1) No theoretical reason has been found for believing that any of the mechanisms examined could account for a significant change in the weather more than a few miles from the site of the explosion.

2) The year 1953 was an unusual tornado year. Although part of the increase in the number of tornadoes reported in 1953 may have been the result of exceptionally favorable weather patterns for tornadoes, much of the increase can be attributed to improvements in the method of collecting tornado statistics.

3) A study of the temperature and precipitation records for the United States does not seem to indicate any departures from normal that are related to the atomic explosions.

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# *News and Notes*

## Macromolecular Chemistry

The international symposium on *Macromolecular Chemistry*, under the auspices of the International Union of Pure and Applied Chemistry (I.U.P.A.C.) and the Italian National Research Council (C.N.R.), was held in Milan 26–29 Sept. and in Turin 30 Sept.–2 Oct. 1954. In Milan the meetings were held at the Museo Nazionale della Scienza e della Technica and at the Instituto di Chimica Industriale del Politechnico di Milano. In Turin they were held at the Instituto dell' Università. The total number of registrants exceeded 300, representing Austria, Belgium, Canada, Czechoslovakia, England, Finland, France, Germany, Holland, India, Israel, Italy, Japan, Norway, Sweden, Switzerland, Union of Soviet Socialist Republics, the United States, and Yugoslavia. The United States was represented by P. J. Flory, Peter H. Frank, Robert W. Kell, H. B. Klevens, Gordon M. Kline, Edmund H. Immergut, Samuel L. Madorsky, Herman Mark, Robert B. Mesrobian, Eric Proskauer, Walter H. Stockmayer, and C. A. Y. Voetelink.

The symposium was opened in Milan by addresses of welcome by V. Ferrari, lord mayor of Milan, by Luigi Morandi, president of the Lombard section of the Italian Chemical Society, and by M. G. Levi, president of the Italian Chemical Society. Herman Mark, who is chairman of the committee of macromolecular chemistry of the I.U.P.A.C., was awarded a scroll of honorary membership of the Italian Chemical Society, after which he presented an illustrated talk on "New rubbers, plastics, and fibers."

The meeting in Turin was opened with addresses of welcome by A. Peyron, lord mayor of Turin, G. Camerana, president of Salone della Technica, and A. Muzzoli, president of Congresso Materie Plastiche. H. Mark then spoke on the "Scientific basis of standardization of plastics."

There were about 80 papers presented, in five different languages: English, French, German, Italian, and Russian. These papers covered the following general subjects: (i) building reactions of macromolecules; (ii) transformation reactions of macromolecules; (iii) block polymers and graft polymers—preparation and properties; (iv) cellulose and derivatives; (v) molecular weight distribution; (vi) methods for the determination of molecular weight; (vii) branched polymers; (viii) fiber-forming polymers; (ix) general properties of polymers; (x) crystallinity and transitions; and (xi) proteins. The papers and discussions will appear shortly as a special issue of *La Ricerca Scientifica* and will be distributed through the Interscience Publishers, 250 Fifth Ave., New York.

At the meeting in Milan, Herman Mark was awarded a medal by the Instituto di Chimica Industriale del Politechnico di Milano; this is the first time the medal has been awarded to a non-Italian. Also, at the meeting in Turin, H. Staudinger was awarded a degree *honoris causa* of the University of Turin, after which he gave an address on the subject "Über die Grundlagen der macromolekularen Chemie."

The next meeting of the Macromolecular Commis-

sion will be held in Zurich, Switzerland, during the period 20–28 July 1955.

S. L. MADORSKY

*National Bureau of Standards, Washington 25, D.C.*

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## Improving Biology Teaching

The Southeastern Work Conference on Biology Teaching, held at the University of Florida from 28 Aug. through 6 Sept. [*Science* **120**, 653 (1954)], had four major objectives: (i) to study the contributions of various subject-matter areas of biology (taxonomy, morphology, evolution and paleontology, physiology and health, heredity and development, and ecology and conservation) to the training of the biology teacher and to suggest the basic principles, concepts, and experiences by which these contributions could be realized; (ii) to identify the major problems involved in biology teaching at the high-school and college levels and in establishing state-wide programs on biology teaching; (iii) to formulate recommendations for the improvement of biology teaching; and (iv) to devise methods for implementing the recommendations of the conference. The purpose of this report is to call attention to the most significant of these recommendations.

The conferees agreed on certain minimum essentials that the high-school biology course should provide all students.

The minimum essentials are (i) an understanding of the basic principles of biology that are essential to effective living in modern society; (ii) an understanding of themselves and of the human life-cycle; (ii) an understanding of how the organisms and physical environment in a given situation form a community with many complex relationships; (iv) an understanding of the usefulness of biology in later life and an appreciation of the possibility that they may contribute to its advancement; (v) an understanding of scientific methods and attitudes; (vi) a positive approach to physical and mental health (vii) the contribution that living things can make to the development of avocational interests.

It was further felt that biology should be integrated into the total secondary-school program. Since knowledge is not self-integrating, such integration cannot be taken for granted. Both teacher and student must work at it.

In order to bring this integration about, the conference recommended that (i) biology teachers have a general knowledge of other areas and that teachers in other areas have some knowledge of biology; (ii) the objectives of the biology course make a significant contribution to the general objectives of the school; (iii) situations be created to encourage individual, group, and class projects to culminate in assembly programs, exhibits for science fairs and meetings of Junior Academies of Science, and other school activities; (iv) interdepartmental planning be encouraged; (v) students be given an opportunity to apply in other classes what they learn in biology.

A number of suggestions were made to illustrate how biology may be integrated with other high-school subjects.

Some of these suggestions were (i) the use of biological information in English themes; (ii) the use of biological data in making curves and graphs in mathematics courses; (iii) the evaluation of health problems, natural resources, and agricultural productivity in social science; (iv) the study of the derivation of biological terminology in language classes; (v) the use of biological topics in speech work; (vi) the use of plant and animal forms and patterns of structure in art; (vii) the relationship of human reproduction to family life and social welfare; (viii) the use of human physiology in physical education; and (ix) the application of biological knowledge concerning the selection, care, and use of foods to home economics.

One of the major recommendations of the conference related to the preparation of the high-school biology teacher. It was recognized that any recommendation for a balanced program would leave much to be desired if the teacher is to be prepared in 4 yr. However, it was felt that a realistic view of the high-school teaching situation as it exists now and will exist for some time to come required the conference to think in terms of a 4-yr program.

