

The Role of the Department of Commerce*

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At the outset I should observe that the distribution of the results of research performed by Commerce agencies is an important responsibility, and each strives to communicate its findings to that sector of the scientific and engineering community with related interests. In clarification of this observation, let me point out that the Department contains eight scientific and technical agencies, all of which produce, process, and distribute information, some to specialized clienteles, others to a broad base of the economy. For example, two of the Department's agencies, the U. S. Weather Bureau and the U. S. Coast & Geodetic Survey, conduct research, make observations, and analyze data of enormous value to meteorologists and oceanographers, respectively. The National Bureau of Standards performs research and development over a wide spectrum of the physical sciences. The U. S. Maritime Administration is concerned with improving the speed, performance, and efficiency of ships. (one feature of their program is the construction and operation of the atomic powered vessel "The Savannah.") The U. S. Bureau of Public Roads undertakes technical studies in such diverse areas as concrete aggregates and automatic traffic control. The Census Bureau is in the forefront of automatic data processing. And, of course, every patent granted by the U. S. Patent Office contains at least one new engineering fact. Thus the scientific and technical information responsibilities of the Department of Commerce are so numerous and different in character that a detailed inventory would take up most of the time allotted today. Instead, let me direct attention to science information efforts in support of the Department's broad mandate—that is, to encourage and strengthen private enterprise.

Historically, the Department of Commerce has always been concerned with information; thus, the collection and analysis of economic, marketing, and statistical information have been regular and recognized responsibilities for many years. However, it was not until the close of World War II that the Department was given the specific task of relating scientific findings to economic growth. In September of 1945, President Truman signed an Executive Order which turned over to the Secretary of Commerce operational responsibilities with respect to the declassification and distribution of government research kept under wraps during the war years. This Executive Order was followed by a second which enlarged the field to include the scientific and technical accomplishments of the Axis Nations. These assignments constituted our introduction to large scale information processing. At

home, the primary difficulty was declassification of the significant facts and their selection from the mass of military knowledge. Abroad, we had to collect useful information from the shattered laboratories of the defeated nations. These pioneer efforts led the executive and legislative branch to assign the Department firm and continuing responsibilities in the field of scientific and technical information. Our legislative authority, passed in 1951, has been called a model of clarity. It is only two pages in length, and its major intent and objectives are set forth clearly in Section 2:

The Secretary of Commerce (hereinafter referred to as the "Secretary") is hereby directed to establish and maintain within the Department of Commerce a clearinghouse for the collection and dissemination of scientific, technical, and engineering information, and to this end to take such steps as he may deem necessary and desirable—

(a) To search for, collect, classify, coordinate, integrate, record, and catalog such information from whatever sources, foreign and domestic, that may be available.

(b) To make such information available to industry and business, to State and local governments, to other agencies of the Federal Government, and to the general public, through the preparation of abstracts, digests, translations, bibliographies, indexes, and microfilm and other reproductions, for distribution either directly or by utilization of business, trade, technical, and scientific publications and services.

(c) To effect, within the limits of his authority as now or hereafter defined by law, and with the consent of competent authority, the removal of restrictions on the dissemination of scientific and technical data in cases where consideration of national security permit the release of such data for the benefit of industry and business.

While this language makes it clear that the Congress is directing the Secretary to carry out scientific and technical information programs as a basic responsibility of his Department, the scope of such programs, their emphasis and depth are left to his judgment and, of course, to that of the Congressional appropriations committees. Let me review program developments in the Department since that legislation was enacted. For a period of several years following the President's signature on the bill, attention was devoted to acquisition, cataloging, announcing, and supplying of unclassified reports produced by cooperating government agencies. Here the Library of Congress played a significant role in the photoduplication process. Shortly after the first Soviet satellite went into orbit, the clamor for more knowledge about technical and scientific achievements behind the curtain

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resulted in a directive to the Department to enlarge its operations to provide a clearinghouse covering such data. This program was begun with the support and encouragement of the National Science Foundation and incorporated the resources of the Special Libraries Association Center in Chicago. Here the Office of Technical Services is in effect a world clearinghouse of translations, abstracts, and the like, especially when the materials are originally in a language which, as our friends in Holland say is, "difficult of access."

