New Strength in the Diet-Disease Link?

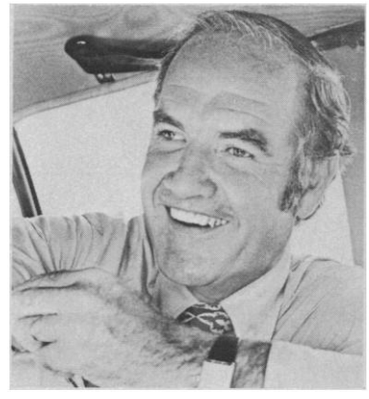
As McGovern questions the quality of peer review in nutrition research, the Cancer Institute tells of a diet to reduce the risk of cancer

In a concession to long-standing congressional pressure, National Cancer Institute (NCI) director Arthur Upton advised Americans on 2 October to eat less fat, drink less alcohol, eat more fiber, and avoid being overweight to reduce their risk of developing cancer. He dubbed the diet "prudent interim principles," and, in a conspicuous caveat, noted the "incomplete evidence" linking diet to cancer.

The announcement came at a hearing before Senator George McGovern's (D-S.D.) subcommittee on nutrition, which for 2 years has been prodding the National Institutes of Health (NIH) to take a stand on diet and prevention (*Science*, 15 June). At the hearing, McGovern, who is up for reelection, also questioned how much nutrition research was getting through peer review at NIH, and threatened to launch a General Accounting Office (GAO) investigation of the process. NIH officials rebuffed many of the allegations.

Photo by E. Poggenpohl

Arthur Upton



George McGovern

Photo by E. Poggenpohl

Donald Fredrickson

In the past, NIH has been loath to make such dietary recommendations, saying hard evidence of a diet-disease link has not yet come to light. The heart institute, for instance, has not backed a general diet to prevent heart disease. In light of the NCI diet, congressional pressure seems to have taken its toll.

McGovern's now-defunct Select Committee on Nutrition got the diet-disease ball rolling in 1977 with the publication of *Dietary Goals for the United States*, a guide to healthy eating. He followed that up with hearings (such as "The War on Cancer: Is It a Multi-Billion Dollar Medical Failure?") in which he asked the institutes to also take a stand.

But critics questioned whether there are enough data to make sweeping generalizations about diet and chronic disease, and whether NIH, a research giant, should get into the business of educating the public in the first place. But McGovern's hearings on the issue resulted in bad press for NIH, and wisdom dictated that they had best be partially responsive. In addition to encouraging a stand on diet and chronic disease, McGovern is now looking into issues of peer review at NIH, and how he can speed new research in nutrition.

Boosts in nutrition research are already a fact, according to institute officials. At the 2 October hearing NIH director Donald Fredrickson spelled out the overall surge in nutrition research at the institutes, and Upton noted that NCI's funds for this research in the past 2 years had gone from $18 to $32 million. The senator was skeptical, however. He challenged the figures, said the "battle is just beginning," and told the scientists that a GAO investigation of the study sections at NIH may be launched. McGovern feels that too few nutrition grant proposals are getting through the money-dispensing machinery, and wants GAO to find out why NIH has so few "peers" in nutrition.

This latest offensive comes from McGovern's Senate agriculture subcommittee on nutrition, which has no jurisdiction over NIH's money or laws. McGovern does, however, have the power to grill institute directors in front of the press and to make them listen to the testimony of disgruntled researchers.

McGovern had assembled a few for the occasion, and complaints abounded. "The structure of the study section system doesn't match with the structure of the problems," Barry Commoner of Washington University in St. Louis told a reporter after the hearing. "Study sections are organized along disciplinary lines, like departments in a medical school. And they reflect a basic research attack." Commoner neglected to mention, however, that there is, in fact, a nutrition study section at NIH and that it seems to be quite healthy. In 1978, it had an award rate (the number of projects funded divided by the number found eligible) of 50 percent. The rate was 43 percent in the genetics study section, 38 percent in reproductive biology, and 36 percent in endocrinology.

This, however, was beside the point, according to Stanley Dudrick of the University of Texas Medical School. He told the subcommittee that only a few nutrition projects are ever found eligible in the first place. "Grant requests have repeatedly been evaluated, judged, and usually not funded by various peer groups comprised, for example, of a der-

0036-8075/79/1109-0666$00.75/0

matologist, a pathologist, a pharmacologist, a veterinarian, an oncologist. . . . Even when there is an acknowledged nutritionist or two on the committee, they are usually basic scientists with expertise in highly specialized areas with no experience or obvious sensitivity in the clinical area of nutrition." He said it was time to change the "ivory tower" attitude that something as deceptively obvious and apparently simple to understand as nutrition was not worthy of research dollars.

