RADIOCARBON DATES (*Continued*)

Our No.	Sample	Age (yr)
C-911	*Bushman Paintings, South Africa* (*Bushman Paintings*): A very good sample of charcoal from South West Africa. It bears on a very important dating problem, namely, the question of the age of certain styles of the so-called Bushman paintings. The charcoal was found stratified in a cave deposit in direct association with ochre for making the frescos which fill the cave walls. H. Breuil is convinced that a measurement of these charcoals will provide a first direct indication of when the main group of these paintings was executed. The sample was collected at a locality known as the *Phillip Cave* which is near Ameib, southeast of the Erongo Mountains in the Windhoek region of South West Africa. Submitted by H. L. Movius, Jr., on behalf of H. Breuil, Paris.	3368 ± 200
C-917	*Zimbabwe, South Africa* (*Zimbabwe II*): Wood from an excavation in the "Temple" at Zimbabwe by K. R. Robinson in 1951 (See plan opposite p. 23 in Zimbabwe Guide). The specimen is cut from a second lintel, the first having already been dated at 1361 ± 120 yr (sample C-613). Sample submitted by Hallam L. Movius, Jr. on behalf of Roger Summers, National Museum, Bulawaya, Southern Rhodesia. This date was averaged with the date for sample C-613 of 1361 ± 120 to give a date of A.D. 574 ± 107 for the Zimbabwe city on the Christian calendar.	1506 ± 305
C-831 C-832	*Hawaii* (*Hawaii I and Hawaii II*): Charcoal and wood from Bowl Cave on uninhabited Necker Island, northwest Hawaiian Islands. Found in 1923 reportedly under 14 in. of sterile dust in association with stone artifacts of ancient Hawaiian type and thought to be contemporaneous with the ancient stone ruins on the island (see *Archeology of Nihoa and Necker*, Bishop Museum Bulletin 53, p. 90). C-831: $1\frac{1}{16}$ oz charcoal stored in museum in tin can 1923–51, in glass jar, 1951–53. Collected by W. Anderson and submitted by Kenneth P. Emory, Bernice P. Bishop Museum, Honolulu. C-832: $2\frac{1}{16}$ oz. piece of *wiliwili* (cork) wood, kept in cardboard box in museum.	166 ± 200 0 ± 250

RADIOCARBON DATES (*Continued*)

References and Notes

1. J. R. Arnold and W. F. Libby, *Science* **113**, 111 (1951).
2. W. F. Libby, *ibid.* **114**, 291 (1951).
3. ———, *Radiocarbon Dating* (Univ. of Chicago Press, Chicago, 1952).
4. ———, *Science* **116**, 673 (1952).
5. ———, *ibid.* **119**, 135 (1954).

6. I gratefully acknowledge the generous financial support of the John Simon Guggenheim Memorial Foundation, the Geological Society of America, and the Wenner-Gren Foundation for Anthropological Research. I also wish to thank the members of the Committee on Carbon 14 and the several other archeologists and geologists who have given advice about selection and identification of samples from time to time. Samuel Thomas, Augusto Moreno, and Delia Gonzalez Tudge burned and reduced the samples this year. Their meticulous care contributed immeasurably to the program.

News and Notes

Advances in International Conservation

The highly successful 4th general assembly of the International Union for the Protection of Nature was held in Copenhagen from 25 Aug. to 3 Sept. at the invitation of the Danish Government, which is a member of the union. Some 150 delegates and observers from 125 organizations and 25 countries participated; these representatives included zoologists, botanists, geographers, and soil specialists with a special interest in ecology as well as educators and officials from government departments concerned with conservation. Problems were presented in papers that were discussed in technical sessions or by special committees, the resulting recommendations were then reviewed by the executive board of the union, and final action was taken at the closing plenary session. The size of the assembly and the program arrangement made the meeting an effective working conference.

A technical meeting on the subject of the protection of arctic animals, presided over by Spärck, revealed an alarming decline in the numbers of many arctic species in recent years. Although some of this decline is due to natural conditions, such as climatic changes, there was clear evidence that man is also responsible because Indians and Eskimos have been furnished with modern rifles and motor boats. Modern transportation, especially the airplane, has made remote areas

much more accessible to human depradations. Such arctic marine mammals as the Greenland whale, the walrus, the polar bear, and the hooded seal have suffered greatly, and the preservation of some of these species is vital for the support of small native populations. Because many of these species, as well as some of the migratory birds that are endangered, are not restricted to the territorial waters of a single country, the problem of their future protection depends upon international cooperation. It was, therefore, decided that the union should establish a permanent Commission on Arctic Fauna to keep informed of the situation and to recommend appropriate action. The splendid work that has been carried out by Danish scientists in many parts of the world, and especially in East Greenland, makes it particularly appropriate that this new activity for the union should have originated at the Copenhagen assembly.

A second technical meeting was concerned with the effects of modern insecticides on mammals, birds, and insects. The papers delivered revealed that much research is now under way, and that extremely grave dangers result from the uncontrolled use of certain chemicals. The subsequent resolutions adopted by the assembly include the establishment of centers by governments to collect and correlate information on the effects of chemical control products on all wildlife, the expansion of research, the use of biological controls or cultural practices in preference to chemicals, and wider publicity to point out the dangers that result from the inconsiderate use of chemical control products. In connection with this last resolution, the union was asked to prepare a popular treatise on the dangers to fauna and flora from the misuse of chemicals.

Other subjects of vital importance to the future work of the union were discussed at special meetings. The one dealing with the population problem resulted in the unanimous adoption of the following resolution, which was forwarded to the World Population Conference that was taking place simultaneously in Rome:

> The IUPN being vitally concerned with the conservation for the benefit of future generations of the capital constituted by the natural resources, and consequently in the reasonable use of these resources, cannot remain indifferent to the rapid growth of human population. The increase of world food production hardly matches, if indeed it can continue to match, the increase of world population. Often, in spite of the efforts of experts, it achieves this only at the cost of an impoverishment of soil and water resources and a destruction of forests or of animal and plant communities and lastly of erosion affecting large regions of the earth.
>
> IUPN, therefore, sends to the World Population Congress, its best wishes for success, and urgently requests the participants of the World Population Congress, in their deliberations and conclusions to lose no opportunity of bringing to the notice of the responsible authorities the urgency of research and of action to deal with the closely connected problems of human population and of the natural resources available for its support.

A symposium on "Ecology and nature protection," organized by V. Westhoff of the Netherlands, was held on the day preceding the opening of the assembly. It included a number of significant papers pointing out that the maintenance of habitats, or biotic communities, should depend upon ecologic research, especially where rare plant and animal species are concerned. Both the UNESCO Technical Conference on the Protection of Nature at Lake Success in 1949 and the IUPN Technical Meeting at The Hague in 1951 had recommended ecological studies with special reference to human factors, and also a scientific study of landscape as it is increasingly affected by man. These recommendations, combined with another from the Copenhagen symposium, led to the establishment by the assembly of a permanent Commission on Ecology with a rotating membership of 12 persons under the presidency of J. Berry of Scotland.

The assembly also held meetings of its Commissions on Public Information and Education, the latter under the acting chairmanship of Laurence Palmer. A meeting of the Committee on the Survival Service reviewed the status of gravely threatened species of mammals and birds, and also approved the recommendation regarding plants that was proposed to the union by the 8th International Botanical Congress that was held recently in Paris. A new publication in French, entitled *Fossils of Tomorrow,* giving the latest information on the status of 12 seriously threatened mammal species, was issued, and recommendations were approved with reference to the Sumatran rhinoceros, the Arabian oryx, the Angolan giraffe, the Asiatic lion, and the Syrian and Nubian wild asses. The New Zealand Government was commended for its prompt action in protecting the rare (flightless rail) *Notornis,* and the Canadian Government was also commended for protecting the breeding grounds of the whooping crane.

