

closing would become relatively trivial. From all indications, guided missiles designed to destroy hostile aircraft (see front cover) will have progressed far enough to provide an effective weapon for attacking the orbiting space station even before one is likely to be built, and with the use of proximity fuses it should not even be necessary to aim very accurately.

Dr. L. R. Shepherd, technical director for the British Interplanetary Society, made a strong plea for civilian control of any satellite vehicle project of the future in his introduction to the international conference. A military monopoly in this field, he pointed out, would be disastrous to the development of interplanetary flight. "The performance of existing rocket motors," he said, "is not far short of that required initially even by manned orbital vehicles, and ten or twenty years of vigorous development should eliminate the performance gap: there is no guarantee that military development will lead to the right sort of rockets for space flight, since the requirements are not necessarily compatible. Indeed, the quickest course in the improvement of the rocket lies in the pursuit of an interplanetary project, since the requirements for this purpose are more exacting than for any other."

Institutional Research

Education Council Forms Policy Group

The American Council on Education has announced the creation of a nine-man committee on institutional research policy, appointed by Council President Arthur S. Adams at the request of the ACE executive committee. "The amount of research sponsored annually by the Federal government in colleges and universities is increasing rapidly", the council points out, "and may exceed \$150,000,000 this year. Industries are also offering a much greater volume of research than in the past. This situation not only intensifies the problems of institutions with large sponsored research programs, but also brings into the picture many colleges which have had little or no experience with this type of operation.

"The problems with which the Committee will deal divide themselves into two major parts. The first has to do with relationships among various interested groups within individual institutions and with correlation of practices among institutions. The second has to do with principles and practices of government agencies, of industrial concerns, and of other organizations which sponsor research."

Chairman of the new committee is President Virgil M. Hancher of the State University of Iowa; other members are Robert F. Bacher of the California Institute of Technology, James H. Corley of the University of California, J. R. Killian, Jr. of the Massachusetts Institute of Technology, Larry R. Lunden of the University of Minnesota, Rev. James B. Macelwane of St. Louis University, J. C. Morris of Tulane, Franklin D. Murphy of the University of Kansas, and T. P. Wright of Cornell.

Earthquake Seismograph Station To Be Established at Rice Institute

Donation of \$25,000 by four geophysical exploration companies toward establishment of an earthquake seismograph station at The Rice Institute, Houston, Texas, was announced in June. The gift was made by General Geophysical Co., Independent Exploration Co., Robert H. Ray Co., and Seismic Explorations, Inc., all of Houston. According to information from the Society of Exploration Geophysicists, these consulting geophysical companies, although engaged primarily in the application of seismology to the search for oil, have shown great interest in the basic earth sciences and feel that the establishment of such a station at Rice will be of great value in fundamental research and will contribute to the solution of geophysical problems. The money will be used to provide the equipment for a seismological station for the continuous recording of the movement of the earth and earthquakes anywhere in the world. It will be the first such station to be established in the Houston area, and in cooperation with other stations such as those at the California Institute of Technology in Pasadena and at Saint Louis University will make possible the directional plotting of earth waves. The Rice Institute will thus become a part of the great scientific network which serves to gather information for peoples all over the world on the incidence, direction, and violence of earth tremors and quakes.

Bismanol

NOL Develops New Magnetic Material

A new magnetic material which exhibits a coercive force of 3000 oersteds, the highest recorded coercive force of any known permanent magnetic material, has been developed at the Naval Ordnance Laboratory. Named *Bismanol* from its composition of bismuth and manganese, and from NOL where it was prepared, the material exceeds any other permanent magnet, except the platinum-cobalt alloy, in available flux density in short magnets where length to diameter ratio is one or less. Since Bismanol magnets are made by the powder metallurgy technique, complicated shapes can be processed to close tolerances without requiring machining.

Bismanol was prepared as part of a search for a magnetic material not containing nickel or cobalt and which could be compacted in the form of fine particles to form permanent magnets. This particular combination of materials was chosen by the NOL researchers because of its potentially high magnetic crystal anisotropy, or, in other words, its possession of an axis along which magnetism is very easy as opposed to one or more other axes along which it is difficult. Permanent magnets are made taking this characteristic into account and aligning the crystals, as far as possible, in the direction of easy magnetism.