McGovern took the criticism one step further. He complained that even when a project gets funded, it tends to be for an "old boy" who has many NIH grants, rather than for a young researcher with new ideas. Fredrickson later sent the subcommittee a report that took the bite out of this criticism. It showed that in the past decade, new investigators on all NIH grants rose from 8.9 percent to 13.7 percent. If renewal grants are left out, the picture gets even better. In 1978, for example, new investigators walked away with 51.6 percent of the new grants.

Taking another tack, Commoner said that secrecy was the root of the problem in peer review. "The way to get at mistakes is to make them public," he said. Then, in what Fredrickson later called a "somewhat paradoxical" act, Commoner pulled out a study section critique of a grant he had submitted and proceeded to read aloud the study section's criticism. Commoner's larger point was apparently that more nutrition research would get through the NIH mill if the deliberations

Commoner said secrecy was the root of the problem in peer review.

were made public. Increased exposure, he said, would help reviewers to stop "nit-picking" and to do a better job. Fredrickson countered that "It is very difficult to discuss the track record of scientists, their course in the last few years, whether they have slipped, what progress has been made, at a public meeting at which the scientist himself may be present." He also noted that priority scores and a critique of each proposal was given to the researcher. And the

Crick Looks Back on DNA

As much, or perhaps as little, as 20 years separates the beginning of analytic biology from that of synthetic biology. 1953 was the year of the discovery of the structure of DNA; 1973 the moment when the recombinant DNA technique was first described. James Watson's account of the first discovery is well known. Francis Crick, whose biography has yet to appear, recently described his view of events in a lecture printed in the September issue of The Sciences, *from which the following excerpt is taken.*

I think what needs to be emphasized about the discovery of the double helix is that the path to the discovery was, scientifically speaking, fairly commonplace. What was important was not the way it was discovered but the object discovered—the structure of DNA itself. One can see this by comparing it with almost any other scientific discovery. Misleading data, false ideas, problems of personal interrelationships occur in much if not all scientific work. Consider, for example, the discovery of the basic structure of collagen. It will be found to have all these elements. The characters are just as colorful and diverse. The facts were just as confused and the false solutions just as misleading. Competition and friendliness also played a part in the story. Yet nobody has written even one book about "The Race for the Triple Helix." This is surely because, in a very real sense, collagen is not as important a molecule as DNA. . . .

But what was it like to live with the double helix? I think we realized almost immediately that we had stumbled onto something important. According to Jim, I went into the Eagle, the pub across the road where we lunched every day, and told everyone that we'd discovered the secret of life. Of that I have no recollection, but I do recall going home and telling my wife Odile that we seemed to have made a big discovery. Years later she told me that she hadn't believed a word of it. "You were always coming home and saying things like that," she said, "so naturally I thought nothing of it." W. L. Bragg, Cavendish professor, was in bed with 'flu at the time, but as soon as he saw the model and grasped the basic idea he was immediately enthusiastic. All past differences were forgiven and he became one of our strongest supporters. We had a constant stream of visitors, a contingent from Oxford which included Sydney Brenner among them, so that Jim soon began to tire of my repetitious enthusiasm. In fact at times he had cold feet, thinking that perhaps it was all a pipe dream, but the experimental data from King's College, when we finally saw them, were a great encouragement. By the summer, most of our doubts had vanished and we were able to take a long cool look at the structure, sorting out its accidental features (which were somewhat inaccurate) from its really fundamental properties, which time has shown to be correct.

For a number of years after that, things were fairly quiet. I named our house in Portugal Place "The Golden Helix" and eventually erected a simple brass helix on the front of it, though it was a single helix rather than a double one. It was supposed to symbolize not DNA but the basic idea of a helix. I called it golden in the same way that Apuleius called his story "The Golden Ass," meaning beautiful. People have often asked me whether I intend to gild it. So far we've got no further than painting it yellow.

Nowadays most people know what DNA is, or if they don't, they know it must be a dirty word, like "chemical" or "synthetic." Fortunately people who do recall that there are two characters called Watson and Crick are often not sure which is which. Many's the time I've been told by an enthusiastic admirer how much they enjoyed my book—meaning, of course, Jim's. By now I've learned that it's better not to try to explain. An even odder incident happened when Jim came back to work at Cambridge in 1955. I was going into the Cavendish one day and found myself walking with Neville Mott, the new Cavendish professor (Bragg had gone on to the Royal Institution in London). "I'd like to introduce you to Watson," I said, "since he's working in your lab." He looked at me in surprise. "Watson?" he said, "Watson? I thought your name was Watson-Crick."

0036-8075/79/1109-0667$00.50/0

names of study section members were a matter of public record, so that secrecy, in that sense, was not a question.