The Peruvian delegate called the union's attention to proposed whaling operations off the west coast of South America, and the assembly adopted a resolution supporting the principles established by the International Whaling Commission for the Protection of Whales and condemned all violation of these principles. Among other resolutions approved by the assembly were those of the 1954 London Conference on Pollution of the Sea by Oil. Also approved was a recommendation emphasizing the need for continued scientific exploration of the marine resources of the world; this latter commended the research of the Danish Galathea expedition.

The union added some 20 organizations to its international membership. Among the newly elected officers were Roger Heim, director of the Museum of Natural History, Paris, as president, replacing J. Bernard of Switzerland; Lord Hurcomb of the United Kingdom and M. C. Bloemers of the Netherlands as vice presidents; and H. Gams of Austria, V. Van Straelen of Belgium, J. G. Baer of Switzerland, and Richard Westwood of the United States as members of the executive board. An invitation to hold the 5th assem-

bly in Edinburgh in 1956 was unanimously accepted.

All who attended the meetings were impressed by the hospitality that was extended by our Danish hosts, which included a memorable dinner given by the Prime Minister, a reception at the Frederiksberg Town Hall, and a luncheon at the Carlsberg Brewery. There were also field trips to Southern Sealand and the Island of Mon, as well as to protected heaths, game reserves, and bird sanctuaries in central and western Jutland. All the activities were well organized by the Naturfredningsraadet.

In addition to a new appreciation of Denmark, each delegate returned to his country with a realization of the extensive work that has already been accomplished by the IUPN, of the need for further strengthening it through new members, and of the necessity for having continued support from UNESCO and, if possible, from FAO, as well as from private and government sources in the countries that are most concerned with the union's program. Unfortunately there is much confusion about the term *protection of nature,* which is much more widely understood in its basic concept in Europe than it is in the United States. In the constitution of the union it is defined as "the conservation and wise use of the entire world biotic community or man's natural environment which includes the earth's renewable natural resources of which it is comprised and on which rests the foundation of human civilization."

The union's activity in furthering conservation is well documented in the published reports of its meetings during the past 6 yr, and the base line for future work, as well as a recent inventory of the reserves and legislation in most countries, is set forth in its two-volume publication on *The Present Status of Nature Protection throughout the World.* The union's education, information, and research activities stem from its special commissions, and also depend in large measure upon the ever-active central secretariat of the IUPN, which is located at 42, Rue Montoyer, Brussels, where further information is always available.

HAROLD J. COOLIDGE, *Executive Director*
Pacific Science Board, National Research Council

Recent Progress in Hormone Research

The annual Laurentian Hormone Conference was held 5–10 Sept. at Mont Tremblant, Quebec, Canada. Fourteen papers were presented. The general subjects considered included the pituitary hormones, steroid chemistry and biochemistry, hormones and abnormal growth, hormones and aging in man, mechanisms of hormone action, and hormone-cardiovascular interrelationships.

The pituitary hormones were discussed in the initial sessions. H. B. van Dyke described the chemical structures, synthesis, and bioassay of the posterior pituitary hormones. M. Sonenberg summarized his studies on the fate of thyroid-stimulating hormone, prolactin, somatotropin, and gonadotropin labeled with I^{131} or S^{35}. The present concepts of the mechanisms of stimulation of corticotropin secretion were critically analyzed by P. Munson, who presented data indicating that morphine blocked the release of corticotropin from the pituitary. R. Hertz described the effects of "Amphenone-B" upon the structure and function of the adrenal cortex. Administration of this compound caused hypertrophy of the thyroids and adrenal cortices of rats, but inhibited the synthesis of adrenal steroids.

Recent developments in the field of steroid biochemistry were reviewed by J. Fried and S. A. Simpson, and by J. F. Tait. Fried described the oxidation of steroids by microorganisms and reported on the biological activities of the 9-halogenated derivatives of hydrocortisone and cortisone. Tait outlined the methods used for the isolation and identification of aldosterone (electrocortin). He pointed out that aldosterone differs from most other adrenal steroids in that it (i) possesses an aldehyde group at C^{13}, (ii) has an extremely high sodium-retention potency, (iii) has a very small concentration in normal adrenal venous blood, and (iv) appears to be little, if at all, under the control of corticotropin.

Jacob Furth described the methods of induction of transplantable pituitary tumors and presented data indicating that these neoplasms synthesize anterior lobe hormones. The endocrinology of human neoplastic growths was discussed by R. Rawson, who reviewed the results of the treatment of human carcinomas by castration, by adrenalectomy, and by the administration of steroid hormones and of I^{131}.

A description of the histologic and functional aging of the human testis and ovary was presented by E. T. Engle. Later G. Pincus presented studies of the urine of men and women to illustrate the variations of steroid excretion with age. Discussion of these papers revealed that, although human gonadal aging processes are now well documented, the relationship of these changes to general somatic aging remains obscure.

The mechanisms of hormone action in carbohydrate metabolism were considered in papers by R. Levine and B. Hastings. The former investigator presented data indicating that insulin controls the entry of glucose into the cell. Hastings discussed the effects of potassium and of various endocrinological disorders on the carbohydrate metabolism of surviving liver slices, and he supported the view that insulin influences intracellular enzyme systems.

The final sessions were devoted to hormone-cardiovascular interrelationships. J. Stamler reviewed the fields of experimental atherosclerosis and hypertension and discussed the relationship of nutrition to human cardiovascular disease. E. Shorr described his investigations of VEM and VDM, outlined the identification of VDM with ferritin, and commented on the role of VEM and VDM in circulatory homeostasis.

All these significant papers, as well as the thought-provoking and lively discussions, are to be published in volume 11 of *Recent Progress in Hormone Research.*

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Science News

Kathleen Lonsdale, fellow of the Royal Society, professor of chemistry and head of the department of crystallography at University College, London, and chairman of the editorial board for *International Tables for X-Ray Crystallography,* wrote the following letter concerning **U.S. visa policies.** It was published in the 7 Oct. issue of the *Washington Post and Times Herald.*

> I have, during the two preceding months, undertaken a lecture tour in India, Japan, Australia, New Zealand and Canada, visiting Hongkong, Bangkok and Singapore en route. As I am a woman, a scientist and a Quaker, with some concern for the right exercise of democratic civilian responsibilities, I have enjoyed considerable opportunities of observing conditions and assessing political trends in general, and in scientific and religious circles in particular, during this time, short though it was.
>
> I think it might have been of interest to many American citizens to have heard my report, and I would like to have given it. When I applied in London for a United States visa, however, one month before my intended departure for Asia, I found that I was expected to supply a list, with dates, of all organizations of any kind to which I had belonged since December 31, 1918. I began with the Royal Society of London and the Religious Society of Friends, but as the list grew longer and longer, two conclusions forced themselves upon me: firstly, that no matter how hard I tried, I would not be able to produce an honest and complete list, since, like all people in public affairs, I must have belonged to dozens, if not hundreds, of organizations; secondly, that my desire to enter the U.S.A. would not sustain me for long enough to make the effort. I therefore altered my itinerary to pass through Canada instead of the U.S.A.
>
> Even so, however, it was apparently necessary for me to spend one night in transit through Honolulu. Since I had no United States visa, but only a transit permit issued in Australia, I found that I was regarded as a dangerous alien; my British passport was removed, as were those of other Commonwealth citizens, and I was informed in print that I would be allowed no visitors and no telephone conversations. Fortunately the absurdity of the latter prohibitions, which I was quite prepared to observe, resulted in their being completely ignored by all the United States citizens in Honolulu, and their friendliness did a little to dispel the general dislike and contempt of United States official immaturity that was otherwise being forced upon me.
>
> Is it too much to hope that the people of the United States will wake up soon to the fact that they are less likely to keep out their enemies by the means they now adopt than to lose their friends?

