Federal Support of University Research

That the relations between universities and the Federal Government have been changing in recent years is news to no one, but the extent of the change may be. Federal support of research and development in universities was, in 1940, only about $15 million and was largely confined to agriculture. In a recent report (Government-University Relationships in Federally Sponsored Scientific Research and Development), the National Science Foundation estimates that in fiscal 1958 support will amount to about $440 million—a thirty-five fold increase (see page 1281). The greatly increased funds, which possibly amount to two-thirds of the total expenditures of the universities for research and development, now go to the support of all of the natural sciences and engineering as well as agriculture.

The change is not only in the degree but also in the pattern of support. Of the $440 million, the major share, $265 million, still goes to the universities proper, but $175 million is allotted to a comparatively new kind of institution, the research center, that is owned by the Government but is operated under contract by one or more universities or industrial concerns. During the war the need for a vast expansion in scientific and technical knowledge led federal agencies to make contracts with universities and industrial concerns for specific programs. For some projects the demands were so great that the facilities of a particular university department were not adequate to do the job, and this led to the establishment of the research centers.

Of the 47 such centers now in existence, 27 are supported by the Department of Defense, 18 by the Atomic Energy Commission, and 2 by the National Science Foundation; 28 of the centers are operated by universities or groups of universities. Among the major centers operated by universities are the Jet Propulsion Laboratory (California Institute of Technology), Applied Physics Laboratory (Johns Hopkins), Radiation Laboratories (California), Argonne National Laboratory (Chicago), Brookhaven National Laboratory (Associated Universities), and Oak Ridge Institute of Nuclear Studies (Group of Southeastern Universities).

The benefits of this program to the nation and to the universities themselves are obvious, but there are questions about the threats to the independence of the universities and to the freedom in selection of research programs. The Foundation raises some of the questions in its report: "To what extent has the availability of funds from particular agencies given direction to research in universities? Have the policies of the agencies distributing funds and the philosophy of universities in seeking or accepting funds been factors in guiding research? Has the type of work done been determined by the availability of extra-university funds for certain kinds of research?"

The Foundation comes to the general conclusion that, although research has necessarily been given some direction, "this direction up to the present has in general been neither necessarily irksome nor detrimental." That this statement is on the whole true is a tribute to the care and restraint that the federal agencies have exercised in their arrangements with universities.

—G. DuS.
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A. Smith, University of Kansas) includes two joint sessions with the International Council for Exceptional Children, 26 Dec.; two sessions, joint, with the American Educational Research Association, 30 Dec.; four sessions for contributed papers, 29-30 Dec.; and a business meeting and the vice-presidential address of Harry A. Cunningham, Kent State University, 29 Dec. The AAAS Cooperative Committee on the Teaching of Science and Mathematics (Bernard B. Watson, 2806 Blaine Drive, Chevy Chase, Md.) will cosponsor the National Association for Research in Science Teaching program.

The four science teaching societies meeting with the AAAS (coordinator, Robert H. Carleton, Executive Secretary, National Science Teachers Association, Washington, D.C.) will have a joint mixer the evening of 27 Dec. The joint session the morning of 28 Dec. will be devoted to the findings of the International Geophysical Year.

The separate portions of the program of the regional meeting of the National Science Teachers Association (William A. Kilgore, D.C. Teachers College, Washington, D.C.) consists of a meeting of the executive committee and two sessions on 27 Dec. and three other sessions on 28 and 29 Dec., the one on elementary science joint with the American Nature Study Society. Tours to the National Institutes of Health, the Bureau of Standards, and the Agricultural Research Center are scheduled for the morning of 29 Dec.

The National Association for Research in Science Teaching (Ellsworth S. Obourn, U.S. Office of Education, Washington, D.C., and Thomas P. Frazer, Morgan State College, Baltimore, Md.) will have a program of particular interest to science and mathematics supervisors, the morning of 27 Dec.

Science in General (X)

The annual Academy Conference (John A. Yarbrough, Meredith College, Raleigh, N.C.,) composed of delegates and other members of the 44 academies affiliated with the Association, will hold a day of sessions on 28 Dec., concluding with the annual dinner and presidential address by Yarbrough. An additional session devoted to a conference on junior academies is under consideration. The Academy Conference will sponsor the 12th annual Junior Scientists Assembly (Keith C. Johnson, Woodrow Wilson High School, Washington, D.C.) for selected high-school students, to be held at a convenient site, apart from the rest of the meetings.

The American Association of Scientific Workers (Robert J. Rutman, national secretary, 6311 Ross St., Philadelphia 44) is planning a one-day conference on participation of women in science.
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The American Geophysical Union (Waldo E. Smith, AGU, Washington, D.C.) is planning a regional meeting and will cosponsor appropriate sessions, such as those on the IGY program.

