



The big brother of the physics journals, the *Physical Review*, had quite a year in 1949. In terms of words published, it was nearly six times as big as in the low year of 1945 and 70 percent bigger than the prewar record in 1939.

The *Physical Review* in 1949 carried 4076 pages, and it must be remembered that, with the format changes of 1949, there are now many more words to a page than ever before. It was more than twice as big as any other of the American physics journals. Its pages comprised 33 percent of the total of all these or about a third of institute doings in the field of production.

On the other hand the *Physical Review* has not yet matched the 1939 figure for pages-per-member of the American Physical Society. The average member now writes 0.51 (old size) pages as compared with 0.75 pages per member ten years ago. This might mean that physicists have become really busy and less verbose. Or perhaps the editor and the reviewers are now sterner. But it may mean that the rise of big machines with their teams has cut down the volume of research reports per man. Perhaps physics has in some sense not yet regained its stride after the war, but this seems hard to believe.

Whatever may be said about the number of pages in the *Physical Review*, there are certain interesting statistics about their contents. For example, about 64 percent of these pages in 1949 reported researches in nuclear physics, including cosmic rays and magnetic resonance. The remaining 36 percent, including spectroscopy, solid state, low temperature, and all the other subjects, have not been analyzed.

Also interesting is an analysis of the pages of the *Physical Review* in terms of financial sponsorship of the researches. In 1949, 56 percent of the pages in the journal carried reports of research sponsored wholly or in part by the government. To make this total, 17 percent of the pages derived from Office of Naval Research sponsorship, 16 percent from Atomic Energy Commission sponsorship, and 6 percent derived from other military agencies. Nongovernment research reported filled the remaining 44 percent of the Review's pages with 39 percent from domestic sources and 5 percent from foreign.

It is just as well not to embark here on the many reflections, both bright and dark, that these figures give rise to. They tell something important about trends affecting the science of physics and so they should be known. Professor E. L. Nichols of Cornell was a far-sighted man when he established the *Physical Review*, but the reality of its 57th year must be far indeed from any goal that he could have imagined in 1893.

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FOOTNOTES TO SECURITY

NATIONAL SCIENCE FOUNDATION

The bill for a national science foundation was approved by the House of Representatives on March 1 by a vote of 247 to 125. The measure now goes to a joint congressional committee for resolution of differences in the versions of the bill as passed by the Senate and by the House.

As it was passed by the House, the bill includes provisions for strict security checks on the foundation's activities. An amendment was proposed by Representative Howard W. Smith, Democrat from Virginia, providing that foundation employees and scholars shall first have been investigated and then adjudged loyal by the Federal Bureau of Investigation. (The FBI has since reaffirmed its opposition to certifying the people it investigates.)

Another amendment, sponsored by Representative Daniel J. Flood, Democrat of Pennsylvania, provides that full clearance must be given by the FBI for any national of any foreign government before he may be permitted to be associated "in any way whatsoever" with the foundation.

Both amendments were quickly approved and read into the House bill, even though atomic energy research had previously been separated from the foundation's proposed activities.

AEC FELLOWSHIPS

The provision for loyalty and security investigation for all candidates for Atomic Energy Commission fellowships included in a rider to the 1950 Independent Offices Appropriations Act passed by Congress in August of last year, led the National Academy of Sciences to recommend that its National Research Council should not accept the responsibility for further administration of the program. The reason given at the time was that the value of the broad program had been greatly reduced by this restriction and grave doubt was expressed whether the continuance of the AEC fellowship program thus restricted could be considered in the national interest.

Subsequent discussions with the AEC, however, led to an agreement that the program be continued under the NRC, but that predoctoral fellowships be limited to renewals only and that postdoctoral fellowships be awarded only to those engaged in work requiring secret information.

Faced with the virtual elimination of the predoctoral fellowship program, the AEC came up with another solution. In mid-February it was announced that a new program in the biological and physical sciences would be sponsored by the Commission, to be administered on a regional basis by institutions located in the northeast, southeast, midwest, and west. The new predoctoral program differs from that administered by the NRC during 1949-50 in that subjects of research must be sufficiently related

to the atomic energy field to justify presuming that the candidate may be considered a potential employee of the AEC or one of its contractors.

Arrangements have been completed with Associated Universities, Inc. of New York City for the northeast and with the Oak Ridge Institute of Nuclear Studies for the southeast to administer the program in these regions. Negotiations were reported under way with the Argonne National Laboratory and the University of California to handle administrative and financial matters connected with the program in the midwest and the west respectively. Supervision of the academic program in the two regions will be under the Midwest AEC Fellowship Board, established by Argonne's Board of Governors, and by the Western AEC Fellowship Board, to be established by the University of California.