Another letter, which appeared in the *Friend* (London) for 1 Oct. under the heading "Five Months' Wait for a Visa," was written by Mildred Creak of the department of psychological medicine, Hospital for Sick Children, London, who is at present touring child guidance clinics in the United States.

> A good many Friends knew that I had difficulty obtaining a visa to visit the U.S.A. for professional visits following the Fifth International Congress for Mental Health, which has recently been held in Toronto, and to which I went as a delegate and to give a paper.
>
> Knowing that the U.S.S.R. visa and visit of 1951 would certainly be something of an obstacle, I made early application, actually on March 29. When I sailed for Canada on July 23 I had still had no answer, one way or the other, in spite of many visits to the visa department of the United States Embassy, cables, and all the help my medical and Quaker friends could give me. I had still heard nothing when the Conference ended in Toronto, four weeks later. . . .
>
> Exactly five months to the day after I had applied for it, and only two days late for my arranged tour of visits to clinics in the U.S.A., the visa came. . . .
>
> It would be easy to capitalise the indignation of my friends on both sides of the Atlantic during the period of uncertainty. Indeed, quite often in that five months, I felt myself as if I had walked into an Edgar Wallace novel without learning my part. It is easy to see that cumbersome methods of investigation will lead to these fantastic delays. In the absence of guilt, the *proof* of innocence is a formidable task. It seemed obscure to me that I was "investigated" without my taking part, since I had nothing to conceal. But it was a situation in which the active exercise of patience and good will was a necessity, and I was determined not to add any stones to the wall of misunderstanding which already exists between English and American thought and practice. I am, therefore, glad of this opportunity to let my friends know that I have a visa and am in the U.S.A.

The Department of the Interior has announced that, according to the September records of the Geological Survey, a **drought of major proportions** comparable to the one experienced in the early 1930's is building up in the southern and central states. Ground-water levels, stream flow, and reservoir levels are at or near record low levels throughout the southern two-thirds of the United States. Many communities and farms are short of water and some utilities and industries have been affected. The moderate floods that occurred in the northeast as a result of hurricane Edna did not appreciably alter the situation.

It is generally held that the land vertebrates arose from crossopterygian fishes. These fishes comprise two groups, Rhipidistia and Coelacanthini. The Rhipidistia, which first appear in the Middle Devonian and disappear in the Lower Permian, are the more primitive in structure and it is from them that the land vertebrates are believed to have been derived. The Coelacanthini apparently evolved from rhipidistians in the Upper Devonian and persisted relatively unaltered until near the end of the Cretaceous, when they disappear from the fossil record.

The crossopterygians were therefore thought to have been extinct since the time of the dinosaurs, a matter of some 70 million yr. Hence the taking of a living **coelacanth,** *Latimeria,* off the east coast of South Africa in 1939 was an event of prime importance. Unfortunately this specimen was incompletely preserved and its internal anatomy could not be studied. In recent years, however, some half-dozen addi-

tional specimens have been caught, five of them off the Comoro Islands, west of northern Madagascar. In a recent number of *Nature* [174, 426 (4 Sept. 1954)], J. Millot reports some new observations on the anatomy of the soft parts of these "living fossils." Hitherto, indications of crossopterygian soft-part structure have been gleaned only indirectly, from the living lung-fish or Dipnoi. These, although closely related to the crossopterygians, and presumably retaining many ancestral crossopterygian characters, nevertheless obviously are highly and peculiarly specialized. Knowledge of actual coelacanth soft-part anatomy is thus of great importance. It should be realized, however, that the coelacanths themselves are highly specialized fishes almost certainly far removed in many details from the early crossopterygians from which the land vertebrates appear to have been derived.

There is a vestige of a pulmonary organ. The remarkably wide esophagus passes over into the stomach fundus without macroscopic differentiation, there being no cardia; the transition can be distinguished only histologically. The capacious stomach is V-shaped, with a short dorsal limb and a long ventral limb that forms a tubular pylorus which opens into a short chamber suggesting the bursa entiana of other fishes. This chamber passes directly into a spiral intestine, there being no cecal appendage. Beyond this is the hind-gut, comprising a rectum and a cloacal pouch bearing a urinogenital papilla posteriorly. An unpaired serous-type nodular gland, probably homologous to the selachian digitiform gland, empties into the cloaca. The liver has two lobes; the hepatic cells contain much fat but considerably less than in many sharks. There is a large gall bladder and a well-developed pancreas. The kidneys are fused into a single median organ located, most unusually, on the ventral abdominal wall behind the cloacal opening; the testes, however, are dorsal and precloacal. There are paired ureters, urinary bladders, and urethrae. The kidney has large glomeruli and well-developed Malpighian tubules; its structure, however, appears complicated and peculiar. Unlike that of many teleosts, it contains no lymphoid tissue but has considerable infiltrations of pseudoeosinophilic leucocytes. The extreme abundance of these cells, their intense and diffuse hemopoiesis, and their penetrating ensheathment of the abdominal organs, appears to be a histological peculiarity of coelacanths.

With Cousteau, Millot has discovered that modern coelacanths inhabit very steeply sloping basalt rocky bottoms around the Comoros, at least 200 to 400 m deep. Inasmuch as there is no adult female among the five specimens caught off the Comoros, Millot believes that their range may extend below 400 m. It has been hypothesized that the coelacanths live in submarine upwellings of fresh water that occur off Grand Comoro. Since it is indicated that coelacanths in past geologic times have lived for long periods in brackish or nearly fresh water, it has been suggested that they have been able to survive because the fresh-water upwellings have provided them with their ancestral environment at depths where there is reduced competition. Millot points out that this hypothesis seems untenable, however, not only because the upwellings seem to occur in the intertidal zone but because samples of sea water from off Anjouan, where the coelacanths were captured, show quite normal marine salinities. In this connection it may be noted by way of addendum that paleontologic evidence indicates that whereas coelacanths originally were fresh-water forms, they apparently became marine dwellers in the Triassic, the Jurassic and Cretaceous species being salt-water forms. Hence there seems to be no need to postulate a fresh-water environment to explain their survival to the present day. Their possession of large renal glomeruli, as reported by Millot, is scarcely to be expected in a salt-water fish, however, unless the coelacanth has evolved some mechanism for retaining body water analagous to, if not homologous to, the urea contrivance of elasmobranchs.—W. L. S., Jr.

Secondary school **science teachers** have been added to the draft board list of those in critical occupations who may be exempted from military service. Heretofore only college teachers with a master's degree or better have been on the list, and the losses of urgently needed high school science teachers have been large.

A letter from C. W. Hart, Jr., that appeared in the 15 Oct. issue of *Science* reported the capture of a shark, ***Squalus acanthias,*** in the Appomattox River at a point that is 120 air mi from the Atlantic Ocean. This puzzling find has been explained by the following paragraph in a recent issue of the Washington, D.C., *Evening Star* which stated that, according to the Richmond, Va., *Times-Dispatch,*

> . . . Doug Jackson of Farmville was given the shark while visiting Virginia Beach. He brought it home packed in ice, but his fondness for it dwindled and he dumped it into the river, thinking turtles would destroy it.

A Swiss patent that may well have been the first practical design of a nuclear reactor has been reported in a recent issue of *Nucleonics.* The patent dates back to 1939, only 5 mo after the discovery of fission and 3 yr before the first reactor was built in the United States. The National Center for Scientific Research in Paris applied for the Swiss patent on 19 Apr. 1940; it was granted 30 June 1944, with a priority to 1 May 1939. After the German invasion of France in 1940, there was no development of the proposed reactor and information on the plan remained classified. The patent is another indication that the United States has had no **monopoly of ideas about reactors,** even during the infancy of atomic energy work.

The inventors found that a light substance arranged near the fissioning uranium would slow the emitted fast neutrons so that they would cause more fissions in a chain-reacting process. By proper arrangement of materials, a continuous chain reaction could be established. The patent notes that the reaction could be controlled to produce usable heat energy.

