettner served as a section chief in the Aeromedical Institute at Rechlin, near Berlin. In 1947, with several other German aeromedical special-

ists, he signed a five-year USAF contract and was assigned to the School of Aviation Medicine. There he has specialized on radiation and related subjects.

Winners of the Highway Research Board Award for the best paper on highway research published by the board last year are **Thomas J. Carmichael,** administrative engineer, General Motors Proving Ground, and **Charles E. Haley,** project engineer of the Committee on Vehicle Characteristics, Phoenix, Ariz. Their paper was a study of the statistical measurement of relationships among vehicle, roadway, and traffic conditions. The award was instituted in 1940 by the Highway Research Board of the National Research Council. **Roy W. Crum,** late director of the Highway Research Board, was posthumously given the George S. Bartlett Award and the Highway Research Board Distinguished Service Award for his outstanding contribution to highway progress. The awards were accepted in memory of Mr. Crum by **Fred Burggraf,** who succeeded him as director of the board. The Distinguished Service Award was established by the Highway Research Board in 1948 for recognition of outstanding achievement in highway research.

Four national awards for outstanding contributions in the field of industrial heating were presented at the mid-winter meeting of the Industrial Furnace Manufacturers Association. The awards were made to **Guilliam H. Clamer,** president of the Ajax Group Companies, Philadelphia; **William A. Darrah,** president of Continental Industrial Engineers, Inc., Chicago; **Adolph W. Machlet,** chairman of the board, American Gas Furnace Co., Elizabeth, N. J.; and **Frederick H. Norton,** professor of ceramics, Massachusetts Institute of Technology.

William B. Cosgrove, assistant professor of zoology at the State University of Iowa, has been appointed to the staff of the Itasca Park Biological Station of the University of Minnesota for the coming summer, to conduct the course and research work in protozoology.

Leon J. De Merre, a biologist formerly with the Army of Occupation in Japan, has been transferred to the Chemical Corps, and is now chief, Planning Branch, Planning and Evaluation Office, Dugway Proving Ground, Tooele, Utah.

E. E. Donath has been appointed head of a new coordinated fuels processing section of the research department at the Koppers Company's Pittsburgh plant. The section is designed to accelerate research not only in coal carbonization, but to probe more deeply the gasification and hydrogenation of coal, with particular emphasis on chemicals that may be produced.

The newly formed Minerals and Metals Advisory Board, which will serve in an advisory capacity on metallurgical problems to the Department of Defense and other government agencies, will have **Francis C. Frary,** retired director of research at the Aluminum Co. of America, as its chairman. The new board is a reconstitution of the Metallurgical Advisory Board formed in January 1951. **Zay Jeffries,** retired vice president of General Electric Company, and **Robert F. Mehl,** director of the Metals Research Laboratory, Carnegie Institute of Technology, will serve as vice chairmen.

Owen S. Gibbs, director of the Gibbs Medical Research Laboratory, Memphis, Whitehaven, Tenn., has been appointed visiting professor of physiology and pharmacology at the University of Arkansas School of Medicine from January to July 1952.

Eta Kappa Nu, national honorary electrical engineering society, has named **Lewis C. Gitzendanner** the outstanding young electrical engineer of 1951. He is employed in the General Electric Company's general engineering laboratory at Schenectady, N. Y. **Burton R. Lester,** of the GE electronics division laboratory, Syracuse, and **Robert L. Trent,** of Bell Telephone Laboratories, Murray Hill, N. J., received honorable mention.

Martin Goland, associate director for engineering at Midwest Research Institute of Kansas City, has been appointed a member of the Committee on Aircraft Construction, a technical affiliate of the National Advisory Committee for Aeronautics. He will also serve as chairman of the Subcommittee on Vibration and Flutter. Mr. Goland is editor of *Applied Mechanics Reviews,* a magazine published at Midwest Research Institute under the auspices of the American Society of Mechanical Engineers.

Aubrey Gorbman has been named chairman of the Department of Zoology at Columbia University. Dr. Gorbman has been on the staff of the Child Cancer Foundation at Yale. At present a Fulbright fellow, Dr. Gorbman is on leave of absence studying at the Collège de France in Paris.

