a whole day to avoid being photographed after she was chosen to head a big limnology research project.

Patrick agrees that scientists perform a service when they stimulate public discussion, but "even the best scientific people will veer from the facts when they get emotionally upset about something." Asked if this comment is relevant to vocal fellow ecologist Barry Commoner, she would only say, "No comment." But she emphasizes that "we're only going to travel forward on pure hard research."

Patrick's favorite kind of scientist is embodied in zoologist G. Evelyn Hutchinson of Yale University, her friend and mentor, who last year was one of three winners of the first annual Tyler award. Hutchinson believes Patrick has done more than any individual—with the exception of Charles Elton of Oxford University—to establish ecology as a full-fledged branch of modern science. He notes that her meticulous work with taxonomy has highlighted the enormous importance, both theoretical and practical, of that discipline.

Patrick cherishes homey pieces of wisdom picked up in childhood. Everyone every day should do something to help humanity. Leave the world a little better than you found it. Always do your very best. She has always worked prodigiously. A former colleague recalls her hopping about on top of laboratory benches to inspect diatoms in the final days of her pregnancy. While other ecologists were huddled in their laboratories, she has gone mucking around in streams and industrial outfalls, belying the opinion of many scientists, she says, that "women couldn't do field work well."

To accomplish what she does, she has learned to make constructive use of bits of time here and there, and, as she says, "I've completely given up the kinds of things most people require in life to carry on my work." Patrick's idea of fun and relaxation is to sit around for a few hours doing diatom taxonomy. Absolutely nothing comes close to competing with science in her interests. She keeps up with *Science* (on whose editorial board she also serves) and other major journals, but "it's a rainy day in Spain that I read the daily newspaper." Up at 6:30 on a typical day, she works for an hour, hits the office at 9, and gets home for dinner with her husband and her son, Charles Hodge V, a 24-year-old medical student. She tries to reserve two evenings a week for "recreation," which likely as not means attending some lecture with her husband, who is professor emeritus of entomology at Temple University. There was never any nonsense about youthful rebellion or generation gap in the Patrick family, and the same seems to hold true for the Hodges. Charles V was given the same microscope at age 7 that Frank Patrick gave his daughter at the same age. But, she says, her son was never pressured into a scientific career. The secret of good parenting, believes Patrick, is to instill values that no one with any sense would rebel against, and not to worry about the superficials. "The trouble with most parents," she muses, "is that they pick."

What does Ruth Patrick think the future holds for society in general? Not being a gloom and doom type, nor given to groundless speculation, she will only say that "we have to work harder than ever before." She thinks it would help, however, if people bore fewer children and adopted less wasteful life-styles.

As for how she will dispose of the $150,000 ecology prize, she plans to put together an enormous book about rivers, collecting all available knowledge and filling in the gaps, if necessary, with more field work (she has already personally studied between 800 and 900 river sections throughout the world). "I do not believe money should be spent on personal frivolity," she says, a comment which from her is in no way self-sacrificing.

—CONSTANCE HOLDEN

NSF and Its Critics in Congress: New Pressure on Peer Review

The National Science Foundation's problems with critics in Congress have been compounded by a demand from Representative John B. Conlan (R–Ariz.) for peer review documents. Conlan's action raises the sensitive issue of confidentiality of peer review proceedings; this has broad implications for the system on which most federal agencies rely to enlist the aid of outside experts to evaluate research proposals.

Conlan charged in a press release on 12 May that NSF Director H. Guyford Stever "had ignored several written requests for NSF documents used in awarding more than $2 million for a disputed high school social studies curriculum called Individualized Science Instructional System [ISIS]."

Conlan said that NSF officials have "deliberately edited and misrepresented grant proposal evaluations from outside academic reviewers in order to push through funding of a particular science course." In a letter, Conlan told Stever that he should comply with the request for the documents or resign.

Conlan had requested both the evaluations contributed by outside experts and the names of the reviewers. Stever has declined to provide either, citing the long-standing NSF policy of preserving the confidentiality of comments on grant proposals and the identity of reviewers. He has been strongly backed by the National Science Board (NSB), the policy-making body of NSF. The NSB unanimously reaffirmed the policy in a resolution passed at its 25th annual board meeting on 16 May.