According to the article, the reactor described consists of 36 long compartments, each containing six 5.9-in. cubic iron-nickel boxes. Spaces between cubes and compartments are occupied by uranium slabs. An inert gas circulates in the fuel chamber to prevent oxidation of the uranium. A heavy-water moderator acts as coolant; it is circulated through the boxes to heat exchangers, from which it is pumped back to the core. High-pressure normal water picks up heat in the exchangers and transfers the energy to turbines. A neutron source located in the core's center aids in starting the reactor. Control mechanisms consist of electrically rotated rods upon which sheet-metal disks are mounted. Sectors of the disks are covered with neutron-absorbing cadmium. Rotation of the rods controls the power level by inserting varying amounts of cadmium between the core compartment walls.

The patent application also describes alternate materials and configurations. Either uranium or thorium, or a mixture of both (as solid, liquid, gas, or compound) could be used as fuel. The document also mentions the need for fission-product removal and refueling, and states that radiations from the core have many applications, particularly in medicine.

An expedition to the Marshall Islands headed by Bruce Halstead, head of the department of biotoxicology in the School of Tropical and Preventive Medicine, College of Medical Evangelists, left 19 Sept. Halstead and 10 members of the department will collect specimens of **poisonous fish** that will be frozen for return to the college. The expedition is being sponsored by the U.S. Public Health Service and the Atomic Energy Commission.

Not so long ago hormones were supposed to be the exclusive possession of vertebrate animals. Plant hormones entered the picture in 1925 and were isolated and chemically characterized a few years later. The hormones of invertebrate animals resisted discovery somewhat longer, but in 1928 the control of pigmentation through the expansion and contraction of chromatophores was shown to depend in crustaceans on a hormone derived from the eyestalks. Wigglesworth proved, by means of classic experiments performed during the early 1930's, that molting in insects, and also pupation, is controlled by hormones, but the chemical nature of these has remained unknown until recently. A. Butenandt and P. Karlson, working at the University of Tübingen, have succeeded in **crystallizing the first insect hormone,** that which is secreted by the prothoracic glands and brings about metamorphosis from the larval stage to the pupal.

The story of this isolation has been told in articles in *Z. Naturforsch.* [9b, 389 (1954)] and *Naturwiss. Rundschau* [7, 355 (Sept. 1954)], the latter being a semitechnical account. The raw material for the isolation consisted of 1 million silkworm pupae, which required a large portion of the annual German production of silkworms and a tremendous amount of hand labor in removing the pupae from the cocoons. From this raw material, amounting to 500 kg of fresh pupae, some 25 mg of crystalline hormone was eventually obtained. Of this purified stuff 0.0075 γ is sufficient for a Calliphora-unit, that is, the amount needed to make a single isolated abdomen of the blowfly *Calliphora* transform from the pupal state to that of the adult fly; and 10 to 12 γ are sufficient to transform the isolated abdomens of the large saturniid Cecropia and Cynthia moths from the pupal forms to the adult. Chemically the pupation-hormone is of great interest, for it contains no nitrogen. Although its chemical structure remains to be determined, the ultraviolet-absorption spectrums indicate that it is a hydroaromatic alcohol with an α,β-unsaturated keto group. It is thus a type of substance that has not heretofore been found in the realm of hormones.—B. G.

A new device for determining differences in **smelling sensitivity** has been developed by Nowell F. Jones, psychologist at the University of California in Los Angeles. The instrument is helping to correlate individual differences in smelling sensitivity with the chemical facts known about certain odorous compounds. The device sends controlled "whiffs" of various materials, some pleasant and some unpleasant, toward a subject's nose. By this means it is hoped to establish definite relationships between the molecular characteristics of certain substances and the ability of individuals to discern their odor.

Scientists in the News

A team of three American doctors headed by **John F. Enders** of Harvard University has won the 1954 Nobel prize for physiology and medicine. The others in the group were **Thomas H. Weller,** also of Harvard, and **Frederick C. Robbins** of Western Reserve Medical School. The men were honored "for their discovery of the ability of the poliomyelitis virus to grow in cultures of different tissues." This opened the way for production of polio vaccine, and also made it possible for doctors to establish quickly and easily whether or not a person has become immune to polio by having contracted it in a mild form sometime during his lifetime. The group's tissue culture technique established a new landmark in medical history. Since it was first announced in 1949, it has become one of the most effective research techniques in the search for a means to eradicate not only polio, but a host of other virus infections such as virus pneumonia, acute respiratory disease, influenza, and the common cold.

This year each award will be $35,066, the highest amount in the 54 yr of Nobel prize history. The members of this winning group will receive $11,688 apiece; all will be invited to Stockholm for King Gustaf Adolf's presentation of the awards on 10 Dec.

John F. Bishop of Beckman Instruments, Inc., has been appointed general manager of the Beckman Division.

Science regrets to announce the resignation of **Walter J. Nickerson** from the editorial board. In July Dr. Nickerson was promoted to professor of microbiology and member of the new Institute of Microbiology at Rutgers University. With his increased responsibilities, he feels that it would be difficult for him to continue in the editorial post that he has filled so ably for the past 2 yr.

John C. Snyder, professor and head of the department of microbiology at Harvard University since 1946, is the new dean of the School of Public Health. He succeeds the late Brig. Gen. James S. Simmons, U.S.A. (ret.), who died during the summer.

Rudolph A. Peters, of the Institute of Animal Physiology, Babraham Hall, Cambridge, England, and until recently professor of biochemistry at the University of Oxford, will give the 10th course of lectures under the Charles E. Dohme Memorial Foundation on 9 and 10 Nov. at the Johns Hopkins Hospital, Baltimore. His subject will be "Present state of knowledge of the biochemical lesions induced by trivalent arsenicals" and "Some recent work in the field of fluoroacetate compounds."

Peters retired at the end of the past academic year from the Whitley professorship of biochemistry at Oxford, a post he had held since 1923. While there he built up a school of dynamic biochemistry and found the first clue to the mode of action of thiamine from a study of its *in vitro* effects on metabolic processes. He has earned knighthood and many other distinctions for his achievements. He was elected a fellow of the Royal Society in 1935, received a Royal medal in 1949, and delivered the Croonian lecture in 1951. He has held many lectureships, including the Dunham lectureship at Harvard College.

The 6th annual Friend E. Clark lectures at West Virginia University, sponsored by Tau Chapter of Phi Lambda Upsilon, will be given on 16 and 17 Nov. by **Joel H. Hildebrand,** who will talk on "How scientists think and work" and "Liquids and solutions." The series has been established in honor of **Friend E. Clark,** professor emeritus of chemistry who was head of the department from 1919 to 1947.

Robert Balk has been appointed visiting professor of structural geology at California Institute of Technology for the fall quarter. Balk is on leave of absence from the State Bureau of Mines and Mineral Resources, Socorro, N. Mex., where he has been principal geologist since 1952.

V. K. Zworykin, television pioneer and inventor, was recently the guest of honor at a scientific seminar and dinner in Princeton, N.J., given by the Radio Corporation of America to mark his retirement as vice-president and technical consultant, RCA Laboratories, and his appointment as the first honorary vice president in the corporation's history. David Sarnoff, chairman of the board of RCA, was principal speaker at the dinner. The seminar's theme was "Thirty years' progress in science and technology." The participants and their subjects were as follows: Hugh Taylor of Princeton University, synthetic materials; I. I. Rabi of Columbia University, nuclear physics; Jerome C. Hunsaker of Massachusetts Institute of Technology, aeronautical developments; and James Hillier of Melpar, Inc., medical electronics. Irving Wolff of RCA Laboratories was the moderator.