In order to provide the best possible training in such a program, the conference recommended that the prospective high-school biology teacher have (i) a college major, that is, a minimum of 24 semester hours, in the biological sciences that includes 1 yr of general biology, or equivalent courses in general botany and general zoology, with at least one-third of the total content devoted to plant science and with field studies included in the course work beyond the first year; (ii) 1 yr of chemistry with the recommendation that organic chemistry as it applies to living things be included; (iii) 1 yr of physics with laboratory work; (iv) ½ yr of earth science; (v) 1 yr of mathematics; (vi) education courses to meet state certification requirements with a course in the methods of teaching high-school biology strongly recommended; (vii) appropriate general-education courses (humanities, social sciences, and communication skills) that are required of other high-school teachers.

These requirements were recommended as the minimum in training an effective high-school biology teacher. The biology teacher who meets these qualifications will have a background for teaching general science and assuming the multiple responsibilities of the science teacher in a small high school. The conference was particularly sensitive on the subject of the high-school science teacher whose major interest is not science. It was agreed that through local and state effort this situation should be improved, reduced, and as soon as possible eliminated.

It was recognized that preservice training is not adequate for a lifetime of effective high-school biology teaching. Continuous self-improvement through in-service training is essential.

It was felt that such in-service activities might include (i) graduate study in biology, related sciences, science education, or professional education, depending on the needs of the teacher; (ii) individual study of scientific and professional literature; (iii) travel, especially to regions of biological interest; (iv) contacts with college

and university laboratories, greenhouses, experimental farms, libraries, and other facilities for professional improvement; (v) participation in local and state-wide, teacher-planned, in-service programs; (vi) use of consultants from colleges and universities, industrial and social agencies, and state departments of education and other government agencies; (vii) conferences, workshops, professional meetings, and intraschool and interschool visitations; (viii) participation in professional and scientific organizations at the local, state, regional, and national levels; (ix) participation in research in pure science or in science education.

It was felt that the colleges and universities could contribute more effectively to the in-service training of the high-school biology teacher.

To this end, the conference recommended that the colleges and universities (i) consider the possibility of offering a wider variety of biology courses during the summer session and explore, with the cooperation of certification agencies, the feasibility of offering extension courses; (ii) arrange annual 1-wk conferences for high-school biology teachers that will provide suggestions for the use of simple materials, demonstrate new types of experiments, give additional background, and call attention to recent developments; (iii) offer appropriate credit to teachers for courses at any level; (iv) design special subject-matter courses for teachers and schedule them at appropriate times; (v) give full resident credit for workshops and work conferences that are comparable in length and quality to standard courses.

The conference attacked the problem of provisional and temporary certification for high-school biology teachers who do not meet the minimum requirements.

In this area, the conference recommended that (i) provisional certificates be issued only when the local superintendent can certify the lack of a qualified teacher; (ii) holders of such certificates be required to become qualified as soon as possible through summer study; (iii) provisional certificates be issued on a 1-yr basis and be renewed only upon presentation of evidence of satisfactory progress toward meeting full certification requirements; (iv) programs be established within the school or local system, in collaboration with nearby colleges and state science supervisors, that will provide for the immediate and continuing in-service training of teachers who hold provisional and temporary certificates; (v) teachers be encouraged to enroll in formal courses selected from the teacher-training program on which full certification is based.

It was also agreed that in the selection of a biology teacher where there is a choice between a prospect with sound training in biology but without professional courses in education and one with a certificate but no biology training, the former should be given preference.

The conference recommended that state departments of education employ well-qualified science coordinators, advisers, or consultants who have had high-school experience and who are trained in both science and education to consult with science teachers in the high schools and to implement a program of cooperation between college scientists and high-school teachers. It was pointed out that the appropriate agency or persons in state departments and colleges should assist in obtaining an hour-for-hour allocation of teaching credit for laboratory instruction.

The conference felt that the state departments of education should play a significant role in insuring a supply of adequately prepared high-school biology teachers.

It was recommended that (i) state departments of education adhere to certification requirements that will insure the minimum training indicated and content areas be adequately represented on commissions that establish certification requirements; (ii) science consultants in state departments actively supervise science teaching in high schools; (iii) state departments refuse to certify persons unless they have had the college courses in biology that adequately cover the areas represented in the high-school biology course; (iv) state departments cooperate with the colleges in setting up approved programs for teachers that will give broad training in science and mathematics in addition to a balanced general education, and that will enable the teacher in the small school to teach in more than one area.

It was believed that state departments of education could also aid in the recruitment, selection, and motivation of high-school and college biology teachers.

To fully realize this goal, the conference recommended (i) the establishment of adequate salary scales to attract and retain qualified teachers in the profession; (ii) the establishment of suitable retirement benefits; (iii) the maintenance of active in-service training; (iv) the establishment and maintenance of a research staff to evaluate and suggest improvements in methodology; (v) the encouragement of democratic school administration; (vi) the encouragement of and assistance in obtaining the best classroom instruction possible; (vii) the encouragement of local communities in their efforts to obtain high-caliber instruction; (viii) the encouragement of administrative officials and advisers to present the teaching profession as an attractive career opportunity to biology majors.

As one would expect, the conference considered the problem of improving the working relationship between the biologist and the professional educator in the training of biology teachers. It was agreed that the effective high-school biology teacher must be trained in subject matter. However, it was further recognized that in order to be effective the high-school biology teacher must be familiar with the areas of adolescent growth and development, the objectives of the total high-school program and the relationship of the biology course to it, the methods of working with boys and girls of high-school age, and the techniques of evaluating student progress. Traditionally, content has been the sphere of the specialist in biology while method has been the province of the professional educator. Too often each has operated independently. It was the opinion of the conference that the best teachers could be produced only when the biologist and the educator worked together.

In order to bring about more effective working relationships, the conference recommended that (i) work conferences be organized at the local, state, regional, and national levels to provide an opportunity for scientists and

educators to discuss their mutual problems; (ii) biology departments be given the responsibility of teaching "methods" courses that carry education credit; (iii) the biologist be encouraged to observe and work with student teachers of biology for whose "content" he is responsible; (iv) the training and experience of the biologist be used in planning education courses, especially when they deal with such problems as human physiology and genetics; (v) both the professional educator and the specialist in biology participate cooperatively in teacher training through joint decisions concerning certification, student advising programs, evaluation of student programs, evaluation of teaching effectiveness, and provision of content material; (vi) there be mutual action by educators and biologists in promoting organizations of high-school students interested in science; (vii) opportunities be provided for exchange teaching assignments between educators and biologists.