Conlan's charges also elicited a letter from Senator Edward M. Kennedy (D–Mass.) expressing the view that the charges "present a serious threat to the integrity of the Foundation and, if not dealt with fully and promptly, may result in irreparable damage to the Foundation's quarter of a century of excellence." Kennedy, who chairs the Senate subcommittee which handles NSF's authorizing legislation, asked the agency for "full response to these allegations, and all documentation which bears any relevance to them."

The Kennedy letter is being interpreted by informed observers as motivated by a wish to clear up the matter through a public airing of the relevant information. In his letter to Stever he writes, "let me assure you of my belief that the Foundation has diligently adhered to the very highest standards of scientific excellence in the selection of proposals for support, and in monitoring the performance of recipients of federal funds. I have been impressed with your own personal commitment to these high standards, and my own trust in you and in the leadership of the Foundation remains as strong as ever."

The ISIS project which drew Conlan's ire is an interdisciplinary science curriculum for high school students. In his state-

ment on 12 May Conlan said that the course contains "shocking and objectionable sex and behavior modification content that invades the personal privacy and sensitivities of young students."

ISIS, which is still under development at Florida State University, is intended to eliminate "unnatural barriers" between scientific disciplines. It is composed of some 80 "minicourses" in which specific topics are dealt with in an interdisciplinary manner, using concepts from physics, chemistry, and biology. Conlan's objections are apparently directed to two of the mini-courses, those on "human reproduction" and "birth and growth."

For Conlan, the pursuit of the ISIS peer review materials is a continuation of a campaign to forge closer congressional control of NSF's course and curriculum improvement program. Conlan's attack on

VITA: Appropriate Technology for the Third World

Bangladeshis cannot afford to buy imported soap and David J. Hopkins, a development worker in Dacca, wants to make a substitute out of locally available materials. A Methodist missionary in Bolivia, Robert L. Caulfield, needs to know how ammonium phosphate fertilizer can be used to fireproof thatched roofing. J. S. Joshi, the fisheries officer in Jamnagar, India, would like to find a commercial use for the copious supplies of seaweed that grow along his coast. Peace Corps volunteer Bruce Cohen runs a radio station on the Pacific island of Tonga and needs training materials for his staff.

The common feature of these various needs for help is that all were made known earlier this year to an unusual but little known organization called VITA, or Volunteers in Technical Assistance. With headquarters in a former convent in the suburbs of Washington, D.C., VITA is a nationwide network of some 6000 scientists and engineers who give free advice to people with technical problems.

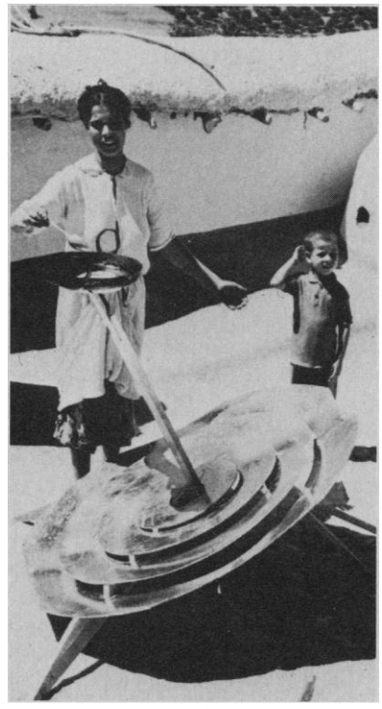
Most of the 1500 requests VITA receives each year come from the developing countries, with about a third each from Africa, South America, and Asia. Many can be answered by provision of material from VITA's library. Problems needing individual attention are forwarded on to one or more volunteers with relevant expertise. They will suggest a technical solution, and provide continuing advice to the requester until his problem is solved.

In the course of rendering advice VITA scientists and engineers have designed such implements as windmills, Savonius rotors, methane gas generators, Archimedes' screws, low-cost tractors, bicycle powered pumps, solar cookers (see figure), and spinning wheels. (The latter was not a case of reinventing the wheel; American colonial spinning wheels were found to be too sophisticated for many purposes, requiring a master craftsman to build them and considerable skill to operate.)