Although the final selection of fellows will be the responsibility of the regional organizations, it is expected, according to the AEC announcement, that the NRC will be requested to assist in the selection of fellows to the extent of assessing the scientific qualifications of applicants. Fellows will be required to have either a full security clearance or "fellowship approval" as provided in the Appropriations Act. Both are granted by the AEC and are determined after FBI investigation of the candidate.

The AEC has also announced that it is sponsoring a graduate level fellowship program to give training in radiological physics to qualified applicants. The program, to be administered by the Oak Ridge Institute of Nuclear Studies, will be conducted at the University of Rochester in cooperation with the Brookhaven National Laboratory, and at the Oak Ridge laboratory and Vanderbilt University. Security clearance is also required in the case of these fellowships.

STRESS PHENOMENA

HIGH-POLYMER DIVISION HOLDS UNIFYING SYMPOSIUM

The seventh meeting of the Division of High-Polymer Physics of the American Physical Society was held on February 2-4 at the Polytechnic Institute of Brooklyn and Columbia University. The division, organized in 1944 as the second one authorized by the APS Council, now numbers about two hundred seventy members and thirty-five associates. A symposium on stress phenomena from the respective viewpoints of solid state and high-polymer physics was a feature of the New York program, which, in all, consisted of twenty-seven papers. A number of high-polymer papers were also presented in a special session on the general program of the Society.

The opinion has been growing among a school of high-polymer physicists, especially those working on the elastic, dynamic, and plastic properties, that the two fields of polymer and solid state physics are developing divergently, though they are based on the same fundamental physical concepts and principles and pertain respectively to phenomena which, in many cases, are at least macroscopically similar. There are arising two systems of terminology for analogous, if not identical, phenomena and concepts, to the unnecessary detriment of the unity and simplification of physics. Thus, with the object of initiating

steps toward clarification of the real similarities and differences between the two fields, the program committee, headed by W. L. Davidson, planned the aforementioned symposium. It is hoped also that a movement along the lines suggested by the symposium will provide for the interchange of ideas, so that useful concepts more completely developed in one field will find fruitful application in the other. It appeared highly appropriate that these efforts toward the retention of the unity of physics should be under the auspices of a division of the Physical Society.

The symposium, held on the Columbia campus, was opened by Frederick Seitz, who presented a paper on the mechanism of flow in single crystals. After a brief description of the observed, gross behavior of crystalline matter, he outlined the modern theories of the deformation mechanism at the atomic level. These theories have an explicit dependence on crystal structure. Arthur Tobolsky followed with a paper on the corresponding topic in polymer physics: the static and dynamic viscosities of amorphous polymers. Because the glasses occupy a position midway between the crystalline solids and high polymers in the classification of matter, are believed to form discrete aggregates, and indeed have been called "inorganic polymers," it was thought profitable to include them in the symposium. Accordingly the third speaker on the program was W. A. Weyl who discussed the rheological properties of glass. In several instances he was able to point out the similarities between the theoretical interpretation of glass behavior and those of crystalline solids or polymers.

The second half of the symposium opened with a discussion of current developments on internal friction in metallic solids by Clarence Zener. The concluding paper was presented by Herbert Leaderman, on the subject of the structure and physical properties of crystalline polymers. Maurice Huggins, who had accepted the unenviable task of synthesizing the different viewpoints presented in the five symposium papers, did a praiseworthy job. The highlight of his comments was perhaps the observation that the deformation processes, whether in metallic solids, glasses, or high polymers, were controlled by energy relationships, and that activation energy figured largely in determining the character of the processes. Unfortunately, a change in the program schedule eliminated the planned opportunity for general discussion, which, it was hoped, would have further advanced the purposes of the symposium.

The regular division program, presented in sessions held at Brooklyn, covered the field of high polymers quite broadly. With respect to the polymers generally regarded as plastics were papers on flow, fracturing, crazing, plasticization, orientation, transition phenomena, equation of state, and a newly identified electrical effect. Research reported on rubbers included crystallization, temperature influences on creep, recover and relaxation, and polymerization with ultrasonic vibration. Textiles were represented by papers on the mechanical properties of wool fibers, an x-ray study of nylon during loading, and an XRD specimen mount for fibers. There were a number