The complete report of the conference appears in the January issue of the *American Biology Teacher,* official publication of the National Association of Biology Teachers, cosponsor with AIBS of the conference. State teams representing each of the ten southeastern states have been organized to adapt the recommendations of the conference to their own needs and to implement the recommendations, and they are now at work. Although it is too early to evaluate the results, the conference promises to have far-reaching effects. It has drawn the plans and laid the foundation on which significant advances in biology teaching can be constructed.

SAMUEL L. MEYER

*Florida State University*

## Science News

The following 10 major **gains in the fight on cancer** during the past 2 yr are cited in the 1952–54 biennial report of Memorial Center for Cancer and Allied Diseases with its research unit, the Sloan-Kettering Institute, New York.

1) The mass and sustained growth, for the first time, of human cancers in laboratory animals.

2) Improvement from 6 percent to 39.5 percent in cure rates for soft tissue sarcomas over the past 20 yr.

3) Synthesis by the Wellcome Research Laboratories of 6-mercaptopurine, a chemical that appears from tests at Memorial to be one of the most effective in restraining acute leukemia.

4) An increase through the years from 10 to 75 percent in the number of patients with cancer of the stomach who can be treated surgically.

5) Establishment of circumcision of male infants as a practical means for partial prevention of cervical cancer in women.

6) Improvement in techniques of surgery of the liver permitting removal of cancer in this vital organ in some selected cases.

7) Development of effective treatment for formerly uncontrollable small blood vessel tumors (hemorrhagic telangiectasia).

8) Adaptation of a virus to destroy, rapidly and completely, human cancer cells of one type in the test tube.

9) Definition of two types of breast cancer, requiring different treatment.

10) Discovery that cortisone, as well as sex hormones, will temporarily control some advanced breast cancers.

At the 121st annual meeting of the American Association for the Advancement of Science, Farrington Daniels, University of Wisconsin chemist and chairman of the board of governors at the Argonne National Laboratory, stated that "stepped-up research in atomic energy is the most hopeful way of eventually mastering the problem of the **world's dwindling fuel supplies.**" He also predicted that energy from the sun may be one of the future substitutes for coal, oil, and gas, the three fossil fuels which are running out at a rapid rate. Daniels further said that "our civilization is due to cheap energy and we haven't yet learned how to live on our current income of daily sunlight."

In her inaugural address to the second All-India Conference on Family Planning that met in Lucknow on 1 Jan., Dhanvanthi Rama Rau, a leader in social reform, sharply criticized the Government for pursuing an "inconsistent" policy in advocating **family planning** without carrying out an effective birth-control program. She pleaded for the establishment of a factory for large-scale manufacture of contraceptives and suggested spreading birth-control information through all possible channels.

Contrary to expectations, religious beliefs have not presented a formidable obstacle in popularizing family planning among the traditionally conservative village folk. Surveys have indicated that 40 percent of the people in the country and 60 percent of the urban population are interested in birth control.

On 26 Dec. a group of **Japanese atomic scientists** left Tokyo by air for a 3-mo survey of atomic energy development in 12 countries.

The **population of the United States,** including members of the armed forces overseas, rose to 163,930,000 at the end of 1954. This represents a gain of 2,830,000 during the year and exceeds by more than 100,000 the previous high gain registered in 1951. It was the eighth year in succession in which the population increase has been more than 2.5 million. Contributing to the 1954 rise were the new high number of births (4,060,000), an all-time low death rate, and a moderate addition through immigration.

Every state except West Virginia shared in the 1954 population increase. The rate of growth was highest along the Pacific Coast, 3.7 percent, or approximately double the national gain of 1.8 percent. Since April 1950 California alone has added more than 2.3 million inhabitants. Its population now numbers about 12.9

million and is exceeded only by that of New York State.

The Rocky Mountain states also experienced a vigorous population growth during the year. Arizona and Nevada have been the fastest growing states in the country, each having doubled its population since 1940.

Florida's population increased by about 5.7 percent in 1954 and by more than 6 percent annually in the years immediately preceding. Increases well above the national average also occurred in the District of Columbia and in New Mexico, Delaware, Maryland, Utah, Connecticut, Michigan, Louisiana, and Texas.

The marriage rate declined to 9.2 per 1000 population. Low birth rates in the depression 1930's are responsible. Divorces were also on the decline, according to the figures for the first 9 mo of 1954. Since the 1946 peak, these rates have dropped more than 40 percent.

Columbia University oceanographers have announced the discovery of **100-million-yr-old fossil sea animals** at the bottom of the Atlantic Ocean. Muddy sediments or "cores" taken from the bottom off Bermuda during the latest voyage of the university's research ship *Vema* were found to contain the ancient fossils. According to W. Maurice Ewing, director of Lamont Geological Observatory, Palisades, N.Y., nothing older than these core samples has been found in any ocean. Probing was concentrated in the 20 by 30 mi expanse that lies over the Bermuda "plateau" and brought up the fossil remains of an extinct shell fish *Inoceramus*.

The U.S. Department of Agriculture has announced that the first **burley tobacco,** Burley 21, with a marked resistance to the wildfire disease will be available to growers for 1955 planting. The new tobacco variety, which was developed by the USDA Research Service and the Tennessee Agricultural Experiment Station, is also resistant to two other diseases, tobacco mosaic and black root rot.

In addition to its disease-resistant qualities, Burley 21 is a stand-up variety that hold its leaves more erect than any other burley now available. This makes it easier to cultivate and harvest without breaking the leaves.

John Stanwell-Fletcher, who as an Air Force officer during World War II helped set up arctic weather stations and landing strips, is to lead a privately financed **expedition to the North Pole** that is scheduled to leave Alert, Canada, on 17 or 18 Mar. The main purpose of the 2- to 3-wk operation is to perfect an instrument by which planes can gage from the air the thickness of arctic ice and, therefore, its suitability for landings. Stanwell-Fletcher has been working on such a device in collaboration with Leonard P. Freider, president of General Textile Mills, Inc., and one of the chief backers of the trip. The idea for the instrument came from a Russian device developed in 1937. Russian scintific papers concerning it were found in the Library of Congress and translated.