Roy O. Greep, professor of dental science, has been appointed dean of the School of Dental Medicine, Harvard University. **Reidar F. Sognnaes,** associate professor of dental medicine, will be associate dean. The new dean succeeds **James M. Dunning,** who has completed a five-year term and wishes to return to the practice of dentistry. He will continue teaching as a lecturer in public health dentistry.

Leroy R. Grumman has received the 1951 Honorary American Fellowship of the Institute of the Aeronautical Sciences. The 1951 Foreign Honorary Fellowship was presented to **John Hamilton Parkin,** director of the National Aeronautical Establishment, Canada. Mr. Grumman is chairman of the board of the Grumman Aircraft Engineering Corporation.

David J. Guy has been elected executive vice president of the American Watershed Council, Inc., national association of local, state, and regional watershed organizations. Mr. Guy was manager of the natural resources department of the Chamber of Commerce of the United States until his retirement last Nov. 30.

Among recent visitors at the National Bureau of Standards were **A. R. Hamoui,** professor of physics and electrical engineering, University of Damascus; and **H. Yamashita,** Electrical Engineering Department, Faculty of Engineering, Tokyo University, Japan.

Ernest H. Huntress, who joined the staff of the Department of Chemistry at MIT in 1920, has been appointed director of the Institute's Summer Session. He will succeed **Frederick G. Fassett,** who was recently appointed associate dean of students. Since 1950 Dr. Huntress has devoted a portion of his time to the Office of the Dean of the Graduate School, serving as deputy dean. If his duties as director of the Summer Session permit, he will continue to assist the dean of the Graduate School.

The second award of the William Procter Prize for Scientific Achievement was presented to **Ernest O. Lawrence,** of the University of California, Berkeley, by the Scientific Research Society of America at the AAAS meeting in Philadelphia on Dec. 27.

Robert K. S. Lim has joined the Miles-Ames Research Laboratory, Elkhart, Ind., the research division of Miles Laboratories, Inc., and Ames Company, Inc. He is head of the Section of Physiology and Pharmacology. Dr. Lim, professor of physiology at the Peiping Union Medical College in 1924, was surgeon general of the Chinese Nationalist Army from 1945 until 1949. Following the retreat to Formosa, Dr. Lim returned to the U. S., where he was visiting research professor of physiology at the University of Illinois a year and then professor and head of the Department of Physiology and Pharmacology at Creighton University Medical School in Omaha. He has just resigned this position to join the Miles-Ames staff.

Donald L. McKernan has been appointed assistant director, Pacific Oceanic Fishery Investigations at Honolulu, succeeding **John L. Kask,** who left Honolulu in December to become chief, Office of Foreign Activities for the Fish and Wildlife Service in Washington, D. C. Mr. McKernan leaves the post of director of research for the Fish Commission of Oregon, which he occupied for more than six years. His extensive experience in fishery research and administration also includes four years with the State of Washington Department of Fisheries, where he directed research on the shellfish resources of the state.

E. H. Mercer, Australian wool scientist, has joined the Textile Research Institute's staff for a year of cooperative study and research with the International Wool Research Project. The Wool Research Project, on which he will also work, is sponsored by The Wool Bureau, Inc., the American Wool Council, the National Wool Trade Association, ONR, USDA, and several American wool manufacturers. At the end of his year in this country, Dr. Mercer plans to return to the Division of Industrial Chemistry of the Commonwealth Scientific and Industrial Research Organization, of Melbourne, Australia.

