News and Notes

Religion in the Age of Science

Ten scientists explained how they thought scientific and religious knowledge could be integrated at the Conference on Religion in the Age of Science that took place from 31 July to 6 Aug. at Star Island in the Isles of Shoals [*Science* **119**, 683 (1954)]. Conference members, numbering more than 200, included theologians, clergymen, and laymen of ten Protesant denominations and Jewish, Buddhist, and Vedanta groups. Since it would be impossible to do justice to the whole conference here, and since it is expected that a volume of its proceedings will be published, the following paragraphs simply represent one man's feeling about some of the significant elements.

Called in the faith that the understanding of religious "truth and reality" is related to the understanding of scientific "truth and reality," the conference stimulated considerable discussion concerning the nature of scientific "truth," particularly following the papers of Philipp Frank (Harvard) and Henry Margenau (Yale). And it was perhaps an occasion of historic significance when, in a later discussion, members of the clergy, in setting forth a certain concept of God, were challenged by other members of the clergy concerning their evidence in the "P plane" (directly observed phenomena, à la Margenau) for substantiating that concept. While there were a number of both scientists and clergymen who held that religious truth was hardly susceptible to being approached by scientific methods, except perhaps in the negative sense of being prohibited by scientific beliefs, there was a strong and seemingly growing recognition that today man can increase the scope and validity of his understanding of his destiny and of his relationship to that "in which he lives and moves and has his being," not only by reading ancient texts, but also by building up the science of theology in harmony with other science. Here the scientists were referring to pure science in search of truth about cosmos and man, and they warned against confusing it with technological applications.

Edwin Kemble (Harvard), although saying that he opposed the common view "that because science and religion operated on different planes they are independent of one another," nevertheless felt that "to those who envisage religion as the life of God in the soul of man . . . a religion that accepts the philosophy of materialism is no religion at all"; and he went on to point out the limitations of the "orthodoxy" of scientific materialism and the necessity for the use of intuitive judgment and of faith in human action. Margenau and others pointed out that "intuition" operated in the creative work of the scientist; and there was considerable agreement, though not by any means complete, that the use of intuition was a common rather than a differentiating factor between the operations of scientists and the formulators of religious truth.

C. J. Ducasse (Brown), after reviewing the disastrous impact of modern scientific conceptions of the world on medieval religious concepts, suggested that "what science has undermined is perhaps not religion itself, but only some of the dogmas of the orthodox forms. . . ." He did not distinguish religious beliefs from scientific beliefs on the basis of any difference in content or subject matter, but rather on the basis of the function of religious beliefs to provide guidance for satisfactory behavior of the individual for himself and for society; and he suggested that religious beliefs might eventually become scientific in that they might be formulated in such a way as to be demonstrably true in the face of the facts. Samuel H. Miller (Andover Newton Theological School) said that the "religious faith of western civilization no longer constitutes the unifying strength or center of perspective." The coming religion will not be "elicited by magic abracadabra, but [will be] one implicit in the nature of things."

That the attempt to integrate religious doctrines with those of science would tend to bring harmony out of the confusion and antipathy among the many religious groups of the world was the theme of one panel discussion. It was pointed out by the historians at the conference that not only does Christendom face the age-old problems of schisms and splits within, but also that we must now take into serious account the great religions of the East and Communism and other semireligious or religious movements that have had a growing appeal in the heart countries of Christian Europe.

Edwin P. Booth (Boston University), indicated his belief that current attempts to bring about unity of the Christian world by the limited ecumenical councils were insufficient in view of the fact that no religion can properly exclude any man, to say nothing of excluding the bulk of the population of the world, which is now physically one world. He thought that ecumenical councils sometimes meet not so much to learn and to yield to a common truth but rather to create a sense of security against the threats of secularism or opposing religious groups. But, Booth felt, real progress toward the goal of one world, a growing clarity and common understanding in religious views like that in the physical sciences, could be developed, if theologians held with integrity to the rationality that characterized some of the great theologians of a half century ago, and if they took as their standard of validation not an ancient text but the experience of living man. He pointed out how past advance in religious thought was of this character. The panel, which included representatives of Hinduism and Buddhism as well as representatives of various Protestant denominations, were confident that the various religious groups at base had much in common, and Swami Akhilananda of the Vedanta Center in Boston expressed his conviction that scientific understanding

would lead to gradual discarding of irrelevant concepts and to concurrence on basic truths. A majority of those at the conference, however, did not seem to want to or expect a single world religious body or a set of doctrines for all men.

The nature of God was the theme of several discussions, stimulated particularly by papers by Harlow Shapley (formerly director of the Harvard Astronomical Observatory) on "The cosmos," by George Wald (Harvard) on "The origin of life," by A. G. Huntsman (University of Toronto) on "This life," by Paul E. Sabine on "Religion and/or science." There was a line of cleavage of opinion about equating God with nature that seemed not so much to separate the clergy from the scientists as to cut between members of both groups. There were a number of attempts to clarify the relationship of God and nature, and A. G. Huntsman said "If God is the spirit or ruler of the universe, we are indeed His creation, and in Him 'we live and move and have our being.' In scientific terms, we are the product of our environment, and we are wholly dependent upon it for all that we are and do." In a humble and honest way, he went on to approach a number of theological questions in the light of science. On this basis he developed the reasons for the validity of the rule that in order to find life man must first seek God's will and obey it. Among the members of the conference there developed jovial references to the scientists as fellow theologians and to theologians as fellow scientists.

Some light from science was shed on certain problems of value in the ordering of human individual life and social life—problems of morality and ethics. The paper by H. B. Phillips (formerly at M.I.T.) on "Freedom and probability," for instance, indicated that individual liberty should be maximized if a society is to receive maximum contributions from individuals. His argument applied the same probability considerations to human, social, or cultural development that Wald had applied to the development of complex organic molecules and living cells from simpler molecules in his account of the origin of life on earth. Phillips pointed out that we do not have prior knowledge of the outcome, and hence of the rightness or wrongness, of the possible acts open to us. If society limits the trials open to its individual members, it reduces the probability that a (right or good) solution will be found. Therefore, the most fruitful form of society is one that allows the maximum liberty to its individual members within the limits set by the requirements for maintaining social structure. This is akin to the requirement of genetic variations for the evolution of biological forms.

Roy G. Hoskins (formerly at Harvard Medical School) pointed out that, among the emergent developments of the biological law of "thou shalt survive," there was a human characteristic called "empathy" that related the individual to the needs of the other members of the society of which he was a part and that motivated him to action that was useful for the group even at times when it was sacrificial of himself. The rule of brotherly love has its basis in cosmic nature.

B. F. Skinner (Harvard) said that experimental psychology was making clear the superiority of a system of rewards over a system of punishments in creating desired new patterns of behavior and that psychology therefore offered powerful tools for ethical training. Some felt that this implied psychological substantiation for the religious insistence on tolerance and love in dealing with other men rather than the aversive methods of punishment or war. Skinner warned that these more powerful and pleasant methods of control could be dangerous when used by clever but unscrupulous men, and he recommended the establishment of suitable social safeguards.

