AAAS team seems to have been the first group of any kind—military or civilian—to collect samples of shrimp, fish, human milk, human hair, human fat, and other materials so that they could be analyzed for the presence of herbicides or their breakdown products. The team is still struggling to develop analytical techniques capable of detecting extremely low concentrations of dioxin, an impurity in Agent Orange that is so toxic that tiny amounts of it concentrated in the food chain could cause health problems. The AAAS team concluded it is "not impossible" that significant amounts of dioxin are entering the Vietnamese diet, but Tschirley, of the Agricultural Research Service, reported new experimental results which indicated that dioxin is photodegraded quickly, does not accumulate in the soil, and is picked up only in small amounts by plants. Tschirley said he doesn't believe there is a "very real possibility" that enough dioxin is being concentrated to cause damage, but he acknowledged that further tests must be made to determine whether dioxin accumulates in the fatty tissues.

Military Considerations. The AAAS did not consider the military utility of herbicides, but Gen. Stone, in rebutting the AAAS findings, argued that "the benefits have outweighed the adverse effects" and that "herbicides have been militarily useful and have saved many lives." Stone said that defoliation of thick undergrowth has reduced the incidence of ambushes and surprise attacks and has enabled the Army to keep tabs on enemy movements. He also said that crop destruction has "hurt the enemy's ability to live off the people and the land." This is indicated, he said, by the fact that enemy defectors have complained of food shortages. Meselson countered by arguing that Stone's evidence was essentially anecdotal and that it was not clear just what factors had brought about a decrease in ambushes in a given area. Meselson said he had heard a spectrum of opinion from military officers—ranging from pro to con—concerning the military usefulness of the herbicide program.

Psychological. The AAAS team seems to have been the first nongovernmental group to conduct long interviews with farmers and village officials concerning the herbicide program. Samuel Popkin, assistant professor of government at Harvard, who directed the interviewing, said the spraying has had "a very negative psychological impact" on the farmers. He said many peasants feel the United States is deliberately trying to destroy the rural economy to make the farmers dependent on the United States. Later, Gen. Stone told *Science* he found the psychological results reported by Popkin—and by the rest of the AAAS team on the basis of interviews with Montagnards—to be the most dramatic finding of the AAAS study. "They're saying the herbicides have had a negative impact that detracts from our overall program rather than adds to it," he said. "I had frankly never realized there was this psychological impact."

The AAAS team was unable to obtain from the military precise data as to where herbicides had been sprayed, when, and how much herbicide of what type had been used. Meselson said the fact that this information was considered classified greatly hampered his group's efforts to determine, for example, precisely which populations should be examined for possible health effects and precisely which areas of the forest should be examined for possible evidence of laterization (no evidence of laterization was seen by the group). However, the Pentagon has said that it will declassify the information if a full-scale study of the herbicide program is made—as is currently planned—by the National Academy of Sciences (see *Science*, 2 October 1969, p. 43).

The AAAS team's final report will be presented after analysis of the samples is completed, perhaps in a few months time. Meselson stresses that the focus for future action should be shifted away from assessing harm and toward finding ways to repair the damage done, preferably by drawing on the talents of Vietnamese scientists. He suggested that one possible way to get rid of the invading bamboo, for example, might be to plant long north-south lines of shade trees in the devastated forests in hopes that the shadows would force the bamboo to recede on both sides. If these and other techniques can be found to restore the devastated areas, then the AAAS study might well merit the praise lavished on it by one member of the convention audience who stood up and exclaimed that the herbicide study is "the greatest service the AAAS has ever performed for the human race."—PHILIP M. BOFFEY

AAAS Convention: Radicals Harass the Establishment

Science, Technology. We declare its use a sham. And subject all who use it ill to the witches' damn.—A hex pronounced on the AAAS convention by the Women's International Terrorist Conspiracy from Hell (WITCHES).

Chicago. Glenn T. Seaborg, president-elect of the AAAS, took the advice of convention officials and fled from a meeting room to avoid being "indicted" by young radicals; Edward Teller, the so-called "father of the H-bomb," was repeatedly badgered despite the two bodyguards who tailed him everywhere; Mrs. Garrett Hardin, wife of the distinguished biologist, got so angry that she poked a young radical with her knitting needle; Jerry Wilson, Washington, D.C., police chief, backed out of a speaking commitment for fear he'd be heckled; and Miss Metric System, a bikini-clad lass who was promoting the metric system with her own impressive measurements, was put to rout by women radicals who resented the "exploitation" of her assets by admiring photographers.

That's the kind of AAAS annual meeting it was—sprinkled with disruptions and headline-grabbing incidents as a loosely organized band of young radicals sought to turn the attention of the AAA$, as they call it, toward the need for a new "people's science." This was the second straight year of disruptions at the AAAS annual meeting, and while the radicals claimed moderate success at getting their message across, their disruptions raised the hackles of

many AAAS members and brought calls for firmer discipline to maintain order at future meetings.

