

Dissent, dissension at AAAS

Search for relevance marked many sessions

The troubled question of the relationship between science and society in the United States has become increasingly prominent in recent years, under the impetus of the war abroad and disorders at home. The annual conference, held in Boston this week, of the American Association for the Advancement of Science, a bellwether among scientific organizations, demonstrated that scientists themselves are urgently concerned with finding ways to resolve the question.

The AAAS conferees were agreed that current social problems, together with the reduction in the funds available for research, force some hard choices about the future direction of scientific efforts. It was not so well agreed, however, exactly how the priorities of science should be reallocated.

Some scientists, for instance, felt that the United States space program had become a luxury that can no longer be afforded in its present form.

Others, including moon-walker Edwin E. Aldrin Jr., argued that the present space program serves a useful purpose in giving the American people a sense of tangible national goals.

There was less controversy about the need to halt the arms race, although scientists at a symposium on arms control and disarmament could suggest little in the way of practical measures to accomplish such a halt except the proffering of resolutions and appeals directed to the Government. Dr. Jerome Wiesner, former science adviser to Presidents Kennedy and Johnson and provost of the Massachusetts Insti-



Wide World Photos

Melvin Margulis registers his protest against science at AAAS meeting.

The future of the United States space program provoked strong feelings on both sides

The United States' space program has made dramatic achievements. But the costs have been considerable. And the domestic and international climate has changed immensely since that day in 1960 when President John F. Kennedy committed the nation to land a man on the moon before the decade was out. War in Asia and social disruption at home have changed everything. And scientists and public leaders are calling for a wise and cool-headed evaluation of the space program's future.

At the annual meeting of the American Association for the Advancement of Science, which ended in Boston this week, scientists both in and out of the space programs debated the effort.

Setting that tone was Dr. Eugene Shoemaker, the California Institute of Technology geologist who has been involved in the lunar program as a specialist on the nature of the moon's surface and, until he quit (SN: 10/15, p. 445) as a geology instructor to the astronauts.

Dr. Shoemaker confided that he had wrestled with his conscience about whether to keep his criticisms to himself, or, as he said, to tell it like it is.

He decided on the latter course, feeling that to refrain from pointing out weaknesses in the lunar exploration program and seeking to correct them would be a disservice. He emphasized that he deeply believed in the exploration of space, "but," he said, "if it is worth exploring space, I think it should be done well, and with a certain amount of grace and elan."

The scientific program on the Apollo 12 flight (SN: 10/18, p. 355) was a great improvement over the modest efforts during Apollo 11, he noted. But even with all the advantages of more time, better planning, better advance photographs and a pinpoint landing, the Apollo 12 astronauts still seem to have been frustrated, said Dr. Shoemaker.

All the rocks looked the same, according to astronauts Charles Conrad and Alan Bean. Where they wanted differences they saw similarities.

"This is the classic lament of the inexperienced geologist when he goes into the field on terrain strange to him for the first time," said Dr. Shoemaker. "It takes a geologist with long experience to be able to detect the subtle surface differences that can provide clues to the underlying structure."

If the field observation in the remaining Apollo missions are to pay off, he said, there would have to be more time between missions, more time on the lunar surface, more mobility given the astronauts in the form of a small surface vehicle, much greater dexterity built into the space suits, and improved geological tools.

He was pessimistic that the pilot-astronauts would be able to make the necessary geological observations and urged that one or two of the scientists trained as astronauts be included on up-coming Apollo missions.

John Naugle, head of the National Aeronautics and Space Administration, revealed that at least one of Dr. Shoemaker's criticisms was being answered. He said there would be only two lunar

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Government of Technology, called upon the Government to halt work on antiballistic and multiple-warhead missiles immediately, without waiting for the strategic arms talks with Russia planned for next April.

Chemical and biological warfare was even more unpopular than missiles at the AAAS conference, and Dr. Victor W. Sidel, chief of the Division of Social Medicine at the Montefiore Hospital in New York, argued that scientists should, if necessary, take action "contrary to the laws of their own nation" to stop CBW research. Dr. Sidel urged scientists to report any CBW research work of which they knew to an international supervisory agency, "even if that work is classified as secret."

Although the conference took no formal action on this proposal, claims by other scientists that defoliants used in Vietnam by the Defense Department may cause birth defects in humans prompted Dr. H. Bentley Glass, current president of the AAAS, to announce the creation of a field-study group to investigate the situation. The group will be headed by Dr. Matthew S. Meselson, a Harvard University biologist who in the past had been strongly opposed to the use of tear gas and defoliants (SN: 10/25, p. 373).

Whether such a study would have an effect on Government policy, or, indeed, whether it would even be possible to carry out the study so long as the war continues, was doubtful, the scientists admitted. Nevertheless, the majority of scientists at the conference considered the study to be a significant action, and reacted with considerable displeasure to the groups of students and scientist activists who roamed from meeting to meeting and continually raised the charge that scientists were abdicating their social responsibility.