Complaints over peer review are perennial, and, to a certain extent, are understandable. The process is a brutal one in which only a few can win. On the larger question of getting nutrition grants into the gears of NIH, Upton certainly can't be charged with ignoring the subject. He told the subcommittee that "NCI contacted more than 20,000 people identified as having an interest in nutrition research, and announced the availability of funds in 32 of the major medical and nutrition journals." In response to this call, he continued, "The total number of nutrition grants funded in 1979 was 143 . . . a 32 percent increase over the 103 funded in fiscal 1978."

Heat from McGovern continues to be applied, however. His staffers say the 143 figure is not correct, and they are checking into the situation. They also say the GAO peer review investigation will be launched in November. Pressure of this sort has an effect. It is clear that the NCI diet would not have been composed and released had it not been for the persistent prodding of McGovern. Whether he will have a similar impact on peer review in nutrition remains to be seen.

> "The number of nutrition grants funded in 1979 was 143 . . . a 32 percent increase over . . . 1978."

In the larger picture, McGovern is clearly a powerful force. It was his own Select Committee on Nutrition that told Americans in 1977 that if they wanted to live longer and better they should cut back on fat, sugar, salt, and cholesterol and eat more fruits, vegetables, and whole grains. He also called for more research into the problem. Since then, the government has more than tripled the amount it spends on research in human nutrition, from $50 to $170 million a year. It's hard to believe, but the whole thing got started back in 1977 when McGovern piled up 125 pounds of sugar, 100 pounds of lard, and 300 cans of soda pop into a hearing room before the assembled biomedical press corps and announced the publication of *Dietary Goals for the United States*.—WILLIAM J. BROAD

RFF Back on Its Feet

Resources for the Future (RFF) is out of the woods financially and will not have to merge with the Brookings Institution, an outcome which seemed unavoidable until this fall. Last year RFF, a resource and environmental research group largely funded by the Ford Foundation, was on the verge of losing its cherished autonomy because of the fund squeeze suffered by most nonprofit groups these days (*Science*, 7 July 1978). However, a year-long fund drive has boosted the organization's reserves from $8 million to $22 million, and RFF's independence seems assured.

Seven foundations and many corporate contributors kicked in. The largest single donation, for $7 million, came in the form of a challenge grant from the Ford Foundation. It was to be made available only if RFF could come up with an equal sum on its own. That goal was achieved at the end of September, when the Charles Stewart Mott Foundation approved a grant of $1.5 million which had been under consideration all year. (The request was taken before the Mott board by a family member who was enlisted in the cause by an RFF staffer visiting the Mott's ranch in Montana.) Other large donations came earlier from the Andrew Mellon Foundation ($2.5 million) and the John D. and Catherine T. MacArthur Foundation ($1 million), the largest new philanthropy in the country.

Nevada Closes Low-Level Radioactive Waste Dump

The biomedical garbage crisis deepened on 25 October when Governor Robert List of Nevada closed one of the two remaining sites in the country still accepting low-level radioactive wastes. Several weeks earlier, on 4 October, Governor Dixy Lee Ray had closed the site in Hanford, Washington, the only one receiving liquid low-level wastes (*Science*, 26 October). Now trouble is brewing at the third and final site. Governor Dick Riley of South Carolina plans to announce soon that the dump in Barnwell, the only one in operation, will impose a "significant reduction" on the quantity of wastes accepted each year.

Riley has announced already that South Carolina will not accept any diverted shipments originally destined for Nevada or Washington. The governor's press secretary said that although Riley has been trying to reduce shipments into the state for at least 6 months, "It's only in the last few days that people have begun to ask questions" about the appropriateness of having their state serve as the nation's only low-level waste dump. He suggested that South Carolina will not serve in that role for long.

Governors Ray and List closed the sites in Washington and Nevada, they said, because shipments from out of state were badly packaged and unsafe. They insisted last July that the federal government, through the Nuclear Regulatory Commission (NRC), must step up its policing of waste handlers. The governors are plainly dissatisfied with the response. Many observers believe the governors are also hoping to push the federal government into adopting a national program requiring the states in the Northeast that produce most of the waste to share in the politically unwelcome task of disposing of it. As a minimum, the federal government will be asked to develop a regional plan, so that garbage from Boston need not be shipped across the continent for disposal. An amendment to the Department of Energy (DOE) authorization bill, which passed the House on 23 October, asks the DOE to make a 6-month study of the idea and propose 12 regional burial sites. These would be administered by DOE.

In the meantime, the waste backup continues to cause problems for biomedical research laboratories and hospitals, which must dispose of thousands of gallons of radioactive liquids each year. Yale University, for example, decided simply to store its wastes indefinitely in an unused accelerator building. Harvard is less fortunate. It had almost decided last week to order a halt to research in which certain radioactive liquids are used, but was spared at the last moment when its waste hauler found a company that would accept the garbage: Todd Shipyards of Galveston, Texas. But one Harvard radiation safety officer said that this is only a

0036-8075/79/1109-0668$00.50/0