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52. T. H. C. Taylor, *The Biological Control of an Insect in Fiji. An Account of the Coconut Leaf-minning Beetle and Its Parasite Complex* (Imperial Institute of Entomology, London, 1937).
53. G. Salt, *Parasitol.* 29, 539 (1937); *ibid.* 30, 511 (1938). The males are winged when bred on hosts other than *Sialis*.
54. F. Enoch, *Entomologist's Monthly Mag.* 34, 152 (1898). M. Rimsky-Korsakov [*Rusk. Entomol. Obozr.* 16, 211 (1917)] reports that females are dimorphic; some are apterous. K. L. Henriksen [*Ann. Biol. Lacustre* 11, 19 (1922)] suggests the existence of a thelytokous race; like R. Heymons [*Deut. Entomol. Z.* 1908, 137 (1908)], he observed fewer males, and no mating in the host egg.
55. The sex ratio (from cols. 3 and 4) is typical for 3rd-instar hosts.
56. A. F. Satterthwait, *J. N.Y. Entomol. Soc.* 39, 171 (1931).
57. M. C. Mossop, *Union S. Africa Dept. Agr. Sci. Bull. No. 51* (1929).
58. A. de Costa Lima, *Inst. Oswaldo Cruz Mem.* 21, 201 (1928); A. Dreyfus and M. E. Breuer, *Genetics* 29, 75 (1944). Sex ratio for *Triatoma megista* hosts.
59. Sex ratio for *Asoleus basalis*. A definite tendency toward the inclusion of at least one male among eggs laid in a host by *A. semistriatus* has been observed by M. Javahery (personal communication).
60. F. Van Emden, *Z. Morphol. Oekol. Tiere* 23, 425 (1931). The males are dimorphic; some are apterous.
61. J. C. Bridwell, *Proc. Hawaii Entomol. Soc.* 4, 291 (1920). Apterous occurs, but rarely. C. E. Keeler [*Psyche* 36, 41 (1929); *ibid.*, p. 121] found a thelytokous race.
62. H. F. Willard, *U.S. Dept. Agr. Tech. Bull.* 19, 1 (1927); A. Busck, *Insector Inscitiae menstruus* 5, 3 (1917).
63. E. Pussard-Radulesco, *Ann. Ephyphyles* 16, 103 (1930).
64. A. E. Treat, *Proc. 10th Intern. Congr. Entomology* 2, 475 (1956).
65. K. W. Cooper, *Proc. Nat. Acad. Sci. U.S.* 23, 41 (1937).
66. E. E. Lindquist and W. D. Bedard, *Can. Entomologist* 93, 982 (1961).
67. The results of Bodmer and Edwards (in *Ann. Human Genet.* 24, 239 (1960)) on rate of approach to equilibrium do not apply in detail to such extreme genetical cases as those of Fig. 3. In general it is true, as these workers concluded, that rate of approach depends positively on the variance (in the cases shown, $\Delta X / (1/2 - X)$ is ultimately 2.086V for normal reproduction and 2.88V for male haploidy). But if, for example, Gg gives all females, as in *Sclara coprophilla* and *Chrysomya rufifacies* [C. W. Metz, *Am. Naturalist* 72, 485 (1938); F. H. Ullerich, *Chromosoma* 14, 45 (1963)], equilibrium is reached immediately.
68. I thank Dr. D. Bevan for information about bark beetles and Dr. T. Lewis for information about thrips.

NEWS AND COMMENT

The National Academy of Sciences: Profile of an Institution (III)

Two principal positions exist on the use that the National Academy of Sciences should make of what are considered to be its greatest assets, prestige and public confidence.

The first position is centered on the belief that the Academy should actively, and, if need be, on its own initiative, use these assets to promote the progress and wise use of science and technology. In a period of limited expansion of federal support for scientific research, some advocates of activism would like to see the Academy devise and recommend priorities for allocating the available funds. Concerning the uses to which science and technology are put, there are persons in this camp who would like to see the Academy initiate studies and issue pronouncements on controversial matters such as missile defense and chemical and biological weapons.

