Stanford School of Medicine (II): Clinicians Make an Issue

There's no academic status in seeing patients. The guy who stays in the lab gets tenure. The guy who sees patients gets kicked out after 3 years.—A former administrator at the Stanford Medical School.

Modern medical education was created when high-quality instruction and research in the biomedical sciences was united with clinical training, but, even at a research-oriented medical school like Stanford, the alliance remains an uneasy one. Some faculty members contend that the research ideal has triumphed at the expense of medical care. Professional pride and prejudice doubtless inspire part of it, but the criticism is potentially strong enough to change the structure of the medical school.

In oversimplified terms, the objections are that some clinical faculty are spending too much time on the wrong kind of research, with the result that they are not pulling their weight scientifically or financially. As inflation and the cutbacks in federal funding put heavy pressure on medical school budgets, this kind of dissatisfaction has mounted and some clinical departments, which have become power centers because of the income they generate from fees, are seeking greater control over their own finances and policy. This is a complex, multilevel argument, which is probably best approached by looking at the anatomy of the medical school.

Some friction persists because medical schools operate under their own double standard. Faculties are divided between Ph.D.'s and M.D.'s, concentrated in the basic sciences and clinical programs, respectively. Top administrative posts in academic medicine continue to go to physicians rather than Ph.D.'s, and in most schools substantial salary differentials favor the M.D.'s.

Since World War II, however, the second-class status of the basic sciences faculty has been considerably assuaged by large-scale funding of basic research by the federal government, principally through the National Institutes of Health (NIH) and also by such victories of research as polio vaccine and by the apparently boundless promise of such disciplines as molecular biology.

The availability of federal funding and prestige accruing from research has caused a blurring of the demarcation line between basic science and clinical programs. Clinicians found it possible to get their own research grants, and clinical departments tooled up programs of clinical research—efforts to apply the results of basic research and technology to medical care. Across the country, the trend has been particularly evident in departments of medicine. The number of subspecialties has multiplied, and developments in chemical therapy and in instrumentation have opened new avenues for clinical research in almost all areas. To achieve interdisciplinary breadth, some clinical departments added Ph.D.'s to their rolls, on occasion outbidding basic sciences departments for their services. Many clinicians, of course, had been doing research, very good research, before NIH support became available. The famous report on medical schools by Abraham Flexner early in the century had urged on physician members of the medical school faculty the self-image of teacher-researcher-clinician. What had changed was that making at least a modest mark in research became obligatory for anyone hoping for tenure and advancement in academic medicine.

At Stanford, critics of clinical research do not fault the clinicians for doing research but for taking the basic sciences departments as their model and straining to make their work as "basic" as possible. The effort to emulate work done in labs headed by men such as Nobel laureates Arthur Kornberg and Joshua Lederberg is understandable, but the result, say the critics, is that many of the clinical researchers are neither very good researchers nor very good clinicians.

Clinical departments, of course, remain responsible for care of patients in medical center hospitals as well as for the training of medical students, interns, and residents—and, as research and training activities have increased, so, not surprisingly, has the size of clinical faculties.*

This has inevitably affected the budget and a score of interviews at Stanford yielded the impression that the criticism of clinical research was directed not so much at its quality but at its costs in the context of medical school financing.

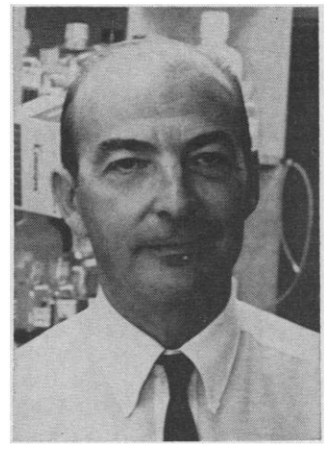
In the leading medical schools there has been a steady trend away from the old practice of basing clinical faculty members' salaries in part on fees they earn through providing medical service. The alternative is the so-called "full–full-time" system under which faculty members are paid set salaries while fees go into medical school coffers. The full-time system permits losses in some sectors to be counterbalanced by surpluses in others and, theoretically, at least, an equalization of quality in departments to be achieved throughout the school.

One of the constants of academic medicine is that some departments, notably surgery, radiology, and anesthesiology, make money on their services, while others, especially pediatrics, produce deficits. In private practice, surgeons, radiologists, and anesthesiologists are the most highly paid specialists. Stanford salaries for senior clinical faculty—in the $30,000 to $40,000 range—look more than adequate by university standards but amount to only about a half or a third of what their colleagues in the premium specialties earn in private practice. The main complaint in these clinical departments is not that they are underpaid, although they are not oblivious of that aspect, but that what they regard as a fair share of funds earned by their departments is not returned to finance research and needed expansion or renovations of facilities. And what they seem to find most galling is their belief that their colleagues in other departments are not putting sufficient time and effort into medical care to pay their department's way.

