respectively by individual firms, industrial research associations, government research stations, technical colleges and universities. It gives rise to many original suggestions, some of them not free from controversy. Apart from research undertaken by individual firms, the report calls upon industrialists collectively to aim at maintaining some twenty-five research associations which would employ between them four or five thousand scientists and technicians and would cost about £4,000,000 a year in running expenditure, to which should be added £2,000,000 or £3,000,000 for development work. This demand is reasonable and moderate and it is a matter for regret that the past attitude of the majority of industrial firms has driven the signatories to conclude that it may not be possible to set research associations properly on their feet without compelling each firm in an industry to make its financial contribution to the appropriate association.

The report rightly insists that lack of facilities for experimental development is still the most serious shortcoming to be remedied if the time-lag between scientific discovery and practical application is to be reduced. It makes a suggestion which requires serious attention—that a state development fund should be created to subsidize experimental work of potential public benefit. The government is also called upon to assume greater direct responsibility for research, to be constantly on the watch for new scientific ideas which may have social or economic value, and, where necessary, to take the initiative in trying them. Most important is the further proposal, of which little has been heard in recent discussions, that the government should, on behalf of the consuming public, arm itself with all powers needed to review industrial costs and margins and, where desirable, to promote standardization of the types and qualities of products in order to ensure that the consumer gets the full benefit of the application of science to industrial processes. It is good, too, that the statement lays stress on the practical importance of the much neglected biological sciences, and that it is well aware of the danger of too exclusive a concentration upon physical and chemical research to the neglect of social, economic, psychological and management studies, all of which, as the report says, are of no less importance to the well-being of the community than industrial research in the narrow sense.

BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH

SIR THOMAS LEWIS, F.R.S., has been appointed to succeed Profesor T. R. Elliott, F.R.S., on the Board of Trustees of the Beit Memorial Fellowships for Medical Research, and Dr. A. N. Drury, F.R.S., has been appointed acting secretary.

The following fellows have been elected with permission for each fellow to be seconded at any time for war duties:

W. HOLMES, D.PHIL. To continue the study of the regeneration of nerve-fibers after injury. At the department of zoology and comparative anatomy, University Museum, Oxford.

MARY F. LOCKETT, M.D. To continue the study of renal pressor substances responsible for experimental high blood pressure. At the Laboratory of Pharmacology, Cambridge.

J. C. BOURSNELL, PH.D. To study the fate and functions of trace and some other elements in the animal body, using radio-active isotopes. At the department of biochemistry and chemistry, of the Medical College, St. Bartholomew's Hospital.

G. A. LEVVY, D.SC. To study the adaptive enzymes in the animal body with special reference to the rôle of glucuronidase in the metabolism of steroid hormones and related substances. At the department of medical chemistry, University of Edinburgh.

H. J. ROGERS, PH.D. To study the biochemistry of hyaluronidase, and the rôle of such enzymes and other bacterial antigens in infection. At the Lister Institute, Elstree, Herts.

G. J. ROMANES, PH.D. To study the relationship between the developing mesoderm and the motor apparatus of the spinal cord supplying it. At the department of anatomy, University of Cambridge.

F. SANGER, PH.D. To study the chemical structure of proteins with special reference to insulin. At the Sir William Dunn Institute of Biochemistry, Cambridge.

S. P. V. SHERLOCK. To study the hepatic function in disease by biopsy methods. At the department of medicine, British Postgraduate Medical School, London.

C. WAYMOUTH, PH.D. To study the factors influencing tissue growth *in vitro*. At the department of physiology, University of Aberdeen.

E. C. WEBB. To study the ultimate mode of action of drugs and poisons in living tissues. At the Sir William Dunn Institute of Biochemistry, Cambridge.

TWENTY-FIVE YEARS OF BOTANY AT BUTLER UNIVERSITY

IN connection with a banquet on September 15 to celebrate the twenty-fifth anniversary of the department of botany of Butler University, the following account of its work has been sent to SCIENCE by Dr. John E. Potzger, associate professor of botany in the department:

A quarter century has passed since Dr. Ray C. Friesner joined the faculty of the department of biology at Butler University, and there offered the first course in botany. One year later (1920) it was divided into a department of botany and a department of zoology.

The first courses in botany had an enrollment of 43 students. During the peak in the first semester of 1941 the enrollment reached 304. Beginning with an offering of 15 credit hours (3 courses), the department expanded until at present it offers 107 credit hours (25 different courses). During the quarter century, 130 Butler students majored in botany; of these 49 now hold M.A., and 19 Ph.D. degrees. Eighteen teach in colleges and universities, 18 hold membership in Sigma Xi.