Many of the conferees, scientists as well as clergymen, expressed their fear of the concepts of material causation that are implied in the scientific account of human origins and of the control of human behavior. They were bothered in particular by the apparent denial of those aspects of life that we have traditionally called spirit, purpose, free will, self-determination, and individual responsibility for moral behavior. That human life should be completely bound up in a chain of mechanical cause-and-effect seemed abhorrent. Yet it appeared doubtful to most of the scientists and clergymen that one could find escape from cause-and-effect in science, and there was a tendency to seek escape into some nonscientific realm. But Karl Deutsch (M.I.T.) had pointed out in the opening address that it was neither safe nor dignified for the custodians of religious truth to maintain that their truth lay in the area where science had no answers, that God was a three-letter word for what we do not know; for, time and again in history, science has come up with explanations of what yesterday it could not explain, and religion has had to beat an undignified retreat as its claims for authority where science was ignorant have been successively demolished.

The new strategy, suggested by many from both the camp of science and the camp of religion in this peace conference in the cold war between science and religion, is that theology should no longer stake its claims only in the area where science is ignorant, but rather that theology should accept and integrate with the developments of the several branches of knowledge represented by the sciences.

But this new strategy means a face-to-face encounter with the apparent threats to the reality of spirit, free will, responsibility, purpose, and so on. One theologian, Bradshaw of Bangor Theological Seminary, implied that perhaps the trouble was more apparent than real, perhaps it was largely a verbal confusion, when he suggested that his colleagues state clearly for the scientists what they mean by the word "spirit" and what particular phenomena of experience they refer to by the term "spiritual" in order to get the scientists' account of these same phenomena. Skinner, when questioned about free will, referred to the doctrines of John Calvin—with the implication that a strict determinism was neither new nor antagonistic to

a vital religious doctrine. Wald pointed out that acceptance of the scientific account of man in terms of molecules takes nothing whatever away from his full reality. Hoskins, as well as Wald, mentioned the emergence of new levels of being or structure that were made up of patterns of the "bricks" of a lower level. The scientific explanation of lower levels does not deny any reality to the higher levels. Although the building material of man may be the lowly molecule, this building material has been shaped into the most complex known organism, with its "spiritual" values.

Ducasse said it was an error to suppose that causation is necessarily compulsion. When, for instance, hunger causes a man "to eat and he *likes* the food he eats, he is then correctly said to be eating not under compulsion but freely. Causality and freedom thus are not inherently incompatible . . . for the alternative to causality is pure objective chance, and volitions that were not determined by motives but were matters of pure chance would be not free but irresponsible. The alternative to freedom is compulsion, not determinism." Compulsion he defined as that class of caused behavior which the subject happens to dislike, "for instance, handing a purse to a hold-up man."

Gerald Holton (Harvard) discussed the religious motivations of some of the great scientists. Frank, in his paper, said that ethical and religious requirements do enter into the constitution of scientific theories, even in physics. In a later comment, he said that the whole structure of knowledge inevitably had to be interconnected, with social, ethical, and religious concepts bound into physical theory and vice versa. He pointed out that one may temporarily restrict the phenomena to be accounted for by a theoretical system in order to achieve certain partial success in understanding; but ultimately no phenomenon can be disregarded, and no discontinuity between partially isolated systems of theoretical explanation can be satisfactory.

The general tone of the conference throughout was one of cooperative cordiality and even elation. There were many testimonials of exciting mind-stretching and new appreciations on the part of both the scientists and the clergy. Booth's daily chapel essays provided many insights into the values and validity of some of the great religious traditions of the world. The clergy and lay members of the conference were deeply impressed with the grand sweep of knowledge about man and his destiny in terms of the scientific view of the universe; and they were amazed at the concern of scientists to help, as Wald put it, to "organize human experience so that persons can feel at home in the universe, some sense of direction in their daily lives, some hope for the future, some purpose in their lives."

Many came away with a deeper understanding of what Pope Pius XII may have meant when he said to the Pontifical Academy of Science, 22 Nov. 1951: "In fact, according to the measure of its progress, and contrary to affirmations advanced in the past, true science discovers God in an ever-increasing degree—as though God were waiting behind every door opened by science." There were suggestions that more specific cooperation should be developed between scientists and theologians. It was proposed that interdisciplinary seminars be established to develop modern moral and religious doctrine in the light of science and that all relevant branches of science should be represented in theological school faculties. There was widespread confidence that the conference had opened a way to an integration of religion and science that would indeed provide a more hopeful basis for cooperative and satisfactory living on the part of men in the age of science. Perhaps, as Shapley suggested, modern science and religion are identical.

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International Congress of Psychology

At the 13th International Congress of Psychology which was held in Stockholm in July 1951, the executive committee of the newly formed International Union of Scientific Psychology, realizing that it would be less difficult to obtain visas for Canada than for the United States, accepted the generous invitation of the Canadian Psychological Association to hold the 14th congress in Canada, with the American Psychological Association as joint sponsor. The congress took place at McGill University and at the University of Montreal, 7–12 June. The total membership consisted of 1021 persons from 31 countries. A substantial sum of money from private individuals and scientific bodies provided financial assistance for many of the foreign visitors who attended the meetings.

Six psychologists came from the U.S.S.R. The program committee was informed late in the spring that these men would like to present papers, but it was possible to arrange for only five of them on the program. They brought with them 2000 copies of a booklet, *Communications at the XIV International Congress of Psychology,* that contained six papers in Russian and translations in both English and French. This booklet was distributed to the members of the congress.

Previous international congresses had accepted practically all papers submitted, and this resulted in programs that were primarily a series of disconnected reports. Dissatisfaction with these congresses led the International Union to suggest that a different procedure be followed by the 14th congress, a concrete hint for more symposiums. The program committee decided on an entirely new venture—a program consisting of symposiums and groups of papers about a common theme, and a few evening lectures. There were only three to five papers and a few discussants in each session; participation was by invitation only, and selection was made on the basis of active research, with the choice in favor of the younger members of the profession. The topics for the sessions were selected with great care; for example, the clinical papers

stressed the scientific implications of clinical data rather than the improvement of clinical procedures, the papers on industrial psychology dealt with the interaction of social and technologic factors in the industrial field, and the papers on individual differences were related to national policy. The congress was considered a great success, chiefly because of the program, which may well serve as a model for the future.

The copresidents of the congress, E. A. Bott of the University of Toronto and E. C. Tolman of the University of California, spoke, respectively, on "The influence of organization on psychology as a science" and "Performance vectors and the unconscious." Tolman took occasion to criticize the "rising tide of anti-intellectualism" on both sides of the iron and of the bamboo curtains, caused by the people of the various countries being dominated by fear. Other evening lectures were "Perceptual and cognitive structures in the development of the infant's idea of space" by J. Piaget of the University of Geneva and the University of Paris; "Perception and cognition" by Albert Michotte van den Berck of the University of Louvain; and "The cortical record of the stream of consciousness" by Wilder G. Penfield of McGill University. The results presented by Penfield are of great significance. He has found that electric stimulation of the temporal cortex of the brain causes patients to review the sights, sounds, and thoughts of previous experiences. These recalls are clearer and more detailed than most memories under normal conditions. The implications of these findings are intriguing in regard to the functions of the cortex.