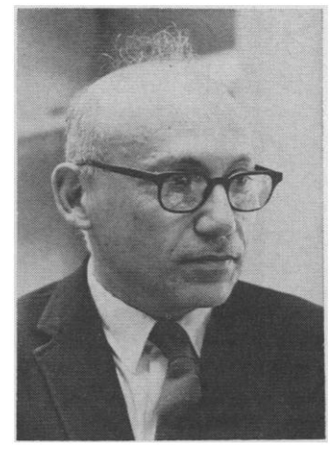
It is worth emphasizing that the animus is not directed toward researchers in the basic sciences departments. Those engaged in fundamental research

* At Stanford, for example, of 123 tenured faculty in 1960–61, 75 were clinical faculty and 47 were basic sciences faculty. Of a total of 290 tenured faculty in 1969–70, 224 were clinical faculty and 66 were basic sciences faculty.

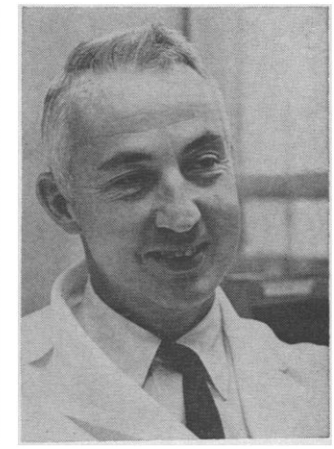
Henry S. Kaplan



Arthur Kornberg



Joshua Lederberg



Norman E. Shumway

at Stanford have not only imparted an aura of excellence but have been sufficiently successful in competing for available NIH funds to be still regarded as self-financing.

The strongest expression of resentment comes from the surgeons. Considering the surgeons' earning power and the proverbial "surgical personality," this should not be unexpected. Self-confidence and an extreme sense of the value of his work are, after all, basic qualifications for a surgeon; temperamentally, the surgeons are to medicine what fighter pilots are to air forces.

Roy B. Cohn, a distinguished renal surgeon whose tenure at Stanford predates the move from San Francisco and who plays the irascible elder statesman with zest, says, "The full-time system denigrates medical care. The exception is the surgeons. Surgeons would do [their work] for nothing. We work harder." Speaking of some of his colleagues in other departments, Cohn says, "Those fellows are very intellectual—once they establish a diagnosis, they lose interest."

Robert A. Chase, chairman of the department of surgery, emphasizes the interdependence of departments in a good medical school by saying, for example, "The department of surgery can be no better than the weakest department in the school." But in discussing the issue there is no mistaking the firmness of his views. "Care of patients is a tough job. There should be appropriate recognition in the institution, and it is not always given. Surgery makes a greater effort than any department." And Chase footnotes a Rand study which, he says, found that Stanford per patient costs are high and that faculty in general don't spend a great deal of time in the clinics. "An economic incentive is not provided," says Chase, "in fact, the incentive is perverse."

Chase goes on to insist that Stanford medical school cannot maintain its position if salaries are not competitive with peer medical schools across the country. Chase gave some examples of medical schools with higher salaries and noted, "The men in the department feel the full-time system is best so long as the constraints don't become terribly discouraging."

The critique of clinical research and the claim that the full-time system has an adverse effect on medical care must, of course, be examined for fairness.

Clinical Research Complexities

Even the sharpest critics concede that clinical research is both necessary and difficult. No matter how intellectually challenging, basic research customarily uses such relatively amenable experimental objects as bacteria, viruses, or laboratory animals, whereas clinical researchers must ultimately work on human beings. The primary concern for the patient's well-being infinitely complicates the clinical researcher's task in designing and carrying out his work. And the critics tend to ignore the large amount of good clinical work being done. A few of the names that were frequently cited for high quality research in clinical departments at Stanford were Thomas C. Merigan for his work on interferon inducers, Rose O. Payne for advances in tissue typing for human organ transplants, and Judith G. Pool, an expert in the pathophysiology of blood typing, for developing a simplified method of preparing cryoprecipitated antihemophiliac globulin which makes surgery possible for hemophiliac patients. Work on immunology by department of medicine chairman Halsted R. Holman and his colleagues was often mentioned.

The charge that clinicians are not working hard enough to pay their own way apparently should be amended in many cases to a complaint that money due them is not collected. It is relatively easy to compute and bill charges for surgery or for radiological examination and treatment. The nature of treatment required by patients of the departments of pediatrics, psychiatry, and medicine often make it much harder. In the case of medical treatment, patients' insurance may provide for only marginal reimbursement. Physicians in these services may be faced with a large number of patients and may decide to see more patients and fill out fewer forms. Other dimensions of the issue are opened when the rewards of anesthesiologists or the total resources required for sophisticated surgery are questioned. But the point is not so much whether the critics are justified but that they feel intensely aggrieved and tend to be those who, because they are big earners for the school, exert real leverage.