The research reports program and the technical translations efforts are continuing, each being stronger in service and wider in scope each succeeding year. For example, our bibliographic journal relating to unclassified government research is now issued every two weeks. The reports announced are largely those of the Department of Defense, the National Aeronautics and Space Administration, and the Atomic Energy Commission, since these agencies are the primary federal sponsors of science, however, it includes all of the other civilian agencies as well. This year we list in specific subject categories the printed reports of civilian agencies which are announced by the Superintendent of Documents of the U. S. Government Printing Office. Thus, to the best of our ability, we are recording in a single place the unclassified, non-proprietary scientific findings of all government agencies. Of course, this does not include reports specifically in the fields of agriculture or medicine, the former is handled by the Department of Agriculture, the latter by the National Library of Medicine. We do include reports even in those fields when they seem to have benefit to the industrial community; in other words, if they are of value to audiences broader than those reached by the two organizations mentioned.

I would like to point out that we have made some marked changes in our cataloging practices in order to avoid duplication and achieve economy. Specifically, we have entered into cooperative arrangements with the Armed Services Technical Information Agency, under which we obtain microfilm copies of all reports delivered to that Agency. Further we use ASTIA's descriptors in our cataloging, and we use ASTIA tapes to produce our catalog cards. As a matter of fact, the "Technical Announcement Bulletin," produced by ASTIA, is incorporated as a major section of our bibliographic journal. I cannot speak too highly of the help provided us by ASTIA personnel; it is a most felicitous relationship.

Recently, under an experimental program led by the National Science Foundation, we have begun to put out a "Keywords Index" of the reports announced. Our objective here is to produce a permuted title index which provides early information on the materials acquired. The key words are taken from the titles of the reports themselves. It is too early to predict the success of this experiment, but I can say that the reactions to date have been surprisingly favorable.

Also, on the initiative and with the support of the National Science Foundation, we have set up a national depository library arrangement whereby microfilm reels of Defense, AEC, and NASA reports are deposited in 12 research libraries geographically distributed around the nation. These libraries, which were selected by the Association of Research Libraries, are the following: Prince

Gilbert Library, Georgia Institute of Technology, General Library, University of California, Government Documents Division, University of Colorado Libraries, Massachusetts Institute of Technology Libraries, the John Crerar Library, Science Library, Southern Methodist University, Linda Hall Library, Kansas City, Missouri, University of California Library, Engineering Library, Columbia University, Carnegie Library of Pittsburgh, University of Washington Library, and the Library of Congress.

While microfilms and Xerox copies made from microfilm are usually the best method of producing documents in response to an uncertain customer demand, it is true that full size paper copies are the most generally satisfactory. In order that such copies can be provided wherever there is reasonable expectation that a report will enjoy multiple demands, we have arrangements with the primary sponsors of research which might be loosely termed "overrun arrangements." Here we are provided stock copies of all reports which in their opinion promise commercial benefits. These reports are announced in our bibliography and through the technical press. They are kept on the shelves of our warehouse in stock for a minimum of two years.

I mentioned earlier the program in technical translations which began in 1958. This is a many-faceted effort based on a world clearinghouse of information on activities in the Soviet Bloc and Red China. Our announcement journal, "Technical Translations," is also produced on a biweekly basis, and it indicates the existence and availability of translations, collections of abstracts, and the like. The notices are supplied to us by commercial translators, friendly foreign governments, the European Translations Center at Delft, and the Special Libraries Association at the John Crerar Library in Chicago. We and the National Science Foundation jointly finance a project at the Special Libraries Association to collect and provide these materials. In addition, the Crerar Library is a major outlet to the public. The European Translations Center at Delft, which was set up by the Dutch Government as a part of its contribution to the Organization of the European Cooperation and Development, is collecting translations from all the member nations and supplying us film copy together with catalog information which we incorporate in "Technical Translations." Thus our journal is the sole announcement medium for these materials throughout Europe as well as in this country.

