of additional K-mesons with masses around 1200 m_e. Leprince-Ringuet (Paris) presented some evidence of a K-meson with a mass of $m_k = (912 \pm 20)\ m_e$ whose decay involves a μ-meson. This K_μ-meson decays according to $K_\mu \rightarrow \mu +$ neutral particle (neutrino?) and is positive. A negative counterpart may have been observed. The existence of a χ-meson ($\chi \rightarrow \pi +$ neutral particle) with a mass between 950 and 980 m_e seems likely. A χ-meson that decays into a μ-meson and two or more neutral particles seems to be rather well established. Some neutral K-mesons that are not θ^0 mesons have been observed also.

Most of the observations on the "strange" particles mentioned in the preceding paragraph were made in cosmic-ray experiments. Some of the particles may also be produced by high-energy proton, neutron, and π-meson beams available in the Brookhaven cosmotron. Thorndike reported observations with this machine on the production of K-mesons and on a few V-events. The events are rare, however. A π-meson beam is most effective for producing these "strange" particles.

Two main problems confront the theoreticians in explaining the behavior of the strange particles: (i) Why is there such a variety of particles? (ii) Why is the lifetime of the particles 10 and more orders of magnitude larger than expected from their large production probability in high-energy events? Some theoretical speculations concerning especially the latter of the two questions were discussed by M. Gell-Mann (Chicago) and A. Pais (Princeton). One of two quite different assumptions may explain the puzzling behavior. The first one postulates that the matrix elements for the production and decay are very strongly energy-dependent, for example, because of high angular momentum, which would give copious production at very high energies and a slow decay of the particle, the latter being a low-energy event. The high angular momentum should manifest itself in the angular distribution of the events. The second model starts from the point of view that the strange particles—for example, Λ^0-particles, are produced, two at a time, by π-meson-nucleon or nucleon-nucleon collisions through a strong interaction. The decay of the particle, however, owing to certain selection rules (isotopic spin!) would be forbidden and therefore would proceed slowly.

After this rather controversial topic of the theory of the strange particles, W. Heisenberg (Göttingen) closed the conference with some remarks. In retrospect, he mentioned the way the problems in atomic spectroscopy were solved whose understanding seemed to present unsurmountable difficulties 33 years ago. Perhaps some unexpected development in the future may do for the present somewhat unsatisfactory state of meson physics what the quantum theory did for the understanding of atomic physics.

News and Notes

International Union Against Cancer and the 6th International Cancer Congress

The council of the International Union Against Cancer met on 21–22 July in São Paulo, Brazil. The official delegates from the United States were Harold L. Stewart, chairman, Charles S. Cameron, and George T. Pack. A completely revised constitution was adopted which greatly improves and simplifies the operation and organization of the union. For the first time, provision is made for the rotation of the presidency and for the office of president-elect. The headquarters of the union will remain in Paris, but it will be moved from 6, Avenue Marceau, where it has been associated with the French League against Cancer, to the Curie Foundation, 26, Rue d'Ulm, where office space will be furnished gratis. Permanent committees were established to assist in organizing future congresses and to consider problems concerned with the publication of *Acta,* the official journal of the union.

The following officers were reelected for another term: president, J. Maisin (Belgium); secretary-general, Harold Dorn (United States); assistant secretary-general, Pierre Denoix (France); and treasurer, Philip Peacock (Scotland). V. R. Khanolkar (India) was elected president-elect. The five vice-presidents of the union and the areas they represent are as follows: Antonio Prudente (Brazil), Latin America; O. H. Warwick (Canada), British Empire; Paul E. Steiner (U.S.A.), United States; Tomizo Yoshida (Japan), Asia; and Leiv Kreyberg (Norway), Europe. Plans were made to hold the next cancer congress in London in 1958.

Under the auspices of the union, the 6th International Cancer Congress was held 23–29 July in connection with the 4th centennial of São Paulo. Of the more than 1000 people registered, 400 were from outside Brazil and approximately 135 were from the United States. The program was divided into 6 concurrent sections consisting of 2 lectures, 4 conferences, 10 panel discussions, 15 symposiums on special subjects, 22 films, and 339 scientific papers, making a total of more than 500 individual presentations. Representatives of 48 countries, including the U.S.S.R., participated in the program. Although it is impossible to report in detail on the numerous papers presented, some points of particular interest are mentioned here.

H. Runge (Germany), using primarily radium and x-ray in the treatment of carcinoma of the cervix, reported an absolute recovery rate of 45 percent after 5 yr and 40 percent after 10 yr. In Russia, complete clinical recovery was obtained in the treatment of cancer of the cervix with radiotherapy in 75.1 per-

cent of stage 1 cases, 51.3 percent of stage 2, and 12.5 percent of stage 3, as reported by E. A. Bazlov. After radical mastectomy for the treatment of breast cancer, E. Viacava (Argentina) gave the following figures for those living after 5 yr: 69 percent of stage 1 cases; 29 percent of stage 2, 9 percent of stage 3, and none of stage 4. Stages 3 and 4 patients received radiation and hormone therapy.

In the field of endocrinology, A. C. Griffin (U.S.A.) demonstrated that hypophysectomy of rats completely prevents the liver damage and tumor development that occurs in nearly all intact animals fed the azo dye 3-methyl-4-dimethylaminoazobenzene. The injection of ACTH and growth hormone almost completely restored the carcinogenic effect of the dye. E. Mardones, R. Iglesias, and A. Lipschutz (Chile) produced uterine tumors in guinea pigs by removing one ovary and crushing the other, thereby causing an irregularity in the rhythm of the sexual cycle.

Studies in chemical carcinogenesis by H. P. Rusch, D. Bosch, and R. K. Boutwell (U.S.A.) resulted in the production of skin cancer in mice by painting with croton oil. Heretofore croton oil was considered a cocarcinogen. This work raises questions about the basic concept of cocarcinogens. P. Ermale and L. R. Halsti (Finland) reported that 15 percent of the mice whose oral cavities were painted with tobacco tar developed carcinoma of the urinary bladder. If confirmed, this is important because it shows that the action of the tar is not limited to the area directly exposed. A. J. Vorwald (U.S.A.) described the pioneer work with P. C. Pratt and E. J. Urban in which the inhalation of beryllium sulfate aerosol by rats produced pulmonary cancer with the adenomatous and epidermoid pattern of lung cancer. Investigations by W. F. Dunning and M. R. Curtis (U.S.A.) indicated that excessive dietary tryptophane was the decisive factor in the etiology of cancer of the urinary bladder induced in rats by feeding 2-acetylaminofluorene. The investigations by A. R. Gopal-Ayengar (India) demonstrated that the most pronounced cytochemical effect of total-body radiation on the Ehrlich ascites tumor in mice was the marked accumulation of RNA in the cells.

Carefully controlled genetic experiments, described by W. E. Heston (U.S.A.), failed to give any evidence that the mammary tumor agent in mice could arise *de novo* as a mutant of some normal cell component, but the experiments suggested that its origin was extrinsic. W. J. Smith (U.S.A.) reported procedures by which the destruction of the sebaceous glands in the skin of mice painted with carcinogens might be used as a test for carcinogenicity. Further development of this method may avoid the necessity of waiting months for cancers to develop in order to determine the carcinogenic potency of some compounds.

Because information about cancer in Russia is so limited, and because of the interest indicated in this matter, the reports of the Russian scientists are described in somewhat greater detail. N. Blokhine outlined the main trends in experimental oncology. Soviet scientists base their work on the teachings of the great Russian physiologist, Pavlov, emphasizing the unity of the organism; therefore, they cannot admit that tumors are autonomous. They do not support the theory of somatic mutation, although they agree that tumor cells may change under the influence of the environment. The virus theory receives a good deal of support. M. A. Morozov has developed a special coloring substance that enlarges virus particles so that they can be seen in the optical microscope.

Nervous trauma aids the development of tumors and metastases in dogs and mice treated with carcinogens. The inhibition of the activity of the higher nervous centers causes an increase in the number of metastases of the Brown-Pearce tumor in rabbits. Increased nervous activity results in fewer metastases.

I. Chevtchenko discussed the use of exfoliative cytology as a diagnostic tool. He indicated that the method was widely used and reported the following accuracy of diagnosis: 87.3 to 98.9 percent for cervical cancer, 83 to 89.6 percent for lung cancer, 92 percent for esophageal cancer, and 69 percent for gastric cancer.

Surgical treatment of gastric cancer was described by A. I. Rakov. Gastric cancer is the most common type in men and women and accounts for 32 percent of all cancers. About 60 percent of the gastric patients are admitted to hospitals. The radical surgery required can be carried out in only about half of these patients. Most surgeons operate for gastric cancer with only a local anesthetic. Usually a subtotal or total gastrectomy is done. Partial resection is considered only palliative. The postoperative mortality for total gastrectomies is 15 to 16 percent. The 5-yr survival rate is about 50 percent in the absence of metastases and 23 percent with metastases. Approximately 10 percent of all gastric cancer patients who report to a physician can be cured.

A. I. Savittski described the Organization of the Fight against Cancer in the Soviet Union. The main organization unit is the Oncological Dispensary which is the center of the anticancer system in major regional localities. It is composed of departments of surgery, obstetrics, otorhinolaryngology, radiodiagnostics, radiotherapy, and roentgenotherapy. It also includes a hospitalization center for patients. There are about 160 of these units in Russia. In addition to diagnosing and treating cancer, they collect and analyze statistics, organize and apply mass prophylactic measures, and supervise public and professional education in cancer. The next unit in the system is the Oncological Station. There are about 870 such stations. Their function is essentially the same as that of the dispensaries except that their jurisdiction is more limited. Finally, the numerous "homes of health education" and Red Cross organization disseminate information about cancer. This state system of health protection is under the supervision of the Committee for the Fight Against Cancer which is attached to the Scientific Council of the Ministry of Health.