Zworykin received his degree of electrical engineer from the University of Petrograd in 1912 and then conducted research at the Collège de France in Paris. After wartime service with the Signal Corps of the Russian Army in World War I, he came to the United States and acquired his American citizenship. He received the Ph.D. degree at the University of Pittsburgh in 1926. He worked on the research staff of the Westinghouse Electric Corp. before joining RCA in 1930.

Zworykin's scientific achievements include invention of the iconoscope and kinescope. He also directed the development of the electron microscope. In World War II Zworykin served on the Scientific Advisory Board to the commanding general of the U.S. Army Air Forces, on the Ordnance Advisory Committee on Guided Missiles, and on three subcommittees of the National Defense Research Committee. He also directed research in aircraft fire control, infrared image tubes for "sniperscopes" and "snooperscopes," television guided missiles, storage tubes, and radar systems. In recognition of his war work, he was awarded the Navy certificate of commendation, the Presidential certificate of merit, and the War Department certificate of appreciation. For his peacetime contributions Zworykin has received many awards both here and abroad, one of the most recent of which was the 1951 medal of honor of the Institute of Radio Engineers.

Charles D. Thomas has been promoted to acting head of the department of physics at West Virginia University, succeeding **R. C. Colwell,** who retired on 30 June. Thomas first joined the university staff in 1931 and has served as professor of physics since 1947. He also serves as head of the radiological division of the West Virginia civil defense organization and has conducted research on radioactivity detection devices.

Cyril L. Comar has joined the staff of the medical division of the Oak Ridge Institute of Nuclear Studies as principal scientist. He resigned his post as laboratory director of the University of Tennessee-Atomic Energy Comission Agricultural Research Program in Oak Ridge to accept his present appointment.

Marvin Camras, senior physicist at Armour Research Foundation of Illinois Institute of Technology, will receive from the City of Philadelphia the John Scott award for scientific achievement. He will receive the award—consisting of $1000, a copper medal, and a scroll—for his discoveries and subsequent improve-

ments in magnetic recording. His inventions currently are used in radio broadcasting, motion pictures, home entertainment, office dictation, memory units for high speed electronic computers, instrumentation, guided missiles, and others.

American Society of Horticultural Science awards for the best papers in their respective areas appearing in ASHS *Proceedings* for the year 1953 are as follows.

Leonard H. Vaughan award in floriculture and ornamental horticulture: **James B. Shanks** and **Conrad B. Link** of the department of horticulture, University of Maryland.

Leonard H. Vaughan award in vegetable crops: **R. W. Richardson** of the Rockefeller Foundation, Mexico City; **T. M. Currence** of the department of horticulture, University of Minnesota.

Joseph Harvey Gourley award in pomology: **J. R. Shay** of the department of botany and plant pathology, Purdue University; **D. F. Dayton** of the department of horticulture, University of Illinois; **L. F. Hough** of the department of horticulture, Rutgers University.

Alex Laurie award in floriculture and ornamental horticulture: **Charles A. Lewis** of Northport, L.I., N.Y.

Charles G. Woodbury award in raw products research: **F. W. Allen** of the department of pomology, University of California, Davis.

Foster D. Snell, Inc., New York, has announced two staff appointments. **Seymour M. Barer,** formerly with the Chemical Plants Division, Blaw Knox Co., is a chemical engineer in the engineering department. As a project engineer, he will be engaged in plant design and process engineering.

Willard R. Crandall, for 25 yr chief chemist for M. Ewing Fox Co., Inc., is a chemist in the product development department where he will supervise a research and development program in polymer emulsion paints.

Twelve men from diverse fields of science were recognized by the Franklin Institute of the State of Pennsylvania at its annual Medal Day ceremonies on 20 Oct. Guest speaker and recipient of the Franklin medal, highest honor awarded by the institute, was **C. E. Kenneth Mees,** vice president in charge of research at the Eastman Kodak Co., Rochester, N.Y. The medal, awarded annually to the scientist considered to have "done most to advance a knowledge of physical science or its application," was presented to Mees "For his many outstanding contributions to the scientific knowledge of the photographic process and for his development of the first organized scientific laboratory in the United States which resulted in new products advancing the usefulness of the photographic process and increasing its artistic acceptance."

A John Price Wetherill medal, awarded for discovery or invention in the physical sciences, was given to **William D. Buckingham** of the Western Union Telegraph Co. for his invention of the zirconium concentrated-arc lamp. This is a direct current lamp, made with permanently fixed electrodes sealed into a glass bulb filled with an inert gas. The lamp concentrates the arc activity to produce a fixed, high-intensity light source.

Edwin T. Lorig, chief development engineer of the U.S. Steel Corp. also received a John Price Wetherill medal for his invention of the Lorig-Aligner, a type of self-centering roll used in the rolling of steel strip and tin plate. His invention has resulted in the manufacture of a better product at a higher rate of speed and with less spoilage.

Clarence N. Hickman, research consultant of Jackson Heights, N.Y., was the recipient of another John Price Wetherill medal "In consideration of his inventions in rocketry, in telephony, in sound-recording, in archery and in other fields."

C. Levon Eksergian, executive engineer of the Budd Co., was awarded the George R. Henderson medal "In recognition of his invention and subsequent intensive development and application of the Disk Brake as applied to both self-propelled and high speed passenger cars in railroad service. . . ."

A Francis J. Clamer medal was presented to **William Justin Kroll** of Corvallis, Ore., "In consideration of his invention of a method adaptable to the large scale production of cold malleable commercially pure titanium and zirconium."

Two men in the fluorescent lighting field were given Frank P. Brown medals "In consideration of their outstanding contribution by the development of the fundamental concept of the fluorescent electric lamp, with the accompanying benefits of high efficiency, low heat output and wide color selection." These men are **Hans J. Spanner,** consultant in electrical engineering of Zurich, Switzerland, and **Edmund Germer,** consultant physicist of Irvington, N.J.

A Frank P. Brown medal was awarded to **Humboldt W. Leverenz,** director of the Physical and Chemical Research Laboratory, RCA Laboratories, Princeton, N.J., for his contributions to the development of the fluorescent lamp, principally by the invention of reliable, efficient, and versatile phosphors.

For his achievements in communication, **Kenneth Alva Norton,** chief of the radio propagation engineering division, National Bureau of Standards, was the recipient of a Stuart Ballantine medal. He was honored "In consideration of his contributions over a period of twenty-five years in the field of radio propagation through which our knowledge has been considerably increased by his measurements; our insight broadened by his theoretical work; our engineering calculations made easier by his charts and our broadcasting frequency allocations above 50 m.c. established more effectively through his guidance."

For their outstanding paper on the "Mechanical design of muscle-operated arm prosthesis," **Alfred C. Blaschke** of the Douglas Aircraft Co. and **Craig L. Taylor,** professor of engineering at the University of California, were recipients of Louis E. Levy medals.

F. Newton Hayes of the Los Alamos Scientific Laboratory and an authority on the physical and chemical properties of liquid phosphors recently visited the department of internal medicine at Yale University. He delivered a talk on the "Mechanics and applications of organic scintillation detection" before a mixed group of chemists, physicists, and physicians.

Howard S. Turner, director of the research and development division of Pittsburgh-Consolidation Coal Co. since 1948, has been named vice president for research and development of Jones and Laughlin Steel Corp. He succeeds **H. W. Graham,** who becomes consultant on technology. **Harold T. Clark,** assistant director of research, has been made director of research.

The Society of Motion Picture and Television Engineers has named **Ray D. Kell,** a member of the television research staff of the RCA Laboratories Division of the Radio Corporation of America, recipient of the 1954 David Sarnoff gold medal award for his pioneering achievements in the development of all-electronic television and for his contributions to color television, including its adaptation to the limits of a 6-megacycle channel.

