not only through the years of training after medical school that are necessary to become qualified to take exams for board certification in a specialty but also pays for their advanced or subspecialty education. For instance, the system subsidizes the first 3 years of training in internal medicine, and then supports additional years for subspecialty training in cardiology, or nephrology, or any of the other medical subspecialties. Total years in training can easily number 5; in surgery even more.

Petersdorf proposed that all training beyond that needed for board certification should be paid for by grants, or money provided by the departments that want subspecialists, or by private funds, or by loans assumed by the trainees themselves. It was a position he argued for as a member of an AAMC committee on funding graduate medical education and one on which he won a partial victory. The AAMC now advocates general funding of residency training for the basic 3 years, plus only one for subspecialty education.

In the 1960's, Congress, with the advice of academics, proclaimed that the country was about to suffer a severe physician shortage and urged academic medicine to rally to the cause. Lured by generous "capitation" funds from the federal government, allocated on the simple basis of numbers of students per class, existing medical schools expanded and nearly 40 new ones opened. Calling the perceived doctor shortage a "figment of somebody's imagination," Petersdorf has doubts about the wisdom of having so readily agreed to rapid expansion. "Suffice it to say that there are now too many schools, some of which are of questionable quality," he has written. "The wild expansion of the 1970's threatens the very quality of medical education."

While the student body was expanding, driven by congressional pressures for more doctors, medical school faculties were growing in substantial numbers as well, for reasons related to an overall growth of the biomedical research enterprise fueled by federal funds—in particular by money from the National Institutes of Health. Petersdorf cites growth at the University of Washington during his own tenure as chairman of medicine from 1964 to 1979 as an example. In 1964, there were 12 research faculty members in the department; by 1979 they numbered 67, virtually all competing for and dependent on grant support, 60% of which came from NIH. Petersdorf told *Science* that as AAMC president he will argue unhesitatingly for a steady increase in research funding from NIH but made the point that some very basic changes in the structure of the research enterprise in the nation's medical schools are inevitable. Indeed, Petersdorf thinks them highly desirable. For instance, he says, "We need to train fewer people to do research, but we need to train them longer and better and be sure there is grant money available to them when they are through."

Petersdorf went to medical school at Yale and graduated in 1952. His career in academic medicine flourished during the 1960's when NIH funds were increasing seemingly without limit and when important advances were made by M.D. researchers who worked both in the laboratory and at the bedside. During that era, the image of the ideal clinical investigator as a person who excelled equally as doctor, researcher, and teacher developed. This was the image to which Petersdorf and most of the present generation of leaders of academic medicine aspired; it is still an ideal.

But with the end of limitless NIH expansion and with a major change in the nature of laboratory research itself in this era of high-tech molecular biology, Petersdorf challenges the "mystique" that has grown up around academic research and looks toward a new ideal. In an article in *Daedalus*† he questioned the following tenets of the establishment: that "researchers are better teachers," that "research-intensive schools are better medical schools," that "researchers are better clinicians," and that "all academicians must do research." "The individual and the university must realize that the day of the triple-threat academic is over, is as defunct perhaps as one-platoon football," he wrote. In its place, he sees the advent of the two-platoon system, manned by the clinician-teacher and the investigator-teacher, two distinct species of medical academic. "The idea," he observes, "has not been well received."

The issues confronting not only academic medicine but the national health care system in general are legion; these are but a few. But they are of special concern to Petersdorf and to the AAMC which, he says, must carefully select those policy issues it is most able to tackle.

Petersdorf has no illusion that the remedies he proposes for changing the academic system will readily come to pass; quite the opposite. "There is a belief out there that our medical system is the best in the world and that anything that changes it will be for the worse." It may be the best, Petersdorf agrees, but it also needs changing, which he would rather see initiated from within the establishment than forced upon it from outside. So he has decided to give it a shot. ■

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†Robert G. Petersdorf, "Medical Schools and Research: Is the Tail Wagging the Dog?" *Daedalus*, Spring 1986.