The frequency of various types of cancer is as follows: gastric, 32 percent; uterus, 16 percent; skin, 12

percent; breast, 7 percent; mouth and lips, 7 percent; esophagus, 6 percent; rectum, 2.5 percent; and larynx, 1.5 percent. An effort is made to give an annual examination to everyone over 35 yr of age; 10 million people are examined each year. About 0.11 to 0.15 percent of these people have cancer, and 0.8 to 0.9 percent of them have precancerous lesions.

In a press release issued prior to the congress, it was stated that lung cancer has increased in Russia, but this increase is not believed to be related to smoking. Extracts of tobacco painted on lips and skin of mice did not cause cancer. Partial success has been attained in preparing a vaccine to prevent cancer in animals; such a vaccine would be used to treat metastases after the primary tumor was removed. In chemotherapy, analogues of nitrogen mustard, folic acid, and vitamins are used that are less toxic than those available elsewhere. In Russia it is believed that the most important phase of cancer control is early diagnosis.

Some general statements regarding the cancer congress can be made. A particularly good symposium on *Geographical Pathology* considered the variations in incidence and the etiology of various types of cancer in different parts of the world, and a symposium on *Nomenclature of Human Tumors* was especially successful in reaching agreement on an international nomenclature and code to be recommended to WHO. For the first time, the preventive aspects of human cancer received wide attention. There appears to be little doubt that smoking is an important factor in the etiology of lung cancer. The prevailing opinion seems to be that proof is still lacking that, with present methods, early diagnosis has any appreciable effect on prognosis except in special cases.

The many investigators from the United States who participated in symposiums are to be congratulated on having discussed their subjects in a general way rather than emphasizing specific and detailed research results. This enabled the large number of Brazilian physicians to benefit a great deal, and thereby contributed materially to the success of one of the important aspects of the congress. The Brazilians were superb hosts and many people felt that the informal exchange of ideas and the establishment of personal relationships were two of the most important results of the meeting. The representatives from the United States seemed to be in complete concurrence with the president of the congress, Antonio Prudente (Brazil), when he said at the concluding session, "The success of the Congress exceeded our wildest hopes."

U.S.A. National Committee on the International Union Against Cancer
National Research Council, Washington, D.C.

Biologists Invade Florida

The 6th annual meeting of biological societies, sponsored by the American Institute of Biological Sciences, was held 5–9 Sept. at the University of Florida, Gainesville. More than 2000 biologists, members of 25 societies, met to hear some 1000 papers and symposiums, to take part in numerous field trips, and to visit elsewhere in the state. The Gainesville meeting represented the first major national gathering of biological societies to be held in the southeastern area. Representation from the universities and colleges of the region was heavy, but the numbers from the Midwest and Far West were surprising. Many of the papers were regional in nature, and the occasion offered a fine opportunity for all interested in southern and Caribbean research to gather and to compare data.

Sixteen field trips, varying in length from ½ day to 4 days, were special features of the meeting. The most ambitious trip was planned by the Ecological Society of America. More than 100 persons spent 4 days traveling and collecting throughout the length of the state, in the Everglades at Cape Sable, down the Keys, and out to a coral reef in the Atlantic Ocean off Miami. The American Society for Horticultural Science arranged a trip that included visits to industries and processing plants, citrus groves, sugar plantations, nurseries, gardens, and horticultural beauty spots. Shorter trips planned by other societies included many of the scenic attractions and also many of the biological attractions, such as Marineland, the Ross Allen Reptile Institute, and the Yerkes Primate Laboratory.

The general meeting featured an address by A. F. Carr, Jr., on "The passing of the fleet." Carr told of the fate of the flotas of Caribbean green turtles, *Chelonia,* from their abundance in the days of Columbus to their present hazardous condition on the brink of extinction. A condensation of Carr's address was published in the October issue of the *AIBS Bulletin.*

At an AIBS symposium, *The Communication of Research Results,* organized by John A. Behnke, contributions were made to the solution of some of the problems that exist in publishing, abstracting, and storing our present accumulation of written scientific knowledge. A report on the papers presented by the five speakers will appear in *Science* and later in the *AIBS Bulletin.*

A special symposium, *Social Organization in Animals,* honoring W. C. Allee, was organized by the Ecological Society of America. Many other societies offered one or more symposiums, and more than 50 speakers took part in these varied programs. Teaching problems in biology, curriculum improvements, and teacher aids and incentives were subjects for several panel discussions.

Of concern to horticulturists was the role and application of combination fertilizers and insecticides. In a cooperative program with the National Joint Committee on Fertilizer Application, K. D. Jacobs (U.S. Department of Agriculture) stated that the consumption of fertilizer-pesticide mixtures in 1952–53 reached a total of 87,000 tons in the United States. Further increased consumption occurred during this last year, particularly in the north-central region, in the control of wireworms and rootworms. Jacobs said that the commercial use of the combinations has al-

ready forged far ahead of research, and further work is needed to determine the best mixtures, the desired rate per acre, the timing of application, the most effective method of application, and the development of new equipment.

R. N. Goodman (University of Missouri) reported that fireblight now appears to be successfully controlled by fewer applications of less concentrated antibiotic sprays than was indicated by experiments a year ago. From 25 to 50 parts of terramycin-streptomycin to 1 million parts of water now seem to be effective.

R. Bruce Ledin (Florida Sub-Tropical Experiment Station) announced the release of a tropical black raspberry that will grow successfully in southern Florida, in fact the first raspberry that will do so. Known as the Mysore berry, it can be propagated by seed, cuttings, or tip layers. So far this new berry has been relatively free of fungus disease and is seldom bothered by insect pests.

During sessions on the social behavior of animals, W. T. James (psychologist, University of Georgia) told of the iron-clad system among dogs in which from puppyhood a dog is destined to be either upper crust, middle class, or an underdog. Born into one of these classes, he must remain there. This hierarchy, based on dominance, appears to be an inherent pattern.

Madge T. Macklin (geneticist, Ohio State University College of Medicine) reported on a recent study of the genetic basis of gastrointestinal cancer in man. Macklin's study showed that stomach and bowel cancer was from 2.5 to 3.5 times as common in the sons and daughters of parents with these cancers as it was in the general population. These children are not destined to develop cancer any more than if they were not related, but if they do, the risk of its being in the gastrointestinal tract is greater.

Scientific evidence, in the form of tape recordings, was offered by W. Frank Blair and David Pettus (University of Texas) to show that frogs and toads employ a special "language" for communication. Recordings demonstrated that differences exist between the calls of closely related species and between individuals. Blair believes that such differences may play an important part in preventing free interbreeding of closely related species. Certainly the calls provide more accurate and easier identification of some species than is possible by examination of physical characteristics.

That female snakes can bear young years after their isolation from males (delayed fertilization) has been known to biologists for some time, but it has not been understood. Wade Fox (Louisiana State University School of Medicine) told ichthyologists and herpetologists that the secret lies in specialized sacs, opening into the oviduct, in which sperm are stored at body temperature. An examination of these receptacles in garter snakes showed the sperm lined up in an orderly fashion with all heads oriented in the same direction. Fox believes that nourishment is supplied in some way, making extreme longevity possible. Since delayed fertilization is known to occur in some turtles as well, he intends to investigate the possibility that the same mechanism exists there.

The real food of mosquitoes is virtually unknown; blood is not a food but a condiment helpful to the maturing of eggs. A study being conducted on an island in the Gulf by John S. Haeger (Florida State Board of Health) revealed that both sexes of the common salt-marsh mosquito, *Aëdes taeniorhynchus,* feed extensively on flower nectaries of Spanish needles, saw palmetto, buttonwood, sea grape, black mangrove, cabbage palm, and the honeydew from green aphids. The daily carbohydrate feeding cycle was found to be related to the male swarming periods, occurring immediately before or afterward. It was found that if a new brood emerged in the vicinity of black mangroves in full bloom, both sexes fed extensively; if, however, no nectar was available at the breeding site, migration was likely to occur.

John T. Curtis (ecologist, University of Wisconsin), reported that soil fungi are even more specific in their choice of habitat than had been believed hitherto. For example, actinomyces are most numerous on dry prairies, and penicillia, particularly those adapted to neutral or slightly alkaline soil, are most abundant in mesic hardwood forests. Curtis is now at work on the soil preferences of each fungus type. This investigation could be of great value in the search for new producers of antibiotics.

A treatment for moniliasis may have been discovered by George H. Scherr (Creighton University School of Medicine). Moniliasis in its early stages is not uncommon as "oral thrush" in infants; later, when it invades deeper organs, it is highly fatal. Using mice, Scherr told how Pyromen nearly obliterated all symptoms of the disease. The activity of Pyromen appears to be similar to that of cortisone. So striking was the effect of this treatment that a number of investigators in this country and abroad are planning to undertake clinical trials on human beings with advanced stages of the disease.

Laboratory synthesis of lignin was described by S. M. Siegel (California Institute of Technology). Since lignins are the principal waste products of the paper industry, an understanding of their biochemistry is particularly important. Siegel showed that the process begins with a reaction between eugenol and hydrogen peroxide, catalyzed by the enzyme peroxidase.

Daniel I. Arnon and his associates (University of California) reported the first complete photosynthetic reaction in isolated chloroplasts. Measurements showed that the chloroplasts were going through all phases of photosynthesis.

The indefinite storage of living dry seeds seems possible, according to W. E. Loomis, A. M. Bryan, and W. M. Struve (Iowa State College). In experiments with corn, the grain was dried slowly in a vacuum to a weight equivalent to that obtained after 3 days in an air oven at 212°F. When stored in inert gases, the seeds appear to be in a state of "suspended life."

Just as the Gainesville meetings began, a delegate

flew in from Barro Colorado Island, Panama, with a live *Peripatus*. Since most biologists had never seen a live specimen, its presence at the meeting aroused considerable interest. But within hours, "it" became "she" and gave birth to a young *Peripatus*. Twenty-four hours later, the mother again went into labor and this time the event was recorded by camera. However, the attendants at the second blessed event lost their patient within a few hours, presumably to desiccation.