The Office of International Relations, National Academy of Sciences–National Research Council, has provided the following information concerning the travel plans of **scientific visitors** to the United States:

S. J. Folley, National Institute for Research in Dairying, Agricultural Research Council, Edinburgh. Arrived 20 Oct. for approximately 5 wk. Will be the guest of the Henry Ford Hospital in Detroit, where he will attend an international symposium on *The Hypophyseal Growth Hormone, Its Nature and Actions.*

R. D. Passey, Chester Beatty Research Institute, Royal Cancer Hospital, London. Arrived 28 Sept. Will visit research centers to survey clinical experiment work on lung cancer on behalf of the Medical Research Council's Biological Working Committee on the Chemistry of Tobacco Smoke in Relation to Carcinogenesis.

D. J. Short, Medical Research Council, London. Here from 27 Nov. to 15 Dec. Will participate in the Animal Care Panel meeting at the University of Chicago, 1–2 Dec. Will visit experimental animal houses, principally in industrial research organizations, in the New York and Chicago areas.

A. W. Taylor, Rothamsted Experimental Station, Agricultural Research Council, England. Here 1 Oct. for 2 yr on a postdoctoral fellowship in the Department of Soils, University of Wisconsin.

Ralph M. Hixon of Iowa State College, who has made significant contributions to both farming and industry in the Middle West through his research in agricultural chemistry, has been chosen to receive the 1954 Midwest award of the American Chemical Society's St. Louis Section. Studies directed by Hixon helped this country meet its need for starch when imports dwindled during World War II. Starch is important not only for food purposes, but for such industrial products as explosives, adhesives, laundering agents, and medicines. Hixon and his colleagues helped to develop the production of starch from a variety of corn known as waxy maize. The production of this starch is now a multimillion dollar business.

Sidney M. Fox, formerly of the Panelyte Division of the St. Regis Paper Co., has joined the Lederle Laboratories Division, American Cyanamid Co., as a chemist in the chemical production section.

Robert E. Hopkins, professor of optics at the University of Rochester, has been promoted to director of the university's Institute of Optics, founded in 1930. He succeeds **Brian O'Brien,** director since 1938, who has been on leave to serve as vice-president in charge of research for the American Optical Co. at Southbridge, Mass. O'Brien has resigned from the Rochester faculty to continue his work with American Optical, but he will retain his post on the advisory committee of the institute.

LaVerne R. Philpott, former chief scientist for the Balco Research Laboratory, Newark, N.J., and holder of a Presidential citation for his contribution to the development of the first successful American radar system, has been appointed a coordinator in the research division of New York University's College of Engineering. He will direct basic research that will include studies fundamental to air navigation and scientific photography.

Ralph S. Heath, for the past 6 yr a civil engineer for the engineering division of the Atomic Energy Commission's Chicago operations office, retired on 31 Aug. after 47 yr of state and federal government service. He finished high school at Detroit Central (now Wayne University), and in 1903 entered the University of Michigan, from which he graduated with a degree in civil engineering. His first regular assignment in his long engineering career was with the district office of the U.S. Corps of Engineers as a surveyor on the Cumberland River Project at Nashville, Tenn., in 1907. Other assignments included the Detroit River improvement project and the development of the Great Lakes Naval Training Station from 1909 to 1919. He superintended some construction both at Pearl Harbor and at the Norfolk Navy Yard; then from 1920 to 1933 he served with the Illinois Division of Waterways. He was transferred to the St. Paul District, U.S. Army Corps of Engineers, in 1933 and placed in charge of construction of eight locks and dams on the Upper Mississippi River.

From 1938 to 1942 Heath was area engineer on the Williamsport, Pennsylvania Flood Control Project before going to the Pennsylvania Ordnance Works in the same capacity; there he was assigned as chief of the contract section under K. D. Nichols, now general manager of the U.S. Atomic Energy Commission. In the fall of 1943, Heath was transferred to the Man-

hattan Engineering District, predecessor of the U.S. Atomic Energy Commission, and stationed at Oak Ridge as supervisor and reviewer of contracts on the K-25 Project (Gaseous Diffusion Plant). On his final day of duty the Atomic Energy Commission presented Heath with a certificate of appreciation "For Faithful and Meritorious Service."

Donald Brieland has become director of the Elizabeth McCormick Memorial Fund, 155 E. Ohio St., Chicago 11, Ill. The McCormick Fund, established in 1908 by Mr. and Mrs. Cyrus H. McCormick, is concerned with research in child development and welfare.

The following appointments to assistant professor have been announced. Tulane University: **H. Marshall Dixon,** physics. University of Cincinnati: **Hans H. Jaffe,** chemistry.

Necrology

Raymond F. Bacon, 74, chemical engineer, author, developer of important processes in the petroleum, sulfur, and allied industries and in the hydrogenation of vegetable oils, and former director of the Mellon Institute for Industrial Research, Philadelphia, Pa., 14 Oct.; **James G. Carr,** 78, former chief of the medical staff of Evanston Hospital and professor emeritus of medicine of the Northwestern University Medical School, Evanston, Ill., 17 Oct.; **Lewis G. Cole,** 80, roentgenologist and investigator of lung dust lesions, White Plains, N.Y., 15 Oct.; **G. P. Douglas,** 62, aerodynamics expert and pioneer of the wind tunnel, Camberley, England, 16 Oct.; **Paul S. Egbert,** 59, chief of civil engineering for the Strategic Air Command's installations division, Omaha, Neb., 13 Oct.; **William L. Evans,** 83, past president of the American Chemical Society, researcher in carbohydrates, author, and professor emeritus of chemistry at Ohio State University, Columbus, Ohio, 18 Oct.

Howard Fox, 81, research dermatologist, author, former editor of the *Archives of Dermatology and Syphilology,* and former professor of dermatology at New York University College of Medicine, New York, N.Y., 19 Oct.; **Martin Friedrich,** 52, specialist in internal medicine and hematology, founder of the Gerald Friedrich Leukemia Research Foundation at the Jewish Hospital, Brooklyn, N.Y., 18 Oct.; **Katharine W. Harris,** 54, dietitian and head of the department of institution management in the College of Home Economics at Cornell University, Ithaca, N.Y., 19 Oct.; **Lewis P. Hobart,** 81, architect and expert in Mexican archeology and art, San Francisco, Calif., 19 Oct.; **Richard E. Holmes,** 46, chief engineer of the air-conditioning and refrigeration division in the Holyoke, Mass., branch of the Worthington Corp., 15 Oct.; **Frederick J. Kasper, Sr.,** 64, fuel engineer with the Eastern Gas and Fuel Associates, Philadelphia, Pa., 19 Oct.; **Frederick W. Kressman,** 66, research chemist and vice president of the Continental Turpentine and Rosin Corp., Laurel, Miss., 1 Oct.; **David Kuperstein,** 53, gynecologist, obstetrician, and former instructor at the Long Island College of Medicine, Brooklyn, N.Y., 19 Oct.

Arthur G. McCall, 79, soil scientist, former president of the American Society of Agronomy, former professor of geology and soils at the University of Maryland, and consultant with the Agriculture Department's Soil Conservation Service, Olney, Md., 19 Oct.; **Jackson R. Schonberg,** 56, staff engineer in the Esso engineering department of the Standard Oil Development Co., Linden, N.J., 19 Oct.; **Henry F. Smyth, Sr.,** 78, pioneer in the field of industrial hygiene research, professor emeritus of industrial medicine at the University of Pennsylvania, and director of the Smyth Laboratories, Philadelphia, Pa., 15 Oct.; **Frederic A. Snyder,** 81, civil engineer, former instructor in military topography and field engineering at McGill University, and safety engineer for the New York Board of Water Supply, New York, 19 Oct.; **William H. Stewart,** 86, past president of the American Roentgen Ray Society and former clinical professor of radiology at Columbia University, New York, 12 Oct.; **Leo R. Tehon,** 59, botanist with the Illinois State Natural History Survey and professor of plant pathology at the University of Illinois, Urbana, Ill., 17 Oct.; **Boris I. Zbarsky,** professor of biochemistry at the First Moscow Medical Institute, Russia, 15 Oct.