A list of the symposiums will give the best idea of psychology today as it appeared at the congress: "Consciousness: revised and revived"; "Projective techniques and psychological theory"; "Multivariate methods for electronic computers"; "The relation of the person to his environment"; "Recent developments in sensory psychology"; "Present status of Freudian theory"; "Social variables in personality determination"; "Mechanisms of motivated behavior"; "Some new approaches to the multidimensional analysis of behavior"; "Social and technological organization in industrial production systems"; "Recent trends in perceptual theory"; "Motor skills"; "Personal contact and change in intergroup attitudes"; "European characterology"; "Information theory in psychology"; "Cross-national research in social psychology"; "Problem-solving behavior"; "Recent developments in color."

Four other symposiums especially exemplify the scope and interest of the program. The papers given in these symposiums follow. In the symposium "Experimental and theoretical analysis of instinctive behavior," the results of recent research on instinctive behavior in animals were reported and the theories were discussed. G. P. Baerends (Groningen) spoke on "Egg recognition in the herring gull"; J. J. A. van Iersel (Leyden) spoke on "An attempt at an analysis of parental behavior of the male three-spined stickleback"; D. S. Lehrman (Rutgers) spoke on "Maternal behavior in birds and the problem of instincts"; and W. S. Verplanck (Harvard), although absent, submitted a paper on "Learned and innate behavior: toward a *rapprochement* of concepts."

S. Biesheuvel (Johannesburg) presented a paper on the general problem of the symposium, "Individual differences in abilities and their implication for national policy," in relation to South Africa. V. Coucheron Jarl (Oslo) had a paper on "Intellectual abilities and schooling as a psychological and social issue." M. Yela (Madrid) spoke on "Some historical and experimental remarks on selection problems in Spain"; and A. H. El Koussy (Cairo) spoke on "Individual differences and social reconstruction."

In the session on "Recent advances in conditioning," J. Lacey (Fels Research Institute) had a paper on "Conditioned autonomic responses in the experimental study of anxiety"; H. Eysenck (London) on "Conditioning and personality"; A. Leontiev (Moscow) on "Formation and nature of mental properties and processes of man"; B. M. Teplov (Moscow) on "Theory of the types of activity of the central nervous system and psychology"; E. A. Asparatjan (Moscow) on "Switching of conditioned-reflex activity as a special form of its changeability"; E. N. Sokolov (Moscow) on "Higher nervous activity and the problem of perception." It was of interest to those present to learn that the Russian psychologists had returned to the conditioned-reflex theory of Pavlov.

In the symposium on "Cerebral functions and behavior," findings from a variety of approaches (electroencephalographic, experimental-surgical, therapeuto-surgical, and clinical) and their theoretical implications were considered. H. H. Jasper (McGill) gave a paper on "Correlates between psychological processes and the electrical activity of the brain"; H. E. Rosvold and J. M. R. Delgado (Yale) on "Effects on behavior of electrical stimulation of the monkey's brain"; A. L. Benton (Iowa State) on "Right-left identification, finger localization, and cerebral status"; and A. Petrie (London) on "Effects on personality of excisions in different regions of the brain."

Two special convocations were held at which McGill University gave honorary degrees to E. A. Bott, Jean Piaget, and E. C. Tolman, and the University of Montreal gave honorary degrees to A. Michotte van den Berck, Henri Piéron, and H. S. Langfeld.

At the meeting of the assembly of the International Union of Scientific Psychology, J. Piaget was elected president of the union and E. T. Rasmussen was elected vice president. The other members of the assembly who were elected are O. Klineberg, Frederic Bartlett, H. Piéron, N. Mailloux, J. Drever, H. S. Langfeld, A. Michotte van den Berck, J. Elmgren, H. C. J. Duyker, and J. Germain. The executive committee elected O. Klineberg secretary general and N. Mailloux treasurer to take office 1 Jan. 1955. The next congress is scheduled for 1957.

H. S. Langfeld, *Secretary General*
International Union of Scientific Psychology
Eno Hall, Princeton University

Science News

Recently in *Science* [119, 676 (1954)] attention was drawn to a proposal by E. Finlay-Freundlich that light suffers an attenuation of energy, resulting in a **red-shift,** whenever it passes through an energy-containing enclosure, and a formula was presented for this red-shift, based upon diverse observational phenomena in astronomy. In a letter to the editor in the *Physical Review* for 1 Oct., H. L. Helfer has demonstrated that the exhibited formula is not universally applicable and that, considering the nature of the objections raised, severe modifications of the hypothesis are necessitated if it is not to be completely abandoned.

The first objection raised is based upon a consideration of systems of double stars whose orbital planes enclose the line of sight. In such systems, the total path-length along which light travels from either star to us varies as the stars revolve about each other. Since the light path of any one star lies in the radiation field of the other star, the resulting situation is that of light transversing an energy-containing enclosure of periodically varying length, which should result in a periodic red-shift according to the hypothesis. Calculations for five double-star systems that are well observed predict a red-shift several orders of magnitude too large to be reconciled with the observations. For one system in particular for which the observational material is very good, the predicted shift is of the order of 200,000 sec.$^{-1}$

Helfer also points out the existence of a group of binary stars in which it is actually possible to observe, during eclipse, the light of one star shining *through* the other. This results in an enclosure of very high energy density, and again the predicted red-shift is several orders of magnitude too large. The latter objection is to be given less weight, owing to the difficulties of interpreting the observational phenomena. The author feels that these two arguments eliminate the possibility of any photon-photon or photon-matter interactions resulting in a red-shift of anywhere near the order of magnitude predicted.

Two French cave explorers, Jean Cadoux and Georges Garby, have reported that they descended 2485 ft in the Berger cave near Grenoble, France, for a world **record for depth** in a natural cavern.

A long-sought instrument, a **millimeter wave generator** that produces electromagnetic waves in the region between microwaves and infrared rays, has been devised by Hans Motz of Stanford University's Microwave Laboratory. The apparatus has generated frequencies up to 2×10^6 Mcy/sec (wavelength, 0.15 mm) at powers from 10 to 100 mw. Because of this they can be used to "see" into the atom, revealing events that take place less than 10^{-6} μsec apart. The instrument's main components are a 3-ft, 2-Mev linear accelerator, an "undulator," and an "echelette spectrometer." The accelerator produces a pulsed beam of electrons that is fed into a silver waveguide in the undulator with a speed slightly less than the speed of light. Eight separate, alternating magnetic fields in the undulator act on the electrons, causing them to oscillate. The waves then pass into the echelette spectrometer, which consists of a 2-ft parabolic mirror facing a grooved aluminum plate. The spectrometer removes the undesired frequencies.

J. Robert Oppenheimer's 26 colleagues at the Institute for Advanced Study in Princeton issued the following statement on 1 July.

Now that the official decision concerning the question of Dr. Oppenheimer's security clearance has been rendered, the undersigned permanent members and professors emeriti of the Institute for Advanced Study consider that in all propriety they may publicly express their feelings concerning Dr. Oppenheimer in the light of the charges brought against him.

We, who have known him as a colleague, as director of our own institution, and as a neighbor in a small and intimate community, had from the first complete confidence in his loyalty to the United States, his discretion in guarding its secrets, and his deep concern for its safety, strength, and welfare. Our confidence in his loyalty and patriotic devotion remains unimpaired as our admiration for his magnificent public service is undiminished.