We have some interesting collections of abstracts which we produce and distribute as well. Four hundred and fifty-one Soviet Bloc journals are reviewed by technical experts who select from them articles of more than ordinary interest. These are then abstracted, and the abstracts grouped by subject matter—physics, electronics, metallurgy, and the like. The series are duplicated and distributed by our agency.

Next we are engaged in a program for the production of translations abroad, using agricultural surplus funds for the financing. Here the National Science Foundation was able to get authority to use these funds for this purpose. Thereafter the Foundation negotiated contracts in Israel, Yugoslavia, and Poland. Under funds transferred by the Foundation, we operate this program, in other words, we find out what materials the government agencies would like to see translated, we obtain the manuscripts,

we send them to the translation organizations in the several countries, we receive the English translations which they have prepared, we have them edited and reviewed, and we get a thousand copies for general distribution. This program has settled down into a very interesting activity; my last information is that from the time an agency selects a book or publication of similar size which it would like to see translated, until the translations is in hand and ready for general distribution in this country, an average time of five months elapses.

We have a related program, which is not too well known, which I would like to describe to you in the hopes that we will gain additional customers. This is a bibliographic service which we undertake in cooperation with the Science and Technology Division of the Library of Congress. As you know, the Library has an unrivaled collection of scientific and technical books, journals, and the like. They are carefully cataloged and may be consulted by visitors to the Washington scene. However, many firms scattered across the country would like access to this knowledge. Therefore we have arranged with the Library to provide such a service on a self-supporting basis. Specifically, a company may indicate its field of interest, whether it wants a current awareness search or retrospective information, the time it would like spent exploring the files, or other limitations it would like to place on the project. An estimate of funds required for the task is provided on the basis of \$8.00 an hour which includes both professional and clerical services. Then Mr. John Sherrod, Chief of the Science and Technology Division at the Library, assigns one of his specialists to the task of producing the information. Prior to a national announcement and promotion of this service, we have worked out the details to a smooth functioning service, and we are prepared to accept additional customers.

Another program, supported by this Office, might be termed a "stable" of private citizens with translation abilities. A number of agencies of government need translations from time to time, but many do not have enough tasks to justify full-time personnel; therefore, a multiagency effort was designed, which is known as the U. S. Joint Publications Research Service. This organization is administered by the Office of Technical Services and functions on behalf of those agencies of government who need specific translation help. The Joint Publications Research Service has offices in Washington, New York City, and San Francisco; in each a large group of translators has been interviewed and their capabilities cataloged. Thus when a translation from the Czechoslovakian or Indonesian is desired, the administrative staff can speedily locate a man or woman with qualifications in this field and arrange to produce the translation promptly on a fee basis. Currently, about 2100 competent translators are employed on a part-time basis in this program, and the current rate of production is 24,000 pages printed per month.

Another Office of Technical Services effort is our work in support of the Agency for International Development. Technical assistance abroad is a means to help people help themselves. In this connection, the Agency for International Development in the U. S. Department of State contracted with us to set up means for answering technical questions which are received from the developing

countries. Using a technique somewhat similar to that described for the Joint Publications Research Service, we have a "stable" of research organizations which have indicated a willingness to receive these questions and have replies prepared by their experts on an hourly charge bases. Currently we have 15 such contracts with major American research institutes and universities, including the Armour Research Foundation in Chicago, Ill., the Lowell Technological Institute in Lowell, Mass., the Battelle Memorial Institute in Columbus, Ohio, the Georgia Institute of Technology, and the Wharton School of Finance of the University of Pa. In addition, we regularly scan the literature for information of a basic industrial nature which can be sent to these countries for practical application there. Practical information with respect to such simple subjects as the manufacture of concrete, food processing, and the like are in particular demand. We have a special problem here since much current technology is on a level of sophistication and scale far beyond the requirements of the developing economies. At present this program is functioning in 72 countries around the world, and we receive most encouraging reactions from the productivity centers, momemtos, and the like which constitute the mechanisms of communication within these nations.

