

Tomorrow's Challenges To the Medical Sciences

AN audience of about 100, composed predominantly of officials of major American corporations, heard the Honorable James B. Conant, retiring Ambassador to West Germany, introduce and summarize three panel discussions on the prospective need for medical research and teaching at a conference on Tomorrow's Challenges to the Medical Sciences, held at the University of Chicago, March 5, 1957. The meeting was sponsored by the National Fund for Medical Education in cooperation with the International Harvester Foundation and the United States Steel Foundation.

Dr. Conant, former president of Harvard, distinguished chemist, and author of *On Understanding Science*, flatly supported the case for corporate contributions to medical schools, saying, "This money will go to protect the health of your employees and customers. Your stockholders will get their money back." This comment was offered in response to the question raised by one corporation official who said he doubted that he could justify use of stockholders' funds to endow teaching hospitals or medical schools.

A sum between \$500 million and \$1 billion over the next 20 years was estimated by Dr. Vernon W. Lippard of Yale University School of Medicine as needed to meet increased operating and maintenance costs in private or independent medical schools. He said 25 new medical schools will be needed by 1975 (7 are in prospect, 4 of them expansions of 2-year schools) and that the number of graduates per year should be 200 more than at present. However great the cost, he observed, Americans spend more money each year on tombstones than on medical education.

Apart from these quantitative changes, indicated by the increase in population, growing industrialization, and urbanization, with the concurrent increase in demand for health services, the panels discussed impending changes in the character of medical knowledge and applications.

Dr. Stafford L. Warren, University of California School of Medicine, Dr. Austin M. Brues, University of Chicago College of Medicine, and Dr. A. Baird Hastings, Harvard Medical School, commented on the implications to medicine of nuclear physics: the new knowledge of biochemistry revealed by radionuclides used to trace chemical processes; the need to evaluate genetic and somatic hazards of radiation exposure and to develop protective measures; the probable environmental effects of nuclear power plants; the application of electron micrography to analysis of macromolecules and viruses; and the employment of radiations in diagnosis and therapy.

Dr. Brues expressed confidence that evaluation of the hazards of radiation, both internal and external, would progress rapidly enough to permit effective protective measures to be applied.

Recent changes in knowledge were said to require wholesale revision of textbooks and study courses. And the increasing range of scientific information of concern to the physician, it was suggested facetiously, might add up to a 16-year study course. But the panel was confident that selectivity, both with respect to learning and the learners, would permit physicians to begin practice long before they are old enough for retirement.

Many changes in physiological concepts were attributed to studies with radionuclides, which Hastings likened to birdbanding. For example, radionuclide studies showed that cells exchange salts, contrary to the indications of chemical studies. The rate of such exchange is a phase of metabolism. Hastings also mentioned a 3-year study which succeeded in changing "or" to "and." Demonstrating that diabetes consists of overproduction and (not or) underconsumption of sugar, the study resolved a longstanding controversy.

Hastings concluded that biological education for medical students today is less than what any educated man should receive in order to live intelligently in today's world. He felt a balanced education would give 60 percent of the time to humanities and social studies and 40 percent to the medical sciences.

Another radionuclide discovery, that animals

consume carbon dioxide, forced revision of the precept that life is like a burning candle: It is not.

The importance of selecting and motivating medical students effectively, in light of increasing responsibilities of the physician, anticipated the discussion of the behavioral sciences by a panel including Dr. Donald G. Marquis, University of Michigan, Dr. John Romano, University of Rochester School of Medicine, John M. Stalnaker, president of the National Merit Scholarship Foundation, and Theodore O. Yntema, vice president in charge of finance, Ford Motor Co.

Marquis noted that the behavioral sciences concern all professions in that they attempt to apply scientific method to the social studies. Much of his discussion was devoted to describing the scope and potentialities of the behavioral sciences.

Stalnaker indicated how behavioral sciences may be applied specifically to the difficult and complex task of selecting candidates for medical education with particular concern for that half of the top quarter of high school graduates who do not go on to college.

Romano's remarks dealt with the challenge of mental health, as an aspect of the behavioral sciences, and he discussed modern psychiatric methods with respect to their similarities to and differences from other scientific studies. Despite the handicap of psychiatric studies, that subjects are not as amenable to control or manipulation as the material of the physics laboratory, the body of common experience and observation was found to be testing and refin-

ing psychiatric theory. Major objects of interest to the psychiatrist continue to be the study of brain-mind phenomena, brain-mind-body relationships, and the field of interpersonal relationships. In particular, Romano commented on the significance of separation from and loss of key human figures in one's life as determinants of mental and physical disabilities.

To accommodate the need for extending medical learning in radiology, behavioral sciences, and other new developments, Yntema recommended extending the process of selection and preparation for advanced education into the early years of childhood. He felt far better use could be made of time spent in elementary and secondary schools, not to mention medical schools. Since scientific progress often means simplification of concepts, he suggested that many advances may in fact short-cut traditional courses of instruction. Educational processes, he indicated, might be rationalized as successfully as automobile production processes.

Following other comments, questions, and discussions, Dr. Conant stressed the opportunity industry has of extending scientific knowledge for the benefit of civilization, the administrative skills which industry may contribute to scientific investigation, and the opportunity for using industrial plants as a channel for popular health education and for improvement of medical care and public health practice. For leadership of such developments, however, he said, look to the faculties and graduates of medical schools.

Grants for Advanced Nurse Training

The Public Health Service has granted 587 awards for advanced nurse training in teaching, supervision, and administration; 553 of the awards are for full-year courses and 34 for spring or summer sessions. The Service has completed allocation of \$2 million appropriated by Congress August 1956 for the first year of the 3-year program.

Half of this year's trainees in 56 schools of nursing and public health are preparing for teaching positions. Of the other half, 28 percent are training for administrative posts and the remaining 22 percent, for supervisory positions.