The second point of view is represented by those who contend that, however desirable such a role may be, the Academy can never be an effective vehicle for carrying it out. They argue that prestige and confidence are fragile commodities that are rarely enhanced by frequent involvement in controversy. They emphasize that the Academy is not a representative body; that, with its

ably aspire to take up complex issues and arrive at positions that reflect the informed conclusions of the membership. They also point out that the Academy possesses a modest mandate—to advise when advice is requested. No one need request the Academy's advice, nor, having requested it, need one follow it. Furthermore, they note the Academy has very limited resources for addressing itself to matters outside the interest of its clients. Its income from endowment last year came to \$398,000—as compared with \$19.4 million that it received in grants and contracts from its advice seekers. (The Academy pays its way mostly with overhead fees, usually 28 percent, that it charges its customers.) Therefore, the holders of this viewpoint believe, the Academy should not go out hunting for trouble; rather, it should husband its prestige and reputation so that it will command respect when it deals with issues that come its way.

Now, until quite recently the second camp wholly prevailed in Academy affairs. As an institution, the Academy has always been tone-deaf to the concerns that produced offshoots of the scientific community such as the Federation of American Scientists and other

generally come under the heading of "science and society." And, as an institution, it still tends to be tone-deaf to these concerns. Recently, for example, 127 Academy members joined several thousand scientists in petitioning President Johnson to order a study of chemical and biological weapons (CBW). There is no legal or technical impediment to the Academy's studying at least the nonclassified aspects of this subject on its own initiative. But, in raising the CBW issue the petitioners obviously hoped to encourage the administration to renounce the use of such weapons. Johnson was not inclined to snap at the bait, and the Academy was not inclined to volunteer itself into the middle of a controversy over CBW. When it comes to issues that can offend those capable of counterattack, the Academy still tends to avoid looking for trouble. Furthermore, as an advisory organization it prefers (and so its clients have come to realize) chewable problems—clear-cut issues concerned with *how* something might be done, or what will be the consequences of doing it, not with *whether* something should be done.

Nevertheless, a careful examination leads to the conclusion that here and there things are stirring inside the venerable institution, and at a few points there is even to be found a definite spirit of adventure. While the significance and potential of these developments are difficult to assess, it is clear that the affairs of the Academy are no longer wholly dominated by cautious traditionalists, for in five separate and most important areas there have been changes and activity that in many re-

alteration in the character of the Academy in national affairs. Let us look at these areas in some detail.

1) For the first time in its century-long history, the Academy has a full-time president. This may seem a small change, but actually it is a very large one, for one of the banes of American science in the postwar period was the unrealistic assumption that it could look after its affairs in Washington on a commuting basis. However, at last it has been fully realized that, in political and bureaucratic struggle, the odds are with those who remain on the field. In 1962 Frederick Seitz, vice president of research and dean of the graduate college at the University of Illinois, succeeded Detlev W. Bronk in the Academy presidency. For the first 3 years, Seitz held the job on the traditional part-time basis. In February 1965, both he and the council agreed that it would be desirable for the Academy to have a full-time head. Seitz took the job, which was accompanied by an undisclosed salary and a presidential residence, purchased for \$250,000 out of Academy endowment funds, plus \$50,000 for renovations—which some people feel add up to a rather hefty sum for an organization that often leads poverty as a defense for inaction. Academy staff and members generally feel that a beneficial difference has resulted from having the president regard the job as his principal occupation. Seitz has further strengthened the presidential office by bringing in a number of experienced special assistants and consultants. Among them are F. J. Weyl, former chief scientist of the Office of Naval Research; Alan T. Waterman, a retired director of the National Science Foundation; and C. E. Sunderlin, former director of research for defense and space systems, Union Carbide.

Academy of Engineering

2) The Academy has worked out a fully cooperative *modus vivendi* with restless and complaining colleagues in engineering. With ample reason, engineers have long complained that the Academy has failed to give proper recognition to their profession. From this point of view, many engineers believe, have followed other consequences, principally the close correlation between Academy membership and membership in the best governmental advisory groups in science and technology. Academy