For the most part, the scientists reacted to the activists' charges with the equally standard argument that science and technology are morally neutral. They defended the works of scientists as Government advisers on the grounds that such work provided them with the knowledge and authority necessary to affect gradually national policy.

Dr. Charles Draper of the Massachusetts Institute of Technology, who is retiring as the head of MIT's instrumental laboratory largely because of student protests against the laboratory did Pentagon-supported research (SN: 11/15, p. 446), said that complaints against the use of technology should be directed to politicians, rather than to scientists. "If you want to stop the flow of water, you have to find a faucet

that controls it," he said.

When left to themselves, the scientists at the conference much preferred to concentrate on discussing the obviously positive contributions to society that science and technology can make.

Numerous symposia were organized on techniques of population control, urban redevelopment and pollution reduction. Naturally enough, in view of the amount of student protest that occurred during the AAAS conference, special interest was focused on the question of the generation gap. A panel of psychoanalysts agreed that much of the disturbance among adolescents is due to their disillusionment with society's failure to carry out its own goals. Dr. Aaron H. Esman, director of training for the Jewish Board of Guardians, said that drug-taking on the part of adolescents is "heavily tinged with a longing for new values of a quasi-religious nature."

Scientists and educators also agreed that the interest of young students in environmental problems (SN: 12/20, p. 575) is a positive sign. Much discussion was devoted to finding new disciplines and techniques to meet student demands for technological studies. Rep. Jonathan Bingham (D-N.Y.) proposed creating a national monitoring network to keep tabs on environmental conditions. And one symposium considered ways in which satellite-observation techniques and electronic data-processing methods could be used to develop such a network. □

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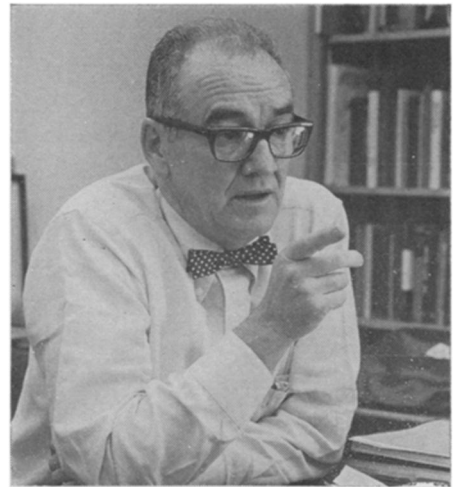
landings in 1970 instead of three. There would be only two in 1971, none in 1972, and the last four would be in 1973 and 1974.

Strong opposition was expressed to a recent statement by Dr. George M. Low, deputy administrator of NASA, that the agency is considering dropping the Apollo flights 17 through 20 to save funds for development of a space shuttle and a manned orbital station needed for the Apollo Applications Program (see page 21). They felt such an act would be false economy—eliminating the very missions that are expected to provide much of the scientific justification for Apollo.

"I think that history will judge the American space program as a stunt if this is done," said Dr. Frank Press of the Massachusetts Institute of Technology.

"We would be left with many unanswered questions and a sense of bitterness," said Dr. Paul W. Gast of the Lamont-Doherty Geological Observatory.

But moon exploration is now becoming history; the main issue for the



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Roberts: Hopefully never to Mars.

future is planetary explorations.

Dr. Gordon J. F. MacDonald of the University of California at Santa Barbara said the plans should not include man. "Serious suggestions of manned planetary explorations, at this time, represent the utmost in folly," he said. "A decision to undertake such a venture would submerge and replace any attempt of a rational scientific exploration of the solar system."

This, expressed in a little blunt language, was also the view of a study of planetary exploration conducted last year by a National Academy of Scientists panel that Dr. MacDonald headed (SN: 10/11, p. 322). It concluded that at this time there is no unique role for man in the exploration of the planets.

Dr. MacDonald and several other scientists called for rigorous examination before deciding on future major scientific efforts, manned or unmanned.

"Is the Viking project (an unmanned lander-orbiter mission to Mars) of equal importance to one-and-a-half year's budget of the National Science Foundation?" he asked. Both amount to about \$700 million.

Most of the opponents of manned missions to the planets felt that a strong program of unmanned missions would be scientifically suitable and worthwhile, but the retiring president of the AAAS, Dr. Walter Orr Roberts, called for redirecting the main thrust of the space effort toward earth applications projects.

He said he hoped man would not go to Mars, "now or ever."

The opposing view was perhaps best summarized by Dr. Carl Sagan of Cornell University. "In all the history of mankind there will be only one generation which will be the first to explore the solar system. To all who come after us, the present moment will be a pivotal instant in the history of mankind. The opportunity is ours if we but grasp it," he said. □