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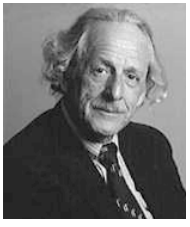

Not the End of the Physician-Scientist

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In 1984 Gordon N. Gill, professor of medicine at the University of California at San Diego, published an essay entitled "The End of the Physician-Scientist?" He described how from the mid-1960s to the early 1980s the biomedical research enterprise in the United States passed largely out of the realm of clinical investigators and into that of Ph.D. scientists working at the molecular level. He also noted that in the United Kingdom and Europe the split between basic science and clinical medicine had been completed by the early 1970s. The clinician-scientist had become the "clinician-applier of basic science." (*American Scholar*, vol. 53, 1984, p. 360.) "Like it or not," Gill concluded, "the separation of physicians and scientists is well advanced.... Partial attention to either science or medicine is no longer enough" (p. 368).

Gill, while astutely describing a genuine and broad historic shift, I think too quickly closed the curtain on the potential contributions of clinical investigators or physician-scientists. Although the participation of M.D.s in biomedical research declined sharply during the 1970s, there are now signs of improvement.

James B. Wyngaarden, the current director of the National Institutes of Health, has attributed the decline in the 1970s to, among other factors, the instability of federal support; society's emphasis on the importance of patient care, particularly among underserved segments of the population; and certain economic obstacles, such as the payback provision of the National Research Service Awards (NRSA). The last scared off many newly minted M.D.s who did not wish to risk incurring a large debt if the life of a researcher turned out to be unsatisfying. Moreover, the modest stipends for postdoctoral fellows made the salary of beginning private practitioners (roughly double a resident's salary) as irresistible as the siren's song—especially to those with family responsibilities. ("The Clinical Investigator as an Endangered Species." *New England Journal of Medicine*, vol. 301, 1979, pp. 1294-9).

But in this decade the picture has brightened. The payback provision of the NRSA was eliminated in 1983. Research stipends have been raised significantly. Moreover, medical school faculty salaries are gaining ground on those of physicians in private practice: the average salary for academic

physicians was 70 percent of the average for private practitioners in 1979 but in 1985 it had reached 77 percent. (See "NIH Seeks More M.Ds in Lab," *The Scientist*, May 4, 1987, pp. 1, 8.) One sign of recovery: the success rate for M.D.s applying for investigator-initiated grants actually reversed itself and rose from 1982 to 1984 from 26 to 36 percent.

In this decade, in fact, NIH redoubled its efforts to draw M.D.s into research. The main programs offered by NIH are training grants and fellowships for young M.D.s to conduct research under the supervision of a medical school faculty adviser; the Medical Scientist Training Program, providing six years of support for medical students simultaneously pursuing an M.D. and a Ph.D., and the post-residency Physician Scientist Award, begun in 1984 and providing five years of research training and an average annual stipend of some $66,000. Furthermore, NIH together with the Howard Hughes Medical Institute has since 1985 provided opportunities for medical students to work for nine months to a year at an NIH laboratory.

Plainly, policymakers at NIH do not view physician-scientists as dinosaurs. Medically trained men and women possess special knowledge of physiological abnormalities and the progress of disease. Through patient care they are presented with insights not found at the laboratory bench. Physicians have made and will continue to make important contributions in the biomedical sciences.

Just this month the FDA approved distribution of lovastatin, the first in a new class of drugs that dramatically lowers cholesterol levels and thereby reduces the risk of coronary. The development of lovastatin grew directly out of the work of Nobel laureates Michael S. Brown and Joseph L. Goldstein, both of the University of Texas Health Science Center in Dallas and both M.D.s. Brown and Goldstein stand as shining examples of physicians who combine clinical medicine and basic science; they epitomize the physician-scientist.

Despite their contributions and those of other successful physician-scientists, one senses that there is more than a kernel of truth in Gill's message. Biomedical research really has undergone qualitative changes. For example, few physicians possess the special skills to undertake research in the fruitful area of recombinant DNA. John W. Littlefield, professor of physiology at Johns Hopkins University, pragmatically pointed out the need "to emphasize the diversity of medical research [and recognize that] some will be done best by M.D.s and some should be done by Ph.D.s." ("On the Difficulty of Combining Basic Research and Patient Care, *American Journal of Human Genetics*, vol 36, 1984, pp. 731-2.) Elsewhere he described "feasible" roles for M.D.s who wish to pursue research while still caring for patients: by conducting epidemiological studies; by serving as an intermediary between a

biomedical team and the clinic; and by leading a group of specialist biomedical researchers studying a disease-related problem (such as Brown and Goldstein have done). ("The Need to Promote Careers that Combine Research and Clinical Care, *Journal of Medical Education*, vol. 61, 1986, pp. 786-7.)

In addition to providing medical students with realistic possibilities for careers that successfully bring together medicine and basic science, I believe we need to expose them to the real work of research well before they graduate from medical school. That is why programs such as HHMI-NIH's Research Opportunities for medical students deserve unstinting support. But exposure to research can come even earlier—at the undergraduate level.

Wyngaarden and many others concerned with the continued participation of M.D.s in biomedical research have urged research experiences for premedical students. This year I have written twice about the important role that exposure to the laboratory plays in helping students decide in favor of a career in research. ("Promoting Undergraduate Science," *The Scientist*, March 23, 1987, p. 9; "Research and Dedicated Mentors Nourish Careers in Science at Undergraduate Institutions," *Current Contents*, vol. 33, August 17, 1987, pp. 3-9). Jules Hirsch of The Rockefeller University—an institution perhaps unsurpassed in combining medicine and basic research—has spoken of the need to catch students early, "to give them a taste of research and a feeling for its excitement." It's a strategy I fully endorse.

I recently found more supporting evidence for the importance of research training at the undergraduate level in a study by the director of the CIBA Foundation in London, David Evered, and his colleagues Joe Anderson, Patricia Griggs and Richard Wakeford. ("The Correlates of Research Success," *British Medical Journal*, vol. 295, July 25,1987, pp. 241-6). The group conducted a survey of the undergraduate backgrounds of 94.1 percent (or 885) of the medical faculty in the United Kingdom. Those who had taken an intercalated B.Sc., the earning of which calls for research experience, were found to gain more funding later from the Medical Research Council, to produce more publications and to be cited more often than those graduating from Oxford and Cambridge or those without an intercalated B.Sc. degree. "It is clear... that research training or experience, or both, as an undergraduate has a positive influence on career intentions and subsequent research performance," they concluded (p. 245).

We need physician-scientists and more of them. To this end I advocate strong support for research experiences for premedical and medical students. ■