Dr. Oppenheimer has performed for this country service of another kind, more indirect and less conspicuous but nevertheless, we believe, of great significance. For seven years now he has with inspired devotion directed the work of the Institute for Advanced Study, for which he has proved himself singularly well-suited by the unique combination of his personality, his broad scientific interests, and his acute scholarship. We are proud to give public expression at this time to our loyal appreciation of the many benefits that we all derive from our association with him in this capacity.

J. Lenihan, leader of a research team in the department of surgery at Glasgow University that is investigating the causes of peptic ulcer, has devised a **Geiger counter** which is small enough to attach to a gastroscope. Development of this apparatus makes it possible to interpret exactly what is going on in the stomach after use of radioactive isotopes.—K. L. H.

Kirtley F. Mather, in the announcement of his retirement after more than a decade of service as book review editor of the *American Scientist* has some pertinent things to say about the **art of book reviewing.** [42, 506 (July 1954)]

. . . There are few, if any, objective standards by which all books may be appraised. Beyond the basic principles of grammatical construction and typographical composition, each author may draft his own ground rules. Rugged individualism occupies one of its few remaining strongholds, and opportunity is still afforded for diversified personal expression. No book reviewer should imagine for a moment that he represents anybody but himself when proceeding with his task.

It was necessary therefore for me to establish some sort of pattern for "The Scientist's Bookshelf," early in the game. It seemed to me that its primary function was informational, rather than pontifical. Its readers would

probably be more concerned with knowing what a book is about, than what I think about a book. At the same time, it was necessary for me to accept judicial responsibility and express opinions concerning the merits of the books considered for review. This involves scientific accuracy, cogency of generalizations and conclusions, depth and breadth of comprehension, as well as clarity of presentation, readability, and probable success as an educational tool. Some of the books that have passed across my desk, since the spring of 1943, have been worthy, in my opinion, of high praise, and that I have tried to indicate in one way or another. Many could best be "damned with faint praise." Others, for one reason or another, have been merely listed or omitted entirely—mostly for lack of space. There have been a very few books, however, which I felt should be harshly criticized, and occasionally I have expressed adverse opinions. Incidentally, I have found that only a few minutes are required to get sufficient knowledge of a book to write a noncommital or faintly commendatory review of it, whereas it takes hours of careful reading to prepare oneself for writing either a strongly favorable or a sharply critical review.

. . . The stream of books flowing from the publishing houses between 1942 and 1947 was not so great but that room could be found for review or brief mention of almost the entire output. Since 1947, the flood gates have opened. Even with additional pages at my disposal . . . it has been impossible to maintain the nearly complete coverage of earlier years. Sometimes I wonder whether certain publishers are not more concerned with quantity than with quality, as they make their decisions from day to day. By and large, the publishers who group their books in series, with eminent scientists retained as editors, seem to be most successful, so far as quality of output is concerned. . . .

Marlow W. Olsen and Stanley J. Marsden, elsewhere in this issue, report finding **parthenogenetic development** in the infertile eggs of nonmated and virgin Beltsville Small White turkeys. This type of development, a common method of reproduction in some of the lower forms such as bees and aphids, is of rare occurrence in warm-blooded animals. Current methods of determining fertility in the hatchery may have to be revised.

John H. Lawrence of the University of California has reported to the Joint Congressional Committee on Atomic Energy that a combination of 80 percent **xenon** and 20 percent oxygen has been used an effective nonexplosive anesthetic during major surgery. The heavy gas xenon, companion of helium, neon, argon, and krypton and the rarest element in the atmosphere, heretofore has been supposed to be inert. The discovery came accidentally during experiments on the medicinal effects of various isotopes at the University of Iowa's Laboratory of Medicinal Physics. Doctors observed that subjects exposed to xenon became drowsy. This led to experiments with rats and mice which showed that they could be anesthetized.

Discovery of a powerful **heart poison** in a chemical from the streptococcus germ was announced by Aaron Kellner and Theodore Robertson of New York at the World Congress of Cardiology which took place in Washington, D.C., 12–17 Sept. It is believed that this substance, a protein-digesting enzyme called streptococcal proteinase that was isolated in crystalline form in 1950 by S. D. Elliott of the Rockefeller Institute, may be the cause of heart damage following rheumatic fever attacks.

Kellner and Robertson injected the enzyme into the veins of rabbits, mice, guinea pigs, and cats. It caused striking damage to the muscles and valves of the animals' hearts, with an inflammatory reaction. With only a few exceptions, the enzyme's destructive action was confined to the heart. When the enzyme was added to the fluid in which an isolated rat heart was being kept alive and beating, contractions soon decreased in strength and frequency, and heart failure occurred within a few minutes.

Rheumatic fever attacks 30,000 Americans yearly, most of them between the ages of five and 15. It is responsible for an estimated 1,000,000 cases of rheumatic heart disease in the United States.

A specially equipped **car for geotechnical investigations** has recently been added to the rolling stock of the Swedish State Railways. The only one of its kind in Europe and probably in the world, the car is intended for on-the-spot examination of samples from the ground along railway lines, where clay, peat bogs, and so forth present special operational problems.

The results of the **postgraduate alien training program,** begun in mid-1949 under the U.S. Information and Educational Exchange Act of 1948, are reported in the 3 Sept. issue of the *Journal of the American Medical Association* by Harold S. Diehl, Edwin I. Crosby, and Paul K. Kaetzel of the Health Resources Advisory Committee of the Office of Defense Mobilization. A large increase in alien physicians taking postgraduate work in the U.S. has helped fill the gaps left by the many young doctors now on active military duty. The number of aliens on U.S. hospital staffs more than doubled from 1950–51 to 1953–54. During the 1953–54 school year, 5589 foreign physicians held appointments as interns, residents, or fellows on house staffs of the civilian hospitals approved for such training by the Department of State. Three years before the total was 2072.

These aliens cut the number of vacancies in those hospitals down to 20 percent for residents and 30 percent for interns. Without them the percentage would have been "considerably greater," since "many young physicians who would normally be taking postgraduate work are on active military duty." Aliens made up 22 percent of the total house staffs in the approved hospitals. Most of them were located in general hospitals which do not serve as major teaching hospitals for medical schools. They made up almost half the staffs of tuberculosis hospitals approved for alien training, and about one-fourth of the staffs of mental hospitals, but only about one-tenth of the teaching hospital staffs.

Three states—Mississippi, North Dakota, and Arkansas—have no alien physicians in training.

Largely because of state licensing laws, more than two-thirds of them are in five states—New York, Ohio, New Jersey, Illinois, and Massachusetts. In New Jersey, 65 percent of the house-staff positions are filled by aliens, and in New York, Illinois, and Ohio about 30 percent.

Nutritional studies with the **white-throated wood rat** (*Neotoma mexicana*) have been under investigation recently by Robert Van Reen and Paul B. Pearson at the McCollum-Pratt Institute, Johns Hopkins University. According to their forthcoming paper in *Science,* the wood rat is of interest in several respects, particularly in that water intake is large under laboratory conditions. It was not possible, however, to maintain the animals on a purified-type diet, and use of the species for research purposes appears unlikely.