ILEEN E. STEWART
American Institute of Biological Sciences

Science News

The role of the **fish as an experimental animal** in biological research is discussed by Ross F. Nigrelli in the *Bulletin for Medical Research* [**8**, 2 (July–Aug. 1954)]. Nigrelli points out that study of these animals has led to major contributions in experimental embryology, genetics, nutrition, renal physiology, endocrinology, and nerve physiology, as well as in many other fields. Nigrelli lists numerous fishes available for such studies, including tropical freshwater viviparous and oviparous species, temperate freshwater oviparous species, temperate marine oviparous species, and tropical marine oviparous species. All of these can be secured commercially or can easily be collected, and many of them can be maintained in laboratory aquariums that are under proper management.—W. L. S., JR.

The French Academy of Medicine has formally authorized the **sterilization of women** who, because of bad health, might lose their lives if they became pregnant. The move is expected to raise a medical storm in largely Roman Catholic France. The proposal by Pierre Lantuejoul was adopted by all but one member of the academy.

Three doctors are to examine a patient before the operation is decided upon. One of them, at least, should be accredited by French courts. Lantuejoul discounted objections that could be raised on moral and religious grounds by saying that an abortion killed a human being while sterilization did not.

World Health Organization warning stations are equipped to isolate and identify any new type of **influenza virus** that may appear quickly enough so that vaccines may be prepared to combat it.

The discovery of two new chemical substances, MECSA and METSA, that preserve the **flavor of cooking oils** when added in quantities as small as 0.005 percent was announced at the American Chemical Society's 16th Midwest Regional Meeting by A. W. Schwab and C. D. Evans, chemists at the Northern Utilization Research Branch of the U.S. Department of Agriculture, Peoria, Ill. The effectiveness of the preservatives was proved in tests on soybean oil and cottonseed oil.

Each of the compounds preserves flavor by forestalling the action of oxygen from the air, which makes the oils rancid. Such metals as iron and copper, present in oil in minute amounts, join with oxygen to cause rancidity, but through the process of chelation MECSA and METSA prevent this spoilage. The two compounds appeared to be equally effective in blocking the metals.

Although the new agents satisfy a long-felt need for a readily soluble nontoxic preservative that imparts no undesirable flavor, odor, or color, they tend to decompose when heated. They were tested successfully by adding them to the oil after the heat-treating phase in the processing. The chemical name for MECSA in mono-octadecyl ester of carboxymethylmercaptosuccinic acid. METSA is mono-octadecyl ester of thiosuccinic acid.

The 8 Nov. issue of *Newsweek* contains an account by Wellington Long, chief of Newsweek's German bureau, of the Erz Gebirge, the ore mountains south of Leipzig and Dresden, East Germany, that are a main source of **Soviet Russia's uranium.** The article, which describes a depressing slave-like life among the workers in the area and gives statistical information concerning labor and production, was put together by Long after interviewing a number of refugees from the area. Long wrote:

> No Westerner knows for sure how much uranium is produced . . . but a recent report in Bonn indicates . . . enough for 44 atomic bombs. But that really is just a guess. Some West German authorities put the production of pitchblende there at 70,000 tons in 1947, 56,000 in 1950, and 31,000 in 1953. These figures suggest that the Erz Gebirge mines are playing out.

The American Veterinary Medical Association has reported that chickens in New Jersey are succumbing to an **unknown liver disease** that has resulted in as much as a 40-percent death rate in some flocks. Characterized by red flecks in the liver, the disease has been noted only in chickens 8 wk old or older. Symptoms are lowered egg production, a blue discoloration of the skin, and droopiness. Illness may occur in one pen of pullets without appearing in an adjacent pen where the feeding and management are the same.

One of the new series of synthetic chemical compounds tested for activity against tuberculosis has been found to be effective in animals against strains of tubercle bacilli resistant to the drugs most widely used in **tuberculosis treatment.** The compound, S-ethyl-L-cysteine, is reported in the November *American Review of Tuberculosis,* journal of the American Trudeau Society, in a paper by Morris Solotorovsky, Seymour Winsten and Eliott Ironson of the Merck Institute for Therapeutic Research, Rahway, N.J., and Horace D. Brown and Harold J. Becker of the Research Laboratories, Chemical Division, Merck and Co.

A white, crystalline, water-soluble substance with a thioethyl component, the new compound does not, however, have the "offensive odor characteristic of

thioethyl compounds" and is well tolerated by experimental animals, according to the investigators who report that it is more active than pyrazinamide or paraaminosalicylic acid (PAS), but less active than isoniazid or streptomycin when given to the animals in their diet.

When injected under the skin, S-ethyl-L-cysteine did not confer a high degree of protection, nor did it show activity against the tubercle bacillus in the test tube. Because of its lack of activity *in vitro,* studies could not be made to determine whether or not tubercle bacilli became readily resistant to the compound.

The Geological Survey, Department of the Interior, has announced that the fossil remains of a **Tritylodontoid** have been excavated on a site near Kayenta, Ariz. This is the first discovery of its kind in the Western Hemisphere. The Tritylodontoids are an ancient group that can be considered either as primitive mammals, or mammal-like reptiles. It is thought that they first appeared late in the Triassic period of the Mesozoic era, about 165 million yr ago, and did not survive beyond the middle Jurassic period of the same era about 145 million yr ago.

Less than 10 small fragments of fossil Tritylodontoids had been found up to 25 yr ago, all in the Old World. Five of these are single teeth or fragments of single teeth; two are small fragments of upper jaws with incomplete teeth; and one is the snout and upper jaw with nine poorly preserved teeth. Since 1930, several less fragmentary specimens have been found. Two incomplete skulls (one with an associated incomplete lower jaw), two upper-jaw fragments, five lower-jaw fragments, two bones, and three fragments of bones were found in the upper Triassic Lufeng series of Yunnan in southwest China. Five upper-jaw fragments and one bone fragment were found in the upper Triassic Stormberg series of South Africa, where the snout end of a skull had been found more than 50 yr before. Finally, jaws, teeth, and bones representing as many as 15 individuals were found in the Rhaeto-Liassic (uppermost Triassic to lowermost Jurassic) of southwestern England. However, to date none had been found in the New World.

The new excavation revealed two rather well-preserved skulls with lower jaws and much of at least one skeleton a short distance below the surface; further quarrying yielded several additional skulls and jaws, together with other skeletal elements. The successful completion of the project is the result of the cooperation among the Bureau of Indian Affairs, the Geological Survey, and the Navajo Tribal Council.

In the November issue of the *American Engineer,* official publication of the National Society of Professional Engineers, G. Keith Funston cites a **Brookings Institution study** which showed that approximately 80,000 engineers, 13 percent, own stock in publicly owned corporations. Funston calls this a surprisingly small total compared with the some 633,000 engineers in this country employed at the professional level. The Brookings study indicated that 30 percent of the country's engineers receive an annual salary income of $7500 and above, and 44 percent earn between $5000 and $7400.

Duplicating in lambs what had been done earlier in rabbits, G. L. Hunter of the School of Agriculture, University of Cambridge, England, and C. E. Adams and L. E. Rowson of the British Agricultural Research Council have successfully **transferred ova** from one breed of sheep to another. Lambs fathered by males of the same breed as the real mothers showed the birth-weight characteristics of the true parents and not the "foster" mothers.

The Navy icebreaker *Atka* will sail from Boston 1 Dec. to visit **Little America** and gather information for extensive Antarctic expeditions planned in 1957, the International Geophysical Year. The expedition, in charge of Glen Jacobsen, will spend 2½ mo in Antarctic waters, returning to Boston 14 Apr. 1955. Landing parties will ascertain the presence and condition of supplies left in Little America by earlier explorers, but no land bases will be established. Changes of ice conditions along the shore since the last expedition also will be observed.

Discovery of a long-lived radioactive **isotope of aluminum,** aluminum-26, by a group of Carnegie Institute of Technology chemists has been announced. Truman P. Kohman, associate professor; James R. Simanton, research associate; and Robert A. Rightmire and Alton L. Long, graduate students, collaborated on the research. The group made the aluminum-26 in the University of Pittsburgh cyclotron with the cooperation of Alexander J. Allen. The new isotope now makes possible the application of isotopic tracing to all known chemical elements. Heretofore aluminum has been the only element without a suitable isotope, for all those previously known have had lifetimes of only a few minutes at most; the new isotope has a half-life of about 1 million yr. The ordinary metal used for construction materials and household utensils is aluminum-27.

The growth and change of **the apple** during the 3000 yr it has been known to man is traced through history and legend in an article by Alan G. May titled, "The king of fruits," appearing in the November issue of *Natural History Magazine,* published by the American Museum of Natural History.

The first successful **treatment of acute toxoplasmosis** in a human being was announced by R. F. Wettingfeld and R. H. Rowe of the Public Health Service Hospital, Memphis, and Don E. Eyles of the National Institutes of Health, Bethesda, Md., at the recent meeting of the American Society of Tropical Medicine and Hygiene. The patient was a woman laboratory technician who had been working on experimental toxoplasmosis in the Memphis laboratory of NIH.

After a month of vague illness, she became acutely ill with fever and swollen lymph glands. Her associates at NIH had previously found that a combination of a triple sulfa drug and the antimalaria drug, Daraprim, was highly active against toxoplasmosis in mice, so they gave the same drug treatment to the sick technician. Her response was immediate, and within 48 hr her fever had disappeared and other signs of improvement followed. She had a prolonged period of convalescence but was finally discharged as cured.

Leo Roy Tehon, 59, botanist, acting chief of the Illinois Natural History Survey, Urbana, and research professor of plant pathology at the University of Illinois, died on 17 Oct. Dr. Tehon had been with the survey since 1921. For the last several years, he had urged community action in combating phloem necrosis and the Dutch elm disease, and recently had been a leader in urging establishment of a shade tree commission for Champaign-Urbana.