members privately say the main reason scientists get preference is that generally they are smarter than engineers. But whatever the reason, the engineers were pretty well fed up with the dominance of the scientists, and talked of setting up their own Academy to honor engineers and provide advice to the government. The prospect of another Academy on what, after all, is not a very heavily trafficked corner brought forth a bit of state-manship which suggests that maybe the scientists really are very smart. After reminding itself that the engineers were indeed restless, the Academy of Sciences agreed to take them under its aegis, charter and into its well-staffed building, thus sparing the engineers the trouble of getting a charter and setting up a new society. The engineers have elected their president—Eric A. Walker, professor of Penn State—and they elect their own members. At this point, both the scientists and the engineers feel the arrangement is satisfactory, and the engineers praise the Academy for its generosity and cooperation. However, despite honeymoon rhetoric, the outcome of this mixed marriage remains in doubt, though one important effect is clear. With a would-be competitor under its own roof, the Academy of Sciences feels a good deal less complacent about its comfortable old position in the affairs of science and government.

Social Sciences

3) There is at last an open recognition that the Academy has an obsolete approach in regard to the behavioral and social sciences. The dictum "If you can't measure it, it doesn't count" serves well in the natural and physical sciences; when applied to the behavioral and social sciences, as the Academy has applied it, with few exceptions, in electing new members, the result is to exclude the producers of some of the most important, exciting, and pioneering research in recent years. Seitz, in an interview, remarked that "the time is over-ripe for forming a partnership with the social sciences, but we can start." This intention has already had a number of tangible consequences. First of all, Henry David, former president of the New School for Social Research, in New York, last year was appointed executive secretary of the Research Council's Division of Behavioral Sciences. David, who came directly from heading NSF's Office of Science Re-

sources Planning, has a clear mandate not to follow the placid caretaker pattern that characterizes some of the NRC divisional secretaryships. The consequences of this mandate are not yet clear, but there is an unprecedented amount of activity in the division. And, perhaps most important to date, the Academy, in cooperation with the Social Science Research Council, has established a Survey Committee on the Social and Behavioral Sciences. Headed by Ernest R. Hilgard, professor of psychology at Stanford, the committee, according to an Academy announcement, plans, among other things, to "evaluate the strengths and weaknesses" of the behavioral and social sciences and suggest ways in which these sciences might be applied to an assortment of national problems. There is obviously a long way to go before the ancient bastion of the physical and natural sciences yields and proper recognition is given to the so-called soft sciences. But one thing that encourages change is the fact that a lot of physical and natural scientists who once believed the methods and creations of their profession could be adapted to all manner of problems now feel challenged but stumped by many of this country's domestic problems. The point was well put by Harvey Brooks, dean of engineering and applied physics at Harvard and one of the leading figures in Academy affairs today. Brooks, who was long associated with the Academy's Committee on Undersea Warfare, noted that "to build something like a Polaris system, all you had to do essentially was to convince half a dozen people, and then you could go ahead and build it. It's not that easy when you try to bring improved housing technology to the cities."

Science and Public Policy

4) In 1962 the Academy responded to a number of economic and political problems affecting the scientific community by establishing the Committee on Science and Public Policy, and giving it a mandate to address itself to any matter related to science and public policy—which today encompasses virtually anything. COSPUP, as it is known, came into existence with a unique status: It is the only one of the several thousand committees and panels in the NAS-NRC complex on which only Academy members may serve. Now, there is a great deal of signifi-

came to this, since the Academy rigidly holds to the position, it takes no stand on any issue: All that it assumes responsibility for, it contends, is selecting qualified committeemen, usually through NRC, to study the problems of its clients. The theory is that what the committeemen say in their reports is their business, not the Academy's, though, on occasion, the Academy hierarchy has been known to prevent exceptionally asinine reports from leaving the building.

Since COSPUP is composed only of academicians, and has a boundless jur-

isdiction, it is generally considered to be —despite protestations that COSPUP, too, comes under the system of institutional nonresponsibility. In any case, the prime mover for COSPUP's creation was George B. Kistiakowsky, of Harvard, who, while serving as Eisenhower's science adviser, felt that the Academy was too enmeshed in trivial advisory tasks and too little concerned with major policy issues affecting the growth and employment of science and technology. Noting that pork-barrel and budget-cutting instincts were impelling

