

ing 12 miles northwest of Washington, where the Circumferential Highway crosses the Potomac, the DAVID TAYLOR MODEL BASIN (Washington 7, D.C.) is a complex of four laboratories (Hydrodynamic, Structural Mechanics, Dynamics & Applied Mathematics) conducting fundamental & applied research in submarine, surface, aircraft, and missile design concepts . . . applied mathematics . . . and related instrumentation. Moving from the River to suburban White Oak, find the 875-acre NAVAL ORDNANCE LABORATORY (Silver Spring, Md.) ② which originates, develops, evaluates new ideas in surface, subsurface, and space weaponry to a point where they will be reliable and effective with the fleet. More than 100 weapons devices developed at NOL are now in active use. Back towards the River, and delightfully situated on "Embassy Avenue," is the famous NAVAL RESEARCH LABORATORY (Washington 25, D.C.) ③ where chemists and mathematicians pursue research in astrophysics, stellar positions, and celestial mechanics, as well as provide the almanacs and standards for time and frequency. Further southward along the River is the NAVAL RESEARCH LABORATORY (Washington 25, D.C.) ④ main basic research facility for the Office of Naval Research. NRL employs a wide variety of physicists, mathematicians, metallurgists, chemists, electronics and mechanical engineers—and is now adding more laboratory facilities—to better investigate all physical sciences so as to improve materials, techniques and systems for the entire Navy. Come away from the River again just east of the D.C. line where the NAVAL OCEANOGRAPHIC OFFICE (Washington 25, D.C.) conducts environmental investigations, and develops new techniques and equipments for oceanography, hydrography, gravity, magnetism, sedimentation, and related navigational science. Once across the ever-widening Potomac, and welcome to the NAVAL PROPELLANT PLANT (Indian Head, Md.) ⑥ where chemists, chemical engineers, and related-area professionals research and develop processes, materials, firing devices, and pilot plant operations of solid liquid propellants. A few miles further south, and across the Potomac is the NAVAL WEAPONS LABORATORY (Dahlgren, Va.) ⑦ which performs two broad-ranging functions; first, in developing and analyzing ballistics, astronautics, and guided weapons systems through basic & applied research in mathematics, physics, and engineering . . . second, in working on various classified DOD projects with the latest computer technology and systems. Finally, we reach the shore of the Chesapeake Bay and the NAVAL AIR TEST CENTER (Patuxent River, Md.) ⑧ Here, aerospace experts perform exhaustive performance evaluations of advanced aircraft, and airborne weapons systems. Much thought is given to improving carrier-based operations (launch and recovery, in particular) . . . and to all kinds of aircraft electronic systems. Today, nearly half the Center's professional efforts involve research, development and evaluation. So don't you get in touch with one or more of these eight U. S. NAVAL LABORATORIES OF THE POTOMAC . . . where research is king.

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## PUBLISHING NEWS

### Physics Organizations Abroad

A newly revised and expanded edition of the *Information Booklet on Physics Organizations Abroad* was published last month by the American Institute of Physics. This edition, like three previous ones, is designed primarily to aid physicists from the United States in their travels abroad and in their correspondence with colleagues from other countries. While the booklet does not attempt complete coverage of physics establishments and personnel outside of the United States, it is considerably longer and more comprehensive than those of the past. Information is given on US agencies with interests in international scientific activities, US scientific attachés and deputies abroad, and international scientific organizations. The bulk of the booklet, however, provides information on organizations, schools, and laboratories within some fifty countries of both Western and Eastern Europe, the USSR, South America, Asia, Africa, and the Middle and Far East. Dr. F. Behn Riggs, Jr., director of the AIP Information Center on International Physics Activities was in charge of the project and copies of the booklet can be obtained by writing to him at AIP, 335 East 45th St., New York, N.Y.

### Translation Programs

The National Science Foundation has announced more than \$200 000 in grants in support of its continuing program to provide English translations of scientific literature written in languages "little known by US scientists". The program, which involves work both in the US and abroad, includes cover-to-cover translations of 37 Russian, one Chinese, and two Japanese journals, as well as selective translations made from the journals of ten countries.

The total cost of the translation activity for 1964 amounted to about \$2.5 million. The domestic part of the program encompasses the translation of books and journals undertaken

by learned societies, universities, and other nonprofit institutions. The publication of translations of Soviet journals by the American Institute of Physics and by the Optical Society of America forms part of this program. Support by the NSF makes up the difference between the cost of publication and the amount earned from sales of subscriptions.

The foreign part of the program is funded from sums in foreign currencies which accrue to the credit of the US government, but which, by international agreement, must be spent in the country of their origin. The work supported by these funds includes English translations of Russian material done in Israel and the production of English translations of local journals in Poland and Yugoslavia. While the Israeli program consists of translations of already published Russian material, in Yugoslavia English versions of nine scientific journals are published simultaneously with the native-language editions, and in Poland eleven English versions appear simultaneously with the Polish ones. The combined effort of the programs in Israel, Poland, and Yugoslavia accounts for the translation of about 220 000 pages of foreign literature. Of the total, Russian material translated in Israel amounts to 63 percent, Polish 27 percent, and Yugoslav 10 percent.