An experimental plane, the Burnelli Loadmaster, has been selected to land the main party of 20 persons and 41 dogs. The unconventional plane, which is rather like a flying wing, requires only 1500 ft to take off or land. Further, its fuselage is said to have buoyancy in case of a forced landing on water.

## Scientists in the News

**Renfrew B. Potts,** Australian physicist and senior lecturer in mathematics at the University of Adelaide, has been appointed a research associate in the physics department of the University of Maryland. Potts came to the U.S. under a Fulbright grant; he will work with the university's solid-state theory group under Ralph Myers and Elliott Montroll on investigations in ferromagnetism and other solid-state theory problems. The solid-state research group is supported by the Office of Scientific Research of the Air Research and Development Command of the U.S. Air Force.

**John R. Hastie,** a member of the Cornell University research office since 1951, will succeed to the post of coordinator of research early in 1955, following the retirement of **Richard Parmenter,** the present coordinator. Parmenter plans to continue certain consulting assignments and to assist the university in special projects. He was instrumental in setting up the Cornell research program, which involves more than $20 million/yr. Hastie's chief function will be to act as a coordinator between faculty members engaged in research and the sponsoring foundations, industries, and government agencies.

**Edwin H. Buford,** since 1950 manager of engineering design in the general engineering department of the Chemstrand Corp., Decatur, Ala., retired on 31 Dec. He had served in a similar capacity with Monsanto Chemical Co. for 35 yr.

**Paul B. Sears,** botanist and chairman of the conservation program at Yale University, was selected as president-elect of the AAAS during the recent annual meeting in Berkeley, Calif.

New members of the board of directors are **Margaret Mead,** anthropologist and associate curator of ethnology for the American Museum of Natural History, New York, and **Chauncey D. Leake,** physiologist, pharmacologist, and executive director of the University of Texas Medical Branch, Galveston.

**Charles B. Officer,** geophysicist with the Woods Hole Oceanographic Institution, was selected as 1954–55 distinguished lecturer by the Society of Exploration Geophysicists. During December and January he has been delivering lectures on seismic exploration and research over oceanic areas before 12 local sections of the society.

The 1955 Rumford medal of the American Academy of Arts and Sciences has been awarded to **James Franck** of the University of Chicago, a 1925 Nobel prize winner. Given for the year's most important discovery or useful improvement in the field of light or heat, Franck was honored for his work in photosynthesis.

On 1 Jan. Queen Elizabeth II named three new barons; one of them was **Edgar Douglas Adrian,** president of both the Royal Society and the British Association for the Advancement of Science. Among those receiving other honors from the Queen was **Wilfrid Clark,** who denounced the Piltdown skull as a hoax. He now is a knight bachelor.

**Allen V. Astin,** director of the National Bureau of Standards, who last year was discharged and reinstated as the result of a controversy concerning the merits of battery additive AD-X2, has been reappointed by the President as chairman of the Federal Interagency Committee on Scientific Research and Development.

**Robley C. Williams,** biophysicist at the University of California Virus Laboratory, was selected by the Philadelphia Board of City Trusts as this year's recipient of the John Scott award. He was cited for his invention of a method of depositing thin metal coatings by thermal evaporation on objects to be examined with the electron microscope, making it possible to get a clear picture of viruses and other transparent objects. The award, consisting of $1000, a copper medal, and a scroll, was presented on 28 Dec. during the annual meeting of the AAAS.

**Phillip L. Merritt,** assistant director for exploration in the Atomic Energy Commission's division of raw materials, has resigned to accept a position as senior geologist with E. J. Longyear and Co., Minneapolis, Minn. He will maintain offices in New York.

Five chemists were awarded honorary degrees at the University of Chicago's 263rd convocation in December. They are **Hermann I. Schlesinger,** professor emeritus of chemistry at the University of Chicago; **Izaac M. Kolthoff,** professor of chemistry at the University of Minnesota; **George O. Curme,** vice president and member of the board of directors of the Union Carbide and Carbon Corp.; **Paul D. Bartlett,** Erving professor of chemistry at Harvard University, and **John G. Kirkwood,** chairman of the chemistry department, Yale University.

The seven experts appointed to the United Nations committee that will make preparations for the proposed international conference on peaceful uses of atomic energy are as follows:

**Dmitri V. Skobeltzin,** physicist and a leading member of the Soviet Academy of Science.

**John Cockcroft** of Great Britain, a Nobel prize winner in physics and since last August a member of the United Kingdom's Atomic Energy Authority. His alternate, J. V. Dunworth, is deputy chief of the science office in the British Ministry of Supply.

**Wilfred Bennett Lewis,** whose alternate is David J. Keys; both men are vice presidents of research and development in the Canadian Atomic Energy Authority at Chalk River.

**Bertrand Goldschmidt,** a member of the French Atomic Energy Commission and head of its general physics service, His alternate will be Jacques Tine, a member of the French delegation to the UN.

**Homi Bhabha,** chairman of the Indian Atomic Energy Commission and a fellow of the Royal Society of Britain.

**Jame de Barros** of the UN delegation from Brazil. His alternate will be Joaquim Coste Ribeiro.

**I. I. Rabi,** Higgins professor of physics at Columbia University.

**Eric J. Hewitt,** vice president of Evans Research and Development Corp., New York, has been appointed to the subcommittee on general products of the Advisory Board on Quartermaster Research and Development of the National Academy of Sciences–National Research Council. The appointment is for 3 yr.

## Necrology

**Liberty H. Bailey,** 96, botanist, horticulturist, author, editor, former president of the AAAS, and dean emeritus of the College of Agriculture at Cornell University, Ithaca, N.Y., 25 Dec.; **Charles Belknap,** 74, former president of Monsanto Chemical Co., St. Louis, Mo., 29 Dec.; **Arthur C. Bent,** 88, author and former associate in ornithology at the Museum of Comparative Ornithology, Harvard University, Cambridge, Mass., 30 Dec.; **Shanti S. Bhatnagar,** 59, chemist, author, former president of the National Institute of Sciences of India, and secretary of the Ministry of Natural Resources and Scientific Research, New Delhi, India, 1 Jan.; **William M. Burton,** 89, chemist, pioneer in petroleum refining technology and retired president of the Standard Oil Co. (Ind.), Miami, Fla., 29 Dec.; **Francis L. Castleman,** 52, dean of the School of Engineering at the University of Connecticut, Storrs, 30 Dec.; **Richard Flack,** 81, authority on fungi and former professor of applied mycology at the University of Göttingen in Germany, Atlanta, Ga., 1 Jan.; **Charles J. Foote,** 93, former instructor in clinical medicine at Yale Medical School, New Haven, Conn., 29 Dec.; **Edmund N. Gathercoal,** 80, author, past president of the American Pharmaceutical Assoc., and emeritus professor of botany and pharmacognosy of the School of Pharmacy at the University of Illinois, Urbana, 27 Dec.; **Annie W. Goodrich,** 89, retired dean of the School of Nursing at Yale University, New Haven, Conn., 31 Dec.; **Arthur C. Parker,** 73, anthro-

