

tical studies should be conducted in appropriate Federal agencies to estimate and publish the numbers of graduate faculty professors who will become available in future years, as well as the numbers of well-staffed centers of excellence which properly may be maintained." Which is another way of asking, where will Texas get the people to help spend that \$5 million?

Among administrators of federal granting agencies, there is apparently a sense of confidence that the development programs will not have a disruptive effect on existing centers of excellence. For example, in an address earlier this month to the National Council of University Research Administrators, John T. Wilson, deputy director of the National Science Foundation, observed, "As you might suspect, there were those in large university centers who were less than wildly enthusiastic, especially in anticipation of tightening budgets, at the prospect of sharing limited funds with institutions having only scientific potential. . . . Many of us believe," Wilson continued, "that it is possible to strengthen more colleges and universities and, at the same time, not necessarily diminish the quality of research to be performed in laboratories of first rank." He went on to say, "institutional support, plus the use of traineeships and other techniques, seem to me to provide mechanisms that are appropriate to serving the ends of broadening the base of Federal Government support in science without doing harm to traditional forms of support for established investigators and for first-rank institutions."

Just how NSF, with a budget that has been static for the past two fiscal years, proposes to do this, Wilson did not say. Furthermore, figures compiled by the Bureau of the Budget indicate that, while federal support of academic research has annually increased during each fiscal year since 1965, the rate of increase has dropped off sharply. In 1965 the total was nearly \$1.2 billion, an increase of 18 percent over the previous year; in 1966 the increase was 15.7 percent; in the current year it is 10 percent. Just what it will be in the Vietnam-dominated budget of fiscal 1968, no one knows, but Washington science administrators are as gloomy as ever.

Meanwhile, there is no relaxation of the political pressures for ever-broader distribution of federal re-

search funds. If anything, the triumph of the Midwest in the competition to provide a site for the 200-Bev accelerator demonstrates that it pays to throw tantrums if you feel you are not getting a fair share. Furthermore, there is no decline in the productivity of the federally financed fellowship and traineeship programs which annually turn out thousands of new customers for research funds. In the ranks of these newcomers lies the ultimate answer to providing faculty for the new and old centers of excellence, but they are coming onto the market at a time when research funds are in short supply and the demands are greater than ever. The statesmen of science automatically shrink from anything that might be called a science policy, preferring a *laissez-faire* setup which implies that all good science is equal. But whether they

wish to recognize it or not, a financial crunch is developing throughout the American scientific community, and, before it gets any worse, it would be useful to devise some order of priorities and long-range designs. It is extremely difficult to match the slow and uncertain pace of scientific education and research to the peculiarities of the governmental budgetary process, but there must be something better than a system that, in large part, is based on hope and good luck. Congress has now become fairly well informed about the peculiar problems of science, and perhaps it is time to argue that, if science is to thrive and achieve all that Congress asks of it, a new multi-year system of appropriations should be adopted so that long-range planning can take the place of year-to-year ups and downs.

—D. S. GREENBERG

## U.S. Patent System: Commission Recommends Reforms to President

"The United States patent system is an institution as old as the Nation itself," begins the recently released report of the President's Commission on the Patent System.\* But, while the basic features of the system have remained constant for well over a century, the demands placed on it have greatly multiplied in recent decades. The Patent Office and the system have come under increasing criticism for invalid patenting of inventions, complexity and expense of patent litigation, and delay in the granting of patents.

Approximately 95,000 patent applications are filed annually in the United States, and at present there is a backlog of more than 200,000 applications. The average period from filing to final disposition is 2½ years, but, as the commission reported, "A substantial number of applications have a period of pendency of five to ten years or more."

In an effort to meet some of these objections and to make other determinations on the patent system, Presi-

dent Johnson, on 8 April 1965, established a Commission on the Patent System. Harry Hunt Ransom, Chancellor of the University of Texas, and Simon H. Rifkind (a New York City lawyer who acted as counsel for Mrs. John F. Kennedy in the recent publication dispute) were named co-chairmen of the commission, and Alfred C. Marmor was appointed executive secretary. During the past 16 months the commission has met for a total of 31 days to determine the current need for a patent system and to suggest possible revisions.

The members unanimously concluded that, as in the past, "The patent system today is capable of continuing to provide an incentive to research . . ." and that they had discovered no practical substitute. The commission noted that the patent system encouraged the inventor and his supporters, created the climate necessary for early public disclosure of technological information which helped avoid duplication, and promoted exchange of international technological information and products by protecting the interests of foreign nationals.

The commission's 65-page report,

\*Copies of the "Report of the President's Commission on the Patent System" are available from the Superintendent of Documents, Government Printing Office, Washington, D.C. for 65¢ each.

entitled "To Promote the Progress of . . . Useful Arts' in an Age of Exploding Technology," contains a list of recommendations for revision of the patent system which the commission regards as "one interrelated and coherent plan." Although the members did not unanimously agree on all recommendations, no member filed dissenting views or individual remarks on the report. The commission was silent on the hotly contested issue of the ownership of patents resulting from government-sponsored research.