His special interests in the field of research were in mycology, plant diseases, flora of Illinois, penicillin research, artificial immunization of plants to diseases by vaccination, fluorinated compounds as fungicides, and forest and shade tree diseases. He was the author of more than 80 scientific articles.

Scientists in the News

Willard F. Libby, recently named a member of the U.S. Atomic Energy Commission by President Eisenhower, has been appointed a research associate of the Carnegie Institution of Washington, effective 1 Nov. The institution is making facilities available to Libby at its Geophysical Laboratory in Washington, D.C., to enable him to continue his researches on carbon-14 and tritium.

Roger Williams, vice president and member of both the board of directors and the executive committee of E. I. du Pont de Nemours and Co., Wilmington, Del., has been chosen to receive the highest award in American industrial chemistry, the Perkin medal of the American section of the Society of Chemical Industry. Williams is being honored for outstanding contributions to many phases of industrial chemical development. Presentation of the award will be made at the meeting at the Waldorf Astoria Hotel in New York on 14 Jan. 1955.

B. C. P. Jansen, professor of physiological chemistry at Amsterdam University, well known together with Donath for the isolation and crystallization of thiamin in 1926, reached retiring age this year. On 2 Oct. his students and friends gathered to present him with a portrait of himself, at which occasion he gave his parting lecture. Jansen's activities have been extensive and of great influence on the development of nutritional science in the Netherlands and Indonesia. His career can be divided into three periods: (i) 1909–1916, when he was head of the subdepartment for physiological chemistry at the Amsterdam Medical School; (ii) 1916–1928, when he was professor of chemistry in Batavia (now Djakarta) in the East Indies; and finally, (iii) his recent years as professor of physiological chemistry on the Amsterdam faculty.

In the first period he was mainly interested in the chemistry of cholic acids, demonstrated through perfusion experiments on the liver and his work on the formation of urea from amino acids. He also organized a teaching system for medical students. During his stay in Indonesia, where there are large-scale nutritional deficiencies, he devoted most of his time to nutrition research, working in the laboratory where Eijkman and Grijns had worked. Both fundamental research, culminating in the isolation of thiamin, and the solution of practical problems were carried out. Included in the latter category were food assays for vitamin A and for the antiscorbutic vitamin, and the determination protein values of local foods. It seems significant to mention that Jansen's and Donath's excellent B_1 assay method with the native ricebird contributed heavily to their success in isolating thiamin.

In Amsterdam from 1929 on, Jansen's aim was to achieve an experimental synthetic diet complete in every respect. His interest stimulated a series of publications from his coworkers on vitamin assay techniques, studies of trace elements, mechanisms of the action of vitamins, and so forth. His laboratory always was full of young people, many of them students who worked on detail projects and received in this way their first scientific training.

His leadership resulted in the development of the Dutch institute for nutrition, which he founded. This organization made funds available for nutrition research independent of the university. In September of this year Jansen, who is a member of the Dutch Royal Academy of Sciences, was president of the 3rd International Congress of Nutrition in Amsterdam.

Charles A. Scarlott, former editor of *Westinghouse Engineer,* has joined the public relations department of Stanford Research Institute as manager of technical information services. He has been an author and an editor in the engineering field for more than 20 yr, where energy has been his specialty.

Homer J. Stewart, professor of aeronautics at California Institute of Technology, was honored by his alma mater, the University of Minnesota, at a recent dinner in Minneapolis that commemorated the 25th anniversary of the department of aeronautical engineering. He received the University of Minnesota outstanding achievement award, which is given to former students of the university who have achieved distinction.

Arthur S. Locke, expert on guided missiles and fire control equipment, who has been consultant in the radar division of the Naval Research Laboratory in Washington for the past 8 yr, has been appointed associate director of the West Orange (N.J.) laboratory of the Vitro Corp. of America.

H. Necheles, director of the department of gastrointestinal research of Michael Reese Hospital, Chicago, and professorial lecturer in physiology at the University of Chicago, has just returned from an extended lecture tour through South and Central America. The gastroenterological societies of Uruguay, Chile, and Peru have nominated him honorary member.

The 12 Oct. issue of the Minneapolis *Star* contained the following editorial entitled **"Dr. Densmore."**

> Dr. Frances Densmore of Red Wing, now 87, is one of the most distinguished living Minnesotans. Her monumental studies on the music of American Indians, incorporated in more than 3000 recordings, 100 articles and 22 books, have won her an international reputation. More than 50 years ago, while old Indians who knew the lore were still alive, Miss Densmore began to collect Indian songs, stories and legends. These are preserved today in the national archives, the Smithsonian Institution, and the records of the Library of Congress.
>
> It is fitting that the Minnesota Historical Society should bestow its first cititation for distinguished historical work on Miss Densmore. The award . . . was a worthy tribute to a great career.

Carl V. Strandskov, formerly with the Pittsburgh Coke and Chemical Co., has joined the research staff of the Miner Laboratories, Chicago.

After 33 yr of continuous service in the department of physics, University of California, Los Angeles, **Laurence Ellsworth Dodd** retired on 1 July as professor emeritus.

George W. Irving, Jr., has been appointed deputy administrator in charge of research for the Agricultural Research Service in the U.S. Department of Agriculture. In this position he will coordinate the research activities of the 16 branches in ARS engaged in studies covering many fields of agricultural science. Irving, who is a biochemist, has spent most of his professional career in the USDA. His scientific work has been mainly of the fundamental type, including some of the earliest investigations conducted in this country on plant growth regulators and radioisotopes. His research on the biochemistry of plant disease resistance led to the isolation of the antibiotic tomatine.

Gabriel Lasker, formerly of Wayne University, is teaching physical anthropology in the department of sociology and anthropology at the University of Wisconsin for the academic year. **Frank Hartung** has also joined that department, where he is taking over the duties of **Marshall Clinard** who is on research leave in Sweden.

Recently the staff of the Neurological Institute, a unit of the Presbyterian Hospital at Columbia–Presbyterian Medical Center, paid tribute to **Edwin Garvin Zabriskie** on the occasion of his 80th birthday. At a gathering in the Columbia University faculty club, he was presented a handtooled leather volume containing tributes of "esteem and appreciation." Zabriskie retired in 1948 after 2 yr as acting director of Neurological Institute. He is a consultant in neurology to Presbyterian Hospital and professor emeritus of clinical neurology at Columbia University. He is past president of the American Neurological Association and of the Association for Research in Medicine and Neurology, and he is a founder and member of the American Board of Psychiatry and Neurology.

Recently **Brig. Sir John Hunt,** leader of the 1953 British Everest expedition, and **Sir Edmund Herbert,** president of the Alpine Club of Great Britain, were presented with the American Geographical Society's gold Cullum geographical medal and fifteen bronze replicas at an informal ceremony in the American Embassy in London. The award, announced last January, was made in recognition of the expedition's signal achievement in being the first to succeed in climbing Mount Everest. The expedition reached the 29,002-ft summit on 29 May 1953.

Herbert, as chairman of the Joint Himalayan Committee of the Royal Geographical Society and the Alpine Club of Great Britain received the gold medal on behalf of the committee, which sponsored the expedition. Hunt accepted the bronze replicas, one for each of the expedition members, given in recognition of their remarkable teamwork. This award to the entire 1953 British Everest Expedition marks the American Geographical Society's first departure from its precedent of giving the Cullum medal in recognition of individual achievement.

The medal presented to Herbert was one of two identical gold medals struck in making the Everest award. The other was presented to the Thyangboche Monastery in Nepal, in honor of the team of 40 Nepalese Sherpas who participated in the ascent. R. Charles Evans, deputy leader of the expedition, made the presentation at the monastery last April.

Necrology

Wallace A. Akers, 66, former research director of the Imperial Chemical Industries and director of atomic energy research in the Department of Scientific and Industrial Research, London, 1 Nov.; **Sydney G. Biddle,** 65, psychiatrist and past president of the Philadelphia Psychoanalytic Society, Philadelphia, Pa., 28 Oct.; **Vera K. Charles,** 77, botanist and mycologist in the Bureau of Plant Industry, Dept. of Agriculture, Washington, D.C., 2 Nov.; **Leroy D. Edwards,** 57, professor of pharmacology at the Purdue University School of Pharmacy, Lafayette, Ind., 29 Oct.; **Harold A. Knight,** 64, associate editor of *Chemical and Engineering News,* Larchmont, N.Y., 2 Nov.; **John Lennard-Jones,** 60, theoretical chemist and physicist and chairman of the Scientific Advisory Council of the Ministry of Supply, Stafford, England, 1 Nov.; **Daniel S. McAfee,** mining and metallurgical engineer and former vice president of the Dorr Co., New York,

28 Oct.; **William A. P. Moncure,** 72, former professor of mycology at Virginia Polytechnic Institute, Blacksburg, Va., 29 Oct; **Gordon B. New,** 68, emeritus head of the section on plastic surgery at the Mayo Clinic, Rochester, Minn., 28 Oct.; **O. W. Park,** 65, authority on honey bees and professor of agriculture at Iowa State College, Ames, Iowa, 16 Oct.; **Auguste Rollier,** 80, tuberculosis authority, pioneer of the sun cure, and founder of the International Factory-Clinic, Leysin, Switzerland, 30 Oct.; **Samuel S. Sadtler,** 81, chemist, inventor, and a founder of the Electrical Chemical Society, Philadelphia, Pa., 2 Nov.; **Nadia D. Savadskaya,** 76, authority on cancer, author, and director of one of the laboratories of the Curie Foundation, Paris, 1 Nov.; **George B. Wood,** 83, research laryngologist, author, and professor emeritus of laryngology at the University of Pennsylvania's Graduate School of Medicine, Philadelphia, Pa., 2 Nov.