pologist, archeologist, ethnologist, author, and retired director of the Rochester Museum of Arts and Sciences, Rochester, N.Y., 1 Jan.; **Samuel M. Seidlin,** 59, endocrinologist, author, pioneer in the use of radioisotopes in thyroid diseases, chief of the Endocrine Clinic and Medical Physics Research Laboratory at Montefiore Hospital, New York, 2 Jan.; **Calvin P. Stone,** 62, authority on sex behavior and genetic psychology, author, editor, past president of the American Psychological Assoc., and professor of psychology at Stanford University, Calif., 28 Dec.; **Ernest V. L. Whitechurch,** 80, former instructor in operative dentistry at Harvard University, Boston, Mass., 28 Dec.

## Meetings

The 9th annual **M. D. Anderson Symposium on Fundamental Cancer Research** will be held 10–12 Mar. at the University of Texas M. D. Anderson Hospital and Tumor Institute in the Texas Medical Center, Houston. The first day of the program will be a review of the current research projects at the hospital. This will be followed in the evening by the first formal gathering for the symposium—a discussion of the epidemiology of cancer by Eleanor Macdonald and a presentation on experimental design by John Fertig, professor in the department of statistics, Columbia University Medical School.

The second day of the symposium will be devoted to histochemistry. George Gomori of the University of Chicago, chairman of this program, has chosen six national figures as speakers. On the final day there will be presentations reflecting current cancer research in the Southwest; A. Clark Griffin of M. D. Anderson Hospital has assembled an interesting series of papers.

The Southeastern Section of the **American Society of Plant Physiologists** is holding its annual meeting at Louisville, 7–9 Feb. In addition to a program of contributed papers, two symposiums are to be held under joint sponsorship: The first with the American Horticultural Society and the second with the American Society of Agronomy.

Symposium I is on *Growth and Development of Plants with Special Reference to Temperature and Light,* Aubrey W. Naylor, Duke University, presiding. Participants will be H. A. Borthwick, A. C. Leopold, J. P. Overcash, J. L. Liverman, and Tokuji Furuta. Symposium II is entitled *Plant-Soils-Water,* P. J. Kramer, Duke University, presiding. Participants will be V. C. Jamison and Charles W. Domby (joint presentation), Hilda F. Rosene, and D. E. McCloud.

At the annual breakfast John W. Mitchell, U.S. Plant Industry Station, Beltsville, Md., will deliver an address on "Agricultural applications of growth regulators." Further information may be obtained from Dr. Wayne C. Hall, Dept. of Botany, A. and M. College of Texas, College Station, Texas.

A report on the Bayreuth meeting of the German Bunsen Society for Physical Chemistry is included in *Zeitschrift für Elektrochemie und Angewandte Physikalische Chemie* (No. 8, vol. 58, 1954). Although the main theme of the meeting was **nuclear chemistry,** the statistics given in the introduction of the article are of interest not only to chemists but also to physicists, biologists, and other scientists. *Chemical Abstracts* in 1951 had 2000 reviews on nuclear chemistry as compared with 790 in electrochemistry and 160 in photochemistry. Even analytic chemistry with only 900 reviews and inorganic chemistry with 570 indicate that nuclear chemistry has become one of the most intensely active fields in all of chemistry.

The meeting opened with a paper by Otto Hahn, Nobelist from Göttingen, entitled the "Development of nuclear chemistry—reminiscences," showing how modern nuclear chemistry is a direct outcome of the classical studies of radioactivity. The report then presents a discussion of "Nuclear structure and nuclear transformations" by H. T. Jensen of Heidelberg, and of "Nuclear binding energies," with illustrations from mass spectroscopy, by J. Mattauch. Next follows an article by Alfred O. Nier of the University of Minnesota on the "Determination of isotopic numbers and mass dependence by mass spectroscopy."

F. A. Paneth discusses the helium method for the determination of the age of iron meteorites; W. F. Libby, the newly elected commissioner of the U.S. Atomic Energy Commission, contributes a comprehensive review on carbon dating; and R. Brill of Brooklyn Polytechnic considers "Crystal structure examination by neutron diffraction." A large number of other articles covering such subjects as the application of tracers, the emanation method of Hahn, adsorption and desorption, and the nuclear shell model make this one of the most interesting publications recently available in the new field of nucleonics and nuclear chemistry. The issue also carries a handsome portrait of Max von Laue in recognition of his 75th birthday on 9 Oct. 1954.

Many prominent leaders of American industry, education, government, and the military, will assemble in Chicago, 10–11 Feb., to attend the **Military-Industrial Conference** at the Conrad Hilton Hotel and discuss the utilization of engineers and scientists in the military and in industry. Participation is invited. Copies of the program will be mailed upon request to: Military-Industrial Conference, Room 1191, 140 S. Dearborn St., Chicago 3, Ill. The meeting is being sponsored by the Society of American Military Engineers with the support of leading industrial, governmental, and professional organizations. Organization of the conference has been prompted by an awareness that, with the expiration of the Selective Service law in June 1955, another bill dealing with military manpower will be introduced in the Congress. This bill will have far-reaching effects on the future welfare of this country and will require exhaustive reconsideration of the entire manpower policy.

Ninety sessions, at which most of the 40 committees in the five technical divisions of the **American Institute of Electrical Engineers** will present papers on the latest discoveries and advancements in their profession, will be held during the winter general meeting of the institute at the Statler Hotel, New York, 31 Jan.–4 Feb. It is expected that the registration of 5000 at the last winter meeting, which set an all-time record, will be exceeded.