W. Albert Noyes, Jr., chairman of the Department of Chemistry, University of Rochester, has assumed the editorship of the *Journal of Physical Chemistry.* Professor Noyes, a former president of the society, is also editor of the *Journal of the American Chemical Society.* In his new post he succeeds **Samuel C. Lind,** dean emeritus of the University of Minnesota Institute of Technology, who is now with the Carbide and Carbon Chemical Company at Oak Ridge, Tenn. **Allen D. Bliss,** of Simmons College, managing editor of the *Journal of the American Chemical Society,* and **Arthur C. Bond,** of the University of Rochester, have been appointed assistant editors of the *Journal of Physical Chemistry,* of which the society became publisher on Jan. 1. Previously, although owned and edited by the society, the magazine had been published by the Williams & Wilkins Company of Baltimore. Appointment of **N. Howell Furman,** chairman of the Department of Chemistry at Princeton, **David N. Hume,** associate professor of chemistry at MIT, and Stewart **S. Kurtz, Jr.,** manager of the Norwood (Pa.) Laboratory of the Sun Oil Company and an assistant editor of *Chemical Abstracts,* to the advisory board of *Analytical Chemistry* has also been announced.

Dennis Ostle, senior geologist of the British Geological Survey (Department of Scientific and Industrial Research), assisted by **F. H. Hale,** of the Atomic Energy Research Establishment of the British Ministry of Supply, and officers of the Sierra Leone and Gold Coast geological surveys, is directing an exploratory survey of Sierra Leone and the Gold Coast. Principal objects of the search are the radioactive minerals of uranium and thorium, and new detecting equipment will be used in the survey.

The Society of Automotive Engineers has awarded **Daniel L. Pastell,** of the Du Pont Company's Petroleum Laboratory staff, the 1950 Horning Memorial Award, which is given annually to the author of the best paper on the adaptation of fuels to internal combustion engines. Mr. Pastell's paper, "Precombustion Reactions in a Motored Engine," was presented at the SAE summer meeting. **Harry LeVan Horning,** in whose memory the award is given, was a leader in a movement to bring the automotive and petroleum industries together to deal with the fuel problem.

Eugene F. Poncelet has joined the Division of Geophysics and Geology of the Department of Applied Physics, Stanford Research Institute, and will continue his research on the nature of fracture and flow of solids. From 1945 until he joined the institute, he was connected with the Owens-Illinois Glass Company as a research professor at the University of Utah, where he spent two years conducting theoretical research on fracture and flow for that company.

S. Wyman Rolph, president, The Electric Storage Battery Company, has been elected president of The Franklin Institute. The retiring president, **Richard T. Nalle,** president of the Midvale Company, was appointed to the board of managers to fill Mr. Rolph's

unexpired term. **Morton Gibbons-Neff,** Philadelphia insurance broker, was elected a vice president of the institute, and **E. G. Budd, Jr.,** president of the Budd Company and a retiring institute vice president, was named to the board. **C. M. Waterbury** was elected assistant treasurer.

W. D. Wright, professor of technical optics in the Imperial College of Science and Technology, University of London, is currently making a three months' visit to the U. S., to confer with American workers in the fields of color vision and color measurement. As Adolph Lomb Memorial Lecturer for 1952 of the Optical Society of America, Dr. Wright will address the society at its New York meeting in March and will visit the several local sections. His headquarters are at Tufts College, where he is serving as visiting professor of optics for the spring semester.

Eugene M. Zuckert has been nominated by President Truman to be a member of the Atomic Energy Commission. An attorney by training, he has been assistant secretary of the Air Force since 1947.

Education

The **American College of Allergists** will sponsor a graduate instructional course in allergy at the Hotel William Penn, Pittsburgh, Apr. 4–6, immediately preceding its annual congress. The course will include a symposium on industrial allergy, and round-table discussions on psychodynamics and on the diagnosis and treatment of asthma. Further information may be obtained from Fred W. Wittich, 401 La Salle Medical Bldg., Minneapolis.

The joint American-Canadian expedition "**Eager Beaver**" will spend six months building emergency airstrips on muskeg and frozen lake surfaces in the Canadian Yukon. Three hundred U. S. and 135 Canadian engineers will take part in the project, during which the capabilities and limitations of equipment and personnel will be tested in temperatures that may fall as low as −65°.