Scientists in the News

On 15 Sept., President Eisenhower "very reluctantly" accepted the resignation of **Henry deWolf Smyth** as a member of the Atomic Energy Commission, effective 30 Sept. The AEC's only scientist member will be succeeded by **Willard F. Libby,** a professor in the University of Chicago's chemistry department and in its Institute for Nuclear Studies, who has been serving as a member of the General Advisory Committee to the AEC.

Author of the famous "Smyth Report" on development of the atomic bomb that was published soon after World War II, Smyth was the only one of the five commissioners who opposed determining that J. Robert Oppenheimer was a security risk. In his letter of resignation Smyth did not mention the Oppenheimer case nor did he mention differences with Lewis L. Strauss. (The scientist told the Joint Congressional Committee on Atomic Energy last July that there had been an air of tension on the commission since Strauss became chairman.) Smyth also opposed the controversial Dixon-Yates contract which the AEC and the Tennessee Valley Authority are negotiating with a private power syndicate. Such a contract would cast the AEC in the role of a "power broker," he asserted. Strauss has defended the proposed contract. Smyth, in his letter to the President, emphasized the atoms-for-peace theme as well as development of atomic weapons. Smyth plans to return to Princeton University, where he had been chairman of the physics department, to accept the newly created post of chairman of the Board of Scientific and Engineering Research.

President Eisenhower now has appointed three commissioners: Strauss, Joseph Campbell, and Libby; Thomas E. Murray is a Truman appointee. There is still one vacany—created by the expiration on 30 June of the term of Eugene Zuckert.

Oliver S. Reading, chief of the division of photogrammetry in the Coast and Geodetic Survey, U.S. Department of Commerce, retired on 31 Aug. after more than 39 yr of service. He joined the Geodetic Survey in 1915, and made progressive advancement to his present rank of captain. His early field assignments with the bureau included hydrographic and geodetic surveying along the coasts of the United States, Alaska, and the Philippine Islands.

During his long service Reading won international recognition as an expert in photogrammetry. He was a pioneer in this field and played a major part in coordinating aerial photogrammetric procedures with the charting activities of the Survey. Among the various types of inventions for which he has been responsible are the nine-lens aerial camera and its associated equipment, the 50-in. precision copying camera, the projection ruling machine, and the coordinate setting machine. Because of his valuable contributions, Reading was awarded the 1947 Department of Commerce silver medal for meritorious service.

Reading was one of the principal organizers of the American Society of Photogrammetry, which now has more than 3000 members. He served as chairman of the American delegations to the 5th International Congress on Photogrammetry and to the 6th International Congress of Surveyors in Rome during 1938. The State Department appointed him president of the American delegation that attended the meeting of the International Society of Photogrammetry at The Hague, in Sept. 1948; during the meeting he was elected president of the society and presided at the 1952 international meeting held in Washington, D.C. In 1953 Reading visited London, Paris, and Munich, attending meetings of the Congress of International Federation of Surveyors, Council of the International Society of Photogrammetry, and the meeting of the Organization for Photogrammetric Research.

A portrait of **Charles M. B. Cadwalader,** of Fort Washington, Pa., president of the Academy of Natural Sciences of Philadelphia from 1937 to 1951, was accepted by the board of trustees at a meeting of Cadwalader's former associates on 28 Sept.

Kamel el Mallakh, the Egyptologist who discovered Cheops' solar funeral ship in May, will probably visit this country in October.

Cornell University has announced the appointment of **Thomas P. Almy** as director of the Cornell (2nd) division at the New York University–Bellevue Medical Center. He succeeds E. Hugh Luckey, who became dean of Cornell University Medical College on 1 July. Almy, a specialist in gastrointestinal disease, will rank as visiting physician at Bellevue, while continuing as associate professor of medicine at Cornell.

Ronald Richter, Austrian-born scientist who once headed Argentina's atomic energy research, has challenged Argentine experts to disclose the results of the experiments he led so the world could judge whether he was a fraud or a physicist. Goaded by charges made recently in the House of Deputies that his experiments had failed, Richter has asked President Juan Perón

and Congress to hold open hearings on his contribution to Argentine science. He said he had been waiting for a "fair settlement" of his case for more than 18 mo, and added "I would like to declare categorically that there were no scientific errors or negative experimental results in the Huemul project so long as I directed it." Richter's experiments are said to have cost the Argentine Government more than 1,000,000,000 P. (about $70,000,000).

Robert L. Sproull, associate professor of physics at Cornell University, has been appointed editor of the *Journal of Applied Physics,* a monthly publication of the American Institute of Physics.

Berch W. Henry has been appointed head of the new Southern Institute of Forest Genetics that the Southern Forest Experiment Station is establishing at the Harrison Experimental Forest in southern Mississippi. The institute, which is to serve the entire South, will investigate fundamental problems in forest genetics, do applied research in tree selection and breeding, and serve as a demonstration area and source of information for forest genetics research and application.

Shinya Inoué, well known for studies of the ultrastructure of the mitotic spindle, left the staff of Toyko Metropolitan University in September to come to the United States to develop research in experimental cytology and submicroscopic morphology in the department of biology at the University of Rochester. At Rochester he will also participate in an advanced graduate course: "The cell and its organelles."

The University of Notre Dame has announced the appointment of **Arthur L. Schipper,** associate professor of biology, as editor of the *American Midland Naturalist.* He succeeds **John D. Mizelle,** who requested relief so that he might return to a full program of teaching and research; Mizelle, however, will remain on the editorial staff as associate editor for invertebrate zoology.

A distinguished foreign visitor, **Earl J. King,** professor of chemical pathology, Postgraduate School of Medicine, University of London, delivered the seventh Walter Estell Lee lecture on 20 Sept. during the 5th annual institute of the Graduate School of Medicine of the University of Pennsylvania.

William S. Godfrey, Jr., of the Logan Museum, Beloit College, has been appointed executive secretary and secretary of the American Anthropological Association. He will take over the two offices from **Frederick Johnson** of the Peabody Foundation in Andover, Mass., who retired on 15 Sept.

A physics scholarship fund in memory of **Irving Shaknov,** who was killed in action in Korea 2 yr ago while serving with the United States Navy's Operations Evaluation Group, has been announced by the Massachusetts Institute of Technology. Dr. Shaknov's parents were not permitted to disclose even to relatives and friends the news that he was missing. In the period before their son's death was made public, they were obliged to make others believe that they were in close touch with their son at all times. The secrecy surrounding Dr. Shaknov's death was lifted recently in Washington at a ceremony conferring a Medal of Freedom posthumously. At the same time, a portrait of Dr. Shaknov, by Jeff T. Boswell, was unveiled in the headquarters of the Operations Evaluations Group in the Pentagon.

Maria Telkes, physical chemist in the research division of the College of Engineering of New York University and an authority on solar energy utilization, has been named a consultant to the Stanford Research Institute.

Folke Skoog, professor of botany at the University of Wisconsin, has been selected as this year's recipient of the Stephen Hales award. Named for an early English plant physiologist, the award is granted by the American Society of Plant Physiologists to scientists who have made outstanding contributions to knowledge in the field of plant physiology. Skoog was selected to receive the award for his work on the physiology of plant hormones or auxins and for his contributions to the technique of growing tissue cultures.