The program of the annual national meeting of the American Nature Study Society (Stanley Mulaik, University of Utah) begins with a board meeting on 26 Dec. and includes, besides joint sessions with the science teaching societies, general sessions on 27 Dec. and the afternoon of 28 Dec. The annual dinner, followed by the annual showing of Kodachrome slides, will be held the evening of 29 Dec.; the joint field trip with the National Association of Biology Teachers will be held on 30 Dec.

The Conference on Scientific Communication Problems (George L. Siegel, Applied Physics Laboratory, Johns Hopkins University, Silver Spring, Md.) now in its seventh year, will have six sessions, 28–30 Dec., devoted, respectively, to “Science in the News,” “Science in Storage,” “Science and the National Defense,” “Science and Three-Dimensional Presentations,” “Science in Textbooks,” and “Science in Translation.”

Details of the annual Conference on Scientific Manpower (Thomas J. Mills, National Science Foundation) are not yet available. As in previous years, this program will be cosponsored by the Engineering Manpower Commission, Scientific Manpower Commission, National Academy of Sciences-National Research Council, and National Science Foundation.

The three sessions devoted to the International Geophysical Year (Hugh Odishaw, National Academy of Sciences, Washington, D.C.)—which, technically, concludes with the last day of the AAAS meeting—will outline the latest IGY findings (i) in the Arctic and Antarctic, (ii) on missiles and satellites, and (iii) in meteorology and oceanography.

The national meeting of Sigma Delta Epsilon, graduate women’s science fraternity (Virginia Lee Blackford, Washington, D.C.), begins with a business meeting on 27 Dec. and includes the annual dinner and grand chapter meeting on 29 Dec. and a luncheon for all women in science on 30 Dec. A headquarters room will be maintained throughout the meeting period.

At least one of the annual addresses of the Society of the Sigma Xi (Thomas T. Holme, Yale University) and of the Scientific Research Society of America (Donald B. Prentice, Yale University) and the award of the William Procter prize are scheduled for the evening of 29 Dec., following the 59th annual convention of the Society of the Sigma Xi; the annual convention of RESA, and their joint luncheon.

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23-25. American Soc. of Refrigerating Engineers, annual, Minneapolis, Minn. (R. C. Cross, ASRE, 234 Fifth Ave., New York 1.)


25-27. Low Temperature Physics, 6th internat. conf., Leiden, Netherlands. (J. van den Handel, Kamerlingh Onnes Laboratory, Leiden.)


25-28. American Assoc. of Physics Teachers, Boulder, Colo. (F. Verbrugge, School of Physics, Univ. of Minnesota, Minneapolis.)


29-4. National Education Assoc., Cleveland, Ohio. (W. G. Carr, NEA, 1201 16 St., NW, Washington 6.)

30-5. High Energy Nuclear Physics Conf., annual (by invitation), Geneva, Switzerland. (CERN, Geneva 23.)

July

4-6. Astronomical League, Ithaca, N.Y. (Miss W. A. Cherup, 4 Kloepfer St., Millvale, Pittsburgh 9, Pa.)


6-12. Research and Development Engineering Seminar, 2nd annual, University Park, Pa. (Extension Conference Center, Pennsylvania State Univ., University Park.)

7-9. Exchange of Knowledge in a Divided World, Chicago, Ill. (H. W. Winger, Graduate Library School, Univ. of Chicago, Chicago 37.)

7-11. Technical and Industrial Communications Inst., Fort Collins, Colo. (Chairman, Dept. of English and Modern Languages, Colorado State Univ., Fort Collins.)


8-11. Institute of the Aeronautical Sciences, summer, Los Angeles, Calif. (S. P. Johnston, IAS, 2 E. 64 St., New York 21.)


(See issue of 15 May for comprehensive list)
Legibility

The current intensified effort to make foreign technical literature more accessible raises questions about the legibility of the translations scientists are expected to review and ways in which such deficiencies as occur in this respect can be corrected. Scientists must do enough reading as it is without the additional burden of having to read material that seems better designed to increase eye-strain than to impart information.

The copies of translations which have come to our attention leave much to be desired. Many of the original translations were poorly typed—letters were faded or smudged, and so on. Some reproductions have been negatives—that is, white type on black background—making for very difficult reading. In a number of cases reductions in size of type and in spacing between words and lines have compounded the illegibilities and compacted the text beyond acceptable minimum standards.

Such conditions undoubtedly contribute to eye-strain, and thus to an increased drain on our energies—and perhaps even to a build-up of psychological resistance to the reading matter as a whole.

Since requirements for effective scientific work undoubtedly encompass the well-being of the scientists themselves, we suggest that information on standards be summarized and disseminated for the express purpose of promoting necessary improvements in the materials we have to read. (We recognize, of course, that other conditions may contribute to eye-strain, such as poor lighting or improperly designed fixtures or furniture. Here, too, ample information is available on desirable standards.) To that end we propose the appointment of an AAAS committee (i) collect and report on technically established legibility standards for reading matter; (ii) determine the extent to which such standards are being met by translation services (public or private), and (iii) work with such services toward meeting standards where they are not now being met. The following illustrates how standards can be formulated. Maximum acceptable number of lines per (vertical) inch may be taken as 10. Maximum number of characters (letters, punctuation marks, and so on, and word spaces) per line may be 60, with 25 to 50 an ideal range. Incidentally, the American Council of Learned Societies reported on a study on this general subject in a 207-page “Manual on Methods of Reproducing Research Materials,” by Robert C. Binkley and others (Edwards, Ann Arbor, Mich.), in 1956.

