

has manipulated the University not for the well being of teaching assistants, or students, or secretaries, or janitors, but rather for the commercial interests of a capitalistic state. . . . If America is to be changed, it should be obvious that our generation is going to have to do the changing. . . . We do right by opposing through our contract demands, union education, and direct action the racism and imperialism which drain our natural resources as they divide our working class. What parody of progress it would be for us to march backward eating bread and dusty butter as we drag the polluted and competitive present into a lost socialist and democratic future."

"They can't be both management and

workers," retorted Young recently. "The labor unions," he said, "are on our side except some Teamsters." The Madison Teamsters local supported the TAA strike by permitting its drivers to refuse to cross student picket lines, and by taking campus bus drivers off the job for a time. But local 171 of the Wisconsin State Employees Association, representing blue-collar workers on the campus, did not back the strike. Neither did the state AFL-CIO.

The TAA has "a transitory membership," Young commented. "We were worried about that until the strike," commented a TAA spokesman. The TAA called the strike because, it said, the university had refused to engage in satisfactory ne-

gotiations over the preceding 9 months. But a major purpose was organizational—to consolidate the union's strength and develop leaders for a continued campaign of pressure on the university and its departments. What long-term success the union achieved toward this goal remains to be seen.

A "student-worker alliance" has been a romantic dream of certain campus radicals from Berkeley to Nanterre. Having in their way realized the dream on a small scale, despite a lack of support from the AFL-CIO, the Madison TAA leaders now talk of organizing teaching assistants, junior faculty and campus workers across the nation into an international, industrial style union.—ANDREW HAMILTON

## Nader's Raiders on the FDA: Science and Scientists "Misused"

A student task force working under consumer advocate Ralph Nader charged last week that the Food and Drug Administration (FDA) has distorted scientific data and has chastised scientists who disagree with it. These and other allegations that the FDA has "misused" science are contained in a 292-page report\* issued by the Nader group at a press conference in Washington, D.C., on 8 April. This latest attack adds to the woes of the beleaguered FDA, which has become embroiled in a variety of disputes and has run through three commissioners in the past 4 years (see *Science*, 16 January 1970).

The Nader report is a sweeping indictment of virtually all of the FDA's food protection programs, which are described as in a state of "total collapse." The report charges that the "quality of the American diet has been allowed to deteriorate" over the past decade. As evidence of this trend, it cites a review article published in the *Journal of Nutrition Education* last fall, which concluded that "dietary habits of the American public have become worse, especially since 1960."

Nader's investigators put much of the blame for this decline on the FDA's failure to serve as an effective counterweight against the "corporate greed and irresponsibility" of the \$125-billion food industry, which is described as more interested in maximizing profits than in providing safe and nutritious food. The investigators charge that the FDA has succumbed to political pressures; has adopted food regulations that "read like a catalogue of favors to special industrial interests"; has been unable and unwilling to protect the consumer; and has deliberately misled the public and Congress, among other sins of commission and omission. They also charge that Secretary of Health, Education, and Welfare Robert H. Finch has been guilty of "destructive intervention" into FDA affairs, with the result that "it now appears that no major decisions are being made at the level of the FDA."

One of the most interesting features of the report is a number of alleged incidents in which FDA officials, through a variety of stratagems, lies, and pressures, have tried to quash scientific evidence that called into question their actions. If the incidents occurred as described—and some of them seem to be well documented—this report may well contain the most titillating material yet published on the hazards

of being a scientist under the thumb of a public-relations-conscious government agency. The report also has critical words for the National Academy of Sciences, various high government officials, and the "small group of industry-dependent 'food scientists' who more often than not routinely produce scientific studies that support the most recent industry marketing decision." The report says the FDA's "impotence" is caused partly by its heavy reliance on the "meager scientific research" carried out by the food industry.

The FDA has not yet decided whether to make a point-by-point answer to the charges. Last week Charles C. Edwards, the FDA commissioner, announced that, while he had not yet read the report, he was "well aware" of certain problems raised by the Nader group. But Edwards expressed the belief that "changes that have taken place over the past few months have been responsive to the need for improving and upgrading the ability of the FDA to function in the best interests of all consumers."