Meetings

The **Council of the European Organization for Nuclear Research** recently held its first formal meeting at the Palais Electoral in Geneva and elected Ben Lockspeiser, director of Britain's Department of Scientific and Industrial Research, as president, with Antonia Pennetta, president of the Corte de Cassazione, Rome, and Jacob Nielsen, professor of mathematics at the University of Copenhagen, as vice presidents. Felix Bloch, Swiss-born Nobel prize winner and until recently head of the Institute of Physics at Stanford University, was installed as director general.

The organization came into legal existence on 28 Sept., when the basic convention was ratified by France and the German Federal Republic, followed at once by Norway. Seven other nations had previously completed ratification: Belgium, Denmark, Greece, the Netherlands, the United Kingdom, Sweden, and Switzerland. Ratification by Italy and Yugoslavia is still awaited. The 10 countries that have so far joined are committed to supply 88 percent of the budget.

The center, to be called C.E.R.N., is already at work. More than 100 persons are employed in the Geneva headquarters and about 50 others in Paris, Copenhagen, and Amsterdam. Excavations for a laboratory outside Geneva are under way, and foundations are being built for a large synchrocyclotron. At the meeting of the council, the budget for the first 3 mo of 1955 was approved so that operations can continue while the details of the year's budget are studied.

The program for the European organization includes the construction of a modern laboratory in Geneva for research in high-energy nuclear physics. The laboratory will have two large accelerators—one a 600-Mev synchrocyclotron and the other a 25,000-Mev proton-synchroton, which will be the most powerful machine of its kind in the world and reach energies ten times greater than the Brookhaven cosmotron and five times greater than the Berkeley bevatron now under construction. Laboratory and apparatus will cost a hundred million Swiss francs. It will take 7 yr to complete the project.

The organization will be responsible for international collaboration in research on the behavior of very high energy particles of the kind found in cosmic rays, but artificially produced.

The **Western Forestry and Conservation Association** will hold its 45th annual forestry conference at the Fairmont Hotel, San Francisco, Calif., 8–10 Dec. The theme of the meeting will be *Western Natural Resources and the National Economy.*

The **American Association of Spectrographers** is planning their 6th annual conference in Chicago, 6 May 1955, on the subject *Industrial Applications of Spectroscopy.* Contributed papers in the fields of emission, x-ray fluorescence, or absorption spectroscopy as applied to industry are invited. *Abstracts must be submitted by 1 Mar. 1955.* Please address all inquiries to: F. E. Stedman or E. E. Stilson, Co-chairmen, Bendix Aviation Corp., 401 North Bendix Dr., South Bend 20, Ind.

An organizational and paper reading session for **plant chemists and biochemists** was held at Columbia University on 23 Oct. The new group, comprising about 50 persons from the lower New England and Middle Atlantic areas, voted to hold annual meetings and to survey the possibilities for coordinating information and publications in the broad field of plant chemistry. R. F. Dawson of Columbia was elected recording secretary, and D. R. Sprinson of Columbia and R. A. Barnes of Rutgers were appointed to serve on the program committee for 1955.

During the scientific session papers were read on the chemistry and biosynthesis of natural products by Ulrich Weiss, Marjorie Anchel, Franz Moewus, and R. A. Barnes. Pathways of carbohydrate dissimilation and of nitrate reduction were discussed by Martin Gibbs and Alvin Nason. Chairmen of the sessions were H. B. Vickery of New Haven and R. C. Anderson of Brookhaven National Laboratory.

On 30 Aug. 36 students and nine faculty and staff members from 18 states and 10 foreign countries met in Nashville, Tenn., for Fisk University's 5th annual **Infrared Spectroscopy Institute.** The 45 persons participating in the institute included 5 engineers, 2 biologists, 1 biochemist, 1 mathematician, 10 physicists, and 26 chemists.

During the week-long institute, two lectures were offered each morning, a laboratory session each afternoon, and a lecture each evening. Introductory lectures were given by Ernest A. Jones of Vanderbilt University, James R. Lawson of Tennessee Agricultural and Industrial State College, and Nelson Fuson of Fisk. More specialized lectures were given by Walter E. Brown of the TVA Laboratories, Wilson Dam,

Ala., Wilbur I. Kaye of Tennessee Eastman Co., and Ivar Cooke and Nelson Fuson of Fisk.

The introductory lectures covered the history, techniques, instrumentation, theory, and application of infrared spectroscopy to scientific problems in general. Cooke, in his specialized lecture, discussed the results of his work at the University of Geneva, Switzerland, on an infrared spectroscopic study of intermediate complexes of organo-metallic compounds. Brown reported on work at the TVA laboratory on infrared and Raman spectroscopic studies of phosphoric acids in solution. Kaye gave an authoritative survey of the "near infrared," the vibrational overtone region of the spectrum in which he has played a prominent part in instrumentation during recent months. He also introduced the institute to the use of this spectroscopic region for qualitative and quantitative analysis. Fuson talked on the effect of different solvents upon the infrared spectrums or organic molecules in solution.

Instrumentation as well as applications were stressed in the lectures of Kaye and Brown. This emphasis was particularly appropriate, for in the laboratory sessions of the conference participants were introduced to the use of six different infrared spectrometers, covering the spectrum from the ultraviolet to deep into the infrared. Two of the spectrometers belonged to Fisk University, one to Tennessee A. and I. State College, and three were loaned to the institute by their manufacturers. In addition, three different commercial makes of potassium bromide pellet dies were available to institute students in order that they might have an opportunity to compare results on this newest technique for making solid samples for infrared analysis.

At the opening session the institute coordinator, Nelson Fuson of Fisk, called attention to another infrared spectroscopic meeting being held the same week in Parma, Italy, and as a result a letter of greeting was sent. An answering cable from the International Symposium on Infrared arrived before the close of the Fisk meeting.

Education

The **School of Nursing of the University of Pennsylvania** has embarked upon a distinct innovation in nursing education, a 2-yr experimental program in basic nursing leading to a newly approved degree of Associate in Applied Science. This program for high school graduates shortens by 1 yr the time usually required for a nurse to complete her education. Not more than half a dozen other U.S. colleges and universities have instituted similar programs, all of which are designed to shorten the training period for the registered nurse without lowering professional standards.

Oklahoma Agricultural and Mechanical College at Stillwater has completed its Radioisotopes and Radiations Laboratory, which opened formally on 9 Nov. C. L. Comar, principal scientist, Oak Ridge Institute of Nuclear Studies, was the guest speaker. He discussed the application of radioisotopes to agricultural research. The laboratory is administered by a radiation advisory committee made up of representatives of the several science branches of the college. Roy M. Chatters has been appointed by the committee to serve as coordinator of the laboratory.

Rollin D. Hotchkiss, associate member of the Rockefeller Institute for Medical Research, will deliver Columbia University's annual **Jesup lectures** in the department of zoology on 1, 3, 6, 8, 10, and 13 Dec. He will discuss the *Transfer of Hereditary Properties in Bacteria* in six lectures under the following headings: "Biological fitness in a microbial world"; "Mechanisms of synthesis in bacteria"; "Experimental modification of synthesis in bacteria"; "Chemical and biological nature of the agents of transformation"; "Mechanism of transformation—the receptive cell and the cellular response"; "Natural mechanisms of hereditary transfer."

A **Laboratory of Tropical Botany** has been initiated by the School of Tropical and Preventive Medicine, Loma Linda, Calif. The purpose of the laboratory is to make field trips into regions of tropical growth to collect specimens for the establishment of a herbarium, for future experimentation on a physiological basis, for study of economic potential, and for specimens containing drugs of possible therapeutic value. The first expedition began in October—a collecting trip to the South American tropics.

Available Fellowships and Awards

The Division of Medical Sciences, National Academy of Sciences–National Research Council, is accepting applications for grants-in-aid for research in three specialized fields:

(1) The **Committee on Problems of Alcohol** has available a limited fund for the support of grants. The committee is interested in fostering research, primarily on the physiological, biochemical, and pharmacologic effects of alcohol. Applications for the fiscal year 1955–56 should be postmarked *not later than 15 Jan. 1955.*

(2) The **Committee for Research in Problems of Sex** is concerned with encouraging research, primarily on the mechanisms controlling sexual behavior in animals and man. Proposals involving endocrinologic, neurological, psychological, anthropologic, phylogenetic, and genetic studies directed toward this objective are therefore invited. Requests that deal with the physiology of reproduction or with related biological and biochemical fields will also be considered. Applications for the fiscal year 1955–56 should be postmarked on or *before 15 Feb. 1955.*

(3) The **Committee on Drug Addiction and Narcotics** may have available for the coming year limited re-

sources for the support of research in the fields of analgesia and addiction. The committee also invites information on basic research being carried on in these fields, in order that it may extend its activities as a center for the exchange of information on current investigations in this area.

Further details and application blanks may be obtained by writing to the appropriate committee of the Division of Medical Sciences, National Academy of Sciences—National Research Council, 2101 Constitution Ave. NW, Washington 25, D.C.

The **Population Council, Inc.,** has announced an expanded program of fellowships at the predoctoral and postdoctoral levels for advanced training in the study of population. Fellowships will be available for study in universities in the United States and elsewhere for the academic year 1955–56. Preference will be given to qualified applicants from countries other than the United States and Europe.

Fellows will normally receive support for full-time work for a period of 1 yr. The basic stipend of $2500 per year may be supplemented to provide for travel expenses, maintenance of dependents, and for other exceptional expenses. Somewhat larger stipends may be granted to postdoctoral than to predoctoral fellows. *Application should be received before 1 Mar. 1955.* Requests for further information and for forms should be addressed to The Population Council, Inc., 230 Park Ave., New York 17.

Grants and Fellowships Awarded

The **National Science Foundation** has announced 216 grants totaling approximately $2,650,000 for the support of basic research in the natural sciences, for conferences and studies on science, for exchange of scientific information, for scientific manpower, and for travel of American scientists to international scientific meetings. This is the first group of awards to be made for 1955.