One objection that may be raised to higher standards (one physicist of our acquaintance did raise it) is that the cost of reproducing translations might be materially increased. Probably so, at least in the beginning. However, the benefits to the individuals and their work should be well worth the higher costs, if any. And in any event, technical ingenuity can surely be counted upon to bring down costs if the incentives to do so become strong enough.

We hope this letter will arouse discussion leading to positive action.

Bernard Frank
Robert T. Hall
Forest Service,
U.S. Department of Agriculture

Blood-Group Nomenclature

The undersigned object to the report in the Journal of the American Medical Association for 31 August 1957 on “Medicolegal applications of blood grouping tests.” In our judgment this report is a highly biased document, and certain of us have already expressed contrary opinions during the course of the report’s formulation, without much effect. The Subcommittee on Medicolegal Problems responsible for this report consisted of four members all of whom are from the United States and two of whom were the chief protagonists for one of the nomenclatures under dispute. Therefore we, the undersigned, do not intend to abide by the recommendations of the report, and we shall continue to use the C-D-E nomenclature until such time as a properly representative international body arrives at a definite nomenclature.


The report of the Subcommittee on Medicolegal Problems, published in the Journal of the American Medical Association, contains a recommendation on Rh nomenclature that can hardly be conceived as a restriction on the liberty of the signers of the protest, or of anyone else active in the field, to use whatever terminology they choose. The desirabil-
ity of a uniform nomenclature appears to be a matter of common recognition; to quote from the summary and conclusions of the report: "Of the two available systems the Committee favors the Rh-Hr over the C-D-E for what it considers strong reasons. It recognized faults in both systems and suggests that the achievement of an internationally acceptable terminology is a desirable objective."

The report contains a long section on "contrary opinion on nomenclature" (pages 2037–2039), recognizing a sharp and almost equal division of opinion on this matter and attempting a fair presentation of the contrary opinion that had come to the attention of the subcommittee. This diversity of opinion was further noted in the "summary and conclusions," where the recommendation is clearly identified as an "interim" one, to apply "unless and until some other convention can be agreed upon."

Perhaps the only conclusion that can be stated at present is that this issue will remain unsolved until "a properly representative international body arrives at a definite nomenclature." The virtually identical phrasing of the protest and the report itself in this connection ("...") suggests that the achievement of an internationally acceptable terminology is a desirable objective") may indicate a greater degree of concordance of opinion on the main issue than has previously been evident. If the report, and the protest it evoked, serve to point compellingly to the desirability of an acceptable solution to this issue, a useful service will have been performed.

**COMMITTEE ON MEDICOLEGAL PROBLEMS, AMERICAN MEDICAL ASSOCIATION**

**Chicago, Illinois**

**Editor's note:** The report referred to was prepared by a subcommittee consisting of A. S. Wiener, Ray D. Owen, Clyde Stormont, and Irving B. Wexler. It contains the following recommendation, under the heading "Summary and conclusions:"

Because the use of two systems of nomenclature for the Rh-Hr system leads to confusion and misunderstanding, the Committee on Medicolegal Problems of the American Medical Association recommends the adoption of a single uniform system for medicolegal reports. Of the two available systems, the Committee favors the Rh-Hr over the C-D-E for what it considers strong reasons. It recognized faults in both systems, and suggests that the achievement of an internationally acceptable terminology is a desirable objective. In the interim, it is recommended that, unless and until some other convention can be agreed upon, the original Rh-Hr notations be kept as the standard and sole nomenclature for preparing approved medicolegal reports on Rh-Hr types.

For those who are uninformed about the long-standing controversy over the Rh nomenclature, it may be pointed out that the Rh-Hr nomenclature, developed and elaborated by A. S. Wiener, has priority in time and is generally favored by workers who regard the varieties of Rh antigens on human red blood cells as being determined by members of a multiple allelic series of genes. The alternative nomenclature, deriving from R. A. Fisher and R. R. Race, assumes a pseudo-allelic relation between three closely linked genetic loci, C-D-E. This nomenclature, which to some extent is used in the United States, is used very widely, if not exclusively, in Great Britain and in Europe, where it is generally regarded as being considerably simpler to use in teaching the complexities of Rh inheritance. Repeated efforts have been made to arrive at a universally accepted nomenclature; but in the absence of certainty about the genetic realities of the situation, no compromise has been reached.

Obviously, the use of some standard and sole nomenclature would be desirable. On the other hand, the imposition of such a standard by an American group representing only one side of the controversy can serve only to sharpen international divisions of practice and opinion.—**BENTLEY GLASS**