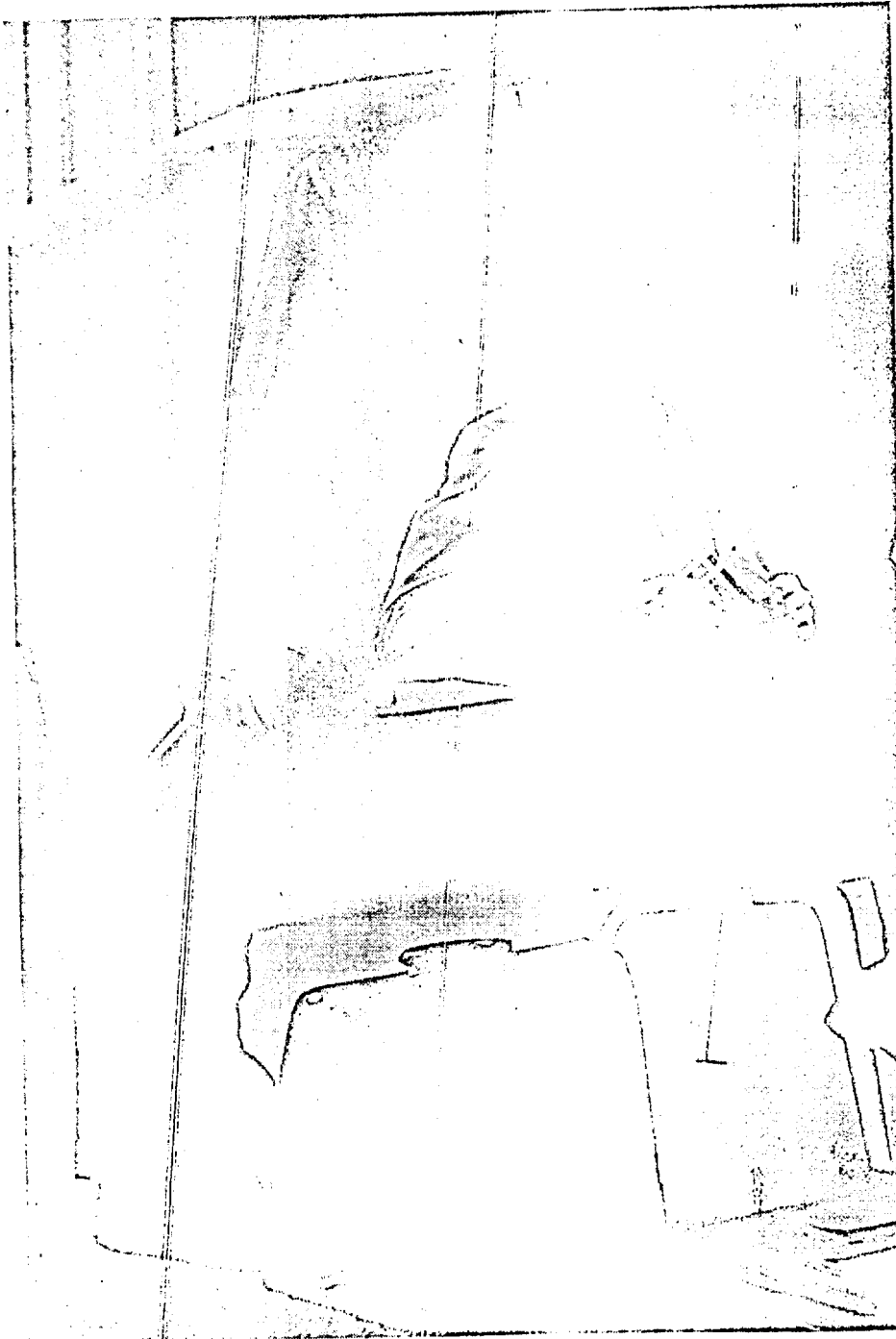
Congress to take a greater part, Kistiakowsky was also concerned by the fact that the Academy still clung to its historical pattern of functioning mainly as an affiliate of the Executive Branch.

Thus was born COSPUP, with Kistiakowsky as the first chairman and Harvey Brooks his successor, when Kistiakowsky became Academy vice president. In its 5-year existence, COSPUP has issued a series of reports and studies, and has achieved some progress toward making the Academy at least better known in Congress. The reports vary in quality and impact but, as a group, merit attention simply because they represent an unprecedented willingness on the part of the Academy voluntarily to commit its prestige to objectives that it previously would not seriously confront or even touch.