The following appointments to assistant professor have been announced. West Virginia University: **Edward Dale Curry, Jr.,** and **Stanley Hunter Reed,** air science and tactics; **Harry Louis Hansen,** plant pathology and entomology; **Eugene Robert Palowitch,** mining engineering. University of Connecticut: **Philip Rosen,** physics. William Jewell College: **Glen T. Clayton,** physics. Louisiana State University: **Richard M. Paddison,** neurology.

Richard L. Dolecek, formerly associate superintendent, has been named superintendent of the solid state division at the Naval Research Laboratory, Washington, D.C. He succeeds **Wayne C. Hall,** now associate director of research for nucleonics at the laboratory.

Rafael Rodriguez-Molina, chief of medical service at the San Patricio Hospital in Puerto Rico, has been elected a fellow of the Royal Society of Tropical Medicine and Hygiene. He also has been recently chosen president-elect of the Asociacion Medica-Distrito Este, medical association of Puerto Rico.

The newly elected **fellows of the Illuminating Engineering Society** are C. E. Egeler, R. L. Oetting, and C. H. Rex of the General Electric Co.; Myrtle Fahsbender and J. J. Neidhart of the Westinghouse Electric Corp.; D. M. Finch of the University of California; Kurt Franck of the Holophane Co.; K. S. Gibson of the National Bureau of Standards; R. A. Palmer of the Duke Power Co.; and F. D. Wyatt of the Chicago Park District.

John Baird, who has been manager of analytical engineering activities at the General Electric Co.'s advanced electronics center at Cornell University, has been named manager of the newly created project analysis section at the G.E. Research Laboratory in Schenectady. The aims of the new section are to help establish the priority and scope of research effort in different scientific areas and to evaluate the results of research in order to speed their application and development by other components of the company.

Norman R. Davidson, associate professor of chemistry at California Institute of Technology, has been chosen 1954 recipient of the California section award of the American Chemical Society for his investigatons of the rates of very fast chemical reactions. He has done pioneering work in developing techniques for the study of reactions that take place in less than a thousandth of a second.

Ira G. Ross, head of the wind tunnel department at the Cornell Aeronautical Laboratory, Inc., Buffalo, has been named director of the laboratory, and **Will M. Duke,** assistant director (technical), has been appointed associate director.

Tiffany Lawyer has resigned as director of the Muscular Dystrophy Clinic at Georgetown University Hospital, Washington, D.C., to accept a clinical professorship in neurology at Columbia University and the directorship of the Montefiore Hospital Neurological Service in New York City. He has been succeeded by **Desmond S. O'Doherty,** who has been at Georgetown for 4 yr. The latter is an assistant professor of neurology and has headed the Georgetown University Neurological Service at the D.C. General Hospital, a position he is relinquishing to take over the directorship of the Muscular Dystrophy Clinic.

Rutgers University has announced the appointment of **John R. Wittenborn,** formerly an associate professor in the department of psychology at Yale University, as professor to head a new department of student personnel services within the School of Education. Wittenborn will direct a program that is designed to introduce an increased use of psychology in education both in classroom teaching and in courses in guidance and counseling. A program leading to the doctorate for prospective school psychologists will be under his direction.

Foster E. Mohrhardt, chief of the library division of the Veterans Administration's department of medicine and surgery, has been named director of the U.S. Department of Agriculture library.

N. S. Hall, professor of soils and agronomy at North Carolina State College, is on leave to serve with the biology branch of the Atomic Energy Commission. He is responsible for the phase of the AEC program concerned with soil-plant relationships and uptake of fission materials.

Frank M. Woolsey, Jr., chief of medical services at the Albany Veterans Administration Hospital and an associate professor of medicine at Albany Medical College, has been appointed associate dean and director of postgraduate medical education at the college. Woolsey will take over the duties formerly performed by **Curtland C. Brown, Jr.,** who was assistant dean of the college prior to his recent induction into the U.S. Navy, and will add others that will make him a full-time administrative assistant to the dean, Harold C. Wiggers.

Meetings

The **Technical Publishing Society,** a professional group to encourage the interchange of information among individuals engaged in preparing, editing, or publishing technical and scientific documents, has been organized in Los Angeles. Officers are A. E. Tyler, president, of the U.S. Naval Ordnance Test Station, Pasadena; Steve Stremm, vice president, of Hycon Manufacturing Co., Pasadena; John Zane, vice president, of the U.S. Navy Electronics Laboratory, San Diego. W. E. Welch, of Brubaker Manufacturing Co., Inc., Los Angeles, is secretary-treasurer of the new organization. Membership includes editors, writers, illustrators, and management and production personnel from industrial and governmental research laboratories. A board of directors is at present studying the standards to be used to accredit individual and chapter memberships.

The 37th annual meeting of the **American Council on Education,** on "Preparing to meet the rising tide of students," will take place 14–15 Oct. at the Conrad Hilton Hotel in Chicago. Among the principal speakers, Joel H. Hildebrand, professor emeritus of chemistry at the University of California, will represent the natural sciences.

The 1st national meeting of the **Institute of Management Sciences** will be held in Pittsburgh, 21–22 Oct., with headquarters at the Webster Hall Hotel. Members and other interested persons are invited to participate. The fee, including registration, a smoker, two luncheons and one dinner, is $15 for members and $20 for non-members. Further information may be obtained from Mr. Robert Johnson, c/o Touche, Noven, Bailey and Smart, 3500 Grant Bldg., Pittsburgh 30.

The institute is a new national professional society that was established in December 1953 by a nationwide group of management analysts, social scientists, mathematicians, and engineers with a common interest in the scientific analysis of management problems. The primary objectives of the institute are the identification, extension, and unification of all scientific knowledge that contributes to the understanding and practice of management. The institute is publishing a journal, *Management Science,* that will include survey

and research papers dealing with scientific analysis and theory of management. W. W. Cooper, a professor at Carnegie Institute of Technology, has been elected the first president of the organization.

The 3rd medical conference of the **Muscular Dystrophy Associations of America, Inc.,** will be held 8–9 Oct. at the New Yorker Hotel, New York.

Eight authorities from the United States and abroad will participate in the fall meeting of the **Commercial Chemical Development Association,** which will be devoted to foreign chemical development and its importance to the United States chemical industry. Emphasis will be on the interchange of technical information as a basis for commercializing chemicals in international markets. The luncheon speaker will discuss the utilitization of atomic energy for peacetime purposes, and a highlight of the meeting will be an address on the "Expanding chemicalization of foreign countries," by M. F. Mitchell of London, who is general manager of chemical industry administration for Shell Petroleum, Ltd. The meeting will be held on 7–8 Oct. at the Bedford Springs Hotel in Bedford, Pa.

Lewis L. Strauss, chairman of the U.S. Atomic Energy Commission, was the principal speaker at a founders day dinner of the **National Association of Science Writers** in New York on 16 Sept. The dinner, which was in celebration of the association's 20th anniversary, also featured reports by a group of Nobel prize winners in chemistry, physics, and medicine who, in addition to 8 surviving charter members of the association, were guests of honor. The association was founded in 1934 by 12 science writers: Howard W. Blakeslee, F. B. Colton, Watson Davis, David Dietz, Victor Henderson, Thomas Henry, Waldemar Kaempffert, Gobind Behari Lal, William L. Laurence, John J. O'Neill, Robert Potter, and Allen Schoenfeld. Blakeslee, Colton, Henderson and O'Neill have since died. At the time of the founding, these men were the only ones who were recognized as specializing in the field of science writing; today, the association has more than 100 active members who represent the nation's press associations, newspapers, and large magazines.