University of California. S. Herrick, astronomy. Orbits of Icarus and other astronomical objects, 3 yr, $5000.

University of California. O. Struve, astronomy. Composition of the stars, 2 yr, $21,000.

Case Institute of Technology. J. J. Nassau, astronomy. Carbon stars near the Galactic equator, 2 yr, $13,500.

University of Chicago. A. B. Meinel and W. W. Morgan, astronomy. Microschmidt reddened B-star survey, 18 mo, $13,000.

University of Chicago, Institute for Nuclear Studies. Chemical reactions in interstellar matter, 1 yr, $7500.

Indiana University. M. H. Wrubel, astronomy. Evolutionary sequences of stellar models, 1 yr, $2900.

University of Kansas. H. G. Horak, physics and astronomy. Solar system photometry, 2 yr, $7500.

Lowell Observatory. E. C. Slipher and A. G. Wilson, Mars committee. Photographic patrol of Mars, 4 mo, $2000.

University of Virginia. H. L. Alden, astronomy. Astrometric study of selected stars, 2 yr, $10,000.

University of Wisconsin. A. E. Whitford, astronomy. Absolute spectrophotometry of stars, 2 yr, $10,000.

University of Arkansas. E. S. Amis, chemistry. Influence of charge and field on chemical processes, 2 yr, $15,000.

University of California. W. G. Young, chemistry. Displacement reactions involving allylic systems, 2 yr, $11,500.

University of Southern California. A. W. Adamson, chemistry. Kinetics of ligand exchange with complex ions in nonaqueous mediums, 1 yr, $5000.

Carnegie Institute of Technology. R. G. Parr and F. O. Ellison, chemistry. Electronic structure of molecules, 2 yr, $21,500.

University of Chicago. W. F. Libby, nuclear studies. Radiocarbon dating, 2 yr, $20,200.

University of Chicago. E. A. Long, study of metals. Properties of matter at low temperatures, 2 yr, $16,000.

Clark University. T. T. Sugihara, chemistry. Yields of long-lived products in the deuteron-induced fission of U^{238}, 2 yr, $10,500.

University of Colorado. S. J. Cristol, chemistry. Mechanism of elimination reactions, 3 yr, $13,000.

Drake University. W. H. Coppock, chemistry. Reaction of aryl esters of chloroformic acid with aromatic hydrocarbons, 1 yr, $2700.

Duke University. C. Hauser, chemistry. Rearrangements, eliminations, displacements, and condensations, 3 yr, $20,100.

Florida State University, E. Grunwald, chemistry. Ion solution and ion association in various solvents, 3 yr, $25,800.

Florida State University. W. Herz, chemistry. Toxic constituents of lantana species, 2 yr, $13,600.

University of Illinois. J. C. Bailar, Jr., chemistry. Metal complexes in the resolution of optically active organic substances, 2 yr, $13,000.

Indiana University. W. J. Moore, chemistry. Chemical reactions of ionic beams, 2 yr, $16,700.

University of Kansas. W. E. McEwen, chemistry. Relative rates of migration of aryl groups in the Schmidt reaction, 2 yr, $6900.

Lafayette College. J. A. Dixon, chemistry. Preparation and study of n-Hexane-d14 and 2,2,4-trimethypentane-d18, 1 yr, $5000.

Loyola University. J. L. Huston, chemistry. Isotopic exchange reactions in nonaqueous ionizing solvents, 2 yr, $8500.

University of Maine. R. Dunlap, chemistry. Liquid-vapor equilibrium for binary solutions of fluorocarbons and hydrocarbons and volume changes on mixing, 2 yr, $9500.

Massachusetts Institute of Technology. A. C. Cope, chemistry. Transannular reactions of cyclic olefins and related reactions of open-chain olefins, 3 yr, $19,000.

James Millikin University. C. Weatherbee, chemistry. Mannich type reactions, 1 yr, $1600.

University of Minnesota. I. M. Kolthoff, chemistry. Convection mercury electrode in the electrolysis of inorganic and organic compounds, 1 yr, $7000.

University of Nebraska. H. E. Baumgarten, chemistry. Chemistry of simple heterocyclic systems, 2 yr, $12,400.

University of Nebraska. N. H. Cromwell, chemistry. Stereochemistry and hyperconjugation of three-ring compounds, 2 yr, $15,000.

University of North Dakota. R. G. Severson, chemistry. Heterocyclic derivatives of silicon, 1 yr, $3500.

Ohio State University. M. S. Newman, chemistry. Synthesis of highly strained hydrocarbons, 2 yr, $11,700.

University of Pittsburgh. H. S. Frank and L. S. Mason, chemistry. Relation of structures to properties in liquid solutions, 2 yr, $20,900.

Princeton University. E. C. Taylor, chemistry. Pyridinopyrimidines, 1 yr, $3000.

Purdue University. H. C. Brown, chemistry. Effect of molecular shape on chemical behavior, 2 yr, $17,000.

Renesselaer Polytechnic Institute. G. J. Janz, chemistry. Reactions of cyanogen with unsaturated organic compounds at moderately high temperatures, 2 yr, $13,800.

San Diego State College. R. W. Isensee and H. Walba, chemistry. Acid-base equilibriums in aqueous solutions of aromatic cyclic amidines, 1 yr, $4200.

Texas Southern University. R. F. Wilson, chemistry. Spectrographic and polarographic study of certain rare earth and transitional elements, 2 yr, $2800.

Tulane University. J. H. Boyer, chemistry. Preparation and properties of aliphatic diazo compounds, 2 yr, $6600.

University of Utah. H. Eyring, chemistry. Theory of reaction rates, 2 yr, $22,800.

University of Utah. W. J. Horton, chemistry. Seven-membered ring compounds, 2 yr, $12,500.

State College of Washington. G. W. Stacy, chemistry. Additions to schiff base systems, 2 yr, $8000.

University of Wisconsin. C. F. Curtiss, chemistry. Theoretical extensions of the kinetic theory of gases, 2 yr, $14,500.

University of California. C. Stern, zoology. Structure and function of the posterior processes of the brain *Nephtys*, 1 yr, $6900.

University of Chicago. T. Park, zoology. Effect of irradiation on laboratory populations, 1 yr, $3800.

Fordham University. C. A. Berger, biology. Changes in chromosome number during development, 1 yr, $2900.

University of Illinois. N. D. Levine, veterinary pathology and hygiene. Cultivation of parasitic nematodes, 2 yr, $9500.

Unversity of Michigan. N. E. Kemp, zoology. Utilization of yolk in amphibian oogenesis, 2 yr, $8100.

Northwestern University. R. L. Watterson, biology. Effect of mitotic inhibitors on feather patterns, 2 yr, $8000.

University of Pennsylvania. W G. Hutchinson, botany. L forms in proteus, 2 yr, $11,200.

Yale University. J. P. Trinkaus, zoological laboratory. Cell and tissue transformation, 3 yr, $12,800.

University of Arizona. R. H. Braham, Jr., atmospheric physics. Physical properties of clouds, 2 yr, $50,000.

University of California. R. E. Holzer, geophysics. Origin of low frequency geomagnetic fluctuation, 1 yr, $9400.

University of California. G. C. Kennedy, geophysics. Silicate systems, 2 yr, $15,000.

University of California. F. J. Turner, geology. Fabric of experimentally deformed ionic crystals and rocks, 2 yr, $13,100.

University of Chicago, Institute for Nuclear Studies. H. C. Urey. Isotopic abundances relating to geochemical research, 1 yr, $21,400.

Earlham College. A. M. Gooding, geology and soil science. Pleistocene terraces of the Upper Whitewater Drainage Basin, 2 yr, $6000.

Massachusetts Institute of Technology. W. H. Dennen and E. Mencher, geology and geophysics. Geochemical investigations of sedimentary rocks, 1 yr, $10,300.

Massachusetts Institute of Technology. M. J. Buerger, geology and geophysics. Crystal structures of minerals, 2 yr, $24,000.

University of North Carolina. S. B. McCaleb, agronomy. North Carolina soils, 2 yr, $9400.

University of Notre Dame. R. C. Gutschick, geology. The Mississippian sedimentary basin in northern Arizona. 2 yr, $1500.

Pennsylvania State University. G. W. Brindley, mineral industries. Structural mineralogy of the serpentine group of minerals, 1 yr, $10,000.

Pennsylvania State University. R. Roy, earth sciences. Phase rule and polymorphism, 3 yr, $30,000.

U. S. Coast and Geodetic Survey. D. S. Cardner, seismology branch. Seismology: Travel-time studies and development of improved travel-time curves for Pacific Ocean region, 2 yr, $15,000.

Yale University. C. R. Longwell, geology. Tectonic history of the region around Lake Mead, Nevada-Arizona, 1 yr, $3500.

University of California. E. G. Thomsen, mechanical engineering. Mechanics of plastic deformation of metals, 2 yr, $12,000.

Cornell University. H. G. Booker, and B. Nichols, electrical engineering. Cause of motion in the Aurora, 2 yr, $13,300.

University of Florida. F. E. Richart, Jr., civil engineering. Stress transfer in granular elastic mediums, 2 yr, $12,600.

Georgia Institute of Technology. M. R. Carstens, civil engineering. Unsteady flow in smooth pipes, 2 yr, $13,800.

University of Houston. A. E. Dukler, chemical engineering. Entrainment in two-phase, gas-liquid flow, 2 yr, $13,900.

University of Illinois. C. E. Kesler, theoretical and applied mechanics. Fatigue of concrete, 2 yr, $20,000.

State University of Iowa. K. Kammermeyer, chemical engineering. Electric conductivity of thin conductive films on nonmetallic surfaces, 1 yr, $7500.

Massachusetts Institute of Technology. R. Eliassen, civil and sanitary engineering. Mechanism of corrosion inhibition by sodium metaphosphate and other chemicals, 2 yr, $14,000.

Massachusetts Institute of Technology. T. K. Sherwood, chemical engineering. Mechanism of mass transfer with chemical reaction, 1 yr, $2900.