In a series of seminars at **Harvard University** during February and March on "Chemical Specificity in Biological Interactions" U. S. scientists will assess the state of knowledge and the outlook in this field. Among the speakers will be E. J. Cohn, W. E. Cohn, Carl F. Cori, C. D. Coryell, T. F. Gallagher, R. B. Turner, V. du Vigneaud, and Shields Warren. The meetings are open to the public and are being held Thursday evenings (except the last, which is on Friday) through Mar. 28.

The Tissue Culture Program of the **Mount Desert Island Biological Laboratory,** Salisbury Cove, Maine, will be open June 15–Sept. 15 to qualified applicants whose research problems, either in animal or plant biology, may be approached by tissue culture methods. Applications should be submitted before *Mar. 15* to Philip R. White, Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine.

The Harry Carothers Wiess Chair of Geology has been established at the **Rice Institute** through a gift of $1,570,000 from Mrs. Wiess in memory of her husband, former vice chairman of the Board of Trustees. It is hoped that selection of some of the faculty—a full professor of geology and two associates—may be made in time to begin classes in the newly established division in September. Main emphasis will be on marine geology.

The Friend E. Clark Lectureship at **West Virginia University** will be held this year by Ludwig F. Audrieth, of the University of Illinois. He will speak Mar. 10 on "The Chemistry of Hydrazine," and Mar. 11 on "Poly- and Meta-Phosphates." West Virginia U is celebrating its eighty-fifth anniversary this year.

Grants and Fellowships

With funds furnished by the **Carnegie Foundation of New York** the Roscoe B. Jackson Memorial Laboratory is offering two summer fellowships for interdisciplinary research between the biological and social sciences. Applicants should have the Ph.D or its equivalent in psychology, anthropology, or sociology to study problems having biological aspects, or persons with similar training in biology or animal behavior to study problems with psychological or sociological aspects. Fellowships carry a stipend of $600 for an eight-week minimum stay, plus allowance for research expenses. Inquiries and applications should be sent prior to *Mar. 1* to J. P. Scott, Division of Behavior Studies, Box 847, Bar Harbor, Maine.

The **Conservation Foundation** has received an anonymous grant of $22,500 for a comprehensive survey of existing activities in various countries in regard to the relationship of natural resources and population pressures. The work of such agencies as WHO, FAO, ILO, and Unesco, as well as that of individual governments and private agencies, will be appraised to discover what each agency considers the problem to be, what it is doing in its particular area, and what the results have been. It is expected that at the conclusion of the analysis in 1953 the foundation will be able to show what will be the most valuable approaches to particular problems.

The **Grass Trust for Research in Neurophysiology** offers a fellowship for work at the Marine Biological Laboratory, Woods Hole, for the summer of 1952. The fellowship carries a stipend of $1,000 and is in general designed for young investigators in the pre- or early postdoctoral stage. Applications, *in triplicate,* endorsed or submitted by a senior investigator, giving full information as to background and research plans of the candidate, should be sent to Robert S. Morison, Rm. 5500, 49 W. 49th St., New York 20, before *Mar. 15.* Selection will be made by Apr. 15.

Applications for the 1952 **Guggenheim Jet Propulsion Fellowships** for graduate study at Princeton and Caltech will be accepted until *Mar. 1* by the Guggenheim Foundation, 120 Broadway, New York 5. From

18 to 24 grants will be awarded, and each will provide tuition and an allowance for living expenses ranging from $1000 to $2000.

Illinois Institute of Technology will accept applications for graduate assistantships, scholarships, and fellowships for the fall semester until *Mar. 15*. Graduate courses are offered in 28 fields, half-time and third-time teaching assistantships are available in all departments, and there are fellowships providing stipends up to $1500 a year plus tuition in some departments. A few full-tuition scholarships will be offered to exceptional students. Ceco Steel Products Corporation, of Chicago, has established two new engineering scholarships at Illinois Tech and will employ the winners at its plant for eight or more weeks during the summer. A grant of $40,000 recently received from the Delta-Star Electric Company will provide for one or more undergraduate scholarships, and the food processing fellowship in food engineering established last year by the Putman Publishing Company (SCIENCE, **114**, 453 [1951]) will be continued.