Roosevelt College in Chicago will hold its 5th annual **Ways of Science Conference** on 15 Oct. at which noted experts will examine the various problems encountered in interpreting science to nonscientists. Recognizing that science today is the concern of every man, conference leaders will seek methods by which science can best communicate with laymen. The conference is jointly sponsored by the college and the Philosophy of Science Association.

The 8th annual congress and festival of scientific films of the **International Scientific Film Association** will take place 6–12 Nov. at the University City and National Research Council in Rome, Italy. Outstanding films of general appeal will be shown at public performances, and there will be presentations of specialized films and papers at the meetings of the sections concerned with the films in medicine and veterinary science, in industry and technology, in scientific research, and in other subjects. Inquiries should be sent to the congress secretariat: Segreteria VIII Congresso Internazionale della Cinematografia Scientifica, Commissione per la Cinematografia Scientifica del Consiglio Nazionale delle Ricerche, Piazzale delle Scienze, 7, Rome.

Education

A 3-day program, 29 Sept.–1 Oct., bringing together some of the world's leading specialists in eye diseases, marked the opening of the new laboratories of the **Francis I. Proctor Foundation for Research in Ophthalmology** at the University of California Medical Center, San Francisco. The funds supporting the research of the foundation derive from the estate of the late Francis I. Proctor. Laboratory space for the foundation was constructed in the new Medical Sciences Building on the San Francisco campus as a result of the donation of $65,000 by Mr. and Mrs. Berthold Guggenhime of San Francisco.

A rapidly expanding collection of books in the **history of science and technology** is being established at the University of Oklahoma through the efforts of E. DeGolyer, an alumnus who is widely known for pioneer work in the application of physics to the oil industry. Stemming from an initial gift of 600 rare volumes in December 1949, the collection has grown to approximately 4000 volumes at the present time, with several hundred more being added each month. It includes such rare first editions or first printings as the major works of Vesalius, Copernicus, Aristotle, Galileo, Newton, Lavoisier, Linnaeus, Hooke, and such comprehensive works as Diderot's *Encyclopédie* and the complete *Acta Eruditorum, Histoire et Mémoires* of the French Academy, and *Philosophical Transactions*. The collection is intended as a library for research and for teaching at both the graduate and undergraduate levels. Toward this purpose the University of Oklahoma is offering courses in the history of science this present academic year.

The board of directors of the New York State Optometric Association voted to recommend a campaign to raise $400,000 toward establishment of a **school of optometry** to replace the one being closed by Columbia University in 1956. The board deplored the decision of Columbia last March to close its School of Optometry after an existence of 46 yr.

R. N. Bracewell will give a course in **radioastronomy** at the Berkeley Astronomical Department of the University of California during the autumn and spring semesters. He is a member of the Commonwealth Scientific and Industrial Organization of Sydney, Australia, and is coauthor (with J. L. Pawsey) of a new textbook on radioastronomy.

Available Fellowships and Awards

About 800 American students with special abilities in science will be selected for a year of graduate scientific study during 1955–56 in the **National Science Foundation's** 4th annual graduate fellowship program. *The closing dates for receipt of applications are 20 Dec.* for postdoctoral applicants and *3 Jan. 1955* for graduate students working toward advanced degrees.

Selections will be made solely on the basis of ability for studies in the life and physical sciences, including interdisciplinary fields. The majority of the fellowships will go to graduate students seeking master's or doctor's degrees, although about 100 awards will be made to postdoctoral applicants. Science students who are now college seniors are encouraged to apply for the awards.

Stipends will range from $1400 to $3400 depending on academic status, and dependency allowances will be made to all married fellows. Tuition and laboratory fees and limited travel allowances will also be provided.

Last year 736 selections were made out of 3300 applicants. Also, about 1400 individuals were named on an honorable mention list that was made available to the press and to deans of graduate schools. Applications may be obtained from the Fellowship Office, National Research Council, Washington 25, D.C.

Grants, Fellowships, and Awards

The **Upjohn Co.** has recently made the following research grants totaling $11,000.

Tufts College Medical School. W. Fishman, New England Center Hospital. Cancer studies, $5000.

University of Wisconsin. R. K. Meyer, dept. of zoology. Steroids and related compounds, $3000.

Johns Hopkins University. B. F. Chow, School of Hygiene and Public Health. Nutrition and metabolism, $3000.

The following **Commonwealth Fund** fellows will be in the United States in 1954–55.

T. W. Bloxam, Glasgow. Geology (metamorphic petrology), University of California.

W. Bräutigam, Heidelberg. Psychiatry, Yale University.

G. M. Brown, Oxford. Geology (igneous petrology), Princeton University.

T. N. Clifford, Leeds. Structural and stratigraphic geology, Harvard University.

P. R. Day, Bayfordburry, Hertfordshire. Plant pathology and genetics, University of Wisconsin.

L. T. Evans, Oxford. Plant growth and development, California Institute of Technology.

I. M. James, Oxford. Algebraic topology, Princeton University.

L. Mestel, Leeds. Theoretical astrophysics, Princeton University.

H. P. F. Swinnerton-Dyer, Cambridge. Algebraic number theory, Chicago.

A. J. Weir, Glasgow. Gestalt psychology, Clark University.

C. H. Wood, London. Industrial medicine, Harvard University.

E. C. Zeeman, Cambridge. Algebraic topology, University of Chicago.

K. A. R. Fastborg, Stockholm. Psychiatry, Yale University.

D. W. Davies, Teddington, Eng. Design and application of electronic digital computers, Massachusetts Institute of Technology.

L. E. J. Roberts, Harwell, Eng. Chemistry of inorganic solids. University of California.

A. D. Butcher, Melbourne. Administration of wildlife and fisheries services, University of Michigan and U.S. Department of Interior's Wildlife Service.

R. G. Downes, Kew, Australia. Ecology and administration of conservation, University of Michigan and U.S. Soil Conservation Service.

A. T. Johns, Palmerston, North, New Zealand. Microbiology, University of California.

A. I. McCutchan, Brisbane, Australia. Dam construction and water control, U.S. Bureau of Reclamation, Denver.

A. L. C. Thorne, Vom, Northern Nigeria. Research in vaccine production and public health measures for the control of rabies, U.S. Public Health Service's Communicable Diseases Center, Montgomery, Alabama.

H. L. Kornberg, Sheffield. Biochemistry research, City of N.Y. Public Health Laboratories, Inc., 9 mo.

E. A. Power, London. Mathematical methods used in theoretical physics, Princeton University, 4 mo.

G. C. Shephard, Birmingham, Eng. Algebraic geometry and abstract algebras, University of Chicago, 9 mo.

R. L. Williams, Oxford. Infrared spectroscopy, University of California, 4 mo.

The **National Research Corporation Scientific Trust,** Cambridge, Mass., has made a grant of $3980 to the University of California at Riverside for the support of basic research. The work is to be conducted by James N. Pitts, recently appointed to the post of associate professor of chemistry, and relates to photochemical studies in the far ultraviolet and Schumann regions. This is a continuation of the work conducted by Pitts at Northwestern University under another grant from the trust.

