

The Project on the History of Recent Physics in the United States

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SOME 2,000 years ago, almost at the very beginning of European intellectual history, Archimedes is supposed to have asserted, "Give me a lever long enough, and a fulcrum strong enough, and singlehanded I can move the world." Some three and a half centuries ago, at the beginning of the intellectual development that has since become modern science, Francis Bacon exhorted philosophers to turn to the study of nature, for "Knowledge, too, is itself a power" (*Nam et ipsa scientia potestas est*).

These fine statements, so splendid in hope, were only fantasies of their authors. For centuries the best application that could be found for Archimedes' statement was to use it as a device on the title page of works on natural philosophy. Bacon's statement could only be applied, during the three centuries after him, to the creation of philosophical toys, which might have amused the dilettanti but which meant little to commerce and government or to the daily life of the individual.

Even at the turn of this century science was still very much an academic discipline. True, some of the toys had been developed to the extent that they could be applied in commerce and industry—one immediately thinks of the steam engine and the telephone—but, for the most part, science was a discipline to be studied in a cloistered university. It had a relatively unimportant role in our economy or government: it was a bookish, intellectual field of investigation for a relatively small group of isolated men.

This is no longer true. Now you can find scientists not only in the university but in every branch and at every level of government and industry. The applications of science have become an intrinsic part of daily life: they influence every facet of American life—technology, culture, politics, and the economy—and they even raise moral ques-

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tions. In sum, the history of science in America has become an essential part of American history.

But there is no need to belabor this point to a group of men and women concerned with the past and with the nature of the changes driving the present into the future. This group will be more aware than anyone else of such changes and of the fact that historical records are being created along with these changes, just as you are more aware than any other group of the necessity of preserving these records before they are scattered or destroyed. We live in one of the great centuries of intellectual development, but we also live in a century in which, I venture to say, more records of possible historical value are being destroyed than in any preceding one.

This is particularly true for scientific records. To the nonscientist they can seem gibberish, and so not worth saving. The scientist himself is frequently unconcerned with, or he may not realize the historical value of, the very records he creates. Nevertheless, at the present time it is still possible to find many of the scientific records documenting the radical changes that occurred in the past 50 years. These are important, if not essential, documents for the recent history of American society.

These three considerations—the unprecedented rate of accumulation of records, the difficulty of evaluating these records, and the recognition that if these records are to be saved they must be saved now—led the American Institute of Physics to set up the Project on the History of Recent Physics in the United States.

Let me tell you briefly what the institute is. It is a federation of the leading professional societies in the field of physics, with some 27,000 members. Typical member societies are the American Physical Society, the American Association of Physics Teachers, and the Acoustical Society of America. Industry is represented in the institute through 185 corporate memberships and aids the institute in carrying out its purposes.

What does the American Institute of Physics do? It provides services for the member organizations, including the publication of some 27 journals; it provides information on physics and physical research to the public; and it conducts surveys and research programs of which this project is one. In general terms the purpose of the institute is the advancement and diffusion of the knowledge of physics and of the knowledge of its application to human affairs.

The Project on the History of Recent Physics was set up by the institute in the summer of 1961 with the assistance of a grant from the National Science Foundation. A Project Director and an advi-

sory committee are in charge. Gerald Holton, of the department of physics at Harvard University, is chairman of the advisory committee. Other committee members are: Sanborn C. Brown, department of physics at Massachusetts Institute of Technology; Karl K. Darrow, secretary of the American Physical Society; Charles C. Gillispie, department of history, Princeton University; Erwin N. Hiebert, department of history of science, University of Wisconsin; Thomas S. Kuhn, department of history, University of California at Berkeley; R. Bruce Lindsay, dean of the graduate school, Brown University; R. S. Shankland, department of physics, Case Institute of Technology; and George Uhlenbeck, Rockefeller Institute.

The general objective of the project is to collect and organize source material on the history of recent physics in the United States, to locate source material preserved elsewhere, and to make such material and information available for study by teachers, writers of textbooks, science museums, historians of science, or others having a serious interest in the history of physics. The specific major objectives of the project are the following:

(1) To locate documents of potential significance for studying the development of physics and of the physics community in the United States. The period under investigation begins about 1890 and extends to the present. Both manuscripts and scientific apparatus are included in the term "documents," for both record scientific achievement and both can be used by the scholar as historical source material.

