Secondary School Fellowships, American Association for the Advancement of Science, 1515 Massachusetts Avenue, N.W., Washington 5, D. C. AAAS-appointed panels will evaluate the applications, which should be returned to the above address before January 6.

Materials Research

Lack of materials meeting the high-performance demands of modern technology, according to a report issued last spring by the National Academy of Sciences —National Research Council, has been a serious handicap to the nation's weapons, atomic energy, and space programs. That conclusion was reached after a year-long study by a fourteen-man NAS-NRC committee under the chairmanship of Clyde E. Williams, formerly head of Battelle Memorial Institute. The committee's report charged that important national security programs "are currently up against a materials barrier because the properties of most available materials are inadequate for the high-performance end-items that must withstand severe temperature, pressure, radiation, corrosion, and stress environments".

The report contained six detailed recommendations for breaking through the "materials barrier". The committee recommended:

1. That the government accord high priority in national security plans and programs to the science of materials, to the training of materials scientists and engineers, and to the development of new and improved materials for national security uses; that the relevant programs of the agencies be strengthened; and that the development of new and improved materials for national security uses be given increased recognition as end-object programs in their own right.
2. That within each [government] department and agency there be greater centralization of responsibility for materials research and development to insure that available resources for materials research and development are utilized in greater measure for projects concerned with better materials, and that the working and central staffs of each department and agency be strengthened, and that the Executive Office of the President continue its efforts to assure that the materials research and development activities of the several departments and agencies are appropriately strengthened.
3. That government incentives be used to stimulate research and development on new and improved materials for national security purposes, including provision for adequate facilities.
4. That in view of the lead time involved in expanding supplies of materials in an orderly manner, the Office of Civil and Defense Mobilization at least once a year should attempt for every potentially needed chemical element or material to assess the supply-demand situation that is likely to exist five to ten or more years in the future. Then, in those cases where competent scientific advice indicates potential future shortages of any chemical element or material, supply-expansion programs should be developed in consultation with industry. Supply-expansion measures would include (a) searching for new deposits, (b) research on processes for recovery from ores or other materials, and (c) stockpiling the element in forms suitable for use at some future time.

5. That all concerned make every possible effort to speed up and to improve the dissemination of technical information on new and improved materials for national security purposes, but that the quality of technical literature be improved if possible by proper technical review to assure that new reports are concise and actually report new work or provide a critical assessment of current understanding rather than just rehash old information.
6. That the universities be significantly strengthened by broad governmental support intended to train increased numbers of scientists and engineers competent to deal with materials problems and also to enhance the national reservoir of basic scientific knowledge applicable to materials problems.

As one result of the study, the Defense Department's Advanced Research Project Agency has awarded three long-term contracts to Cornell and Northwestern Universities and the University of Pennsylvania for research programs in materials science. The objective is to uncover new basic information on the properties and behavior of materials rather than to engage in the direct development of new materials. ARPA plans to sponsor projects at three additional universities within the next year and three more the following year.

Within the next three years Cornell University plans to construct a $4 million building which will house the administrative offices of its newly organized Materials Science Center, graduate research of the Laboratory of Atomic and Solid State Physics, and several technical facilities. Under a long-term $6.1 million ARPA contract, Cornell will set up programs for the expansion of basic research and training of PhD research scientists in materials, which will involve portions of five departments in two colleges at the University. Cornell is considering the possibility of constructing a substantially larger building, of which the ARPA construction would be a part, to house a physics and chemistry library, and some of the other activities of the Department of Physics. The Materials Science Center will be under the direction of Robert L. Sproull, who has served since 1949 as director of Cornell's Laboratory of Atomic and Solid State Physics.

The second ARPA contract went to Northwestern University, whose Materials Research Center (NMRC) will receive about $3.5 million in federal support until it reaches full operation during the next four years. By 1964 it is expected that the research budget of the Center from private and governmental sources will reach $2.2 million annually. The fundamental research into relationships "between composition and structure, and between properties and behavior of materials" will involve 18 specialized laboratories, most of which will be housed in two new wings to be added to the Technology Institute on the Evanston campus. Chairman of the center will be Morris E. Fine, present chairman of Northwestern's Materials Science Department. Cooperation between the departments in engineering and physical sciences will carry over into graduate education and Northwestern will offer course sequences to

acquaint graduate students with all the major materials. It is expected that the number of researchers and graduate students will at least double in number within the first five years.

The University of Pennsylvania received a $4.4 million contract from ARPA and plans to construct a three-story building on its campus to house its new facility for the research program in materials science. While the initial contract covers only a four-year period, the University expects that the program will continue for at least ten years and that the teaching staff and graduate students of the departments involved with materials science (metallurgy, solid-state physics, and chemistry groups) will at least double in number.

Documentation

The fourth edition of a bibliography of paperbound science books, entitled *An Inexpensive Science Library* and listing some 500 volumes, has been released by the American Association for the Advancement of Science's Library Program as an educational service. The books listed are classified in terms of the relative sophistication demanded of their readers. A listing of the publishers' names and addresses and selected retail dealers is included. Copies of the 70-page list can be obtained from the AAAS (1515 Massachusetts Avenue, N.W., Washington 5, D. C.) for 25 cents each; a one-third discount will be given on orders of more than 25 copies.

As has previously been announced, the editorial offices of the *Journal of Applied Physics* are now located in the state of Tennessee. However, a considerable portion of the contributions and communications submitted to the *Journal* are still being addressed to its former office at Cornell University. The staff requests that all manuscripts and letters intended for publication in *JAP* be addressed to the new office: Dr. J. A. Crawford, Editor, *Journal of Applied Physics,* Solid State Division, Oak Ridge National Laboratory, Oak Ridge, Tenn.

Volume 1, Number 1 of *The Australian Scientist,* a monthly digest of progress in scientific research, development, and application, is scheduled to appear in February. The new journal will aim at increasing interest and knowledge in scientific subjects in Australia and will contain lay-language articles in all areas of science. The editorial board consists of S. T. Butler of the University of Sydney School of Physics; A. S. Fraser of the CSIRO Division of Animal Genetics; H. Messel, head of the School of Physics at Sydney; Sir Mark Oliphant, director of the Research School of Physical Sciences, Canberra, and R. N. Robertson, member of the executive, CSIRO, Melbourne. Subscription information is available from the publisher, Tasman Press Pty. Limited, 9–23 Upward Street, Leichhardt, N. S. W., Australia.

The 1960 edition of *The Optical Industry Directory* has been published by the Optical Publishing Com-