The **Atomic Energy Commission** has announced the award of 20 unclassified physical research contracts; three are new, and the remainder are renewals. The contracts are generally for a term of 1 yr.

University of Delaware. R. L. Pigford. Thermal diffusion in liquids, $6155.

Rutgers University. S. Weissmann. Radiation damage of metals and alloys, $10,983.

University of Washington. G. H. Cady. Preparation of compounds containing O-F or N-F Bonds, $7100.

Carnegie Institute of Technology. R. Smoluchowski. Grain boundaries and lattice imperfections, $36,277. Radiation effects on materials, $40,130.

Carnegie Institute of Technology. T. P. Kohman. Nuclear chemistry research, $42,552.

Columbia University. J. L. Kulp. U-Pb method of age determination, $35,723.

Cornell University. J. L. Hoard. Structure of fluorocarbons, elementary boron, and boron compounds, $5171.

Florida State University. R. E. Johnson. Exchange between labeled halogens and certain inorganic halides, $4543.

Oregon State College. T. H. Norris. A study of generalized acid-base phenomena in nonaqueous ionizing solvents with radioactive tracers, $7750.

University of Oregon. P. Van Rysselberghe. Corrosion of zirconium, $11,200.

Pennsylvania State University. T. F. Bates. An investigation of the mineralogy and petrography of uraniferous shales and lignites, $86,014.

Pennsylvania State University. H. D. Wright. Mineralogy of uranium-bearing deposits in the Boulder Batholith, Montana, $8300.

Princeton University. M. G. White. 18-mev cyclotron and associated nuclear physics research, $221,190.

University of Rochester. R. E. Marshak. Synchrocyclotron, cyclotron, and theoretical physics research, $669,040.

Syracuse University. P. Barrett. Nuclear interactions of cosmic rays, $23,922.

Tufts College. T. R. P. Gibb, Jr. Research on hydrides, $26,720.

State College of Washington. H. W. Dodgen. The formulae and stability of complex ions in solution, $5154.

Yale Unviersity. H. L. Kraybill and E. C. Fowler. High-energy physics, $34,506.

Yale University. F. Hutchinson. Stopping power of water, $3000.

Miscellaneous

A permanent and unique record of the largest vaccination campaign ever undertaken is now available to tuberculosis specialists and public health workers as a result of the publication by the World Health Organization of reports covering mass **BCG vaccination** against tuberculosis in 23 countries. A total of nearly 30 million persons were tested with tuberculin, and almost 14 million of them received BCG vaccination against tuberculosis in the course of programs conducted for 3 yr by the International Tuberculosis Campaign.

Data on each person tested and vaccinated were recorded on individual cards which then were tabulated according to sex and age. These statistics were collected and analyzed by the WHO Tuberculosis Research Office in Copenhagen. Publication of all the reports concerning the mass campaigns conducted from 1948 to 1951 is now complete and represents an important step in the systematic and carefully controlled investigation of BCG vaccine and vaccination undertaken by WHO.

Since June 1951, the work of the International Tuberculosis Campaign has been officially the responsibility of the World Health Organization and the UN Children's Fund. The campaign has now spread to 30 other countries, where tuberculin tests have been given to 90 million people, of whom 36 million have received BCG vaccination. The WHO Research Office is also analyzing the results from these vaccination campaigns.

With the September issue of the National Mental Health Program's **Progress Report,** the National Institute of Mental Health concludes its sponsorship of the monthly newsletter. Henceforth, the features of the *Progress Report* will appear as a two-page section of the monthly *NAMH Reporter,* which is distributed by the National Association for Mental Health, Inc., 1790 Broadway, New York 19, a nonprofit organization. Those who wish to receive the *Reporter* should address their requests to the association.

The **Marine Biological Laboratory,** Woods Hole, Mass., will be open for advanced biological research and to library readers throughout the year. Furnished housekeeping apartments and rooms will be available to those desiring such facilities. Inquiries should be addressed to the laboratory.

A plea for "letters, paintings, and other materials reposing in shops, private libraries, and homes" that are the work of the 18th century ornithologist **John Abbot** has been made by Elsa Allen, research associate in ornithology at Cornell University who is conducting a study of Abbot's life and work. She has been working for the past 2 yr on this project and now has assembled over 1000 colored slides of Abbot's unpublished bird paintings.

John Abbot came to America in 1773 from his London home and lived for over 60 yr in and near Savannah. After the Revolution he entered upon a long career of painting and studying American birds, insects, and plants and is said to have accomplished more work than any other naturalist in America at that time. Because he did not publish his paintings and texts, these have lain for 150 yr in several different libraries. Both Harvard University and the University of Georgia at Athens possess fine sets of his bird drawings, but the main parts of his vast collections are in England.

The **Dodrill-GMR mechanical heart,** introduced in 1952 and the first device of its kind to be used successfully on human patients undergoing heart surgery, has been presented as a permanent exhibit to the Smithsonian Institution. The device was conceived and developed by a team headed by F. D. Dodrill of Detroit's Harper Hospital and consisting of other Harper medical men and engineers from the General Motors Research Laboratories.

Necrology

Samuel W. Boggs, 65, author and geographer for the State Department, Washington, D.C., 14 Sept.; **Simeon L. Carson,** 72, former clinical professor of surgery at Howard University Medical School, Washington, D.C., 8 Sept.; **W. Roy Geddes,** 57, vice president of North American Cyanamid, Ltd., Toronto, Canada, 12 Sept.; **John E. Hoyt,** 75, author, research engineer, and retired professor of physics at Drexel Institute of Technology, Philadelphia, Pa., 12 Sept.; **Edwin C. Kenton,** vice president of Evans Research and Development Corp., New York, 19 Aug.; **John H. Kintner,** 62, investigator of animal diseases and director of the Grayson Foundation Laboratory at College Park, Md., 28 Aug.

Charles A. McKendree, 67, psychiatrist and retired professor of clinical neurology at the College of Physicians and Surgeons, Columbia University, New York, 11 Sept.; **Charles McMartin,** 74, head of the department of surgery and former director of the department of dermatology and urology at Creighton University, Omaha, Nebr., 14 Sept.; **Lillian B. Patterson,** dean of the University of Washington School of Nursing, Seattle, Wash., 8 Sept.; **Harold R. Ranken,** 71, retired chief engineer of the Leeds and Northrup Co., Philadelphia, Pa., 14 Sept.; **William G. Tuller,** 35, radar and electronics investigator and vice president in charge of engineering for Melpar, Inc., Alexandria, Va., 5 Sept.; **Otis R. Wolfe,** 68, chief eye surgeon of the Wolfe Eye Clinic, Marshalltown, Iowa, 11 Sept.

Erratum. The statement attributed to Joshua Lederberg in the report of the Oak Ridge Conference on Genetic Recombination [*Science* **120**, 291 (20 Aug.)] to the effect that streptomycin treatment will improve the crossing of certain strains of bacteria, was in error. There is no demonstrated action of streptomycin on the fertility of *E. coli* crosses.—B. G.