In its deliberations, the Commission decided that its objectives should include shortening of the period of pendency, hastening disclosure of innovation, reducing expenses associated with obtaining patents, and making U.S. practice more compatible with that of other major countries.

#### First-To-File-System

In order to help achieve these objectives, the commission recommends a "first-to-file" system, under which the first person to file his application would receive the patent in the event that two or more people applied for a patent on the same invention. Under this system, the inventor could file a preliminary application without incurring the trouble and expense of filing a formal application and hiring a patent lawyer. He would have a year in which to test his invention and to develop financial backing before having to file his complete application. The granting of a patent would depend not only on U.S. conditions but also on whether or not the invention was patentable abroad. No item long sold or used in foreign countries would be patentable in the United States, if the commission's recommendation is adopted. The commission believes that the "first-to-file" system would also encourage prompt disclosure of newly discovered technology; it recommended that all patent applications be published within 24 months of filing date. Adoption of the commission recommendation would put a premium on the quick dispatch of papers by the inventor to the Patent Office. As Marmor noted at a press conference, "The first one to file would receive the patent. That is assuming, of course, you did not steal it from the other man, and various things like that."

A main objective evident in the

commission's report is improvement of the quality and reliability of patents. To achieve this end, the commission recommended that Patent Office decisions denying a patent claim be presumed correct in all reviewing courts, and that a Statutory Advisory Council be established which would provide a continuing evaluation of the patent system and make a report every fourth year, suggesting improvements. The commission also recommended that an effective quality control program be developed and that the applicant carry the burden of establishing patentability. Commissioner Edward J. Brenner said at a press conference that these latter two recommendations were already being implemented by the Patent Office.

The commission recommended that the classes of patentable materials remain the same, except that no patents should be given on ornamental designs, on data-processing-machine programs, and on plants. It noted that a patent may be granted today on any new variety of specified types of asexually produced plants. "While the Commission acknowledges the valuable contribution of plant and seed breeders," the report stated, "it does not consider the patent system the proper vehicle for the protection of such subject matter, regardless of whether plants reproduce sexually or asexually." The commission urged that protection for these categories be found outside the patent system.

#### Reducing Costs

The commission report also contained several recommendations for reducing the costs of litigation, including one for setting up the office of Civil Commissioner in those U.S. District Courts where the case load justified such an office. The Civil Commissioner would supervise the pretrial phase of patent litigation to reduce the time and expense involved. The commission reported that the high cost of patent litigation was "one of the most common grievances called to the Commission's attention by all branches of the patent-using community."

The commission made several suggestions concerning the operation of the Patent Office. The Office should be given financial support adequate to insure first-class staffing and equipment, the report said, and should not be required to be financially self-sufficient. "To recover 100% of Patent

Office operating expenses on a sustained basis would require substantial fee increases," the report stated. "This could reduce overall inventive activity which, together with the resultant loss of technological disclosure, could adversely affect our economy."

The commission also recommended that the term of a U.S. patent expire 20 years after its earliest effective filing date, rather than 17 years after the date of issuance, as is now the case. It noted that the present procedure encourages deliberate delays and that implementation of its recommendation would bring U.S. practice into closer conformity with most foreign systems. Throughout its report the commission emphasized the need to harmonize U.S. patent practices with those of all nations of the world, while protecting those features of the U.S. system which appear superior.

#### Toward a Universal Patent

The commission, in its 35th and final recommendation, states that "the ultimate goal in the protection of inventions should be the establishment of a universal patent, respected throughout the world, issued in the light of, and inventive over, all of the prior art of the world, and obtained quickly and inexpensively on a single application." To help achieve this goal, the commission recommended the formation of regional patent system groupings and a universal network of mechanized information storage and retrieval systems.

One commission member\*, James Birkenstock, IBM Vice President for Commercial Development, said that his conversations with patent offices in both East and West bloc countries had convinced him that steps toward a universal patent, including "harmonization of classification systems and cooperation in the area of searching" were "definitely in sight within the next five or ten years."

After releasing the commission's report earlier this month, President Johnson announced that he was appointing Donald F. Hornig (his Special Assistant for Science and Technology), Secretary of Commerce John T. Con-

\*Other commission members are John Bardeen, University of Illinois; Howard W. Clement, Chicago patent attorney; Howard K. Nason, president, Monsanto Research Corporation; Bernard M. Oliver, Hewlett-Packard Company; Sidney Neuman, Chicago patent attorney; Horton Guyford Stever, president, Carnegie Institute of Technology; Charles B. Thornton, chairman of the board of Litton Industries; and several representatives from the U.S. Government.

nor, and Acting Attorney General Ramsey Clark to review it carefully. This review is currently proceeding, and it would be somewhat surprising if the President and his three-man committee decided against requesting legislation based on the commission's recommendations. At the time he released the report, the President called it "a balanced and thoughtful document" which "promises to guide us towards the first key changes in our patent system in more than 130 years."