Meetings

The **AAAS Lancaster Branch** will hold meetings on the first Thursday of each month from Nov. 1954 through Mar. 1955. Attendance at these meetings, which are held at Franklin and Marshall College, ranges from 680 to 800 persons.

The 3rd **U.S. National Congress of Applied Mechanics** will be held at Brown University 11–14 June 1958. It is hoped that the scheduling of conflicting meetings can be avoided by this early announcement. Inquiries regarding the congress should be addressed to one of the following members of the organizing committee at Brown University, Providence 12, R.I.: Prof. D. C. Drucker, secretary; Prof. E. H. Lee, treasurer; Prof. W. Prager, chairman.

The **Utah Academy of Sciences, Arts and Letters** will meet at Weber College, 19–20 Nov.

More than 1000 physicians and surgeons from 33 countries attended the 3rd **International Congress of Internal Medicine** in Stockholm, 15–18 Sept. It was opened by Nanna Svartz of Sweden, president. Hypertension and collagen diseases were the two main subjects. A large group of U.S. scientists were present. Paul Klemperer of Mount Sinai Hospital in New York questioned the prevalent theory that arthritis, rheumatic fever, and kindred diseases are caused by allergies. Philip S. Hench of the Mayo Clinic and 1950 Nobel prize winner for his codiscovery of cortisone,

gave a lecture on the revolutionizing uses of this suprarenal hormone as well as of the hypophysical hormone ACTH, especially against collagen diseases. Another Nobel prize winner, Corneille Heymans of Belgium, submitted new theories about the reasons for high blood pressure. He reported that research conducted at the Veterinary College in Stockholm by Yngve Zotterman and his associates has confirmed his theory that the blood pressure is affected by reactions within the carotid artery. The next congress will be held in Madrid in 1956.

At the **Congress of the International Committee on Photobiology** held in Amsterdam, 23–28 Aug., the Niels Finsen medal was awarded to William W. Coblentz in recognition of his research on the biological action of light. Because Coblentz could not be present in Amsterdam, the presentation of the medal was made on 21 Oct. at the National Bureau of Standards by Alexander Hollaender of the Oak Ridge National Laboratory, new president of the committee. The new secretary is W. Burckhardt of Zurich. The next congress is scheduled to take place in Turin, Italy, in 1957.

The 3rd general assembly of the **International Union of Crystallography** was held in Paris, 21–28 July. Delegates from the U.S. were Lawrence O. Brockway, chairman, of the University of Michigan; Arthur L. Patterson of the Institute for Cancer Research, Philadelphia; Bertram E. Warren of Massachusetts Institute of Technology; Ralph W. G. Wyckoff of the division of physical biology at the National Institutes of Health and currently scientific attaché, American Embassy, London; and William H. Zachariasen of the University of Chicago. At the present time 18 countries are represented in the union.

The major items considered by the assembly were: (i) reports of commissions and joint commissions; (ii) election of commissions and of representatives on other bodies, and determination of their terms of reference; (iii) election of an advisory board for *Acta Crystallographica,* a bimonthly periodical; (iv) clarification of the position and powers of delegates and alternates; (v) consideration of the publication of a list of crystallographers of the world, including their addresses and major fields of interest; and (vi) discussion of general policy and time table for the period to the next general assembly.

Education

Rice Institute at Houston, Texas, has established a new department of geology that will emphasize fundamental study and research. Specific work in geology will begin in the third year, after a thorough background in mathematics, physics and chemistry. Only relatively small numbers of students will be admitted. The new division was made possible through a gift from Mrs. Olga Keith Wiess that established a chair in geology as a memorial to her late husband.

A long-range program in **cancer education** has been initiated at the Medical School on the Los Angeles campus of the University of California. The project is being supported by a yearly grant of $25,000 from the U.S. Public Health Service. Emphasis will be on teaching of the latest cancer diagnostic and therapeutic techniques to medical students. Patients whom the students will observe will benefit from these techniques and at the same time the additional clinical material furnished by the program will aid research. Justin Stein, professor of radiology, will coordinate the program. All departments will participate since the cancer problem covers all phases of medicine.

The **University of Pennsylvania's** new animal research center, an adjunct to the university's School of Veterinary Medicine, has been formally dedicated. Known as New Bolton Center, it is located in Chester County, which is one of the richest agricultural areas in southeastern Pennsylvania.

One of the features of the dedication program was the initial showing of a plaque set up in recognition of the gifts and services of heirs of the late Effingham B. Morris, Philadelphia financier, to veterinary education at the university.

Massachusetts Institute of Technology has announced plans for building the **Karl Taylor Compton Laboratories for Nuclear Science and Electronics** as a memorial to the institute's late chairman. The $3,000,000 laboratory will be dedicated to fundamental research that will exploit the peacetime potential of electronic and nuclear science. A fund of $3,000,000 will be provided for unrestricted support of work in these fields. The M.I.T. nuclear reactor, which is to be devoted solely to education and to nonsecret and peacetime research, will also be associated with the Compton Laboratories.

Available Fellowships and Awards

University faculty members are invited to apply for places in the **Oak Ridge research participation program** carried out by Oak Ridge National Laboratory and the Oak Ridge Institute of Nuclear Studies. Through this program, faculty members may conduct research in Oak Ridge for periods of from 3 mo to 1 yr. Oak Ridge National Laboratory is the principal center of research, although limited opportunities for participation also exist in the University of Tennessee–Atomic Energy Commission agricultural research program and in the medical and special training divisions of the Institute.

Oak Ridge National Laboratory offers opportunities for fundamental and applied research in physics, chemistry, metallurgy, biology, mathematics, and engineering, with a number of nuclear reactors and particle accelerators as the principal research instruments. The UT–AEC agricultural research program is concerned with the internal and external effects of radiation on farm animals. The Institute's medical division

conducts extensive studies of the internal and external uses of radioisotopes in cancer treatment, and studies in radiation physics; the special training division carries on research in instrumentation, radioisotope applications, and the occurrence of radioactivity in ores and sea water.

Payment while a person is on leave for research participation approximates his university salary. Application should be made 6 mo in advance of the time when the applicant expects to begin his Oak Ridge research. Additional information may be obtained from the University Relations Division, Oak Ridge Institute of Nuclear Studies, Box 117, Oak Ridge, Tenn.

The National Academy of Sciences–National Research Council has announced the inauguration of a new program of National Research Council–National Bureau of Standards postdoctoral research **associateships in chemistry, mathematics, and physics** for the academic year 1955–56. These associateships have been designed to provide young investigators of unusual ability and promise an opportunity for basic research in the following fields: pure and applied mathematics, applied mathematical statistics, numerical analysis, experimental thermodynamics and calorimetry, statistical mechanics, molecular structure and spectroscopy, low temperature physics, solid state physics, theoretical and nuclear physics, radiological physics, analytical chemistry, inorganic chemistry, and physical chemistry.

These fellowships are open only to citizens of the United States. Applicants must produce evidence of training in one of the foregoing fields equivalent to that represented by the Ph.D. or Sc.D. degree and must have demonstrated superior ability for creative research. *Applications must be filed on or before 10 Dec.* Awards will be made about 1 Apr. 1955. Further information may be secured for any of the programs by writing to the Fellowship Office, National Research Council, 2101 Constitution Ave. NW, Washington 25, D.C.

Grants and Fellowships Awarded

The **American Academy of Arts and Sciences** has recently announced the following research awards from (i) the Permanent Science Fund, 6 grants totaling $7030, and (ii) the Rumford Fund, one grant of $500.

J. H. Boyer, Tulane University. Azlactones from the reaction of aldehydes on azides.

R. S. MacNeish, National Museum of Canada. Development of agriculture and concomitant development of 'high culture' in southwest Tamaulipas, Mexico.

