

tion, saccharin is used as an additive in many prescription drugs which, pharmacologists say, would have to be "re-constituted" were the sweetener to be prohibited.

As to alternatives to saccharin, it is safe to say that none is available right now. However, Abbott Laboratories, maker of cyclamates which were banned in 1969 on the basis of data showing they cause tumors in rats, has been trying for years to get FDA to allow them on the market again. Abbott claims, and many scientists tend to agree, that the data supporting the cyclamate ban were tenuous at best, and the company very likely would be happy to get back into the artificial sweetener business. Another big drug house, G. D. Searle & Co., is ready and willing to bring something called "aspartame" to the market. A company press release dated 17 March declares that "Aspartame may be low-cal substitute for saccharin." But the

FDA is not too sanguine about aspartame and has stayed its approval pending a review of Searle's animal data. In fact, Searle and the FDA have been debating the aspartame question since 1974 and, at the request of FDA, Searle has agreed "in principle" to pay for an independent review of its own studies. Searle understates the case when it says, "The company is unable to estimate when this review will begin or be completed." One can be sure that aspartame will not be on the market any too soon. Chemicals extracted from the rinds of oranges and grapefruit have been discussed recently as new artificial sweeteners but, because of their fruity taste, they would have limited application even if they were fully developed and accepted by the FDA. So one must conclude that a ban on saccharin really means an end to artificial sweeteners for the time being at least.

Whatever happens to saccharin, one thing is sure. There will be no ban until

July at the earliest, so there is plenty of time to stock up. What the FDA said in its 9 March announcement is that it is setting in motion all the legal machinery necessary to issue a ban. In effect, it gave everybody advance notice of the fact that it will publish its proposal for a ban in the Federal Register some time in mid-April. After that, the "public" has 60 days in which to comment, arguing for or against the agency's position. Then, FDA must review the information it has received and, only after that, can it force saccharin products off the shelves. It is not foolhardy to speculate that the 60 day period for comment might be extended and the debate will rage on for some months before things are settled. As Washington *Post* writer Tom Shales wryly observed in a recent column, "The FDA has opened a Pandora's box and fallen into a fine kettle of fish." But not by accident.

—BARBARA J. CULLITON

## Solar Energy Research Institute: Grumbles About a Change in Plans

The Energy Research and Development Administration (ERDA) has picked a contractor and initial site for the Solar Energy Research Institute (SERI) amid grumblings that the new facility will be little more than a "captive organization" whose effectiveness may be diluted because last-minute political maneuvering resulted in a plan to build several regional SERI's to supplement the central facility.

The contractor chosen to establish and operate the central facility is the Midwest Research Institute (MRI), headquartered in Kansas City, Mo., which submitted a proposal in cooperation with the State of Colorado. MRI will launch initial operations in leased office space near Golden, Colo., just west of Denver, and is prepared to establish a permanent facility, if such is approved, on 300 acres of land on nearby South Table Mountain. The proposed permanent site is owned by the state, which has agreed to deed it to the federal government without cost in an effort to snare the coveted research plum.

The choice of MRI was the end result

of an arduous evaluation and selection process carried out by ERDA over much of the past year. The agency received 20 formal proposals. One was quickly rejected as unresponsive to many of the requirements; the other 19 were subjected to detailed review, including oral and written communications and visits to each of the proposed sites.\* The evaluations were conducted by a Source Evaluation Board of ERDA personnel, headed by Raymond Fields, which scored each proposal on the basis of its overall management plan, key personnel, and manpower resources. The board was unanimous in rating the Midwest Research In-

stitute-State of Colorado proposal as best, and ERDA's acting administrator Robert Fri, who was officially responsible for the final decision, stated: "After careful consideration, I agree that the MRI-Colorado proposal is the best."