(2) To urge upon scientists, archivists, industrial and academic institutions, and others the importance of preserving documents recording the history of physics in the United States and to assist, wherever possible, in such preservation.

(3) To conduct and record interviews with physicists associated with significant discoveries made in the United States and to obtain photographic or other records of apparatus used in important researches.

(4) To obtain and organize a biographical-bibliographical collection of data on the more outstanding members of the physics community in the United States and to organize a locator file of historical source material for the history of physics in the United States.

(5) To organize into an archives for the history of physics the information and the archival material gathered. This Historical Archives is located at the American Institute of Physics.

(6) To encourage and initiate the use of the Historical Archives by scholars.

(7) To assist others, including educators and writers of textbooks in science, in studying or presenting the history of physics.

It was decided that the initial step would be to collect biographical and bibliographical information from a representative group of the more outstanding physicists. This decision left us with very diffi-

cult questions. What, in the mobile society of twentieth-century America, is a physicist? And how does one recognize a physicist to be outstanding? These questions are easy to answer for a group of ten or so, because of Nobel Prizes and other international recognitions of merit, but it is not easy to develop impartial criteria that will yield a list of a thousand or more names.

We accordingly turned to operational definitions that could be reduced to counting: we decided a physicist to be one who spoke to the physics community when it was formally constituted as a professional audience. This definition suggested the listing of those who had been invited a number of times to give papers at meetings of the American Physical Society and the listing of members of the American Physical Society who had published a significant number of papers in the journals of the American Institute of Physics. In addition, we included physicists who had been starred in the earlier editions of *American Men of Science*. This procedure, eventually, gave us a list of some 1,250 men. We then divided the list into 3 parts: the deceased men (a group numbering about 325), the living men 60 years or older (numbering about 250), and the living men under 60 years of age (numbering about 675). The 60-years-or-older fraction we called group *A*; the other, group *B*.

Letters were sent out to the members of group *B*, asking each of them to check his biographical entry in *American Men of Science* for errors and omissions, to send a bibliography of his research, and to send a photograph of himself. Similar information on the members of the deceased group is being requested on an individual basis from members of their families or from the organizations where they worked. At the same time, information on the whereabouts of their manuscripts is being collected.

Besides furnishing the information requested of the larger group *B*, each member of the smaller group *A* was asked to write an intellectual autobiography and to send us a collection of his reprints, annotated if possible with critical comments. This gave the senior generation of distinguished American physicists an opportunity to write autobiographies and to evaluate their own research and lives. Not all requested to do this could respond, for a surprisingly large percentage of group *A* still has considerable responsibilities—in many instances more than ever before. Yet, in spite of this, many have already taken advantage of the opportunity to record their judgments on men and events, which otherwise very few would have done. The History Project has received thus far about 60 autobiographies varying in size from one handwritten sheet to booklength.

Many other autobiographies are still being prepared for the project.

Another goal of the project is to encourage the preservation of manuscripts of American physicists and to prepare a Manuscript Locator File—a card catalog recording information on the location of, together with a brief description of, manuscripts in the project's field of interest. As a first step, letters were sent to the directors of the libraries of some 30 universities where physics departments have been active in research, requesting information on manuscripts of physicists and urging the importance of preservation of those manuscripts. Copies of these letters were sent to the chairmen of the physics and history departments. The survey of manuscript collections has been extended to other universities and to nonacademic organizations.

A Locator File for Apparatus is also in preparation. Letters have been sent to some 40 science museums asking for information concerning any instruments of historical importance that may be in their collections. During personal visits by the Project Director to universities, apparatus of historical significance is sought and its location is recorded.

Manuscripts of physicists are being sought for the Historical Archives established in connection with the project. No great amount of space is available for storage, but we do have some space, and we have collected some manuscript material. Two brochures have been prepared on the preservation of historical documents¹—one on apparatus and one on manuscripts—and the two have been sent out to the members of group *A*. In a letter transmitting these brochures, we urged upon their recipients the importance of preserving such records and asked them to give consideration to the preservation of whatever historical documents they may have.