The Potomac Division of the **American Phytopathological Society** will meet 3–4 Mar. at the Plant Industry Station, Beltsville, Md. Papers of general interest will be delivered on the first day and a fungicide symposium, *Fungicides—Past, Present, and Future,* will be held on the morning of the second day. This symposium will be moderated by J. W. Heuberger, and the speakers are George L. McNew, director of the Boyce Thompson Institute for Plant Research; Hubert Martin, formerly of England and now director of the Science Service Laboratory, London, Ontario; T. Walter Reed, assistant manager of research, California Spray Chemical Corp.; and Lea S. Hitchner, executive secretary of the National Agricultural Chemicals Assoc. Hitchner will place emphasis on the recently passed Miller bill. The speaker for the annual banquet will be Karl D. Butler, a well-known plant pathologist with a number of years' experience in state experiment stations in the tropics for the U.S. Department of Agriculture.

The **Sixth Alaskan Science Conference** sponsored by the Alaska Division, AAAS, will be held at the University of Alaska at College, 1–4 June 1955. Organizing chairmen for the six sections of the conference are

- Agriculture and Forestry—Arthur W. Greeley, regional forester, U.S. Forest Service, Juneau
- Biological sciences—Andres I. Karstens, commanding officer, Aeromedical Laboratory, Ladd Air Force Base
- Physical sciences—Chas. Genaux, chemistry dept., Univ. of Alaska
- Engineering—A. F. Ghiglione, commissioner of roads, Alaska Road Commission, Juneau
- Medicine and public health—Earl Maxwell, surgeon, Elmendorf Air Force Base, U.S. Air Force
- Social sciences—Margaret Lantis, anthropologist, U.S. Dept. of Health, Education, and Welfare, Anchorage

Anyone wishing to present a paper at the conference is asked to contact the appropriate chairman by *15 Feb. 1955.*

The **National Conference on Transistor Circuits** will be held in Philadelphia, 17–18 Feb., under the joint sponsorship of the Institute of Radio Engineers Professional Group on Circuit Theory, the Science and Electronics Division of American Institute of Electrical Engineers, and the University of Pennsylvania. The 1955 conference is patterned after the first one held at the same location a year ago and will consist of four consecutive sessions with papers covering both linear and nonlinear transistor circuit applications. Emphasis will be on material not previously available in the literature, and the program is designed to be of greatest value to engineers who already possess some knowledge of transistor circuit behavior. Authors are encouraged to publish subsequently in professional journals in lieu of conference transactions.

One innovation being considered this year is an evening session of informal round-table discussions. It is requested that those interested in participating write the chairman of the program committee, H. E. Tompkins, Burroughs Research Center, Paoli, Pennsylvania, indicating discussion topics. Anyone interested in attending who has not received registration forms should request them from Mr. W. J. Popowski, Minneapolis-Honeywell Regulator Co., 176 West Loudon St., Philadelphia 20, Pa.

The organizing committee of the 14th **International Congress of Pure and Applied Chemistry,** to be held in Zurich, 21–27 July, has announced that the final date for registration is 15 Feb. The committee adds that technical reasons prevent further postponement.

The 7th annual convention of the **International Academy of Proctology** will take place at the Plaza Hotel in New York, 23–26 Mar. 1955. The international, national, and local program committees are planning an unusual seminar on anorectal and colon surgery. There will be special emphasis on anorectal presentations and on panel discussions, as requested by those who attended the Chicago meeting in 1954. Plans are being developed for wet clinics and lectures at the Jersey City Medical Center under the direction of Earl Halligan, surgeon-in-chief of the Medical Center.

Speakers from this country and from abroad will present papers and motion-picture demonstrations of their personal techniques. Mexico is expected to be very well represented at this meeting. All physicians and their wives are cordially invited to attend the convention, whether or not they are affiliated with the academy. There is no fee for attendance.

## Education

On 2 May the Special Training Division of the Oak Ridge Institute of Nuclear Studies will open a special 4-wk basic course in the **techniques of using radioisotopes,** to be offered especially for scientists and technicians from among the 53 countries eligible to receive shipments of isotopes from this country. The course is the first of several supporting projects launched under the auspices of the Atomic Energy Commission in furtherance of President Eisenhower's proposal for an international atomic agency. Like the regular basic courses, this class will be limited to 32.

Qualifications for prospective enrollees are a bachelor's degree, adequate training and experience in the

field in which they propose to use isotopes, and an understanding of the English language. Application forms, which must be submitted before 1 Feb., are available at U.S. embassies and legations, or may be obtained from the Special Training Division, Oak Ridge Institute of Nuclear Studies, P.O. Box 117, Oak Ridge, Tenn.

Formal dedication of the new $1.5 million **engineering building of Johns Hopkins University** will be held in the spring of 1955. The building, which will be named Ames Hall in honor of Joseph Sweetman Ames, former president, completes the group of major buildings on the main quadrangle of the Hopkins campus. All departments are expected to be completely in operation in the new structure by the end of the year.

The **largest radiotelescope** in the United States, a steerable parabolic antenna 60 ft in diameter, will be built at the Agassiz Station of Harvard College Observatory. The National Science Foundation is expected to help support its construction, scheduled to begin shortly; an anonymous benefactor will also contribute. The largest radiotelescope of this saucer variety now in use, which is operated by the Naval Research Laboratory in Washington, D.C., is 50 ft in diameter. However, two larger antennas of the same kind are now being built abroad. The Dutch are constructing a 75-ft instrument, and the British are building a 250-ft one that is scheduled for completion next year.

Approximately $1 million for a new geology building is being given to the **Rice Institute** by the three daughters of the late Harry C. Weiss, Mrs. James A. Elkins, Jr., Mrs. William Francis, Jr., and Mrs. Lloyd Smith. The actual structure will cost in the neighborhood of $750,000 and is expected to be ready for use by the fall of 1956. It will house the Harry C. Weiss chair of geology established in 1952 by Mrs. Weiss as a memorial to her husband. Mr. Weiss, who died in 1948, was one of the founders of the Humble Oil and Refining Co. and a chairman of the Rice Institute board.

The 23rd **venereal disease postgraduate course** will be given at Tulane Medical School of Louisiana in New Orleans from 31 Jan. through 4 Feb., cosponsored by Tulane's Division of Graduate Medicine and the U.S. Public Health Service. The course, which is accredited by the American Academy of General Practice, is designed to acquaint the practitioner with the latest developments in diagnosis, treatment, and management of venereal diseases. No tuition will be charged. Applications for admission should be made immediately to Dr. Clifford Grulee, Jr., Director of the Division of Graduate Medicine of Tulane University of Louisiana, 1430 Tulane Ave., New Orleans, La. The course is open to any physician either in civil or military practice anywhere in the United States.