The radical activities were so far-flung and so loosely organized that it is difficult to get a clear picture of all that went on. The great bulk of the scheduled AAAS sessions were not disrupted, and some observers who had attended both this year's convention and last year's thought that the turbulence was much more obvious last year. The general pattern this year was that the various radical groups would meet in a caucus each evening to select a few targets for disruption the next day while individual radicals would occasionally go off and "do their own thing" at sessions that particularly intrigued them.

Radical Planning Coalition

The disruptive activity was planned and executed by a coalition of radical groups that operated under the name Science For The People Action Coalition. The initial planning was launched in October by a group at the University of Chicago composed largely of people associated with the New University Conference, an organization of radical graduate students, faculty members, and staff workers that claims chapters on some 60 campuses. Two of the most active leaders of the University of Chicago group were William Zimmerman, 30, an assistant professor of social sciences, and Richard C. Lewontin, 42, a professor of mathematical biology who is a member of the National Academy of Sciences and a recent member of the editorial board of *Science*. Also active in the early planning was a small group of radicals from the Boston area who had spearheaded the dissenters at last year's AAAS convention in Boston. The most prominent leader of the Boston radicals —most of whom are associated with Scientists and Engineers for Social and Political Action, an organization that claims chapters in some ten cities— was Herbert L. Fox, a 40-year-old physicist who works for a Cambridge, Massachusetts, consulting firm which he begged reporters not to identify lest he be fired. Active roles were also played at the convention by various Women's Liberation groups and other radical organizations. According to Zimmerman, about 50 people were heavily involved in organizing the day-to-day demonstrations.

These are some of the major "happenings" that were either seen by this reporter, or covered in newspaper accounts, or cited in a mass interview between *Science* and more than a dozen radical leaders.

► On the advice of convention officials, Seaborg, the chairman of the Atomic Energy Commission and recent winner of a controversial election to become president-elect of the AAAS, abandoned plans to address a convention symposium and fled through a side door as radicals crowded into the room and prepared to "indict" him for the "crime" of using "science against the people." Immediately after Seaborg's departure, the radicals took over the meeting and read the indictment over a bullhorn to the assembled television cameras, journalists, hotel plainclothesmen, and AAAS members. The radicals charged that Seaborg, through his various institutional affiliations, has used science for the benefit of "corporate America" and that he will continue to do so as head of the AAAS, which the radicals identified as "America's prime public-relations agency of the military, industrial, government, big science, university complex." With the meeting out of control, the chairman adjourned and several top federal science officials who were scheduled to speak went unheard.

► Edward Teller, the noted nuclear physicist, was called a "flunky of power" at a press conference and was subsequently heckled as a "war criminal" when he addressed a symposium. Radicals stood on the speaker's platform holding placards denouncing him, and they presented him with a "Dr. Strangelove Award" for exemplifying "science in the service of warmakers." Teller rejected the award and responded to the harassment with an emotional speech likening the attacks to the treatment he had received as a Jew in the "witch caldron" of Nazi Germany. Throughout the convention, Teller was closely followed by two bodyguards, who seemed to have been assigned by the hotel and by the Chicago police on the basis of a tip that Teller might be physically harmed. Six more burly men were on hand at key points around the room when Teller spoke. The radicals called them "thugs," but liberal anthropologist Margaret Mead, who was chairing the session, commented: "If he [Teller] has bodyguards here, it's because it's been made necessary for him to do so."

► The only known victim of violence, as it turned out, was one of the radicals. Frank Rosenthal, a 26-year-old nuclear physics graduate student at Columbia University, was shouting and heckling from the audience at a session on "The Individual and Violence" when Mrs. Garrett Hardin, wife of the eminent biologist, got exasperated and jabbed him in the arm with a knitting needle, drawing a little blood. Mrs. Hardin received scattered applause and later expressed satisfaction over her deed. "It felt kind of good," she told reporters, adding that maybe she should have jabbed the chairman of the panel as well for letting the radicals take over. However, the chairman, Joseph F. Coates, of the National Science Foundation, commented that Mrs. Hardin "just lost her cool" and thus provided an interesting lesson in how violence occurs.

► Coates was a repeated target of the radicals who considered him a "pig" and a "super criminal" because he had previously worked for the Institute for Defense Analyses. The radicals disrupted two "violence" sessions chaired by Coates, and they screamed obscenities at him when he attended one of their evening meetings. Coates told reporters that he had expected a "clash of minds" but found only a "clash of mouths."

► The radicals heckled or took control of discussion at several sessions a day at the peak of the convention. Among other incidents, they took brief possession of the podium before Philip Handler, president of the National Academy of Sciences, was scheduled to give a major address and described Handler as a "lackey of the ruling class." They showed their own film to a session on housing. They heckled at a talk on the space program. And they took over the microphone at the end of a drug symposium to continue the discussion along new lines.

Workshops and Other Activities

The radicals operated out of a set of rooms provided by the AAAS. In addition to demonstrating at the regular sessions, they staged their own workshops on such topics as Vietnam, unemployment of scientists, and the teaching of radical ecology. They also showed a film series. The radicals claim to have sold some 1400 copies of their magazine, *Science for the People*, at 50 cents apiece. And they say that they consumed some 20,000 sheets of paper in distributing leaflets to the convention. "That's a lot of bullsh-t," one of them boasted.