The emphasis in VITA's advice to Third World countries is on "appropriate technology," the use of skills and materials that are locally available, or, if equipment has to be imported, on designs that can be repaired by the village craftsman. Much of the volunteer advisers' experience has been incorporated into *Village Technology Handbook**, a manual which tells you nine-tenths of what you need to know about basic life-support systems, from the digging of wells to the salting of fish and the cutting of bamboo pens. The handbook was compiled by Daniel Johnson, an engineer with General Electric at Schenectady and one of the original founders of VITA in 1959.

VITA grew out of a local group, the Mohawk Valley Association of Scientists and Engineers, which included several GE scientists as well as Johnson and another VITA founder, Robert M. Walker, now at the Washington University, St. Louis. The purpose was to create a means for the scientific and technical community to give personal help with the problems confronting developing nations. At first members met in each other's houses. Later it was necessary to hire full-time staff, and then to move from Schenectady to Washington. During the "Great Society" years, at the government's request, VITA set up a domestic operation with branches in several cities, but government funds dried up in 1973 and the emphasis reverted to the original purpose of work overseas.

VITA's director is Tom Fox, an ex-Peace Corps administrator with experience in Upper Volta. Michael P. Greene, formerly a solid state physicist at the University of Maryland, has recently joined as the organization's technical director. VITA now has a headquarters staff of 20 and an annual budget of about $500,000 (down from $1 million at the time of its domestic involvement), to which the Agency for International Development is the largest single contributor. Local VITA's have been established in Nigeria, Brazil, the Philippines, and Central America. The organization reckons to have answered more than 25,000 requests from 100 countries.



Solar cooker designed by VITA scientists.

"Appropriate technology is an issue which lies at the center of development strategy but which at present is being left largely to organizations like VITA," says Charles Weiss, science and technology adviser at the World Bank and a member of VITA's corporate board. "VITA is pointing to a vast but unfilled need—it's a shame there is not a bigger effort in this field," he says. One limit on VITA's growth is that its services have not been widely publicized. Many of those requesting help are Peace Corps volunteers or Americans working aboard who have heard of VITA by word of mouth. Its smallness, however, may be linked to its success. Compared with the many costly aid projects that are of little or negative value to the people they are supposed to help, VITA is an efficient, if small-scale, vehicle for putting technical skills to the service of Third World countries.—N.W.

*Obtainable from VITA, 3706 Rhode Island Avenue, Mount Rainier, Maryland 20822. Price: $9 if you live in the United States and can afford it, free if you don't and can't.

the House floor on another NSF-supported project— the introductory anthropology course, "Man: A Course of Study" (MACOS)—at the time of the debate on the NSF authorization bill (*Science*, 25 April) was considered by many observers as having paved the way for an amendment requiring NSF to submit all research grant awards to Congress for review. The amendment, proposed by Representative Robert Bauman (R-Md.), empowers either house of Congress to veto a research project. If no action is taken within 30 days, however, the grant is automatically awarded.

The fate of the Bauman amendment is still unresolved. Although the amendment was attached to the authorization measure passed by the House, the Senate subsequently passed its own version of the bill which did not include any such proviso. Furthermore, no such amendment was discussed during the debate on the Senate bill. Kennedy had declared himself against such a review process for Congress, and his subcommittee had rejected the proposal.

The next step is a House-Senate conference to reconcile the two measures to allow final passage of the bill. The appointment of conferees by committee chairmen is ordinarily a routine matter, but when Representative Olin E. Teague, chairman of the House Science and Technology Committee, moved to name the conferees for the NSF bill under a unanimous consent motion, Bauman objected, automatically requiring that the matter be taken up more formally. Bauman is expected to propose that the House conferees be instructed to insist that the congressional review amendment be retained in the conference version.

Teague was expected to go to the House on 22 May to seek approval of the conferees without the commitment to the amendment, but he decided to defer the move until after the Memorial Day recess, which ends on 2 June. The delay seems to have been dictated solely by the press of business as the House tried to wind up its affairs before the recess.