Copies of the translated Polish and Yugoslav journals can be obtained from the Office of Technical Services, US Department of Commerce, Washington, D.C. 20230.

### AIAA Publishing Program

In January of this year, three new journals were initiated by the American Institute of Aeronautics and Astronautics, an affiliated society of the American Institute of Physics. Henceforth, original papers on the design, development, and missions of aircraft, spacecraft, and rocket-propelled vehicles will appear in the



## The Friction and Lubrication of Solids Part II

By F. P. BOWDEN and D. TABOR. Exploring frictional behavior of the adhesion mechanism for metals and, with modification, for non-metals, the authors show that energy loss by surface deformation may contribute considerably to total friction loss, particularly when adhesion contribution is small. They also deal with recent experimental studies of surface structure and topography, the adhesion of molecularly smooth surfaces, friction and adhesion in high vacuum, the effect of surface imperfections on bulk strength, the structure, orientation, and lubricating properties of surface films, the behavior of lamellar solids, and friction at great solid speeds. *International Series of Monographs on Physics*.

544 pages; 40 half-tones. \$13.45

## The Two-Nucleon Interaction

By MICHAEL J. MORAVCSIK. Complete in its major outline of nucleon-nucleon scattering as related to forces between two nucleons, this condensed picture of the present state of knowledge of the two-nucleon interaction assumes a general knowledge of quantum mechanics and rudimentary field theory. Part A deals with experiments and the description of their results. Part B covers such matters as meson theory, pion potentials, structure of dispersion relations, applications of the one-pion exchange singularities, and the role of heavy mesons. *Oxford Library of the Physical Sciences*.

50 text figures. Paper, \$2.90

**Oxford University Press**  
**New York**

*Journal of Spacecraft and Rockets* and the *Journal of Aircraft*. The third new publication, the *AIAA Bulletin*, will contain abstracts of papers presented at AIAA meetings, meeting announcements, and programs. The two journals appear bimonthly, and the *Bulletin* is a monthly.

The recent additions bring the total of AIAA periodicals to five. Publication of *Astronautics & Aeronautics*, a magazine containing interpretive articles, and of the *AIAA Journal*, which carries the most noteworthy research and development papers in the aerospace field, will continue.

The editor of the *Journal of Spacecraft and Rockets* is Gordon L. Dugger of the Johns Hopkins Applied Physics Laboratory. The *Journal of Aircraft* is edited by Carl F. Schmidt of the Flight Safety Foundation.

### Historical Ephemeris

The recent publication of the volume, *Planetary, Lunar, and Solar Positions: A.D. 2 to A.D. 1649*, completes a project undertaken by Bryant Tuckerman of the International Business Machines Corporation to provide tables of positions of the sun, moon, and naked-eye planets, covering the period from 601 B.C. to the time of Kepler. The first volume of the work, subtitled *601 B.C. to A.D. 1*, appeared in 1962. Both volumes are published by the American Philosophical Society of Philadelphia.

The tables list the tropic celestial latitudes and longitudes of Saturn, Jupiter, Mars, and the Sun (longitude only since its latitude is always zero) at ten-day intervals. For the Moon, Venus, and Mercury, the information is listed at five-day intervals. The first date given is January 3, 601 B.C., and the last is December 31, 1649 A.D. The Julian calendar is used throughout. The positions are calculated for 7:00 P.M. local time on the 45th meridian east of Greenwich. (At one point this is designated BCT, Babylon Civil Time.) An introduction gives methods of interpolation for unlisted dates and hours and of correction for other geographical locations.

In a preface appended to the first

volume, Otto Neugebauer remarks on the usefulness of the tables: "Their significance reaches far beyond an insight into the early development of astronomy. The recovery of great masses of detailed eclipse records, accurate data for phenomena like occultations, etc., will eventually give reliable early elements for the testing of empirical constants related to the problem of secular acceleration."

"The possibility of accurate dating of month-by-month recorded meteorological remarks (clouds, storms, floods, and river level) will place the discussion of climatic changes in ancient Mesopotamia on a solid foundation. Quotations of prices, references to epidemics, to historical and military events, etc., are contemporary records which can be dated precisely, thanks to the astronomical context in which they are embedded."

The work was begun at the Institute for Advanced Study in Princeton and later moved to IBM. The computation for the first volume was done on an IBM 704; for the second, an IBM 7094 was used. The two volumes are available separately; the first at \$4.00 and the second at \$7.50, from the American Philosophical Society, Independence Square, Philadelphia, Pa.

### Publishers Merge

The stockholders of Scientific American, Inc., publisher of the magazine *Scientific American*, and W. H. Freeman and Company, a San Francisco textbook publisher, have approved the merger of the two companies. Under the terms of the agreement, which was made public recently by Gerard Piel, president of Scientific American, and Stanley Schaefer, president of W. H. Freeman, the Freeman organization will continue its book-publishing activities as a wholly-owned subsidiary of Scientific American, Inc., under the direction of Mr. Schaefer and other members of its present management. The Freeman colophon will continue to appear on all its books. The Freeman company was founded in 1946. It publishes books on the life sciences, agriculture, chemistry, geology, mathematics, physics, and the philosophy of science.