Let me hasten to add that we have no wish to preempt any material from a local archives, should it have an active interest in a particular collection. When we learn of the existence of a collection, our procedure has been first to determine the interest of the local organization. If the local archives knows of these documents and has little or no interest in them, we obviously will not allow them to be lost, and we will proceed further; if the local archives is interested, we will be glad to assist the staff in any way we can. In particular we will be glad to evaluate the historical importance of any docu-

¹ *Notebooks, Correspondence, Manuscripts: Sources for the Fuller Documentation of the History of Physics* and *Scientific Instruments and Apparatus: Sources for the Fuller Documentation of Physics*. These two publications—R-145 and R-152, respectively—are available without charge by writing to: American Institute of Physics, 335 East 45th Street, New York, N. Y. 10017.

ments of a scientific nature. On the other hand, if any local archives should know of a collection relating to research in physics or to the physics community, we will be very pleased to learn of it. Our main objective is to see that documents of historical interest are adequately preserved and that their location is noted.

A related field in which we are interested is that of the history of the American Institute of Physics and of its member societies. Recently the American Association of Physics Teachers recorded oral interviews with some of its early officers; transcripts of the interviews have been deposited with the Historical Archives. The American Association of Physics Teachers is now considering further steps to extend its documentation. Some of the other member societies of the American Institute of Physics are becoming concerned with their own history. The Optical Society of America set up in the summer of 1963 a committee to prepare a history of its first 50 years.

An additional goal of the History Project is to record interviews with some of the men in group *A*. After a careful review of the accomplishments of these men had been made—a purpose for which the project's biographical-bibliographical files proved valuable—a program of interviews was initiated. The procedure adopted is to ask a colleague (of the person to be interviewed) to conduct the interview: one or two such interviews of 1-hour length are recorded on tape, and the interview is then transcribed for the Historical Archives. We are also exploring the question of documentation of industrial research; John Beer is acting as consultant to us in this area.

In order to report periodically on the information that has been gathered and to stimulate others to send us information, a quarterly newsletter is now being planned. It will be circulated to all interested persons: members of the Advisory Committee, museum and library directors, and all others who may be interested in the history of recent physics.

The material we have in the Historical Archives—insofar as no restrictions have been placed upon it by the donor—is open for research by properly qualified scholars. The Archives was opened for research in the spring of 1963. A brochure, now being written, will describe the materials in the Historical Archives and outline how access to these materials may be obtained. We now have 12 file drawers full of documentation on the men in whom we are interested, and material is coming in all the time. We should be happy to show the Archives to anyone interested.

Supplementing the documents of the Historical Archives is the Niels Bohr Library of the History of Physics. The late Dannie Heineman made it possible for the American Institute of Physics to house this new library, and the Heineman Foundation has also donated funds towards a collection. We now have about a thousand books, and we are actively seeking additional volumes. Although we expect eventually to have certain rare volumes, the greater part of the collection will consist of working copies of books devoted to the history of physics in the nineteenth and twentieth centuries.

This has been a brief sketch of the Project on the History of Recent Physics in the United States. Our general objective—to collect and organize historical source materials in recent physics and to know the whereabouts of such materials located elsewhere—is, of course, a considerable task; we recognize that it would be both presumptuous and impractical for us to assume that we can do everything ourselves. We hope that other organizations will become interested in such records: we shall be very glad to cooperate with them and to give them assistance wherever we can. Similarly, we shall be glad to learn of any collections relating to physicists or to the physics community.

Our main concern is to do whatever we can so that source materials for the history of physics may be adequately preserved and their locations may be noted. Let me also repeat that we are extending a helping hand to others interested in the same problem. We believe that cooperation is beneficial to all.

“... for acquiring a correct knowledge . . .”

The greater part of the Materials for the Documentary History are from the Records and Files of the Continental Congress and the old States, and from the Archives of England and France; the correspondence and Papers of American Officers and Agents not preserved with the Publick Records, forms another portion: The residue consists principally of Private Letters, and published notices of, and Remarks on, Publick measures; and of publick Discussions on important Questions, which in the absence of Debates in the Congress and the State Legislatures are necessary for a clear understanding of the reasons and the necessity for their Action, and for acquiring a correct knowledge of the state of Publick opinion, and its influence upon Legislative Bodies during the Revolution.

—PETER FORCE, autograph draft, unsigned, “Mem. Submitted to Secretary of State, 29 May 1847, and particular Specification required,” at p. 80928 of vol. 22 of the Peter Force Papers, in the Manuscript Division, Library of Congress.