Briefing:

House Endorses Pork Barrel Funding

For the second time in a month, Congress has turned back attempts to block pork barrel funding of research and construction projects at individual universities. The latest move came on 23 July, when the House of Representatives soundly rejected an amendment to delete a total of $69.7 million, earmarked for eight university projects, from the appropriations bill for the Department of Energy (DOE). The vote was 315 to 106. Four weeks earlier, the Senate had similarly refused to delete $55.6 million for projects at nine other universities from the Defense Department's budget (*Science*, 11 July, p. 145).

In most cases, proposals for the projects have not been submitted to the department that will provide the funds, and none of them has even gone though the usual congressional approval process.

The votes in both the House and the Senate were preceded by lengthy debates on the propriety of distributing research and construction funds on the basis of congressional directive rather than scientific peer review. Both votes sent a clear message: there is a good deal of unhappiness on Capitol Hill over perceived inequities in the distribution of R&D dollars, and Congress intends to go right on earmarking funds for specific projects.

The House debate focused on eight projects that the House Appropriations Committee has directed DOE to bankroll in fiscal year 1987. Three of them involve further installments of funds for construction projects that Congress directed DOE to finance in previous years, and the other five are new projects.* The committee inserted funds for the projects in DOE's FY 1987 appropriations bill and, in a report that accompanied the legislation, gave the department explicit instructions on where the money should be spent.

When the bill reached the House floor, Representative Robert S. Walker (R–PA), a conservative critic of government spending, proposed an amendment to knock out the

*The three ongoing projects are: National Center for Chemical Research, Columbia University, $4 million; Center for Science and Technology, Atlanta University, $7.5 million; and Demonstration Center for Information Technologies, Brown University, $5 million. The five new projects are: Center for New Industrial Materials, Iowa State, $6 million; Center for Nuclear Imaging Research, University of Alabama at Birmingham, $12.3 million; Energy Research Complex, University of South Carolina, $16.3 million; St. Christopher's Hospital for Children, Philadelphia, $14.8 million for an energy demonstration project; Center for Excellence in Education, Indiana University, $3.8 million.

$69.7 million earmarked for the projects. Calling it the "hog heaven amendment," Walker complained that the projects had not been peer reviewed for scientific merit and that the expenditure had not been approved by the House Committee on Science and Technology, which is supposed to authorize DOE programs.

Noting that this one appropriations measure contained $10 million of academic pork barrel funds in FY 1984, $30 million in FY 1985, $48 million in FY 1986, and nearly $70 million in FY 1987, Walker argued that the funds "come out of the hide of other deserving projects all across the country." He added, "political determinations are made about science rather than good academic scientific decisions."

Next came Representative Don Fuqua (D–FL), chairman of the House Science and Technology Committee. Fuqua was in a difficult position. The Appropriations Committee had ridden roughshod over the science committee's turf, but, if he sided with Walker, he would offend some powerful congressmen who were championing the projects. He attempted a "compromise," offering a substitute for Walker's amendment that would prohibit DOE from spending money on the projects until it has thoroughly reviewed detailed proposals for them.

Walker wouldn't have any of it. He could see that the amendment would almost certainly result in the projects eventually being funded, and managed to get Fuqua's amendment ruled out of order. There then followed a debate on the merits and problems associated with distributing funds on the basis of scientific peer review.

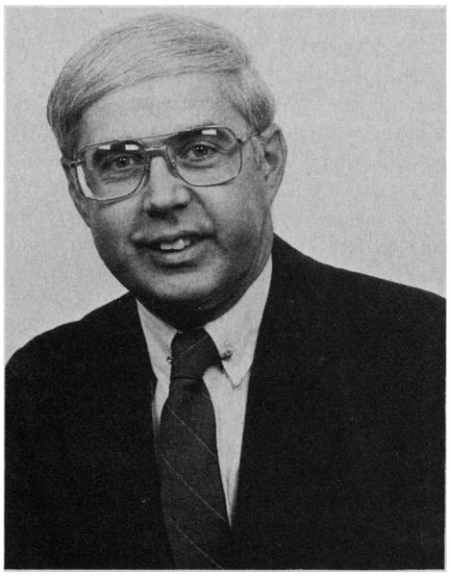
The tone was set by Representative Tom Bevill (D–AL), chairman of the appropriations subcommittee that approved the bill. "We are being asked for Congress to delegate its responsibility to these peers to handle most of the research money in this country," he said. "Let us let the Congress handle a little of the money."