COSPUP's first published product, *The Growth of World Population*, which appeared in 1963, came to the safe conclusion that uncontrolled population growth was a menace to economic development. It literally said nothing that had not been said at least a decade before, but the fact that the Academy said it attracted great attention. Jerome B. Wiesner, Kennedy's science adviser, believes the Academy's voluntary move in that controversial area played a significant part in Kennedy's decision to begin the long and difficult process of providing government support for family-planning programs.

Another notable COSPUP production was *Federal Support of Basic Research in Institutions of Higher Learning*. It came in 1964, a period when Congress was both restless and relatively uninformed about the extent, use, and value of federal aid to basic research. It is doubtful if many, or even any, congressmen plowed through it, but the report did take the pioneering step of advising the scientific community that a few chiselers in its ranks were besmirching the reputations of all. Whether the ethical tone improved as a consequence is difficult to say, but the message had validity, and the Academy deserves credit for delivering it.

COSPUP has also engaged in the preparation of studies on the needs and opportunities in various scientific disciplines. These invariably conclude that the progress of civilization hinges on getting more support for this or that field. But when the studies are well



Officers of the Academy: President Seitz (right) with Vice President Kistiakowsky.

Chemistry, the result is a valuable inventory of the status of a field of research and an assessment of the resources needed to pursue promising lines of inquiry. Whether or not this does any good is a separate matter. It is universally agreed that the chemistry report made a balanced, honest, and persuasive case for more federal money for chemistry; but by all accounts, in the 2 years that have passed, the increase amounts to a trickle. COSPUP has also become the Academy's emissary to the U.S. Congress. It is under contract to provide counsel to the House Science and Astronautics Committee, and is ready to do business with any other committee that will have it.

In 1964, the Science and Astronautics Committee asked COSPUP to advise on how much support the federal government should provide for basic research, as well as on the wisdom of the allocations of existing funds. Those questions were much too sticky for COSPUP, or probably any committee of scientists, as a whole, to answer. So, COSPUP appointed a 15-member committee, which presented the House group with 15 separate essays, bound within 336 pages under the title *Basic Research and National Goals*. The same House committee asked COSPUP to address itself to the problems of technology. COSPUP's response, soon to be published, will consist of 16 separate essays. This performance leaves some congressmen privately cussing their new-found friend, the Academy. But within the Academy leadership there is little desire to get into the problem of rating the needs of one discipline against another. Says Brooks, "I don't see how the Academy can establish interdisciplinary priorities. I can't figure out any rational system that works better than the present system of *laissez faire*."

Though it is doubtful that COSPUP's performance has provided much enlightenment for the Congress, Congress and the Academy are getting to know each other. It is difficult to measure the consequences of this relationship, but since Congress no longer leaves science policy affairs almost exclusively to the Executive Branch, it cannot hurt for Congress and the scientific community to become better acquainted.

Foreign Office

5) The final area of new activity to be examined is the Academy's Of-

since 1961 by Harrison S. Brown, professor of geochemistry at Caltech. Brown, who devotes about 2-1/2 full-time months to the job, recounts that he became Foreign Secretary at the urgings of Bronk, Wiesner, and others, with the intention of making the Academy part of a triumvirate in international scientific affairs. The intention was, he says, that the Academy, having the flexibility of a nongovernment agency, would work closely with the President's Science Advisory Committee (PSAC) and the State Department's Office of International Scientific Affairs to promote international scientific cooperation and the application of science and technology to economic development. Whatever the intentions of the parties, nothing resembling the triumvirate plan has endured beyond its first few years. In recent years PSAC has taken little interest in international scientific affairs, and Dean Rusk's interest in this area is generally thought to be reflected in the fact that the directorship of the Department's science office has been filled on an acting basis by a nonscientist State Department administrator for the past 2 1/2 years. From now and then Rusk makes a statement getting a high-ranking scientist, but a common feeling among many of the candidates is that Rusk assigns relatively little importance to the job and that it is not worth holding. It is clear, therefore, that accession to the administration of the Academy's policies figures in at least some of the rejections of his offers.