R. S. Miller, Harvard University. Population growth and competition in *Drosophila*.

R. L. Reid, University of New Zealand. Behavior of several species of organisms, particularly concerning the relationships between motivational conditions and the activation of habits.

M. D. Taylor, Howard University. Vapor phase dissociation of some carboxylic acids, III. Trifluoracetic acids.

H. B. Washburn, Museum of Science, Boston. Mount McKinley, Alaska, Map.

G. G. Holz, Jr., Syracuse University. For the purchase of a spectrophotometer and associated glassware to be used in measuring turbidity of protozoan suspensions and in spectrophotometric chemical analyses.

The following **Damon Runyon Memorial Fund** grants for cancer research, totaling $137,760, were awarded in September:

Columbia University. College of Physicians and Surgeons. Alfred Gellhorn, $12,000.

Memorial Center, Sloan-Kettering Institute. J. S. Laughlin and J. J. Nickson. The role of high energy radiation in cancer patients, $20,000.

New York University. Morris H. Harnly, $8900.

University of Oregon. T. B. Fitzpatrick, A. B. Lerner, and H. S. Mason. The detection, metabolic control, and therapy of malignant melanomas, $20,000.

Roswell Park Memorial Institute, Buffalo, N.Y. Theodore S. Hausohka, $10,300.

Hitchcock Foundation, Hanover, N.H. M. Dawson Tyson, $4700.

Chicago Medical School. Philippe Shubik, $4860.

Scientific Specialties Corp., Boston. The purchase of a color translating ultraviolet microscope, $7500.

Fellowships

Louis Wolfe, New York. Cancer research in Europe, $6000.

Julian Van Lancker, University of Wisconsin; George Fruhman, New York University; Jean-Gabriel LaFontaine, Memorial Center; Anand P. Chaudhry, University of Minnesota; and Marie B. Sorenson, Children's Cancer Research Foundation, Boston.

Fellowship renewals

Ulrich Naf, New York; Chiyeko Okawa, Oak Ridge, Tenn.; Henri Isler, Montreal; Joseph V. Landeau, New York; and Spyridon Allvisatos, New York.

Seventy-nine corporations and one foundation provided educational assistance to **Rensselaer Polytechnic Institute** during the fiscal year 1953–54. The total value of the aid given by these organizations amounted to $167,239. Of this amount, $68,826 was in unrestricted gifts from 24 companies. Thirty-four companies contributed gifts of equipment valued in excess of $32,000. Thirteen companies donated scholarships valued at $23,378; and six companies provided fellowships to the amount of $17,200. The National Science Foundation and two corporations made grants-in-aid valued at $25,800 to five research programs.

This assistance was in addition to $200,000 contributed by 105 companies in support of two sessions of the Industrial Council, an extracurricular educational program arranged by the institute under policy guidance from representatives of industry. The council's objective is to create a greater understanding of the economic and social philosophies under which we live.

The School of Chemical Technology at the **North Dakota Agricultural College,** Fargo, has recently received additional research and fellowship grants. The latest award of $4800 was provided by Spencer Kellogg and Sons, Inc., of Buffalo, N.Y. This sum will be paid over a period of 4 yr, and will be used to subsidize the research activities of a graduate student working in the field of drying oil technology; in addition, one or two senior students may be awarded $300 to $450 annually.

The Archer-Daniels-Midland Co., of Minneapolis, Minn. has again renewed its two grants of $1250, one for an undergraduate and the other for a graduate in chemistry.

Instruments and Equipment

Readings of linear dimensions, radii, and angles in places where obstructions prevent the use of contact measuring devices can be obtained with a new direct-reading **erect-image microscope.** The instrument is designed to utilize a pocket comparator of any make—the comparator can be set in place and locked with one adjustment. Thus one or more comparators with varied reticle patterns can be used. Linear dimensions are given in both inches and millimeters; measurements up to ½ in. in submultiples of 0.005 in. can be made. Working distance between objective and object is 5½ in. The instrument has rack and pinion focusing with a variable tension control and lock. A knob controls 360° lateral movement of the microscope; it is possible to reverse the microscope bracket and to move the objective below table level. (Edmund Scientific Corp., Dept. Sc., Barrington, N.J.)

Laboratory workers can use a new **ringstand micro-adjustor** designed by Fred E. D'Amour of the University of Denver to avoid the difficulty encountered in raising or lowering the clamp holding a piece of apparatus when it is clamped directly to the ringstand. The apparatus is clamped to the sleeve of the adjustor (Fig. 1) in approximately the desired position; it may then be raised or lowered very precisely by means of the knurled thumbscrew. The sleeve is tongued to a slot in the vertical bar so that it cannot rotate. $8. (Phipps and Bird, Inc., Dept. Sc., Richmond, Va.)

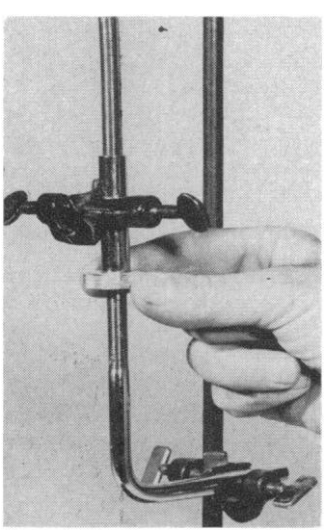

Fig. 1.

A new semiexpendable **tissue receptacle** is available to users of the Autotechnicon. The bottom of the receptacle is molded of Bakelite. The lid, a paperboard disk that also supports the tissue during its processing run, snaps into a groove on the rim of the bottom. Multiple holes in both lid and bottom allow free circulation of processing fluids during immersion and rapid drainage after removal. Identification can be penciled on top of the lid. Cardboard dividers and auxiliary biopsy liners are also available. (Technicon Co., Dept. Sc., 215 E. 149 St., New York 51.)

Miscellaneous

Mineral Resources of Fort Defiance and Tohatchi Quadrangles, Arizona and New Mexico by John Eliot Allen and Robert Balk may be obtained for $2.50 from the State Bureau of Mines and Mineral Resources, New Mexico Institute of Mining and Technology, Campus Station, Socorro, N. Mex. Designed for the U.S. Bureau of Indian Affairs as a thorough survey of all mineral and water resources that might furnish a basis for new income for the Navajos, this 216-page report presents geologic descriptions of 484 mi² of the Navajo reservation. Included are the Defiance anticline, the Buell Park caldera, and the south end of the Chuska Mountains. Descriptions of 30 rock units ranging in age from Precambrian to Recent, shown on a colored geologic map that is printed on a photomosaic base, are included, as well as a special section on sedimentary petrology by Max Willard. Although commercial deposits of uranium and oil have not yet been discovered in the area, the formations in which they occur elsewhere are carefully described and delineated with numerous detailed measured sections.

The **American Board of Nutrition** will hold its next certifying examinations during Apr. 1955 at locations convenient for candidates. Completed applications of persons who wish to be considered for certification should be submitted *not later than 1 Feb. 1955.* Application forms may be obtained from the secretary, Otto A. Bessey, Department of Biochemistry and Nutrition, The University of Texas School of Medicine, Galveston.

The October issue of The American Film Forum's regular monthly release is entitled ***Do Security Regulations Hamper Science?*** This film features Congressman Thomas Burke of Missouri and John S. Toll, chairman of the physics department of the University of Maryland, discussing this subject. The moderator for all Forum films is Marquis Childs, columnist and commentator. These reels are available from the American Film Forum, Inc., 516 Fifth Ave., New York 36.

Publication of a new series of molybdenum chemical data bulletins has been announced by the **Climax Molybdenum Co.** These bulletins are designed to provide, in a concise form, authoritative data on the properties of molybdenum compounds. Previously such data were often difficult to find in the literature and hard to evaluate. Copies of this data series are available from the Climax Molybdenum Co., 500 Fifth Ave., New York 36.