Representative Manuel Lujan, Jr. (R–NM), the ranking minority member of the science committee, raised the issue of fairness. He noted that 51% of federal R&D funds go to only 30 universities, and no universities in the Southeast and Southwest rank among the top 20 recipients of federal research dollars. "Clearly, Congress has a role to play in redressing this imbalance," he argued.

After more than an hour of debate, Walker's amendment was so soundly defeated that there is now no room for doubt about where the House stands on earmarking funds for academic projects. The bill now goes to the Senate.

All this is not going down well among academic and scientific organizations, which have been fighting hard for the past few years to curb the practice of pork barrel funding for science projects. It is also creating disquiet in the funding agencies. One DOE official, for example, noted that all the projects funded in this bill involve construction, but they will be supported with funds that are supposed to go to research. The effect, he says, is a transfer of funds from research to bricks and mortar. ■

COLIN NORMAN



Representative Walker. *Author of "hog heaven amendment" to delete pork barrel funds.*

Britain Offers Plan for Chemical Weapons Verification

In a move designed to remove the largest remaining obstacle to international agreement on a treaty banning chemical weapons, the British government has put forward a proposal to bridge the current gap between U.S. and Soviet positions on verification procedures.

Britain's suggestion maintains the U.S. insistence that such a treaty must include a provision for spot checks on a signatory suspected of producing chemical weapons clandestinely. Its novelty is to allow the challenged country to select how it demonstrates its innocence, provided this is done within 10 days from the challenge.

The hope is that this will go some way toward meeting Soviet reservations about giving access on demand to militarily sensitive installations. If a compromise is reached on the verification issue, it could pave the way for agreement on a full chemical weapons treaty for submission to the United Nations General Assembly by the end of next year.

Timothy Renton, Britain's Minister of State for Foreign and Commonwealth Affairs, told the U.N. Conference on Disarmament in Geneva on 15 July that adequate verification procedures, including a stringent provision for challenge inspections "in exceptional circumstances," was an essential safety net for the convention to minimize the possibilities of cheating.

The United States and the Soviet Union are close to agreement on the procedures that would normally be used to verify compliance. These would include checks that existing stockpiles and production facilities were being destroyed, and that chemicals from civilian industry were not being diverted into military production.

Under the British proposals, a state suspected of noncompliance would be required to accept a visit from a technical inspection team. The team would arrive within 72 hours of the challenge being made, and the challenged country would then have 7 days to provide all the evidence it felt necessary to prove its innocence.

If, at the end of this period, the inspection team was not satisfied with what it had been shown, the country concerned would then be considered to have infringed the treaty. The next step would then be decided "at the political level" by all signatories to the treaty.

"Our fundamental philosophical approach is identical to that of the United States, in that we repeat the absolute obligation [on a signatory country] to demonstrate compliance," said a member of the British delegation to the disarmament talks. "However, we have taken one step back in purposely not describing any specific methods for doing so.

"The Soviet Union never fails to say that it is prepared to accept verification on challenge as long as there is some right of refusal. In our proposals, there is the right of refusal of comprehensive access," if this was considered necessary on security grounds, he said.

Renton said after his speech that the proposals "put the ball very much in the Soviet court." Indeed, they are seen by some as deliberately being used to test assertions by Soviet leaders, recently repeated by Mikhail Gorbachev, that they are keen to reach agreement on a chemical weapons ban in the near future.

Officially, the United States still maintains its position that it requires a treaty to guar-