Three-Part Design

Brown nevertheless has persevered with astonishing energy in seeking to carry through as much of the original design as possible, concentrating his efforts in three areas: (i) assisting the growth of scientific and technical competence in the developing nations; (ii) strengthening East-West ties through exchange programs; and (iii) strengthening international scientific organizations.

A great number of activities has been undertaken in pursuit of these objectives. These include a leading role in strengthening the International Council of Scientific Unions; administration and expansion of important segments of the Soviet-American exchange program, as well as the establishment of exchange programs with most eastern European nations; sponsorship of cooperative research activities or conferences with

the Philippines, and several other nations; and workshops and conferences on economic development in various Latin American and African nations. Through Brown's office, the Academy is under contract to the Agency for International Development to provide advice and services for assisting scientific institutions abroad. So far it has worked out programs with Brazil, Peru, Nigeria, the Philippines, and Taiwan, and others are in the works. With the approval of the Johnson administration, the Academy, the Social Science Research Council, and the American Council of Learned Societies have formed a Committee on Scholarly Communication with Mainland China. The Chinese so far have not chosen to communicate, but the Committee keeps looking for leads.

In view of recent disclosures about the CIA's energy and perseverance in infiltrating and subsidizing the international activities of various private organizations, it is appropriate to consider the situation with respect to the Academy's many foreign operations. It is a well-established fact of life in the scientific community that the CIA frequently approaches foreign-bound or newly returned scientists to solicit their cooperation. There is no evidence that the Academy as an institution has ever been a party to such proceedings, and, in fact, Brown says that his office has taken steps to keep the CIA away from persons involved in the East-West exchange program. In pursuing this objective, he said, it has been useful to have the services of several persons with intelligence agency backgrounds. Among them is Brown's chief staff man, Murray Todd, who came to the Academy in 1961, after having served in the CIA's West Coast office. "I have a protection problem with the kids that we send to the Iron Curtain countries," Brown said. "Todd knows the agency and he can tell them to leave them alone." Serving with Todd in the Foreign Office is Lawrence Mitchell, who became head of the section on the U.S.S.R. and Eastern Europe in 1959. Brown says that Mitchell, too, came from CIA, though Mitchell's curriculum vitae, as furnished by the Academy, lists him as a former Foreign Service Officer. Brown explains that he and Todd became acquainted in the 1950's when Todd would debrief scientists who had been abroad. He said

competence, and, upon becoming Foreign Secretary, recalled that Todd had once said he had been hired by CIA. He says that Todd's hiring was for reasons of his competence, not his CIA background, but that the background has proved useful. Seitz says that he considers the intelligence backgrounds of Todd, Mitchell, and several others as being "completely innocent." "We as an Academy cannot afford to be involved in any clandestine activity," he said. Seitz adds that he was informed that, before he became president, CIA "informally raised a suggestion" concerning "people going overseas." It was turned down, he reports, and, as far as he knows, CIA never again showed any interest in the Academy. Seitz points out that, since CIA is a government agency, the Academy stands ready to provide it with technical advice upon request. But none has been forthcoming, he says, adding, "I think they sized us up and decided that we're not their baby."

Recent disclosures about CIA's remarkable record may inspire skepticism toward these assurances, but there is no available evidence to contradict them.

Any assessment of where the Academy is bound must reckon with the fact that essentially it is a conservative institution—sometimes in the best sense of the word, often in the dullest. What it does best, and what it does most, is attend to the housekeeping chores of the scientific community. The pulling power of its prestige is such that it can get almost anyone to come to Washington—gratis, except for expenses—to sit for a few days on an NRC committee. The demonstrated willingness for further tasks suggests that NRC committeemen believe they have an opportunity to be effective on matters they consider important. And what these committees do, by and large, is lubricate and adjust the administrative machinery of contemporary science and technology. Is this or that subspecialty of science being neglected? NRC will convene a highly expert panel to look into the matter, and though it usually takes a good deal of time, often a year or two, the committee will produce a comprehensive study. This housekeeping role is not to be scoffed at. American science and technology are better off for its being done, and done well. Obviously, other organizations might attend to a good deal or even all of it. But the Academy is doing it, and its performance is highly respected.

