mind them that they face an opportunity. For years they have cultivated cordial international relationships among themselves. As I have already written elsewhere, science is wholly independent of national boundaries and races and creeds. This is no idle statement. It is a living reality, illustrated in the international congresses of scientists that are being held in large numbers. Last December the American Association for the Advancement of Science passed a resolution calling on the British Association for the Advancement of Science and "all other scientific organizations throughout the world to cooperate not only in advancing the interests of science but also in promoting peace among nations and intellectual freedom in order that science may continue to advance and to spread more abundantly its benefits to all mankind."

At its recent meeting the British Association passed resolutions for closer cooperation with the American Association and organized a division for exploring the interrelations of science and society. The American Association will not neglect its opportunities to make science and the generous ideals of science more important factors in the progress of society. Its age and honorable history, its broad interests, which include not only the natural sciences but the humanities, its large and rapidly increasing membership, its obligations to society and its unparalleled opportunity to be of service to mankind all inspire its membership.

F. R. MOULTON

OFFICE OF THE PERMANENT SECRETARY
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THE ADVANCEMENT OF SCIENCE

THE WESTINGHOUSE TIME CAPSULE

So many readers of SCIENCE and others have shown interest in the questions propounded in my letter published August 19 that a brief explanation of how these problems were finally settled may be in order. I wrote that Westinghouse was desirous of depositing a "Time Capsule" on the site of the New York World's Fair, containing a "cross section of our time" for posterity 5,000 years from now.

The problem contains three major parts: (1) how to build a vessel capable of lasting 5,000 years, (2) how to leave word of its whereabouts for historians of the future and (3) the selection and preservation of the contents. There are many subsidiary problems, such as protection of the deposit against vandalism. Burial 50 feet deep in the swampy soil of the fair site is expected to take care of this latter problem quite effectively.

The construction of the vessel was undertaken by a committee headed by M. W. Smith, Westinghouse manager of engineering. It was decided that a hard alloy of copper would be most suitable. For reasons of strength and convenience, a torpedo shape was chosen. The Time Capsule, as finally constructed, is seven and a half feet long and eight and three eighths inches in diameter. The outer shell consists of seven cast segments of Cupaloy (copper 99.4 per cent., chromium .5 per cent., silver .1 per cent.) which is temperable to the hardness of mild steel, but has corrosion resistance and electrical characteristics similar to those of pure copper. The segments are screwed together hard and sealed with asphalt; the nearly invisible joints peened out and the outer surface burnished.

The inner crypt, six and a half inches in diameter and six feet nine inches long, is lined with an envelope of Pyrex glass, set in a water-repellent petroleum base wax. This crypt, evacuated, washed and filled with slightly humid nitrogen, contains the "cross-section of our time."

After consultation with librarians, museum authorities and the U. S. Bureau of Standards, it was decided to leave word for the future by means of a book, printed on permanent paper in special inks. In order that the appearance of this "Book of Record of the Time Capsule" might match its permanence, Frederic W. Goudy consented to design it and set a portion of the type. A special run of 100-pound book paper was made to Bureau of Standards specifications. Suggestions for binding and general treatment were obtained from the National Archives, the New York Public Library and other sources. The cover is royal blue buckram stamped in genuine gold. The signatures are sewed by hand with linen thread.

Copies of this book will be sent to selected libraries, museums and other repositories throughout the world, in the hope that a few will survive in some form for the required time. The book contains a message asking that it be preserved and translated into new languages as they appear; a description of the Capsule's contents, and the exact latitude and longitude of the deposit as determined by the U. S. Coast and Geodetic Survey to the third decimal point in seconds. The geodetic coordinates are tied into the survey's national network, on which astronomical as well as geodetic data are given. In addition, instructions are included for making and using instruments to locate the Time Capsule by the methods of electromagnetic prospecting.

That our tongue may be preserved, the book contains an ingenious "Key to the English Language," devised by Dr. John P. Harrington, of the Smithsonian Institution. By means of simple diagrams, the peculiarities of English grammar are explained; a mouth map shows how each of the 33 sounds of English are pronounced. A 1,000-word vocabulary of "High Frequency English," spelled in the ordinary way and neo-

phonetically, is provided. In itself the key is believed to contain all the elements archeologists of the future will need to translate and pronounce 1938 English, but to make doubly certain, the Time Capsule itself contains multilingual texts, a dictionary and a lexicon of slang and colloquial English.