The Nader group's report was based primarily on a 4-month investigation of the FDA conducted last summer by a team of 16 students and recent graduates, drawn mostly from the fields of medicine and law. The team was headed—and its report was written—by James S. Turner, a 29-year-old graduate of the Ohio State University law school. Turner's investigators were among some 110 "Nader's raiders" who spent last summer digging into the policies and practices of federal regulatory agencies. The student teams were under the general supervision of Na-

\* *The Chemical Feast*, by James S. Turner, is available from the Center for Study of Responsive Law, 1908 Q Street, Washington, D.C., for \$10 (send check with order); a cheaper paperback version will be available through bookstores in the near future.

der, who has gained fame as a champion of consumer interests, and they worked through Nader's Center for the Study of Responsive Law, which is supported by foundation funds. Nader groups have previously issued reports critical of the Federal Trade Commission and the Interstate Commerce Commission. Additional reports on pollution and agriculture are expected to be released in the coming months.

Nader's team seems to have been granted remarkably free access to the FDA's records and personnel. High FDA officials directed all employees to assist the investigation, and the student team reports that the agency seemed "eager to help." The students were at the agency on virtually a daily basis during the summer. They conducted more than 500 separate interviews with sources inside and outside the agency, and they collected more than 10,000 documents. Despite the agency's cooperation, the students felt that they were frequently lied to, and their report has a bitterly critical and disillusioned tone to it. "It is fair to say," the report concludes, "that none of the students expected to find in the FDA the shocking disarray and appalling failure of responsibility that their investigations revealed almost daily. As the number of altered documents, misrepresented facts and suppressed studies began to mount, the students' initial skepticism changed to a deep doubt about all the agency's activities and finally ended in the conviction that most agency efforts were a failure."

#### Science Prostituted

The report throws so many brickbats that it is difficult to enumerate them all, but the charges involving alleged "prostitution of science" were summarized in a press release accompanying the report. The release claims that "the FDA regularly tailored its scientific activities to support already arrived at administrative positions" and that "scientific opinions and memoranda have been distorted, altered, misrepresented and ignored, allowing serious potential health hazards to go unreported or uncorrected for indefensible periods of time." For the most part, the students try to avoid the tricky business of judging the validity of competing scientific studies and claims. Instead, they concentrate their fire on the mechanisms by which scientific data is (or is not) brought to the attention of policy-making officials, and they argue that the mere existence of scientific controversy

or doubt, in many cases, should be enough to require that dubious substances be withheld from the food supply until proven safe.

The most blatant case of document altering uncovered by the students involved a memorandum warning that the marketing of cyclamates—a class of artificial sweeteners—should be stopped because of possible carcinogenic and mutagenic effects. The memorandum, which was written in January 1969 by Marvin Legator, head of cell biology research at FDA, described findings from a study of human prisoners receiving cyclamates. It closed with a strong recommendation that "the use of cyclamates should be immediately curtailed, pending the outcome of additional studies." The memo was passed to Legator's superior, Edwin L. Hove, who disagreed with the recommendation and deleted it from the memo. The students charge that Hove—without informing either Legator or the FDA commissioner or the official to whom the memo was actually addressed—prepared and forwarded a new memorandum over Legator's name, using the same heading and date and the original language, but omitting the recommendation against cyclamate use. The students charge that this "deceptive irresponsible action" obscured the "profound importance" of the discovery Legator wished to communicate to the FDA commissioner.

The students are highly critical of the government's handling of the whole cyclamate controversy. They charge that the FDA consistently ignored or minimized scientific studies suggesting that cyclamates might be dangerous; that an FDA advisory committee which gave a favorable report on cyclamates last year did not contain, or even consult, a single scientist critical of cyclamates; and that high government officials have undercut the effectiveness of a ban on cyclamates that was announced last fall. Last October HEW Secretary Finch announced that he was taking off the market soft drinks and foods which contain cyclamates because such action was legally required after findings that cyclamates caused cancer in test animals. The students charge that Finch later delayed the effective date of the ban to cut the economic losses of the food industry, that he allowed food products (though not beverages) containing cyclamates to be sold on a non-prescription basis if they carry a warning label, and that he continues to play

down doubts about cyclamate safety.