stake, however, the Academy, just as it tends to recreate its image in elect-
sensitive attuned to serving the status quo in society. The charter stipulation that it provide advice upon request, coupled with a lack of substantial resources of its own, means, by and large, that the Academy serves the "in's" and has little traffic with the "out's" regardless of what issue is at stake. The Academy can and does assert independence in setting up advisory committees, and it even dickers over the phrasing of the problems it will take on. But when one looks back over the many major scientific and technological problems that have afflicted the nation in recent years, it turns out that our most prestigious scientific society has quite an absentee record. For example, since 1919 the Academy has operated the Highway Research Board, under which comes a mammoth complex of advisory bodies, supported mainly with funds from state highway departments, for providing technical advice and conducting studies related to "the broad field of highway transportation." The productivity of the Board is incredible. Last year, it produced over 9000 pages of documents. The total inventory of its publications ranges from "Squeal of Tires Rounding Curves" to definitive studies of the cost and durability of competing highway pavement materials. But with all its expertise and resources, it never got around to what is now acknowledged to be a most critical element in highway transportation: safely designed vehicles. The view of one engineer who occupies an extremely high government position is simply, "The Board is a dupe for engineers who want to lay down pavement."

C. P. Snow writes that "scientists have something to give which our kind of existential society is desperately short of. . . . That is foresight."

The Academy's record provides very spotty support for this thesis. In regard to drug safety, pesticide hazards, arms control, drug hazards, and a score of other issues involving the wise use of science and technology, the Academy has not demonstrated any great foresight prior to outbursts of public concern. On the most painful and difficult moral issues of our time—civil rights—the Academy's record is a total blank (though it has been stirred to take civil liberties stands, on its own initiative, when the rights of scientists have been

The Academy has a committee on supersonic boom, appointed at the request of the House of Representatives, but are determined to build a supersonic transport, despite widespread fears that it will be an economic and accoustical calamity. "We cannot advise whether such a transport should be built," Seitz stated in an interview. "We can only provide technical advice to assist the appropriate agencies in their decision-making." To which he adds, "The most we can do is to be a conscientious and discerning catalyst in shaping events that are already shaping themselves. If you try to issue a dictum, you run into trouble."

Science Space Board

Through its Space Science Board the Academy serves as science adviser to the National Aeronautics and Space Administration. Early in the relationship NASA made it clear to the Board that it was not the least bit interested in the Board's views on whether there should be a manned space program, or on the relative allocation of resources within the space program. For a variety of reasons, it was indicated to the Board, there was to be a large-scale space program, and if the Board wished to provide advice on its scientific components, NASA would be pleased to consider it. Later, however, it did ask the Board to stake out various post-Apollo possibilities.

It is, of course, not for the Academy to determine whether or not there should be a manned space program or a supersonic transport. These decisions properly lie with agencies that are ultimately responsible to the nation's electorate. But there should be no illusions that the Academy is wholly independent within the confines of its advisory role. Occasionally in the hands of shrewd agency administrators the Academy is a useful and, at times, easily manipulated instrument for employing scientific prestige in behalf of their administrative and political designs. As one former agency head put it, "When you've got a problem, you sound them out on what sort of committee they might put together. If it looks like they'll use people who will come out the way you want it, you tell them to go ahead."

Wholly by design, and in accord with the political traditions of American science, the Academy has made itself an intimate part of the system it serves. In its substantive proceedings,

science does not employ the adversary process, nor does it do so in its political affairs. The structure of the science and-government relationship is based on the assumption that wisdom emerges from harmony, not from conflict. Thus, Seitz sits on PSAC and chairs the Defense Science Board. Bronk was virtually everywhere in the science and government structure during his presidency.

When the progenitors of the Mohole Project sought an administrative base, they were accorded a place as a formally constituted committee of the Academy, of which Bronk was president. And they got their money from NSF, whose top advisory board was chaired by Bronk. No collusion was involved; if anything, Mohole came about without Bronk or his associates paying very much attention to what was then a minor operation with commendable scientific objectives. In the best tradition, it was all very harmonious, and no one considered it his task to ask hard questions.

The late Hugh Dryden served as Home Secretary of the Academy and deputy administrator of NASA, for which the Academy's Space Science Board is the principal scientific adviser. And, as it turns out, most members of the Board were doing research with NASA funds, which was only natural, since NASA pays for most of this country's space research and it makes sense to have space researchers on the Space Science Board. There is no doubt that these arrangements involve well-intentioned, honorable people, volunteering large amounts of uncompensated time to work on difficult problems of national importance. At question, however, is not the virtue of the people but the wisdom of the system.