University of Michigan. S. W. Churchill, chemical engineering. Chemical reaction rates for gases passing through shock waves, 2 yr, $13,200.

Unversity of Michigan. C. M. Sliepcevich, chemical and metallurgical engineering. Light scattering properties of aerosols, 1 yr, $5100.

University of North Carolina. H. H. Stadelmaier, engineering research. Disorder-order transformation in $FeNi_3$ and the permalloy problem, 1 yr, $4000.

Pennsylvania State University. J. N. Brennan, engineering mechanics. Solid state structures in single-crystal metals, 3 yr, $20,000.

Purdue University. J. R. Burnett, electrical engineering. Nonlinear servomechanisms, 1 yr, $10,000.

Rutgers University. R. K. Bernhard, engineering mechanics. Dynamic soil characteristics: Response curves and critical frequencies, 2 yr, $16,000.

Stanford University. C. W. Richards, civil engineering. Effect of specimen size and stress distribution on yielding in mild steel, 1 yr, $6700.

University of Texas. M. Van Winkle, chemical engineering. Viscosity and surface tension of homogeneous liquid mixtures at their boiling points, 2 yr, $10,000.

University of Utah. S. S. Kistler and E. B. Christiansen, chemical engineering. High temperature glass, 1 yr, $5100.

Virginia Polytechnic Institute. M. V. Nevitt, metallurgy. Sigma phase in the ternary systems Cr-Co-Cu and Cr-Mn-Cu, 1 yr, $8000.

Washington University. G. Mesmer, applied mechanics. Stresses in pin-loaded eye-shaped bars, 1 yr, $5900.

The American Museum of Natural History. C. M. Breder, Jr., fishes and aquatic biology. Interaction of endocrine system, 1 yr, $6800.

Indiana University. S. D. Gerking, zoology. Efficiency of food utilization by a fish population, 2 yr, $10,000.

University of New Hampshire. E. Swan, zoology. Environmental effects on growth rate and patterns in sea urchins, 2 yr, $5000.

University of California. C. Epling, botany. Adaptive mechanisms in selected wild populations of *Drosophila pseudoobscura*, 3 yr, $20,000.

University of California. T. Hinton, zoology. Role of genes in the metabolism of nucleic acid and other compounds, 2 yr, $12,000.

University of California. A. Lang and S. G. Wildman, botany. Mode of synthesis and inheritance of proteins in plants, 3 yr, $21,000.

University of Michigan. D. L. Nanney, zoology. Studies of Protozoan genetics, 3 yr, $21,000.

University of Minnesota. J. G. Gall, zoology. Submicroscopic morphology of the animal cell nucleus, 1 yr, $6000.

Yale University. H. P. Papazian, plant science. Genetic studies on incompatibility factors in coprinus, 2 yr, $5500.

University of Chicago. S. MacLane and S. S. Chern, mathematics. Algebraic topology, 3 yr, $31,000.

University of Chicago. A. Weil, methematics. Abelian varieties and their application, 1 yr, $6500.

University of Colorado. S. Chowla, mathematics. Extended Riemann hypothesis, 1 yr, $9000.

University of Connecticut. R. D. Schafer, mathematics. Nonassociative algebras, 2 yr, $10,000.

Harvard University. R. Brauer, mathematics. Structure of groups of finite order, 1 yr, $3800.

Harvard University. O. Zariski, mathematics. Local uniformization on algebraic varieties over modular ground fields, 1 yr, $5900.

University of Illinois. C. T. Yang, mathematics. Mappings from spheres to Euclidean spaces, 1 yr, $6200.

Institute for Advanced Study, Princeton. L. Ehrenpreis. Theory of distributions, 2 yr, $11,900.

University of Kansas. G. B. Price, mathematics. Geometry of function space, 1 yr, $19,000.

University of Michigan. C. J. Titus, mathematics. Linear vector spaces of elliptic mappings, 1 yr, $5000.

University of Michigan. L. Tornheim, mathematics. Geometry of numbers, 1 yr, $6000.

University of New Hampshire. H. G. Rice, mathematics. Recursion theory, 2 yr, $8700.

University of Notre Dame. P. Erdos, mathematics. Probability and Related Problems, 1 yr, $10,000.

University of Pennsylvania. R. D. Anderson, mathematics. Higher dimensional manifolds, 3 yr, $23,700

Purdue University. L. Gillman, M. Henriksen and M. Jerison, mathematics. Function space algebras, 2 yr, $21,700.

Smith College. R. E. Johnson, mathematics. Rings with atomic alegbras of ideals, 1 yr, $3700.

Syracuse University. A. Edrei, mathematics. Zeros of the derivatives of analytic functions, 1 yr, $7000.

University of Virginia. G. T. Whyburn and E. J. McShane, mathematics. Topologic methods in analysis, 3 yr, $34,400.

Wayne University. G. Lorintz, mathematics. Summability methods and function spaces, 1 yr, $8900.

Yale University. N. Jacobson, mathematics. Jordan algebras, 1 yr, $8800.

California Institute of Technology. M. Delbruck, biology. Phototropic responses of sporangiophores, 2 yr, $15,000.

California Institute of Technology. H. Borsook and R. S. Schweet, biology. Metabolism of lysine, 2 yr, $9000.

University of California. D. E. Atkinson, chemistry. Autotrophism in hydrogenomonas, 3 yr, $14,500.

University of Southern California. P. D. Saltman, biochemistry. Enzymatic mechanism of CO_2-fixation in the succulents, 2 yr, $10,000.

University of Chicago. B. Vennesland, biochemistry. Enzyme reaction mechanism, 3 yr, $24,000.

Duke University. G. W. Schwert, biochemistry. Properties of chymotrypsinogen and of chymotrypsin, 3 yr, $19,000.

Florida State University. E. Frieden, chemistry. Properties of ascorbic acid oxidase, 2 yr, $7400.

Harvard University. K. Bloch, biochemistry. Enzymatic synthesis of glutathione, 3 yr, $20,000.

Harvard University. B. W. Low, physical chemistry. X-ray crystal structure of proteins and peptides, 18 mo, $10,000.

Harvard University. F. H. Westheimer, chemistry. Chemical models for enzyme systems, 3 yr, $24,000.

Haverford College. A. G. Loewy, biology. Cytoplasmic proteins, 2 yr, $10,000.

Iowa State College of Agriculture. S. Aronoff, botany. Biosynthesis of chlorophyll, 3 yr, $12,000.

University of Kentucky. R. L. Hardin and P. R. Moore, biochemistry. Enzymes concerned with phosphorylation of glycerol, 2 yr, $5500.

University of Louisville. J. F. Taylor and D. Dallam, biochemistry. Enzymes associated with lipoproteins, 2 yr, $16,000.

Loyola University. N. C. Melchior, biochemistry. Molecular structure and the intensity of the absorption of light, 3 yr, $12,000.

Northwestern University. J. W. Hastings, biological sciences. Role of flavins in bioluminescence, 2 yr, $10,000.

University of Oregon. H. S. Mason, biochemistry. Biochemistry of natural melanins, 3 yr, $27,000.

Princeton University. A. M. Chase, biology. Mechanism of enzyme action: Luciferase, 3 yr, $9500.

Purdue University. H. Hunt, chemistry. Heats of combustion of amino acids and proteins, 3 yr, $25,000.

Rutgers University. W. J. Nickerson and J. R. Merkel, microbiology. Metal-regulated reactions of flavin systems, 2 yr, $15,000.

University of Wisconsin. P. P. Cohen, physiological chemistry. Enzymatic peroxidative breakdown of uric acid, 3 yr, $24,000.

California Institute of Technology. J. R. Pellam, physics. Cryogenic research, 3 yr, $34,500.

Carnegie Institute of Technology. S. A. Friedberg, physics. Investigations in low temperature physics, 2 yr, $14,700.

Clemson Agricultural College. J. E. Miller, physics. Study of sulfur, 1 yr, $5700.

Columbia University. H. A. Boorse, physics. Research in low temperature physics, 2 yr, $15,700.

Columbia University. L. Brillouin, physics. Physics and information theory, 1 yr, $12,600.

Columbia University. P. Kusch, physics. Energy levels and hyperfine structure of helium -3 and -4, 2 yr. $24,300.

Duke University. H. Sponer, physics, Electronic structure of molecules, 2 yr, $14,200.

Georgia Institute of Technology. L. D. Wyly, physics. Angular correlations between nuclear radiations, 2 yr, $15,000.

University of Illinois. J. S. Koehler and F. Seitz, physics. Plastic deformation, 2 yr, $18,100.

University of Illinois. R. Maurer, physics. Low temperature research on polar crystals, 2 yr, $14,300.

Indiana University. K. A. Brueckner, physics. Theory and interpretation of elementary particles, 2 yr, $32,200.

Johns Hopkins University. G. H. Dieke, physics. Spectroscopy of rare earths at low temperatures, 1 yr, $4700.

University of Kansas. L. W. Seagondollar, physics. Nuclear reactions with 3 Mev protons, 2 yr, $17,800.

University of Maine. G. C. Krueger, physics. Phase contrast analysis of nonhomogeneous transient phenomena, 2 yr, $6600.

Massachusetts Institute of Technology. B. B. Rossi, physics. Cosmic ray research, 1 yr, $9300.

University of Pittsburgh. C. Dean and G. A. Jeffrey, physics. Nuclear quadrupole coupling and x-ray diffraction data, 2 yr, $11,500.

Rice Institute. C. F. Squire, physics. Studies in solid state physics, 2 yr, $22,300.

University of Utah. J. W. Keuffel, physics. Scintillation counter study of unstable cosmic ray particles, 3 yr, $24,600.

University of Vermont and State Agricultural College. A. S. Skapski, physics. Influence of thickness on the melting point of thin lamellae, 2 yr, $10,300.

University of Wisconsin. K. M. Watson, physics. High energy nuclear reactions, 2 yr, $10,300.

