

United States are essentially the same today as they were five years ago."

Meanwhile new discoveries have come at an explosive rate. The panel lists a few: "pulsars (SN: 3/6/68, p. 281), atomic and molecular lines, organic molecules (SN: 5/12, p. 351), measurements of the galactic magnetic fields (SN: 9/21/68, p. 282), and even a new test of general relativity (SN: 3/9/68, p. 229)."

"While our country stood still, Great Britain, The Netherlands, Germany and India have started new large radio telescopes (SN: 5/3, p. 434) and several are essentially complete and ready for operation," says the panel. It goes on to reiterate its recommendations of two years ago: The resurfacing of the Arecibo radio telescope in Puerto Rico so that it will be useful at short wavelengths and the construction of an interferometric array of radio telescopes at Owens Valley, Calif.

The panel adds two new recommendations for capital construction, the so-called Very Large Array planned by the National Radio Astronomy Observatory, and a 440-foot single telescope that has been planned by a consortium of universities (SN: 5/3, p. 434).

New, more sensitive receiving equipment should be added to existing telescopes, says the panel: "Continued operation with antiquated electronics is a poor use of the capital investment of earlier years in the existing radio telescopes."

The panel feels that its program is extremely urgent, but whether the Government will respond and how fast is not yet clear. Spokesmen for the NSF say it is too early to comment on the agency's response. Money for resurfacing Arecibo was in the foundation's budget but the House of Representatives appears about to defer it.

The need for resurfacing has been evident for at least three years.

One telescope of the array at Owens Valley exists, but it was already under construction in 1967. Since it was completed, there has been no further construction.

The Smithsonian Institution has taken the 440-foot telescope under its wing and is seeking \$2 million to complete design studies and evaluate prospective sites. A house bill to authorize the money is to be the subject of hearings in mid-September; a similar Senate bill is less far along.

The radio astronomers' earlier report was one of a series of requests by most of the scientific disciplines with which Washington has been bombarded in the last five years. Some efforts have been made to accommodate the sciences, but most long-range requests, like those of the astronomers, have fallen on budget-plugged ears.

SOCIAL SCIENCE

More research, more relevance

A massive survey of the social sciences was prompted three years ago by the growing demand of social scientists for more applied research, to enable society to use them more effectively.

The survey is now complete. Its results—the sciences are coming into their own, but have massive needs—come at a time when concern for social science research is at a peak.

On July 11 President Nixon announced the creation of a National Goals Research Staff to develop a system of social indicators and to prepare annual reports on the directions of society. On Aug. 3 the National Science Foundation released a report by its Special Commission on the Social Sciences, begun in 1968. Among its recommendations were increased use of the social sciences to aid in solving problems of society, inclusion of social scientists in key Presidential advisory groups, a \$10 million appropriation to the NSF to establish research institutes devoted to particular social problems, and combinations of the social sciences and other disciplines for a broader gauged approach to problems.

The present survey represents the combined efforts of the National Academy of Sciences and the Social Science Research Council, and is supported by the National Science Foundation, National Institutes of Health, National Institute of Mental Health and the Russell Sage Foundation. It was conducted among all universities that granted doctorates in social science between 1960 and 1966.

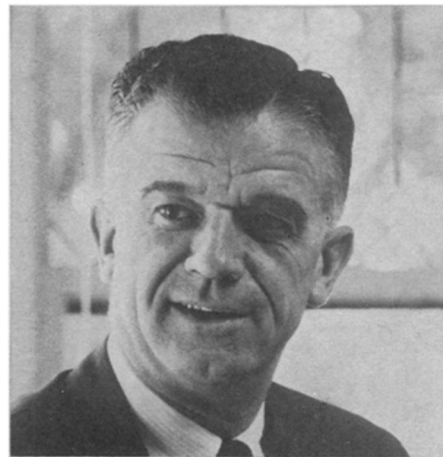
Ten separate panels totaling 76 members were set up to investigate specific sciences—anthropology, economics, geography, history, linguistics, political science, psychiatry, psychology, sociology and a special panel on statistics, mathematics and computation.

Summing up the preliminary recommendations of the survey committee, its chairman, Dr. Ernest R. Hilgard of Stanford University, asked that:

- Social scientists from the private sector address themselves to the problems of basic vs. applied research.

- Eventually a council of social advisers to the President be established. "We now are satisfied," says Dr. Hilgard, "to urge a full participation of social scientists within the Office of Science and Technology and within the President's Scientific Advisory Committee."

- A new type of organization for research in universities be established, similar to a school of engineering or business administration or medicine, but devoted to analysis of social prob-



Stanford University

Hilgard: Support for social research.

lems. The committee suggests a graduate school of applied behavioral sciences to start out as a Ph.D.-granting institution with high standards. Dr. Hilgard cites the Institute of Social Science at Yale and the Public Policy Research Organization at the University of California as models.

The survey committee's recommendations were augmented by the proposals of its psychology panel, chaired by Dr. Kenneth E. Clark of the University of Rochester and Dr. George A. Miller of the Rockefeller University.

Psychology's problem so far, as was evident at the annual American Psychological Association convention (SN: 9/6, p. 177), is that psychology has not delivered in social problem solving. Scientists can enrich the environment of a barnyard animal, says Dr. Clark, but cannot help young children from inadequate backgrounds to learn.

In an effort to inspire better use of the nation's psychology resources, Dr. Clark's panel:

- Endorsed the committee's proposal for a new type of graduate school, but proposed that students should get more financial support over a four- or five-year period.

- Proposed strengthening of the National Science Foundation support of basic research in the social and behavioral sciences as well as the National Institutes of Health support of basic research in psychology.

"Our tools are now sharp, our manpower still small but rising, and with continued support our returns to society should soon be many times the investment made in our researches," Dr. Hilgard concluded.

Publication of the final recommendations of the overall survey and the separate panel reports is planned for November. ◇