Tradition and caution permeate the halls of the nation's most prestigious scientific society. But the science and technology that produces its illustrious membership is neither traditional nor cautious, nor necessarily humane. There is a spirit of change at the Academy, but there is also timidity and a membership that is largely indifferent to the affairs of their institution.

This series of articles opened with the account of an incident in which an influential Senator asked, "What is the National Academy?" The truth of the matter is that, at this point, the Academy itself is not certain of the answer.—D. S. GREENBERG

• **GOVERNMENT SOCIAL RESEARCH:** Federally sponsored research in the social sciences, according to a new study, has tended to be too small-scale and academically oriented to make any major contribution toward solving the nation's social problems. In the staff study, released by the Research and Technical Programs subcommittee of the House Committee on Government Operations, federal agencies and university social scientists were said to be more interested in the pursuit of knowledge for its own sake. The study, Representative Henry S. Reuss (D-Wis.), subcommittee chairman, said, will be used as a basis for hearings on social science research. Dr. Harold Orlans, a sociologist on leave from the Brookings Institution, conducted the study which resulted in a four-volume omnibus report. Questionnaires mailed to leading scientists throughout the country revealed that a majority favors the calling of a White House conference on the status of social sciences, but opposes the establishment of a National Social Science Foundation (*Science*, 17 February). Critical comments in the report include: federally financed research is often trivial or irrelevant, and if usable, goes unused; too much emphasis is placed on small projects, rather than large coordinated efforts directed at a specific objective; and federal agencies tend to withhold findings critical of their programs or policies. Copies of the study, *The Use of Social Research in Federal Domestic Programs*, are available from the Superintendent of Documents, Government Printing Office, 710 North Capitol Street, Washington, D.C. 20402.

• **"CHICKEN TRIAL":** The six members of the New Jersey Supreme Court have upheld last year's lower court ruling endorsing experimentation on living animals by high school students. (*Science*, 22 April 1966). The test case involved an East Orange, N.J., high school boy who injected Rous sarcoma virus into four live chickens as part of a cancer research project. After the two surviving chickens, together with details of the experiment, were exhibited in a Newark Science Fair, the experiment came to the attention of the New Jersey Society for the Prevention of Cruelty to Animals. The SPCA brought the East Orange Board of Edu-

cation to court, charging that for technical as well as substantive reasons, the research violated the state's anticruelty statutes. Fearing a threat to animal experimentation in general, the National Society for Medical Research entered the case as a codependant, and mobilized support from the scientists associated with the Biological Sciences Curriculum Studies, several of whose representatives testified at the trial about the importance to students of early introduction to work with living animals. Charles S. Barrett, the county judge, supported the scientists' case in all particulars, concluding that the experiment did not involve "unnecessary cruelty" and had substantial educational value. The Supreme Court simply adopted Barrett's opinion.

• **FISH PROTEIN CONCENTRATE:**

In order to get a head start on its research on fish protein concentrate, the Department of the Interior's Bureau of Commercial Fisheries has been awarded a \$200,000 grant from the Agency for International Development (AID). The funds will go for expansion of the Beltsville, Md., pilot plant for food technology studies, and for predesign engineering on a new plant. The bureau expects to receive its own funds for expansion of its pilot plants in its 1968 budget which takes effect 1 July, but the AID grant will enable it to begin the work immediately.

• **STONY BROOK APPOINTS OMBUDSMEN:**

The faculty, staff, and student body at the State University of New York, Stony Brook, now have three special emissaries to listen to their complaints and suggestions, investigate them if they are worthy, and possibly bring them to the attention of the University president. In response to a suggestion at a recent faculty meeting, President John S. Toll appointed three ombudsmen. The position, which originated in Sweden, traditionally has no specific administrative responsibility, but broad independent authority to investigate problems brought out by members of the community. The Stony Brook ombudsmen are Homer Goldberg, English department, and Theodore Goldfarb, chemistry department, for the entire University, and Robert Weinberg, physics department, for the residential colleges.