The department has at present three full-time professors, and two instructors in the evening division. Each

member of the regular staff pursues some field of research. Ray C. Friesner's interests are in the taxonomy of Indiana plants, the goldenrods of North America, and dendrology; C. M. Palmer specializes in algae, with emphasis on Lemanea, and J. E. Potzger works in phytosociology, grasses of Indiana and pollen analysis. Collaborating in departmental research are Wm. Daily, of the Eli Lilly Laboratories, in Cyanophyceae, and Mrs. Wm. Daily in Characeae.

In 1919 Butler had no herbarium, to-day it is possessor of 70,000 sheets of ferns and higher plants, 1,600 algae and 1,000 packets of mosses. These represent collections by members and students of the department, or exchanges for collections made by the staff. The department sent out 39,220 sheets to herbaria all over the world, and received 23,220 sheets. The Botanical Library receives 240 current magazines.

In 1928 the Butler Botanical Garden was founded, and in 1929 the department began publication of the "Butler University Botanical Studies." They are gradually becoming a valuable source for ecological studies of Indiana forests. Members of the staff and majors in the department make a sociological study of every larger tract of comparatively undisturbed timber in Indiana that is brought to their attention. The Butler Studies reach 167 universities all over the world. To date the members of the staff and graduate students have contributed 160 scientific articles.

THE ANNUAL MEETING OF THE OPTICAL SOCIETY OF AMERICA

THE twenty-ninth annual meeting of the Optical Society of America will be held at the Hotel Pennsylvania, New York, N. Y., on October 20 and 21.

On the morning of Friday, October 20, there will be a symposium of invited papers entitled "A Review of Some Applications of Optics." The papers included are "The Projection of Light," by Frank Benford; "Practical Applications of Metallic and Non-Metallic Films on Optical Elements," by Dean A. Lyon; "Photography of the Ocean Bottom," by Maurice Ewing, "Techniques in Applied Electron Microscopy," by Robert D. Heidenreich. Following luncheon on the same day Professor Richard M. Sutton will present a brief report of the recent National Research Council Conference on Present and Postwar Problems Facing Physicists. In the afternoon a continuation of the symposium of invited papers is planned. The program includes "Recent Studies on the Fluorescence of Glass," by N. J. Kreidl; "Color Motion Pictures of the Whole Sky," by H. R. Condit; "The Application of Spectro-Chemical Analysis in the Steel Mill," by P. R. Irish. The speaker at the dinner will be Professor R. W. Wood, professor of physics at the Johns Hopkins University, who will present some "Reminiscences." Prior to his address the Adolph Lomb Medal for 1944 will be presented to Dr. R. Clark Jones, of the department of physical research of the Bell Telephone Laboratories. On Saturday, October 21, both morning and afternoon, there will be sessions for contributed papers.

All members intending to present papers at the sessions on Saturday are urged to submit abstracts as soon as possible and not later than September 12 in order that proper clearance may be obtained from the authorized Government agencies. Members of the Armed Forces and representatives of Government agencies should obtain clearance for their own abstracts, forwarding a copy of the authorization to the secretary with the abstract. Should a large number of contributed papers on spectroscopy be received, arrangements will be made for simultaneous sessions on Saturday.

Train and hotel reservations should be made early. The meeting will be open to non-members as well as members of the society and all those interested are cordially invited to attend. Non-members who desire to receive the advance program or other information in regard to the meeting should address their requests to Arthur C. Hardy, Secretary, Optical Society of America, Massachusetts Institute of Technology, Cambridge 39, Mass.

SCIENTIFIC NOTES AND NEWS

PROFESSOR S. A. MITCHELL, who is retiring after serving for thirty years as director of the McCormick Observatory of the University of Virginia, has been presented by colleagues, former students and friends with an album containing a hundred and twenty-six letters of appreciation.

PROFESSOR SOLOMON LEFSCHETZ, of Princeton University, has been elected an honorary member of the Mexican Mathematical Society.

LIEUTENANT COLONEL GARFIELD GEORGE DUNCAN, M.C., has been awarded the Legion of Merit for his "outstanding experimental work on the suppressive treatment of malaria in the Southwest Pacific area."

THE Bisset Hawkins Medal of the Royal College of Physicians, London, has been awarded to Brigadier J. A. Sinton, in recognition of his work on preventive medicine, particularly on malaria.

SIR JOHN MARSHALL, from 1902 to 1931 director-general of archeology in India, has been awarded the Gold Medal of the Royal Asiatic Society.

THE Royal Astronomical Society of Canada has conferred the Chant Medal for 1943 on Cyril Geoffrey