The specific question of obtaining the peer review information seems, for the moment, to be in abeyance. The NSF point of view is that their position is supported by both practice and law. The rationale for confidentiality in the peer review system is the belief that it is difficult for a scientist to speak critically of a research idea on the record when the work of a colleague, friend, or a dominant figure in science is involved. This assumption undergirds the peer review structure throughout government.

Government lawyers trace the legal basis for confidentiality to the exemptions written into the Freedom of Information Act. While the Congress or a duly constituted subgroup of the Congress—a committee or special investigating committee —might win access to peer review material, an individual congressman making the request on his own initiative appears to be cast in the role of a private citizen. As such he would apparently not have a right to access under current interpretations of the law. At least two court decisions, including one involving a demand by the Washington Research Project for access to National Institutes of Health grant applications, have supported the confidentiality principle. The comments of experts participating in the peer review process were held to be opinion and, therefore, as part of the deliberative process which appears to come under one of the exemptions in the Freedom of Information Act.

Conlan, for the time being, appears to have opted for seeking to achieve his objectives by working through regular channels. Peer review is one of several major themes which are slated to be given special attention in oversight hearings scheduled to begin on 22 July. It is thought that Conlan will seek to make the hearings a forum for a critical examination of the peer review process. Although he is at present working within the committee structure, he does not preclude seeking judicial relief in his quest for the peer review information.

On the broader issues raised earlier about the curriculum revision program, there is action on several fronts. An NSF internal review committee appointed by Stever has been examining the agency's precollege curriculum program to determine whether agency criteria are being properly followed—from the selection of subjects to the making of business and contractural arrangements. The group has concentrated on five case histories based on representative projects. The MACOS and ISIS courses are included in the review.

The review team is headed by Robert E. Hughes, NSF assistant director for national and international programs, and is made up mainly of upper-level NSF officials who have not been involved in the curriculum projects. Also serving on the group are two members of the National Science Board, Grover E. Murray, president of Texas Tech University and Texas Tech University School of Medicine, and L. Donald Shields, president of California State University at Fullerton.

The group presented its review to the agency's advisory committee for science education in mid-May, and the committee then forwarded its own recommendations to Stever. The National Science Board has considered both sets of documents and plans to develop its own recommendations.

After the recess Hughes will present to Teague a set of recommendations which he himself prepared, along with comments by Stever. Last month Teague appointed a citizen review committee of his own to study the matter (*Science*, 23 May). The committee was asked to report at the end of June but, after holding a 2-day meeting in May, decided to request a month's extension. Teague is expected to agree.

NSF appears to have made a maximum effort with the review. There are signs that the agency will make a vigorous defense of its conduct of the curriculum development program, but will acknowledge that its procedures were not adapted rapidly enough to changing circumstances and will propose some fairly far-reaching changes.

In Congress, events in the House would appear to be crucial for NSF, and Teague the key figure. So far his actions have appeared to be deliberate and even-handed, but until the reports are in responses are unpredictable. It is safe, however, to predict a long, hot summer for NSF.

—JOHN WALSH

APPOINTMENTS

Brian J. Thompson, director, Institute of Optics, University of Rochester, to dean, College of Engineering and Applied Science at the university. . . . **John V. Bergen**, director, National Formulary, to president, Philadelphia College of Pharmacy and Science. . . . **William L. Nastuk**, professor of physiology, Columbia University, to director, Bioengineering Institute. . . . **Elmer L. Gaden, Jr.**, former chairman, chemical engineering and applied chemistry department, Columbia University to dean, College of Engineering, Mathematics, and Business Administration, University of Vermont. . . . **William E. Lavery**, executive vice president, Virginia Polytechnic Institute and State University, to president of the institute and university. . . . **James H. Brickley**, lieutenant governor, Michigan, to president, Eastern Michigan University. . . . **Richard V. Andrews**, assistant dean, School of Medicine, Creighton University, to dean, Graduate School at the university. . . . **John Naughton**, dean for academic affairs, School of Medicine and Health Sciences, George Washington University, to dean, School of Medicine, State University of New York, Buffalo. . . . **Irvin Omtvedt**, associate director, agricultural experiment station, Auburn University, to chairman, animal science department, University of Nebraska, Lincoln.