So far I have been describing the past and the present. What of the future? This is indeed hazardous to predict, but I can report a significant development which may provide a guidepost for future directions. This is the decision of the Secretary of Commerce to appoint an Assistant Secretary for Science and Technology and the appointment of a distinguished research administrator, Dr. J. Herbert Hollomon, to this division. Dr. Hollomon has been associated with the General Electric Company since 1946 as Assistant Manager of the Metallurgy Research Department, and since 1960 as General Manager of the General Engineering Laboratory of the Company. He has been a member of many outstanding professional associations, and he has been an Adjunct Professor of Metallurgy at Rensselaer Polytechnic Institute and has served in advisory educational posts at other universities. Dr. Hollomon has an international reputation for vigor, imagination, and effectiveness. He has already made it clear that he regards the stimulation of the civilian sector of our economy to be a task demanding urgent and extraordinary attention. He points out that the nation's scientific and technical posture is in effect a two legged stool, with one leg Defense and a second Space. This situation has been a natural and inevitable response to international tensions; however, a balanced program requires a third leg—Civilian Technology. It is in this area that information programs need to be recast and strengthened. It happens that this year the National Academy of Sciences reported to the Department its views and recommendations with respect to the technological needs of two sectors of our economy, these are textiles and building. In each, the Academy made special mention of current deficiencies in information which are hampering the stability and growth of these major contributors to the gross national product. Further the Academy recommended specific programs designed to improve the reporting of science and technology to these two industries.

I am not permitted at this time to report the Department's plans to respond to these recommendations since we have not completed our appropriations hearings. I can say that Dr. Hollomon regards the prompt distribution of scientific and technical information to industry to be an important component of his plans for a civilian technology program, and he has constructive ideas on how to improve the situation.

In summary, the Department's role can be "spelled out" in these terms: 1. To see that all of the useful information produced in the course of the Department's own programs is made available to those who can contribute to, or benefit from the findings. 2. To make sure that the results

of all unclassified government sponsored research and development is supplied to the public promptly and in a convenient form. 3. To provide a clearinghouse service for technical translations and like materials. 4. To see that, from whatever sources are required, industry gets the information it needs.

In all of these endeavors we will continue to work with and through existing agencies, such as the major abstracting services and the specialized information centers. Our targets for the years ahead are—to improve our service, advance our efficiency, and augment our audience.

The Scientific and Technical Information Program of the National Aeronautics and Space Administration*

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The National Aeronautics and Space Administration has been given a responsibility which can be described in quite simple terms understandable to both the technical and lay publics: and that is, to push back the frontiers of space. In so doing, the continuing research and development carried on throughout the national aerospace program is directed toward a far more significant objective; and that is pushing back the frontiers of knowledge and perception. Everything that NASA does, even when it results in the creation of a spectacular vehicle, or the most esoteric and advanced hardware, aims directly at the task of increasing man's knowledge of the world beyond him and, to a great extent, at a better appreciation of his own environment.

This pool or reservoir of knowledge must not become stagnant if we are to be alert to national self interest and to our responsibilities throughout the free world. Specifically, we must recognize the need for communicating, on the widest practicable basis, knowledge vital to the aerospace program within the aerospace family. However, we must not lose sight of the potential impact of this new knowledge, new techniques, and new innovations on our own industrial economy. By maintaining a clear

understanding of the broad spectrum of the many national communities to be served, we take a major step forward in building a national scientific posture which will contribute to our international energies and image. Therefore, and in summary, we view the scientific information deriving from NASA endeavors as a critical national resource.

We accept the premise that the information requirements which NASA must satisfy can only be met by a system that ensures *ready* access—for science, for industry, for the educational world, and for the general public—to NASA—generated scientific knowledge appropriate to a given need. As a result, NASA's scientific and technical information program has been designed to encourage the broadest and most effective use of the scientific knowledge at NASA's disposal. Mere availability of information is not enough. The information must be so collected, "repackaged" when necessary, and distributed that NASA's many publics can secure utmost benefit.

Operating Principles.—The new NASA scientific and technical information program is guided by five operating principles which merit identification and brief explanation: *First*, our products and services are designed for the ultimate consumer of knowledge—the scientist, the engineer, the laboratory worker. Of course, they can also be

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