So far as is known, the selection process was conducted thoroughly and fairly. None of the original proposals or ERDA's evaluations of them has been made public, and therefore even the other contenders have no real idea how good the winning proposal was. But Fields says the selection board felt no political pressure whatever to decide the issue on any basis other than merit. And at least one of the runners-up concedes that the judging was fair. Says an aide to Senator Edward M. Kennedy (D-Mass.), who lobbied hard to get the prize for New England, "Naturally, we were disappointed. We understand we were in the running until the very last minute. But there's every evidence it was a fair, objective decision. There's apparently wide agreement that Midwest Research Institute

\*The 18 final competitors, in addition to MRI, were: Battelle Memorial Institute of Columbus, Ohio, teamed with the State of Arizona; Corporation for Solar Energy, sponsored by the California Energy Resources, Conservation and Development Commission, Berkeley, California; State of Georgia for Solar Consortium, Atlanta, Georgia; Icarus Corporation, sponsored by The City Council, City of Wilkes-Barre, Pennsylvania; Purdue University in cooperation with the State of Indiana; Solar Research Management Corp., Lockheed Missiles & Space Company, Inc., of Palo Alto, California, in cooperation with the State of Florida; Michigan Energy and Resource Association of the State of Michigan, teamed with Bendix Corp., Lansing, Michigan; National Solar Energy Research Consortium, Inc., Washington, D.C.; National Solar Energy Research Institute, Inc., Minneapolis, Minnesota; Nebraska Energy Research Corp., Lincoln; State of New Jersey, Trenton; Solar Energy Research Institute of Boston, Massachusetts, on behalf of the States of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont; Southwest Research Institute, San Antonio, Texas; Stanford Research Institute of Menlo Park, California, teamed with the State of New Mexico; System Development Corp. of Santa Monica, California, teamed with the El Paso Regional Solar Energy Task Group; Thermo Electron Solar Huntsville Corp., Huntsville, Alabama; University City Science Institute, Philadelphia, Pennsylvania; Department of Natural Resources, State of Utah, Salt Lake City, Utah. The competitor who was dropped early in the game was Goodrich-Bartlett & Associates, of Las Cruces, New Mexico.

submitted an excellent, excellent proposal."

The issue that troubles many observers, however, is a decision made late in the game to establish several satellite solar laboratories as well. The notion of satellite laboratories has been floating around ever since ERDA started pondering how SERI might be organized more than a year ago, but the concept never gained substantial support. The National Academy of Sciences, which was asked by ERDA to suggest criteria for the new institute, came out strongly against multiple laboratories. An academy committee headed by Richard L. Garwin, an IBM physicist, urged that a single SERI be created with only some "relatively small" nonpermanent field stations set up elsewhere to study phenomena that could best be observed in certain locations (wind energy, ocean thermal gradients, and the like). The academy argued that it would be a mistake to set up several research centers "fully duplicative" of each other because it would be inefficient to try to create large, competent staffs at each center and to replicate analytical capabilities at each. The academy also rejected the idea of several different centers, each specializing in a particular facet of solar energy, because it felt that evolution of the solar-energy field would require frequent redeployment of resources, an exercise "most readily achieved if the resources are not divided into rather fixed packets so that a decision to phase down or abandon one line threatens the continued existence of a specialized research institute."

ERDA seems initially to have accepted the academy's reasoning, because at the time the agency officially solicited proposals from contractors interested in setting up SERI, it did so on the basis of a single central facility. That is what the contractors submitted plans for and what the Source Evaluation Board evaluated. Then, shortly before the winning contractor was to be announced, the Carter Administration decided to set up some regional centers as well. The notion of satellite laboratories had never completely died; it had been cited in issue papers prepared by ERDA for study by the new Administration during the transition period. But the final decision to adopt a regional approach was made only recently at a meeting between James Schlesinger, President Carter's energy czar, and Fri, the head of ERDA. Thus, the press release announcing that MRI had been chosen to establish the central SERI in Colorado, proclaimed "in addition" that "by far the most effective way to encourage widespread use of solar en-

ergy is through a regionally diversified effort. Therefore, [ERDA] will work with regional organizations to establish additional components of a national SERI effort."

Many participants believe that the regional approach was adopted almost entirely for political purposes—to defuse opposition from regions of the country that were lobbying hard to get SERI and would be disappointed to come out empty-handed. By this reasoning, a satellite laboratory might help to ease the pain of defeat. Some politicians are known to have intervened personally in an effort to snare SERI for their regions. Senator Edward M. Kennedy (D-Mass.) and other Massachusetts politicians who accompanied President Carter on his trip to the recent "town meeting" in Clinton, Mass., took advantage of the opportunity to extol the virtues of New England as a home for SERI. Senator Hubert H. Humphrey (D-Minn.) said he had lobbied vigorously at the White House and was confident his state would be selected as the site for a regional facility.