The third problem, choosing the Capsule's contents, proved the most difficult. It is inconceivable that any selection short of a most voluminous burial could adequately represent all the enormous variety and vigor of our contemporary scene. In making our selection we consulted archeologists, historians, authorities in art and literature, editors and many others. Out of thousands of suggestions, we finally chose to include some thirty-five articles of common use, ranging from a slide rule to a woman's hat, each selected for what it might reveal about us in the archeological sense. About seventy-five samples of common materials are included, ranging from fabrics of various kinds, metals, alloys, plastics and synthetics to a lump of anthracite and a dozen kinds of common seeds.

These material items, however, are only supplementary to a voluminous essay about us and our times, reduced to microfilm. On three and a half small reels there are reproduced books, articles, magazines, newspapers, reports, circulars, catalogs, pictures; discussing in logical order where we live and work, our arts and entertainment, how information is disseminated among us, our general information, our religions and philosophies, our education and educational systems, our sciences and techniques, our earth, its features and peoples; medicine, public health, dentistry and pharmacy, our major industries and other subjects. This "Micro-file" comprises more than 22,000 pages of text and 1,000 pictures; a total of more than 10,000,000 words. It includes instructions for making, among other things, a motion picture projection machine. For use with this are three spools of newsreel, made up especially by RKO-Pathe Pictures, Inc., showing about twenty characteristic significant or historical scenes of our times, complete with sound. A magnifier is, of course, included for reading the microfilm. Instructions are provided for making a full-size reading machine.

This task of leaving word of our time for "futurians" has been undertaken with a deep sense of our responsibility. It could never have been done were it not for the willing help of many men of science, hundreds of whom have made valuable suggestions, or given time and thought to the details of the venture. Space does not permit naming many of them here, but I can not forbear mention of Dr. Clark Wissler, of the American Museum of Natural History, whose guidance throughout has been most valuable.

Further details of the Time Capsule project will be reported fully elsewhere. Complete lists of the contents and other information will be sent to any one interested. It is hoped that this pioneer effort will encourage others to deposit even more adequate records of our day in many places, and at such intervals as will provide "futurians" with a complete running history of their past, our present.

DAVID S. YOUNGHOLM,
Vice-President, Westinghouse Electric and Manufacturing Company

THE SALARIES OF MEN OF SCIENCE EMPLOYED IN INDUSTRY

IN connection with an investigation of the pecuniary rewards of great abilities, I have obtained the facts for the starred men in the Cattell list of 1935 who were employed by business concerns.

There were seventy-two such men. Twenty-seven of them were employed by companies not listed in the Treasury report to the Ways and Means Committee. Of the others, twenty-nine presumably received less than $15,000 per year, inasmuch as their salaries are not reported. But a few may have been on leave of absence or not included by some error. This leaves sixteen receiving $15,000 or over as shown below, with the persons' reported fields of research:

$15,000 to $19,999	4	(chemistry, optics, physics, psychology)
20,000 to 24,999	2	(chemistry for both)
25,000 to 29,999	4	(chemistry for three; electrical engineering)
30,000 to 34,000	1	(chemistry)
35,000 to 39,999		
40,000 to 44,999	1	(chemical engineering)
45,000 to 49,999		
50,000 to 54,999	1	(photography)
55,000 to 59,999	1	(physics and electrical engineering)
60,000 to 64,999		
65,000 to 69,999	1	(chemistry)
70,000 to 74,999	1	(chemistry)

I estimate that ten of the twenty-nine men in these companies received $10,000 to $14,999 and nineteen of them $5,000 to $9,999.

Most of the men receiving over $15,000 have managerial responsibilities. But some of them are nearly or quite as free as they would be if employed by universities or philanthropic institutions. I think, however, that $21,500 is the highest of the salaries paid for work under such conditions. The man receiving it has managerial responsibilities, but perhaps no more unpleasant or distracting than those of the head of a university department or laboratory for pure research.

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