A **professorship in electrical engineering** has been established at Columbia University through a grant from the General Electric Co. The professorship will be used for teaching and research in the fundamentals of generating, handling, and processing energy. John R. Dunning, dean of the School of Engineering, said that "study would be made, not only of the present status of knowledge in the . . . field, but also of applications of nuclear and solar energy. The principal objective of the professorship will be to develop courses, curricula, and fundamental research."

Fifty students enrolled for **the 5-day course in pathology of diseases of laboratory animals** held recently at the Armed Forces Institute of Pathology. Lecturers included W. H. Feldman, Mayo Foundation, on tumerous growths in dogs; A. M. Pappenheimer, Harvard University, on natural diseases of mice; F. S. Vogel, Air Force Radiobiology Laboratory, on diseases affecting chimpanzees; C. R. Cole, Ohio State University, on taxoplasmosis; and Erwin Jungherr, University of Connecticut, on parrot fever.

A program leading to the Ph.D. in the medical sciences has been established at **State University of New York College of Medicine** in Syracuse. Graduate work is offered in five fields: anatomy, biochemistry, pharmacology, physiology, and microbiology. The program is designed for those who wish to specialize in one of these preclinical subjects and should not be confused with postdoctoral education in clinical medicine for physicians. It will be supervised by a faculty committee headed by Wilfred W. Westerfeld, professor and chairman of biochemistry. Tuition has been set at $100 a semester, with a $15 activity fee for the academic year.

## Available Fellowships and Awards

An expanded program for the support of research and conferences on the physiology of pregnancy was announced by Willard C. Rappleye, president of the **Josiah Macy, Jr. Foundation,** at the 25th annual meeting of the directors. In the past the foundation has given emphasis to the support of scientific investigations on the problems of psychosomatic medicine and of aging, but with enlarged resources now available, the directors have decided to give special attention to the prenatal phases of human development and the maternal adaptation to pregnancy. They will assist departments of obstetrics and gynecology to develop programs of clinical and basic research.

Six fellowships of $2000 each for graduate study in the field of aeronautical structures at the **Institute of Air Flight Structures,** sponsored by the Daniel and Florence Guggenheim Foundation at the Columbia University School of Engineering, have been announced. The fellowships for 1955–56 are open to young men who show aptitude and interest in pursu-

ing advanced teaching and research in the field of aircraft structures. A bachelor's degree is normally required, although it need not be in aeronautical engineering. The fellowships are renewable on merit. *Applications must be filed by 20 Feb.*; information may be obtained from Dr. Hans H. Bleich, Director, Institute of Air Flight Structures, School of Engineering, Columbia University, New York 27, N.Y.

A program of financial aids for students who will study for advanced degrees in the School of Industrial Management at the **Massachusetts Institute of Technology** during 1955–56 has been announced. Assistantships and fellowships, will be available to a number of students in the 2-yr course that leads to the degree of master of science in industrial management. This program is especially intended for college graduates in fields of science or engineering.

Assistantships, with a stipend of $1640 for each academic year, are available to certain men with an educational background which permits them to carry a reduced course load. For these assistants the tuition is $540. Fellowships to enable a number of students of unusual ability to attend the school are available each year. In general, these fellowships provide full tuition as a minimum and range upward to $3000 for married men or $2300 for those unmarried.

In both cases, applications should if possible be filed before 1 Mar. Further information may be obtained from the Chairman of the Graduate Committee at the School of Industrial Management, Massachusetts Institute of Technology, Cambridge 39, Mass.

The board of trustees of the **Alumni Fund of Michigan State College** offers five predoctoral fellowships ranging in value from $1000 to $1400 tenable in any subject at Michigan State College for the year 1955–56. With each fellowship a waiver of course and tuition fees is granted. Only U.S. students are eligible.

The Alumni Fund also offers one $3000, 10-mo postdoctoral fellowship, open to U.S. applicants. This fellowship is available for research in any subject for which Michigan State College has appropriate facilities. It carries with it the same housing privileges as are accorded to faculty members. Inquiries should be addressed to the Dean of the School of Graduate Studies, Michigan State College, East Lansing, Mich. *Completed applications must be received before 1 Mar. 1955.*

The Geophysical Laboratory of the Carnegie Institution of Washington and the geology department of the Johns Hopkins University are cooperating in the award of two 2-yr predoctoral fellowships in **petrology and geochemistry.** Applicants for the awards must have completed a year of graduate work in the geologic sciences and must be proficient in physical chemistry.

During the first year the fellows spend most of their time at the university completing courses and other requirements for the doctorate. The second year is devoted to research at the Geophysical Laboratory leading toward a dissertation. Stipend is $2400 the first year and $2800 the second. Application for a fellowship, supported by transcripts and recommendations, *should be sent by 1 Mar.* to Prof. Ernst Cloos, Chairman, Geology Department, Johns Hopkins University, Baltimore 18, Md.

**Radcliffe College** invites applications for the $3000 Helen Putnam fellowship for advanced research in any field related to human genetics or mental health—including psychology, child development, and other fields of social science. This postdoctoral resident fellowship for women permits use of research facilities at Harvard University. For information communicate with the Secretary of the Graduate School, Radcliffe College, Cambridge 38, Mass. Completed forms should be returned *by 1 Apr.*

Research proposals directed to the Division of Biological and Medical Sciences of the **National Science Foundation** will be received at any time. The proposals on research projects to begin during the first half of the academic year 1955–56 will be reviewed during March. These proposals should reach the foundation *prior to 15 Feb.*

## Grants and Fellowships Awarded

The following **AAAS research grants** have been awarded:

Oregon Academy of Science to Ludlow Corbin, Portland. Effects of hormones such as estrone, estradiol, testosterone, and progesterone on the cellular division of the green alga *Chlorella.*

Georgia Academy of Science to Netta E. Gray, Agnes Scott College, Decatur. Morphologic and taxonomic studies of the tree genus *Podocarpus.*

British Columbia Academy of Science to Charles R. Harris, University of British Columbia. Bioassay of insecticides for residual contact toxicity.

Arkansas Academy of Science to George G. Iggers, Philander Smith College, Little Rock. Research on the idea of progress in recent philosophy of history.

Arkansas Academy of Science to Charles G. Hamilton, College of the Ozarks, Clarksville. Research on legislation during the progressive period in state legislatures.