Norman E. Shumway, head of the division of cardiovascular surgery and a pioneer in the heart transplant operation, is a strong proponent and participant of research in surgery. His view of how to organize it is a highly personal one. "I don't think you can do good research while carrying a heavy clinical schedule," says Shumway. "Research is a young man's game, and you find yourself providing a place for younger and brighter guys."

An ideal way to do this, Shumway thinks, would be to establish a cardiac center, "a miniature Manhattan project," which would combine preclinical

Michigan War Research Charged

Charging that the University of Michigan is perfecting weapons systems "used by the military to kill and incapacitate other human beings," a student member of a committee that approves all the university's classified research attacked Michigan's research contracts with the Department of Defense. Michael Knox, a graduate student in social work and a member of the Faculty Senate Committee on Classified Research, made the charges in a letter sent last week to the chairman of the faculty senate.

Specifically Knox claimed that University of Michigan researchers are:

► "Developing devices to protect bomb- and napalm-carrying aircraft so they can reach their target."

► "Perfecting systems which can locate human targets so they can be destroyed."

► "Improving military missile capabilities."

The Michigan faculty senate established the committee of which Knox is a member, after a 1968 controversy over classified research at the university. The committee examines unclassified summaries of all proposed classified research contracts and decides whether the work is appropriate for the university.

"I never suspected that the university was engaged in weapons research before I was appointed to the committee," Knox said in an interview with *Science*.

Knox went on to say that he hoped that, by making the information public, he would "raise the level of consciousness" of the campus community so that they could "decide for themselves whether this type of research is appropriate for the university."

Michigan receives about $10.4 million per year from the Defense Department in research contracts, half of which have classified portions. Most of the research in question is performed under the direction of the University's Institute of Science and Technology at the Willow Run Laboratories, located about 4 miles outside of Ann Arbor. Some of the classified projects, however, are conducted on the main campus.

James T. Wilson, director of the Institute of Science and Technology, told *Science* that Knox's letter accurately describes some of the research at Willow Run. In Wilson's opinion, however, Knox over emphasizes the military applications. "He starts at the Viet Nam end and works back to the basic research," Wilson said.

"Obviously," Wilson continued, "the military wouldn't support the work if there weren't military applications." But he added that "the Willow Run Laboratories pioneered remote-sensing devices even before the military applications were foreseen. And "a little more than one-third of Willow Run's budget now comes from non-Defense Department sources."

According to Wilson, only about 10 percent of the staff at Willow Run are regular university faculty members. Most, he said, are older graduate students who might work on the classified aspects of military contracts, but who always publish their theses in nonclassified areas. Wilson emphasized that the Willow Run facility builds no prototypes of military hardware, only "breadboard models to collect data."

Many Michigan faculty members thought that the question of military contracts was settled with the establishment of the Committee on Classified Research. But Knox's allegations imply that the committee refused few, if any, proposals. Because of the letter, classified research has again become a major issue on the Ann Arbor campus. Student demonstrations have already taken place, and more are planned.

—ROBERT J. BAZELL

teaching with research and care on "cross-departmental lines." Shumway says the center "would have more to do with cardiology than surgery. It can't be a specialty hospital—there's too much overlap in areas such as infectious diseases." Such a center he sees as necessarily a part of the university medical center.

Understating it somewhat, Shumway admits, "Some people won't like this, but suppose a whole school goes this way. It might be very attractive to federal agencies."

Rather similar views are held by Henry S. Kaplan, the astute and tough-minded chairman of the department of radiology. Kaplan was one of the engineers of the medical school's consolidation on the Stanford campus in 1959, and he has remained influential in the policy counsels of the medical school.

Kaplan, like Shumway, is attracted by the prospects of establishing a center or institute which would focus treatment and interdisciplinary research in a particular field. Kaplan envisions a cancer center and thinks that the push for a massive attack on cancer advocated in Congress and now proposed in the President's budget (*Science*, 12 February 1971) may provide the funds. The real question, says Kaplan, is "how to create an institute which is a fiscal and physical entity yet is still in the main stream of the educational process. I would not want to see a cancer center or cardiac center which is not part of the teaching process. We don't want watertight compartments."

Kaplan also bluntly concurs with the surgeons in saying, "A heavy degree of subsidization of those departments is going on needlessly. We wouldn't mind so long as people in those departments were working as hard as possible. It's time to blow the whistle," says Kaplan.