The radicals held open meetings every night which attracted crowds of up to 250—more than many regularly sched-

uled sessions. Not all who came to their meetings were sympathetic, and the radicals themselves were split by violent disagreements over tactics and sometimes philosphy. At one radical meeting Rosenthal—the student who had been "needled" by Mrs. Hardin—was pounced upon by four young radical women who tried to drag him from the room. Rosenthal was subsequently berated in a heated planning session by a number of radicals who felt that he undermined their efforts with his wild tactics.

The more thoughtful radicals were trying to deliver a call for revolution and for the liberation of science from capitalist control, but the message tended to get lost in the high jinks and disruption. As Zimmerman, one of the Chicago-area radicals, expressed it: "We didn't come here to close down the meeting or to advise people to withdraw from science. We came to argue that science has to be transformed." The radicals acknowledged that they have not fully worked out just what a true "science for the people" might be. But they suggested that it might include such elements as performing research on the power structure for the people, rather than vice versa; designing kits to detect environmental poisoning; and developing "people's weapons," such as the Molotov cocktail.

Whatever the goals of the radicals may have been, their disruptive tactics frequently "turned off" as many people as they "turned on." The tone of newspaper comment was generally negative. The *New York Times* deplored the "rowdy tactics" of the dissenters and suggested that they were "emotional fanatics." The *Washington Post,* whose editorial page is among the most liberal in American journalism, likened the radical scientists to "Nazi storm-troopers" and noted that, while Mrs. Hardin should not, of course, have jabbed that heckler, it was hard to feel too sorry about it. "It should not be beyond the power of scientists to restore reason to its normal throne at their conventions," the *Post* said.

—PHILIP M. BOFFEY

ACE: Rating of Graduate Programs Shows Little Change in Status Quo

The American Council on Education (ACE) has published an updated version of its mid-1960's comparative study of university graduate departments, which won for itself a place as the Baedeker of American graduate education. The new study* reflects a big increase in the number of graduate programs, but shows that the institutions which dominated the ratings 5 years ago—notably Harvard and Berkeley—are still in dominant positions. According to the survey's authors, the "most dramatic development has been an improvement in the rated quality of the faculty in a large number of graduate programs."

The original study, conducted by Allan M. Cartter, then an ACE vice president and now chancellor at New York University, was based on data collected in 1964 and was published in 1966. More than 26,000 copies have been distributed. Titled *An Assessment of Quality in Graduate Education* [see *Science* **152**, 1226 (1966)], it caused a strong reaction, particularly among academics whose oxen had been gored.

The authors of the new study are Kenneth D. Roose, who was an ACE vice president until recently, and Charles J. Andersen, a member of the ACE staff. Methodologically, Roose and Andersen have followed closely in Cartter's footsteps, although the new study offers ratings in 36 disciplines (seven more than the earlier study) and is based on responses from 6000 scholars, compared with the 4000 who turned in usable questionnaires in 1964. It would be fair to say, however, that the Cartter report was a more personal and a somewhat more controversial document since Cartter not only included a broader discussion of the justification of a subjective survey but also made more explicit comparisons of institutions.

The authors of the new report play their data cards closer to the vest, as the revised title, *A Rating of Graduate Programs*, implies. Several times in the course of the report Roose and Andersen make the point that they "have tried to deemphasize the pecking order relationships inherent in most scoring systems, for it is not our purpose to bolster or deflate egos."

The fundamental objection of critics to the original ACE report was that it was subjective and empirically uncheckable. The response to that criticism has been that nothing else was intended. The rating by peers is intended to indicate the reputation of graduate programs, not to measure quality on some absolute scale. Objectors can say with justification that the raters may have inadequate knowledge of some departments they judge or may be swayed by out-of-date impressions, old school ties, or plain and fancy snobbery. At a press conference held to discuss the report, ACE president Logan Wilson repeated the enjoinders of Cartter and his successors to regard the report only as a compilation of judgments of scientists and scholars, but noted that "the reputation of an institution is nothing more than what its judges think it is."

Roose and Andersen used Cartter's rating system but rather drastically altered the way in which the results were presented in the published report. The principal changes were in not publishing numerical ratings and in merging categories to provide larger groupings of institutions.

The questionnaires asked the scholars to evaluate graduate departments in three respects. Two of the sections, on quality of faculty and effectiveness of the doctoral program, were repeated from the Cartter study, and the third section was added to elicit opinion on changes in the last 5 years.

In the section on faculty quality, the respondents were asked to indicate the "term that corresponds most closely to your judgment of the quality of the graduate faculty in your field at each institution listed. Consider only the scholarly competence and achievements of the present faculty. Limit the number of 'Distinguished' ratings to no more than 5." The other possible ratings were: strong, good, adequate, marginal, not sufficient for doctoral

* *A Rating of Graduate Programs*, by Kenneth D. Roose and Charles J. Andersen, is available for $4 from the ACE, Publication Division, 1 Dupont Circle, Washington, D.C. 20036.