Another instance of distortion of scientific data occurred when Herbert Ley, then commissioner of the FDA, testified before a congressional committee last July. Ley read a staff paper contending that monosodium glutamate (MSG), a flavor enhancer, was safe for use in baby food despite questions about efficacy and safety that had been raised previously by Nader and by a few scientists. The staff paper cited four "refined toxicological" studies which supposedly supported FDA's position that MSG was safe. But a student investigator who later contacted the FDA researchers involved found that "two of the tests had apparently not been conducted at all and the other two were preliminary in nature." The FDA has denied many of the students' contentions concerning these four tests, but the students seem to have been on target in some, if not all, respects. Ley publicly apologized to the congressional committee for citing one test that had not been conducted until 8 days after his testimony, and the investigators involved in a second one of the tests wrote a letter asking the commissioner to modify his statement. The students blame the incident on the "psychological atmosphere" at the FDA which leads staffers to "filter out and reject evidence that does not support the administrative position already taken and to elevate even the most flimsy information that does support the administrative position."

#### Misleading Use of Poll

The students were particularly critical of the way in which the FDA developed its so-called GRAS list, which is a list of food chemicals that are "generally recognized as safe" and are thus exempt from legal requirements that food additives must undergo rigorous testing for safety before they are added to the food supply. The students say the FDA prepared a tentative list of safe substances in December 1958, then sent it to 900 scientists throughout the country for comment. Only 355 replied, and of that number, only 194 "concurred with the list or made no comment." Subsequently, a revised list, which deleted six of the original substances, became official. The students claim that only one scientist responding to the FDA commented directly on cyclamates, and he said there was not enough information available to include them safely on the list. Yet the FDA's final statement, made in 1959, con-

cluded that safety had been "adequately established" for nonnutritive sweeteners, including cyclamates.

The students' report charged that the FDA's "selective acceptance of expertise deprived the creation of the GRAS list of any respectability as a scientific endeavor. . . . The vigor with which the FDA announced that it had consulted 900 scientists about the list suggests that the consultation was done for public relations and not scientific reasons."

Some of the incidents cited by the students illustrate what they consider "almost incredible . . . bungling" by the FDA. Perhaps the prime example of this is the FDA's campaign against vitamin supplements. In 1962 the FDA decided that vitamin supplements and health foods cost the American people an unnecessary \$300 million each year, so it issued regulations to suppress the "fraud." The most significant part of the regulations was a requirement that each bottle of vitamins be labeled to inform the public that they get all the vitamins they need from the food they eat. The FDA claimed to have the support of the National Academy of Sciences-National Research Council, but it had changed the amounts of various vitamins recommended by an NAS-NRC committee headed by William Sebrell. Sebrell consequently denounced the FDA regulations. In recalling the incident, James Goddard, former FDA commissioner, said: "It shook me up that we didn't have enough know-how to prevent the mistakes that became apparent in the dietary supplement regulations." Goddard tried to track down the man who had changed the NAS-NRC recommended amounts only to find that he had left the agency immediately after filing his report. By that time, the students note, "the agency was so far down the path of pushing the regulations that it could not withdraw."

The FDA is not a happy place for scientists to work, if the student investigators are to be believed. Several researchers showed the students "atrocious logs" in which they kept detailed accounts of "assaults on their scientific integrity." They complained that some supervisors routinely sign their names to research work they have not conducted; that one supervisor dispenses invitations to scientific meetings only to "yes men" and "stooges"; and that another supervisor has expressed the belief that mediocre researchers should be promoted because they need more help

than good researchers do. The most common complaint was that the FDA "constantly interferes" with medium- and long-range research projects, at least partly from fear that the results will embarrass the agency.

The students also criticized the FDA for retaliating against scientists who disagree with its positions. They noted that Jacqueline Verrett, an FDA biochemist who reported a relationship between cyclamate injected into chicken eggs and deformities of embryos taken from the eggs, was consistently ignored by the FDA and was then criticized by Secretary Finch for expressing her doubts about cyclamates on a Washington, D.C., television station.