Announcement has been made of new research grants recently awarded by the Surgeon General of the U.S. Public Health Service upon the recommendation of the National Advisory Mental Health Council at its November meeting. Fifteen new grants were awarded totaling $204,664. This list does not include grants awarded to investigators for the continuation of projects previously supported by the **National Institute of Mental Health.** Forty-nine such grants, totaling $585,979, were also awarded at the November meeting.

Yale University. F. A. Beach. Psychophysiology of reproductive behavior, $14,248, 5 yr.

Council Child Development Center. E. K. Beller. Fear, aggression and dependency in childhood $15,766, 1 yr.

Harvard University. G. Caplan. Evaluation of a mental health program for student nurses, $14,430, 1 yr.

University of California. H. S. Coffey. Relation of group tension to interpersonal role, $6304, 1 yr.

American Psychological Association. J. E. Anderson. Research conference on psychological aspects of aging, $9990, 1 yr.

University of Wyoming. R. H. Denniston. Relation of hormonal factors to behavior, $4175, 3 yr.

University of Chicago. N. N. Foote and D. Riesman. Functions of play in developing adulthood, $21,600, 3 yr.

Harvard University. D. H. Funkenstein. Interpersonal perception in schizophrenia, $9654, 3 yr.

Yale University. D. E. Hunt. Effect of need for approval on children's behavior, $4390, 2 yr.

New York University. M. Jahoda. Psychology of role acceptance in women, $10,751, 1 yr.

Washington University. F. H. Kanfer. Studies in verbal behavior, $7208, 3 yr.

George Washington University. W. Overholser. Effect of psychoanalysis on therapist's techniques, $15,637, 3 yr.

Mount Zion Hospital. S. Reichard. Psychogenic factors in schizophrenia and the neuroses, $8400, 1 yr.

Harvard University. B. F. Skinner and H. C. Solomon. Experimental analysis of psychotic behavior, $30,000, 2 yr.

Harvard University. J. P. Spiegel and F. R. Kluckhohn. Influence of family and culture on mental health, $32,011, 2 yr.

The November allocations of the **Damon Runyon Memorial Fund** for Cancer Research are as follows:

University of Helsinki, Institute of Forensic Medicine. Unto Uotila, $3000.

University of Helsinki, Institute of Forensic Medicine. Harald Teir. Study of malignant growths, $5000.

University of Helsinki, Institute of Forensic Medicine. Kai Setala, $7000.

Pasteur Institute, Paris. Raymond Laterjet, $5000.

Hopital des Enfants Malades, Paris. Georges Schapira, $3500.

Columbia University. To support five projects in cancer research, $60,920.

Institute of Industrial Medicine, New York University–Bellevue Medical Center. Norton Nelson, $19,000.

Mount Zion Hospital, San Francisco. B. L. Freedlander. Chemotherapy of experimental mouse tumors, $7000.

Children's Cancer Research Foundation, Boston, Mass. George Yerganian, $5700.

Boston University. Paul Fulton and Maurice H. Shulman, $5000.

*Fellowships*

Jose Riera Vinas, New England Center Hospital, Boston. Studies of white cell antibodies.

Pier Luigi Melanotte, University of Utah, Salt Lake City. Experimental research in bone growth and in bone tissue mineral metabolism.

## In the Laboratories

**Ab Kabi,** a Swedish pharmaceutical company, and the **Pfizer Corp.** have concluded an agreement that will permit the production of Terramycin and Tetracyn in Sweden. Some 30 other pharmaceutical preparations will also be launched on the Swedish market. Ab Kabi has made penicillin for many years and its output of streptomycin is seven times larger than Swedish consumption.

A $2,100,000 electronic computing machine, said to be the biggest in Britain, has been installed at the **Royal Aircraft Establishment** in Farnborough, England. The unit covers 6000 ft² of floor space, contains 8000 electron tubes, and is maintained at constant temperature by the circulation of air at a rate of 30,000 ft³/min. The machine is expected to save both time and money in the development of guided weapons and high-speed aircraft.

The new **André Meyer Department of Physics in Mount Sinai Hospital,** New York, has been dedicated. The new physics department is the gift of Mr. Meyer, a hospital trustee. In addition to its own full-time staff of 15, the department will house investigative activities of some 70 physicians and scientists from collaborating services taking part in a research program that last year spent $900,000. The department stems from a one-man, one-room laboratory started in 1938 for work on biophysics and on the standardization of scientific instruments.

In November the **Fisher Scientific Co.** opened a new plant at 1458 N. Lamon Ave., Chicago 51, Ill. In the technical service and demonstration laboratories of the new facility visitors at the opening saw the latest in electronic instrumentation and the 37,000 ft² warehouse, so completely integrated by pneumatic and conveyor systems that 10 men can handle the stock of more than 16,123 different items of apparatus and several thousand different reagent chemicals. As special features the company transferred from Pittsburgh its "Pasteur Memorial U.S.A.," the largest collection of Pasteur portraits and manuscripts and original letters in this country, and the 18-ton Fisher Mobilab, a complete laboratory-on-wheels.

The National Association for Mental Health has awarded **Smith, Kline, and French Laboratories** and the **American Medical Association** citations for their television production "Search for Sanity" which was presented on the *March of Medicine* program on 31 Oct. It marked the first network use of live television cameras in a hospital for the mentally ill. The citation commends the program for its "outstanding contribution to public understanding of the problem of mental illness."

Construction of a large electronics laboratory for engineering and research, to cost nearly $1,500,000, was begun by the **Raytheon Manufacturing Co.** on 29 Nov. on a 73-acre site in Wayland, Mass. Raytheon has more than 1500 professional engineers among its approximately 18,000 employees, and the new building with its 150,000 ft² of floor area will provide office and laboratory space for the largest single group of engineers within the company.

**Hillside Hospital,** Glen Oaks, N.Y., has established a research service devoted to the study of psychologic, neurophysiologic, and biochemical aspects of mental illness. Funds for the service have been appropriated by the board of directors, supplementing two grants by the U.S. Public Health Service, and one by the Dazian Foundation for Medical Research. Maximilian Fink, former supervising psychiatrist at the hospital, has been appointed director of research.

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*Erratum*: In the issue of 29 Oct. 1954 the name of the third author of "Effect of 2,4-D on respiration and on destruction of IAA in oat and sunflower tissues," page 710, was incorrectly spelled. It should be Dawson C. Deese (not Desse).