Yale University. C. T. Lane, physics. Low temperature physics, 3 yr, $26,400.

Northwestern University. D. J. Lewis and J. W. Cotton, psychology. Research on learning and retention, 2 yr, $10,200.

Swarthmore College. W. C. H. Prentice, psychology. Psychological research in the department of psychology, 5 yr, $27,600.

Barnard College. Aubrey Gorbman, zoology. Comparative physiology of thyroidal function, 2 yr, $13,300.

University of California. E. A. Adelberg, bacteriology. Enzymatic changes in genetic adaptation, 4 yr, $26,100.

University of California. C. M. Agress, medicine. Distribution and nature of the sensory coronary arterial innervation, 2 yr, $12,000.

University of California. M. Doudoroff, bacteriology. Mechanisms of utilization of carbohydrates by microorganisms, 4 yr, $26,700.

University of California. R. B. Livingston, anatomy Neurophysiological mechanisms in movement and perception. 2 yr, $20,400.

University of Southern California. S. C. Rittenberg, bacteriology. Metabolism of malonate by *Pseudomonas fluorescens*, 3 yr, $24,000.

Columbia University. E. Chargaff, biochemistry. Role of phosphorolytic and phosphorylating enzymes in nucleic acid metabolism, 3 yr, $28,600.

Columbia University. P. Feigelson, biochemistry. Adaptive enzyme formation in mammals, 6 mo, $2070.

Cornell University, Medical College. D. B. Melville. Biochemistry of ergothioneine, 3 yr, $30,000.

Hahnemann Medical College and Hospital. A. G. Moat, bacteriology and immunology. Role of biotin in carbohydrate metabolism, 2 yr, $8200.

Harvard University School of Dental Medicine. P. L. Munson. Mechanism of stimulation of ACTH secretion, 2 yr, $15,200.

Massachusetts Institute of Technology. W. S. McCulloch, electronics. Transmission of signals across the central nervous system, 2 yr, $25,600.

New York Medical College. C. Neuberg, biochemistry. Mechanism of action of certain synthetic hydrazine derivatives, 2 yr, $15,500.

University of North Carolina. T. Z. Csaky, pharmacology. Relationship between cellular permeability and carbohydrate metabolism, 2 yr, $10,200.

North Carolina State College of Agriculture and Engineering. C. McAuliffe, agronomy. Absorption and metabolism of nitrogen compounds by the tobacco plant, 2 yr, $10,000.

Texas Agricultural Experiment Station. J. A. Liverman, biochemistry and nutrition. Biochemistry of the photoperiodic response, 2 yr, $12,000.

Vanderbilt University. J. H. Park, physiology. Relation of thyroxine to oxidative phosphorylation, 2 yr, $10,000.

University of Wisconsin. E. H. Newcomb, botany. Metabolic changes underlying cell enlargement in plants, 3 yr, $14,100.

Yale University. G. B. Pinchot, microbiology. Phosphorylation in cell-free bacterial extracts, 2 yr, $11,600.

California Academy of Sciences. E. C. Zimmerman. Insects of Hawaii, 2 yr, $24,600.

University of Florida. B. B. Leavitt, biology. Analysis of plankton from the deep scattering layer, 1 yr, $1300.

Indiana University. J. E. Canright. botany. Floral morphology and anatomy of the Annonaceae, 2 yr, $5200.

University of Miami. L. C. Gilman, zoology. Morphologic and physiologic differences among varieties of Paramecium, 2 yr, $7100.

University of Michigan. Pierre Dansereau, botany. Phytosociological studies in the Canary Islands, 1 yr, $1700.

University of Michigan. A. H. Smith, botany. Manual of fleshy basiomycetes of western U.S., 3 yr, $12,400.

Missouri Botanical Garden. R. M. Tryon. Manual of the fern flora of Peru, 3 yr, $12,100.

National Academy of Sciences. P. E. Cloud, Jr. Marine mollusks of reefs of the Pacific Ocean, 1 yr, $1950.

South Dakota State College. T. B. Thorson, entomology-zoology. Fluid compartments of fishes, 2 yr, $4000.

Yale University. J. R. Reeder, plant science. Grass embryo in relation to taxonomy and phylogeny, 2 yr, $5400.

General

B. W. Jones, mathematics. University of Colorado. To assist in an exchange professorship in mathematics at the University of London, $1000.

Naples Zoological Station. R. Dohrn, director. Two American tables at the Naples Zoological Station, 5 yr, $10,000.

Smithsonian Institution. Barro Colorado Biological Laboratory, Barro Colorado Island, Gatun Lake, Panama Canal Zone, 2 yr, $29,000.

Attendance at international meetings

International Congress of Mathematicians. K. Kodaira, mathematics. Princeton University, $600.

Tenth General Assembly of the International Union of

Geodesy and Geophysics. P. E. Church, meteorology and climatology. University of Washington, $700.

Conseil de Physique Solvay. L. Onsager, chemistry. Yale University, $568.

Fifth Congress on Coastal Engineering. T. Saville, engineering. New York University, $200.

International Union of Chemistry. H. H. Anderson, chemistry Drexel Institute of Technology, $650.

Conference on Selecton, Training, and Support of Medical Research Workers. E. Allen, research grants, National Institutes of Health; R. Keith Cannan, medical sciences, National Research Council; H. B. Steinbach, zoology, University of Minnesota, $2675.

Conferences in support of science

University of California. Third Berkeley Symposium on Mathematical Statistics and Probability, $10,000.

Nationad Academy of Sciences. Committee on nuclear sciences, $18,000.

Robert S. Peabody Foundation for Archaeology. Conference on radiocarbon dating, $5500.

University of Tennessee. Conference on mechanics of sediment transport, $5800.

University of Texas. Conference on molecular quantum mechanics, $5000.

International Geophysical Year

National Academy of Sciences. Support of the U.S. National Committee, $100,000.

Exchange of scientific information

American Mathematical Society. Partial support of the transactions of the American Mathematical Society, $3500.

The American Museum of Natural History. The International Journal, *Insectes Sociaux*, $920.

Bernice P. Bishop Museum. Partial support of secretariat of the Pacific Science Association, $12,000.

Free University of Brussels. Publication of tables of physicochemical constants of concentrated solutions, $12,000.

Institute for Advanced Study. Survey of the mathematical foundations of quantum mechanics, $3300.

International Council of Scientific Unions. Partial support of meeting of the bureau of the International Council of Scientific Unions, $3700.

Studies in science

University of Chicago. Status of demography as a science, $32,700.

Scientific manpower

National Academy of Sciences. Register of scientific and technical personnel in the field of biology, $17,000.

National Academy of Sciences. Studies on doctoral degrees in science, $15,000.

Miscellaneous

MD Publications, Inc., New York, has announced publication of ***Antibiotic Medicine,*** a new companion journal to *Antibiotics and Chemotherapy.* The first issue of this new journal, which is to be exclusively devoted to clinical studies and practice of antibiotic therapy, will appear in Jan. 1955. Henry Welch is editor-in-chief and Félix Martí-Ibáñez is associate editor. For further information write to the publishers at 30 E. 60 St., New York 22.

Plans have been announced for the construction of an $800,000 addition to the headquarters of the **American Dental Association** at 222 E. Superior St., Chicago. The addition will be seven stories high, 25 ft wide, and 125 ft deep and will connect through the west wall of the present structure. Further, a sixth floor will be added to the present five-story building. Construction is expected to be completed in the late fall of 1955. The association now has nearly 82,000 members, an increase of 25,000 in the past 10 yr.

Academic Press, Inc., New York, has published a **memorial volume for Richard von Mises** entitled *Studies in Mathematics and Mechanics.* The volume was put together under the editorship of Garrett Birkhoff of Harvard University, Gustav Kuerti of Case Institute of Technology, and Gabor Szegö of Stanford University, who say in their preface:

> The studies collected in this volume were presented to Professor Richard von Mises as a token of reverence and appreciation on the occasion of his seventieth birthday which occurred on April 19, 1953.
>
> Von Mises' thought has been a stimulus in many seemingly unconnected fields of mathematics, science, and philosophy, to which he has contributed decisive results and new formulations of fundamental concepts. Although it might have been desirable that all sides of his work be reflected in this volume, it appeared wiser to be satisfied with a partial recognition of his interests. Thus the Committee in charge of this publication requested contributions only in the fields of mathematics and mechanics.
>
> Even with this limitation, we found it impossible to invite papers from all those colleagues who at one time or other enjoyed scientific collaboration with von Mises, and only a few of his many former students could be asked to contribute. We hope, nevertheless, that the papers included will give some indication of the ideas associated with von Mises' name the world over. . . .
>
> Von Mises was in full vigor of body and mind when he learned last April about the plan and content of this Anniversary Volume, as it was then called. In May he was taken ill and passed away on July 14, 1953.
>
> We felt that the appropriate decision under the circumstances was to proceed with the publication of the volume as it had been originally presented to him. . . .

Philipp G. Frank's Introduction to this book appeared as an obituary for Dr. von Mises in the 11 June issue of *Science.*

The **Naval Research Laboratory** in Washington has vacancies for physicists, electronic scientists, and electrical engineers. Salaries range from $3410 to $9600. For information write to W. G. Torpey, Code 1817, Naval Research Laboratory, Washington 25, D.C.

Volume 3 of the ***Yale Conservation Studies,*** published by the Yale Conservation Club, is now available. This volume contains articles of current interest on forestry in Japan, water pollution problems, and the national parks, among others. The papers are written by students and graduates of the Yale Conservation Program. Copies may be obtained for $1 each from the Yale Conservation Program, 77 Prospect St., New Haven, Conn.

The more than 30 papers presented at the 4th **Canadian Textile Seminar,** which was held recently at Queen's University, Kingston, Ont., are now available in a bound volume that may be obtained for $5, post free, from The Textile Technical Federation of Canada, 1410 Guy St., Montreal 25, Que.