#### Critic Fired

Similarly, William C. Purdy, who served as science adviser to the FDA's Baltimore district, was let go after he submitted a detailed critique of one of the FDA's pesticides control programs. Purdy's contract was not renewed when it expired last July and, according to the students, the FDA shortly thereafter removed all the raw data laboratory sheets from the Baltimore office, thus removing "some of the major evidence supporting charges against the program from the reach of persons who might be critical of it."

The National Academy of Sciences also comes in for criticism, though the attack on the Academy is not nearly so bitter in tone as the attack on FDA. The students charge that the NAS Committee on Non-Nutritive Sweeteners ignored data, which an alarmed FDA scientist submitted to it, suggesting that cyclamates might cause genetic damage, apparently because the committee has a stated policy of evaluating "only material that is in the published literature or has come to it through official channels." The students also claim that FDA officials who sit on the Academy's pesticide committee are "crucial to its operation" and that the FDA thus ends up sitting in judgment on itself when the Academy reviews pesticides.

The students make a number of recommendations aimed at turning the FDA from a "mediocre plodding agency" into a "vital force for the public good." Perhaps the most significant recommendation is that the laws be changed so as to make FDA enforcement actions compulsory rather than dependent on "the discretionary authority of the politically appointed Secretary of Health, Education and Welfare." The students also suggest

## NEWS IN BRIEF

### ● INTERIOR UNDER SECRETARY:

Fred J. Russell, a multimillionaire California businessman, has been appointed to the Interior Department's second highest post. Russell was formerly Deputy Director of the Office of Emergency Preparedness, a post he assumed shortly after the 1968 election. The 53-year-old Russell has both industrial and real estate holdings, with experience in developing residential and industrial property. He takes over as Under Secretary from Russell E. Train, now head of the Council on Environmental Quality. Train had been, prior to his appointment in the Interior Department, president of the Conservation Foundation, a leader in the International Union for the Conservation of Nature and Natural Resources, and a founder of the African Wildlife Leadership Foundation.

### ● OIL SPILL BILL:

President Nixon has signed a bill imposing stiff penalties on owners of leaking oil wells or tankers which pollute U.S. territorial waters. Under the new law, an owner could be billed for cleanup costs of up to \$14 million for each incident, unless he could prove the spill was caused by an act of God, war, or a third party. There would be no ceiling on an owner's liability if he were found guilty of willful negligence or misconduct. Authority is also provided for immediate federal action to clean up spills, criminal penalties for failure to give notice of such occurrences, and research to develop new cleanup methods.

### ● PILL WARNING MODIFIED:

The Food and Drug Administration, apparently responding to pressures from doctors, pill manufacturers, and planned parenthood advocates, has revised its proposed warning for birth control pills. The new 115-word warning (about 1/6 the original length) does not mention any side effects except blood-clotting; it advises women to consult a doctor if they experience any of several symptoms. All technical language and statistics have been removed from the new warning, which was published in the *Federal Register* last week. A more detailed statement, similar to the one first proposed by the FDA, will be sent to all doctors. Interested parties now have 30 days to comment.

that consumer representation be brought into the FDA decision-making process; that the FDA be given "scientific independence" from industry by setting up a well-funded research laboratory or a referral board that might act as an umpire in judging scientific claims; and that the FDA "regain the confidence of its own scientists" by easing the rules of publication, using university professors as science adviser ombudsmen, and allowing scientists a more direct part in FDA decision-making. The students particularly urge that the FDA seek to enforce the law rather than simply try to persuade industry to obey the law. A basic theme of the whole report is that the FDA's "faith in industrial self-regulation" has been misplaced.

What is one to make of this outraged, sweeping attack on the FDA? To begin with, one must note that the

report was put together by young people, students mostly, who presumably came to Washington expecting to find out how the system had gone wrong. There is thus a possibility that the report contains errors resulting from youthful inexperience or from the blindness that sometimes afflicts those with a preconceived notion of what they might find. Yet Nader, over the years, has developed a reputation for accuracy that few reformers can match. And while Nader did not participate directly in the study of the FDA, he has emphatically endorsed the task group's report. At the press conference last week, he said the report documents "a story of truly massive deception" by the FDA and industry.