Both bismuth and manganese are nonmagnetic when alone. In the preparation of the magnetic alloy, powdered manganese and powdered bismuth are mixed

and heated to about 700° C, after which the mixture is cooled to 400° C and aged at that temperature from eight to sixteen hours. The alloy then consists of the intermetallic compound, manganese bismuthide, and unreacted manganese and bismuth. To get the enriched bismuthide from the mixture the material is ground and the magnetic portions separated from the non-magnetic metals by a magnetic separator. The magnetic portion is then hot pressed at a temperature of 300° C in a double acting floating die in the presence of a strong magnetic field. The latter is used to align the particles along the direction of easy magnetism. Bismanol magnets made in this manner not only show the high coercive force mentioned above but also have a maximum energy comparable with Alnico magnets (3×10^6 gauss-oersteds) and a Curie temperature of 350° C. No technical evaluation of the new magnet with respect to temperature, stability, aging, shock, etc. is available at the present time.

APS—Bell Labs Award

O. E. Buckley Solid State Physics Prize

Bell Telephone Laboratories and the American Physical Society have established the Oliver E. Buckley Solid State Physics Prize, consisting of an annual prize of \$1000 to be awarded by the Society to a person adjudged to have made a most important contribution to the advancement of knowledge in solid state physics within the five years immediately preceding the award. Endowed by a trust fund of \$50,000 provided by Bell Labs, the prize is named in honor of the Laboratories' former President, now Board Chairman, who is to retire on September 1 after 38 years' service in scientific and administrative work for the Bell System.

The prize, which will be administered wholly by the APS, will be available for each calendar year, but the Society may delay an award to a subsequent year. A total of 25 prizes will be awarded during the 25-year life of the trust and in 1978 the remaining funds are to be turned over to the American Physical Society for the uses and purposes of the Society.

The committee announced by the Society to select the first winner of the prize consists of five members of the Society. They are Harvey Brooks, Harvard University; J. B. Fisk, Bell Labs.; J. C. Slater, Massachusetts Institute of Technology; Cyril S. Smith, Institute for the Study of Metals, University of Chicago; and APS President J. H. Van Vleck, Harvard University.

NRC Fellowships

Rockefeller, Lilly, and RCA Awards

The National Research Council has announced awards for 1952-53 under programs of fellowships which it administers. National Research Fellowships in the Natural Sciences, postdoctoral fellowships supported by the Rockefeller Foundation to promote fundamental research, were awarded to 13 scientists. The new fellows with their institutions of study and scientific ad-

visors are: George R. Bird (Columbia University, Charles H. Townes); Julian C. Eisenstein (Clarendon Laboratory, Oxford, F. Simon); Isidore B. Fleischer (University of Nancy, Professor Dieudonne); John B. Hanson (California Institute of Technology, James Bonner); Donald G. Higman (McGill University, Hans Zassenhaus); Martin J. Klein (Dublin Institute for Advanced Studies, E. Schrödinger); Dan L. Lindsley, Jr. (Princeton University, K. Cooper); Ariel G. Loewy (University of Cambridge, Kenneth Bailey); Edward A. Mason (University of Wisconsin, J. O. Hirschfelder); Robert G. Mills (Princeton University); Norbert Muller (University of Chicago, R. S. Mulliken); John E. Sanders (U.S. National Museum, G. Arthur Cooper); William G. Van der Kloot (University of Cambridge, William H. Thorpe).

Five awards were made under a new fellowship program, the Lilly Research Laboratories Postdoctoral Fellowships in the Natural Sciences. These fellowships are to further the training of young men and women who have demonstrated marked ability for fundamental research in the natural sciences. The new Lilly fellows are: John H. Barrett (Massachusetts Institute of Technology, J. C. Slater); Albert W. Burgstahler (Harvard University, G. Stork); David P. Hackett (University of London, T. A. Bennet-Clark); David S. Hogness (Institut Pasteur, Jacques Monod); Michael M. Robison (University of Cambridge, H. J. Emeleus).

The RCA Predoctoral Fellowships in Electronics, supported by the Radio Corporation of America, are to give special graduate training in electronics to young men and women of marked ability. The 1952-53 awards were to Harry Dreicer (Massachusetts Institute of Technology, S. C. Brown and W. P. Allis) and William R. Grow (Stanford University, Lester M. Field). Renewal awards were made to Casper W. Barnes (University of Florida, W. W. Harman); Bernard E. Keiser (Washington University, D. F. Winter); Seymour Stein (Harvard University, Ronald W. King).

Miscellany

Calling for a five-year French atomic energy development program, Premier Pinay's Cabinet has approved a plan for spending \$107,000,000 on nonmilitary research aimed primarily at aiding industry and medicine.

Yale University has signed a contract with the AEC to step up its linear accelerator to twenty million volts. The present accelerator, designed by H. L. Schultz and W. G. Wadley of the Yale physics department, has been operating in the energy region between four and five Mev, and its capacity is believed to be about ten Mev. The enlarged machine will be housed in a unit of the recently authorized physics building which is to be constructed on the Yale campus.

In San Antonio, Texas, Trinity University and the Southwest Foundation for Research and Education have