#### Politically Favored Regions

Whatever the reason, the regional components of SERI appear headed for sections of the country that carry political weight in the Carter Administration. Planning grants will be offered to organizations to propose "regionally based solar research efforts" in three areas of the country—the Southeast, home of President Carter himself; the North Central area, home of Vice President Walter Mondale and Humphrey, a major sponsor of the legislation that established SERI; and New England, home of House Speaker Thomas P. O'Neill, Jr. and Kennedy, another major sponsor.

New England is the only area that submitted its first SERI proposal on a regional basis; states in the other areas will have to unite on a regional approach if they hope to snare a satellite facility. The big losers in this solar sweepstakes appear to be the far west and southwest, which are not currently slated for any facility, although the possibility of still more satellites has not been ruled out.

The regional approach was adopted so hurriedly that no one is sure just what the regional facilities are supposed to do. ERDA cannot even figure out what to call them; its press release refers to them vaguely as "components" or "efforts." Some supporters of the New England proposal have come away from discussions with ERDA confident that they will be able to set up a fairly extensive program—precisely what the academy sought to prevent. But various officials

involved in establishing a framework for SERI give differing "guesstimates" of the role of the regional components.

Some key participants believe the regional approach is advantageous. Donald A. Beattie, ERDA's acting assistant administrator for solar, geothermal, and advanced energy systems, states: "We think it's going to work and has a lot of merit to it."

Beattie said that the regional facilities will get additional funds beyond those planned for the central SERI installation. "They will not be slicing up the SERI pie," he pledges. But some observers believe that, in the long run, such slicing up is inevitable. Given a limited amount of funds for solar energy research, they reason, any increase in the number of facilities receiving those funds will lessen the amount available to the others.

Other aspects of the plans for SERI are also causing concern in some circles. For one thing, the new institute will report to the director of ERDA's division of solar energy, a relatively low-ranking official. That has the practical disadvantage of leaving some ERDA programs of importance to SERI—such as materials research that is housed in another division—outside the administrative framework in which SERI will operate. It may also indicate, some solar enthusiasts fear, that ERDA is not wholeheartedly committed to the new institute, which is being established at the behest of Congress rather than of the Executive Branch.

Moreover, SERI will be under potentially tight administrative control from ERDA's Washington headquarters and will not enjoy the autonomy that some observers consider necessary for a first-rank laboratory. This is particularly troubling to those solar enthusiasts who believe ERDA's solar programs have thus far been less than exemplary. The academy committee recommended that SERI be given block funding and set up under a board of directors that would insulate it somewhat from the ERDA managers in Washington. But ERDA, apparently fearful that such a laboratory would prove unmanageable and unaccountable, opted for more direct control.

At least one of the competitors for SERI—a consortium of Caltech, Stanford, the University of California, and the University of Southern California—found the proposed management relations so restrictive it almost dropped out of the competition, according to Paul Craig, director of the University of California's energy and resources council, who quarterbacked the California entry. The Californians particularly objected

that ERDA's request for proposals required SERI to "accept ERDA direction and work surveillance over the work program" while the draft contract required SERI "not to assign or remove any [key personnel] without the prior written consent" of ERDA. Thus, when the Californians submitted their proposal, they complained that "the tenor and, in many respects, the provisions of the draft contract are such that SERI cannot be effective as a contractor-operated study and research organization."

Craig told *Science* he believes the ERDA decisions on SERI are "exactly what would be expected of an organization given a mandate which it does not wish." He said ERDA has structured an institution "so captive as to dissuade anyone committed to excellence"; he predicted that the satellite facilities will "dilute the organization by making it coordinate a number of regional areas determined by geography, not technological needs"; and he called the low rank of the official to whom SERI reports "clear evidence of an intent to downplay the whole thing." He also suggested that the MRI proposal may have been picked because it was "the least threatening one strong enough to be defensible." Craig is vulnerable to a charge of voicing a loser's "sour grapes," but it should be noted that the Californians were complaining even before they formally entered the competition.