The report has few, if any, kind words to say about FDA. It thus reads more like an indictment than like a balanced appraisal. But the function of

the report is to point out shortcomings and to goad the agency into reform. For that purpose an indictment is probably more effective than an "on-the-one-hand-this . . . on-the-other-hand-that" approach. In answering previous attacks the FDA has tried to shift the blame to Congress for failing to provide the agency with sufficient funds, staff, and authority to carry out its responsibilities. The students will accept that explanation only in part. "The real heart of the failure," they say, "is the agency's misdirected leadership" and the "destructive intervention" of the political appointees who supervise the agency. The report is overwhelmingly negative in tone. But if even half of the charges made by the students are true—and Nader's batting average is reputedly much higher than that—then the FDA is unquestionably in need of a major overhaul.—PHILIP M. BOFFEY

## Weather Services: Working toward Worldwide Forecasts

Weather prediction for public consumption in the United States began in the 1850's with a group of amateurs, linked by telegraphy, observing storms in the Great Lakes area in order to warn ships. Today the government is on the threshold of participating in two new giant international experiments, designed to fill gaps in the un-

derstanding of the world's weather system.

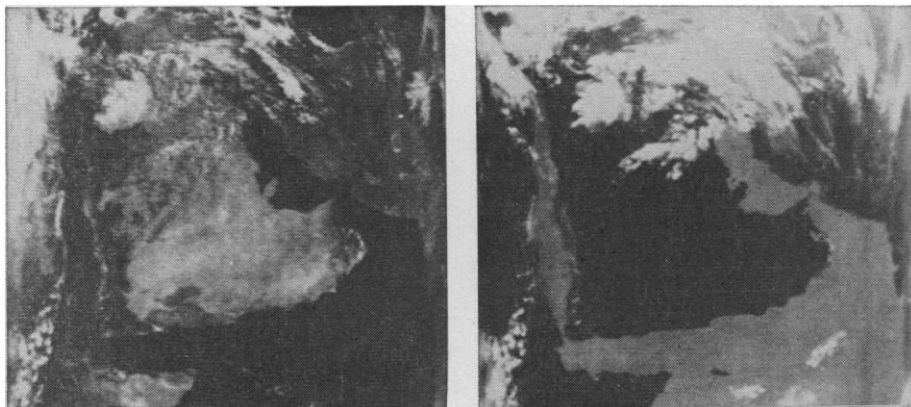
The two experiments, plus the results of an earlier one, may lead to a truly accurate and complete global network of weather forecasting. A World Weather Watch (WWW) was formally established in 1968, but the name denoted a goal rather than a fact (*Sci-*

*ence*, 16 June 1967). The WWW is a global observation network and data-processing and telecommunications system with three centers—Moscow, Washington, and Melbourne. But weathermen do not have adequate facilities all over the globe—observational facilities are particularly lacking in underdeveloped countries and on the oceans—and weathermen do not completely understand tropical weather. The two projected experiments are designed to help fill the gaps.

The two new experiments were discussed at a conference in Brussels late in March, attended by delegates from 25 nations, which was sponsored by the World Meteorological Organization (WMO) and by the International Council of Scientific Unions (ICSU). Robert Mayer White, administrator of the U.S. Environmental Science Services Administration (which includes the Weather Bureau), led the American delegation.

The Brussels conference agreed to begin a "Tropical Experiment" in the fall of 1973 or 1974 in the tropical Atlantic region—from about 15°N to 10°S. The participating nations tentatively volunteered to donate up to 24 oceanographic and meteorological vessels and ten instrumental aircraft. Britain and France each said they hoped to have new satellites in orbit to aid the experiment.

A Tropical Experiment Board was appointed to manage the experiment,



The newest satellite weather eye, Improved TIROS Operational Satellite-1, shot these pictures of the Caspian Sea and Saudi Arabia area on 11 February from an altitude of about 920 statute miles. The photograph at the left was shot during daylight hours; the one at the right was shot during total darkness by a scanning radiometer. For the first time, relatively inexpensive ground stations all over the world are receiving nighttime as well as daytime cloud cover pictures from ITOS-1.