Although it is difficult to evaluate legislative sentiment when Congress is in recess, it would seem at present that legislation based on the commission's report would meet with no substantial opposition on Capitol Hill. It is not unreasonable to speculate that inventors and their sponsors will operate under changed rules in the not-too-distant future.—BRYCE NELSON

## Scientists Named To Receive National Medal of Science

President Johnson announced the names of the 11 recipients of the 1966 National Medal of Science during the Christmas holiday weekend. The National Medal of Science, established by Congress in 1959, is awarded by the President to individuals "who in his judgment are deserving of special recognition by reason of their outstanding contributions to knowledge in the physical, biological, mathematical or engineering sciences." The awards are made on the basis of recommendations from the President's committee on the National Medal of Science, headed by H. E. Carter of the University of Illinois.

This year's recipients and their citations are:

### Biological Sciences

**Edward Fred Knipping**, director, entomology research divisions, Department of Agriculture: "For outstanding original contributions involving unique biological approaches to the control of insect vectors responsible for diseases of humans, domesticated animals and plants."

**Fritz Albert Lipmann**, professor of biochemistry, Rockefeller University: "For original discoveries of molecular mechanisms for the transfer and transformation of energy in living cells, and for fundamental contributions to the conceptual structure of modern biochemistry."

**William Cumming Rose**, professor of chemistry emeritus, University of Illinois: "For the discovery of the essential amino acid threonine and for subsequent brilliant studies elucidating the qualitative and quantitative amino acid requirements of man and of animals."

**Sewall Wright**, professor of genetics emeritus, University of Wisconsin: "For original and sustained contributions to the mathematical foundations of the theory of evolution and for basic contributions to experimental and biometrical genetics."

### Engineering Sciences

**Claude Elwood Shannon**, Donner Professor of Science, Massachusetts Institute of Technology: "For brilliant contributions to the mathematical theories of communications and information processing and for his early and continuing impact on the development of these disciplines."

**Vladimir Kosma Zworykin**, honorary vice president, Radio Corporation of America: "For major contributions to the instruments of science, engineering and television, and for his stimulation of the application of engineering to medicine."

### Mathematical Sciences

**John Willard Milnor**, professor of mathematics, Princeton University: "For clever and ingenious approaches in topology which have solved long outstanding problems and opened new exciting areas in this active branch of mathematics."

### Physical Sciences

**Jacob Aall Bonnevie Bjerknes**, professor of meteorology, University of California: "By watching and studying maps he discovered the cyclone-making waves of the air and the climate-controlling changes of the sea."

**Subrahmanyan Chandrasekhar**, professor of theoretical astrophysics, University of Chicago: "For numerous superb contributions to stellar astronomy, physics, and applied mathematics and for his guidance and inspiration to his many students and colleagues."

**Henry Eyring**, dean, graduate school (retired), University of Utah: "For contributions to our understanding of the structure and properties of matter, especially for his creation of absolute rate theory, one of the sharpest tools in the study of rates of chemical reaction."

**John Hasbrouck van Vleck**, Hollis Professor of Mathematics and Natural Philosophy, Harvard University: "For his many contributions to the development of the theory of molecular structure and for his profound influence . . . on the theory of the magnetic and dielectric properties of materials."

## Scientists in the News

**H. William Koch**, chief of the National Bureau of Standards division of radiation physics, will take office 1 January as director of the American Institute of Physics. He will succeed **Van Zandt Williams**, who died in May, to the institute's chief administrative office.

AIP has also announced the appointment of **Arnold A. Strassenburg** as director of the education and manpower division, replacing **William C. Kelly**, now with the National Academy of Sciences. Strassenburg will retain his post as professor of physics at the State University of New York at Stony Brook.

## Recent Deaths

**William Frederick Meggers**, 78; former chief of the National Bureau of Standards Spectroscopy Section; 19 November.

**F. J. Plantema**; head of the structures and materials department of the National Aerospace Laboratory NLR; 13 November.

**Robert F. Novotny**, 40; specialist in metamorphic geology of New England for the U.S. Geological Survey; 3 December.

**Francis E. Ray**, 68; research professor of pharmaceutical chemistry at the University of Florida, Gainesville, and former professor of organic chemistry at the University of Cincinnati; 25 November.

**Kenneth F. Maxcy**, 77; former head of the department of epidemiology at the Johns Hopkins School of Hygiene and Public Health, Baltimore, Maryland; 12 December.

**Ret. Air Force Col. H. Clayton Beaman**, 78; early missile authority and consultant to Johns Hopkins University Applied Physics Laboratory; 7 December.

**Henry B. Clark**, 55; head of the department of oral surgery, University of Minnesota School of Dentistry; 3 December.