The man who will direct SERI for the MRI team shares a few of the misgivings about potential problems but is basically optimistic that all will work out well in practice. He is Paul Rappaport, 55, who is currently director of the process and applied materials research laboratory at RCA's David Sarnoff Research Laboratories in Princeton, New Jersey. Rappaport, an expert in photovoltaics and solar cells, was a highly popular choice to head SERI. (Craig calls him "an excellent person.") No fewer than eight different competitors for SERI asked Rappaport to head their teams, and he agreed to let himself be listed as director on the entries from three states—Colorado (the eventual winner), Arizona, and New Jersey. Rappaport's deputy director at the Colorado site will be Michael C. Noland, who is currently director of MRI's engineering sciences division.

Rappaport told *Science* he feels strongly that the regional components must relate to and report through the central SERI. "Otherwise I would not take the job," he said. "I would be very upset if we ended up with four SERI's that competed and overlapped." However, Rappaport called the regional approach "not a bad idea" because it allows many states to feel they are taking part. Rappaport also acknowledged some "concern" about ERDA's desire to retain detailed managerial oversight, but he recognized that SERI must be

"responsive" to ERDA and national needs. "If I come to feel too restricted—so that we cannot bring in the right kind of people—then we'd have a major problem and I'd have to do something about that," he said. Rappaport added that, while some ERDA officials initially seemed skeptical that SERI could have much effect, virtually all officials now seem to consider it "a valuable thing."

Negotiations are under way between ERDA and MRI on a 5-year contract to establish SERI. Costs are estimated at \$4 to \$6 million for the first year and are expected to rise toward \$20 million in the third year, if the regional components are included. The initial staff will include up to 75 professionals at the central site. ERDA has been saying that SERI's initial role will include analytical and assessment work and certain research activities with a potential for quick payoff. But Rappaport says his personal hope is that perhaps 60 to 70 percent of SERI's effort will be "hard R & D" with the remaining 30 to 40 percent devoted to such "soft sciences" as analysis and assessment, environment, and marketing.

Meanwhile, Beattie, the assistant administrator in charge of solar programs at ERDA, pooh-poohs fears that SERI is being downgraded or diluted. "The new Administration looks on SERI with kinder eyes than the previous one," he says. "The climate for solar energy is good."—PHILIP M. BOFFEY

## Stevens Institute of Technology: After the Strike, Still Unsettled

*Hoboken, N.J.*—On 10 February, striking faculty at Stevens Institute of Technology voted to return to work. Their 18-day strike was the longest in the annals of their union, the American Association of University Professors (AAUP) and is thought to have set a record for higher education. But it produced no significant movement toward agreement on a contract.

Negotiations have continued, but the firing of two tenured faculty members during the strike—the administration argued that it was exercising a right to protect its legitimate interests by hiring replacements including permanent replacements—has led to a protest action before

the National Labor Relations Board and a court case, and has added a major issue to the dispute.

Stevens, a private institution with a good regional reputation, has 1300 undergraduates and 950 graduate students. After World War II the institute expanded its research activities and amplified its curriculum to include programs leading to degrees in science and in technology and society in addition to its traditional engineering degrees. But it is still perceived as primarily an engineering school, and about 85 percent of its undergraduates take engineering degrees.

The strike punctuated Stevens' first experience with collective bargaining.

The AAUP was designated as bargaining agent in an election in late spring 1975 decided by a single vote, 51 to 50.

Unionization at Stevens seems to have been precipitated by a financial recovery plan announced by the administration in 1974. Like many other institutions of higher education, Stevens was under heavy pressure from inflation and was experiencing operating deficits. The administration responded with a 3-year plan which, among other things, called for no raises last year and a 5 percent increase during the current academic year. The faculty objected strenuously to the salary restraints at a time when living costs were rising rapidly and Stevens salaries were falling behind those at comparable institutions. Pay, then, was a primary issue, but the plan developed by the administration also affected such things as tenure procedures, faculty workloads, and rules on consulting, and stressed "management rights" in general.

Money and power, therefore, are