As critic, Kaplan's flanks are well covered. His department not only operates deeply in the black but has a strong reputation for clinical research. He himself is a successful researcher who pioneered development of the linear medical accelerator for radiation treatment of cancer and is, among other things, an authority on Hodgkin's disease and malignant lymphoma.

Kaplan's analysis of the ills of the medical schools is broader than a simple indictment of the handling of fees. In the period of rapid growth he feels that "too much reliance was placed on

the federal government." A source of the trouble was the "extension into the NIH easy money era of the Flexner concept of the triple threat man (teaching, research, patient care). In some departments the feeling that a man should be a great clinician fell into disuse. If you stay with the idea of the triple threat man, as patient load increases you must increase the staff. But where is the lab space and free time to work in the labs coming from?

"This is the problem of the medical schools. We must find a way to diversify the function of the faculty. One solution would be to create two kinds of faculty appointments. You might create a postgraduate medical school to exist side by side with the undergraduate medical school."

An immediate problem, as Kaplan sees it, is to create an incentive plan to provide Stanford with competitive salaries and funds for research.

The problem of incentives and the question of such new departures in organization as creation of a cancer center and cardiac center are in abeyance while Stanford searches for a new dean to replace Robert S. Glaser, who resigned last spring to become a Commonwealth Fund executive.

The acting dean is John L. Wilson, who came to Stanford as an associate dean when Stanford took on administration of a regional medical program. Wilson is held in generally high regard by the faculty. In style he is anything but a confrontationist, but he is credited with taking relatively strong initiatives in the area of budget and day-to-day administration, considering his acting capacity. But the tougher policy problems have been tabled in the interim.

Internal pressures building at Stanford, such as those for creation of semiautonomous cancer and cardiac centers, some pessimists feel could dismember the medical school. Others, like geneticist Joshua Lederberg, think it may be possible to establish a new form of specialized treatment center connected to medical schools which would allow the schools to increase income without breaching the integrity of medical education.

Those familiar with the realpolitik of medical schools feel that something substantial must be done soon, since the resentments that produced the demand for an incentive plan and the center proposals are near the flash point in many schools. How Stanford deals with these problems or fails to deal with them will be important beyond Stanford, because, in making its reputation, Stanford inevitably made itself a model for other schools.

Stanford is being subjected to other strong centrifugal forces. Among the strongest is the demand from activists that the school commit itself more deeply to meeting the needs of the community. The implications for research and governance at Stanford of these demands will be the subject of a third article.—JOHN WALSH

Federal R&D: Domestic Problems Get New Efforts But Little Money

The popularity of the idea of diverting some of the nation's technically skilled manpower from defense and space research to work on the solution of pressing domestic problems has not been lost on the Nixon Administration. A year ago, for example, in connection with the budget for the current fiscal year (FY 71), the White House revealed an analysis of federal research and development programs which declared, "Emphasis is being placed on research and development relating to environmental, education, housing, transportation, and crime problems." In principle this policy could lead to major new programs and increases in the now scarce supply of R&D funds. But progress during this past year has been slow, and prospects for the future do not look much better.

One of the changes to be noted so far is that several civilian agencies with no previous scientific or engineering orientation have joined the list of R&D supporters and consumers, and others have upgraded their previously lackluster technical abilities. The Justice Department and the Post Office, for example, have begun new programs within the last 2 years, and the Departments of Transportation (DOT) and of Housing and Urban Development (HUD) have centralized and renovated their R&D efforts. These four agencies are distinguished by the fact that their R&D programs contain more D than R and emphasize machinery and systems development. Consequently industry and not-for-profit think tanks, rather than universities, have been the major recipients of funding from these programs. All four agencies rely more on contracts and grants than on in-house programs to accomplish their missions, and, except for some DOT funds, essentially all the R&D dollars are spent out-of-house.

Large amounts of new money have not yet been forthcoming, however. Justice, for example, has only $10 million in R&D money for the current fiscal year (FY 71), HUD has $35 million, and the Post Office has $60 million. DOT has about $490 million in this year's R&D budget, but over half of this amount is for the supersonic transport (SST) and has not yet been approved by Congress. These programs are tiny compared to the nearly $8-billion R&D effort in the Department of Defense or the $3.5 billion spent by the National Aeronautics and Space Administration (NASA). A sign of possibly higher levels of spending on hardware and development programs oriented to domestic problems is contained in the Administration's budget requests for the coming fiscal year, which were released last week. The Administration is proposing increases of $125 million in DOT, almost $50 million in the Post Office,* $15 million in HUD, and about $15 million in Justice. But these figures are projec-

* The Post Office will become a quasi-public corporation on 1 July 1971, under the control of a Board of Governors. The FY 72 budget has not yet been approved, and Congress must also pass on the federal subsidy funds in that budget.