The **National Institute of Arthritis and Metabolic Diseases,** new USPHS institute, has announced a program of clinical traineeships in prevention, diagnosis, and treatment, to improve the competence of physicians in the treatment and rehabilitation of arthritis patients. Annual stipend for trainees without dependents is $3,000; with dependents, $3,600. For additional information and application forms, write to Chief, Extramural Programs, National Institute of Arthritis and Metabolic Diseases, Bethesda 14, Md.

Meetings and Elections

Don P. Johnston, of Wake Forest, N. C., has been elected president of **The American Forestry Association,** succeeding D. C. Everest. John M. Christie, of Washington, D. C., was re-elected treasurer. Seven new directors were elected and 21 honorary vice presidents.

At its annual meeting in Montreal the **American Ornithologists' Union** re-elected Josselyn Van Tyne president, Alden H. Miller and Ludlow Griscom vice presidents, Harvey I. Fisher editor of *The Auk,* and Reuben Moser treasurer. Albert Wolfson was elected secretary.

At the 1951 annual meeting of the **Central Neuropsychiatric Association** in St. Paul and Minneapolis last October, the following officers were elected: president, Raymond W. Waggoner; vice president, Lee M. Eaton; secretary-treasurer, Hamilton Ford; counselor, Frank Luton. The 1952 meeting will be held in Nashville during October.

The **Colloquium of College Physicists** meeting at the University of Iowa June 11–14, will be joined by the **American Association of Physics Teachers** for its summer meeting. Special features will be four lectures by George E. Uhlenbeck, of the University of Michigan, and the annual exhibit of new devices, both experimental and nonexperimental, for which prizes are offered.

The **Essential Oils Association of the U. S. A.** has elected George H. McGlynn president, succeeding Gerard Danco, and Waldo Reiss vice president. Pierre J. Coutin was re-elected secretary-treasurer.

The **Institute of Medicine of Chicago** has elected Vincent J. O'Conor, of Northwestern, president for 1952. Henry T. Ricketts, of the University of Chicago, was elected chairman of the board, and George H. Coleman, secretary.

At its meeting at Brown University last December the **Mathematical Association of America** elected the following officers: first vice president, F. L. Griffin (2 years); secretary-treasurer, H. M. Gehman (5 years); members of the Board of Governors, D. H. Lehmer, W. E. Milne, and F. H. Steen. Continuing in office are Saunders MacLane, president, and Jewell H. Bushey, second vice president. The summer meeting of the association will be held Sept. 1 at Michigan State College.

At its annual meeting in Los Angeles in October, the **National Rehabilitation Association** named Corbett Reedy president-elect, and J. O. Talley became president. Ashley Ross was re-elected treasurer, an office he has held since 1946, and Holland Hudson and Edward Stiles were elected members at large of the board of directors.

The second interuniversity **Summer Seminar in Statistics,** held at the University of Connecticut, Storrs, Aug. 6–30, devoted a week each to biometrics, time series, statistical theory and probability, and techniques of interest in the social sciences. C. I. Bliss, J. Ipsen, M. G. Kendall, J. W. Tukey, M. Kac, H. Robbins, F. Mosteller, F. L. Strodtbeck, and M. A. Woodbury organized the various programs, which were attended by professional statisticians, students, and consumers interested in statistical techniques. Information concerning the 1952 sessions is available from D. F. Votaw, Jr., Leet Oliver Memorial Hall, Yale.

The annual **Symposium on Molecular Structure and Spectroscopy** will be held at the Department of Phyics and Astronomy, Ohio State University, June 9–13. There will be discussions of the interpretation of molecular spectroscopic data and of methods for obtaining such data, as well as sessions devoted to phases of spectroscopy of current interest. For further information write to Harald H. Nielsen, Ohio State, Columbus 10.

A conference on **The Use of Isotopes in Plant and Animal Research,** to be held June 12–14 at Kansas State College, will be sponsored by the college, Argonne National Laboratory, and the Isotopes Division of the Atomic Energy Commission. A detailed program (and other information) will be available in March from R. I. Throckmorton, Kansas Agricultural Experiment Station, Manhattan.