

dence. Then, in the last 200 years or so, there has been another warming-up period that we are still experiencing. Throughout the island history, there must also have been periods of melting and accretion of salty or brackish ice taking place at the lower boundary. These periods may or may not have been parallel with the upper ice history, although the upward heat flow would, of course, increase with decreasing total thickness. Figure 2 shows the change of thickness of the iced firn with accumulated dirt weights, the latter being essentially a time scale. Dotted lines show possible accumulations that have since been ablated.

The significance of this historical record lies in its future climatic implications. During the period in which the 90 feet of ice accumulated on the island, the ice of the entire Arctic basin, including shore areas along the high-altitude land mass, must also have attained considerable thickness. The snow cover noted on T-3 in 1952, 1953, and 1954 amounted to from 1.5 to 1.7 feet. This amount is also typical of northern Ellesmere. As the ice pack became thicker, it was able to withstand the pressures of the wind that tended to hummock it to great heights. In time, the surface must have leveled off considerably. The reduction in surface roughness decreased the wind drag and lessened the ice movements caused by winds and permanent currents. The result of this process was a smaller loss of ice to the Greenland Sea each year. Even today, the ice that flows through this entrance to the Atlantic Ocean is mostly derived from the eastern hemisphere part of the basin. A few hundred years ago the general accretion

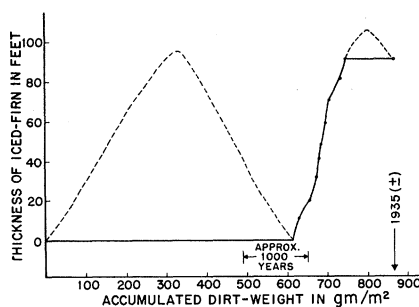


Fig. 2. History of iced-firn accumulation.

period stopped and the present period of ablation began. Little by little, the percentage of heavy ice in the Arctic basin decreased.

The earlier Arctic explorers often wrote of the thick "paleocrystic" ice that is rarely seen today in an ocean where the ice is 6 to 12 feet thick and probably less than 20 years old. Storkerson spent the summer of 1918 on an ice flow in the Beaufort Sea that he estimated to be 50 feet thick (7). This, probably, was sea ice rather than shelf ice or a surface dirt layer would have been noticed. At present, there is probably little left of older ice except that along the shore, which is itself breaking up under the forces of a faster-moving ice pack and the increased tides and storm effects that accompany the thinner ice pack.

Although it would appear from Fig. 2 that 90 feet must be ablated from the island before we can approach the conditions prevailing a thousand years ago, it must be pointed out that however mild the temperatures may have been at that time, the ice shelf survived and is not

surviving the present period. We can only infer that either the ice shelf is thinner now or that the disrupting forces are greater, or both. These disrupting forces are excessive vertical movements of tidal or storm origin, which would increase in frequency with decreasing pack ice thickness. The implications in either case are that the ice is thinner at the present than ever before in historical times.

The ice along the shores of the high-latitude land masses such as Ellesmere Island and Greenland should be the first to form in a cold period following an open polar sea and should be the last to melt as we approach the conditions of the open polar sea. The evidence given here would indicate that we are approaching such a period again. The far-reaching effects of such a possibility warrant further efforts for the collection of more evidence in the other floating islands and in the shelf and high-latitude glaciers of Ellesmere Island and Greenland (8).

References and Notes

1. J. O. Fletcher, *Tellus* 2, 323 (1950).
2. A. P. Crary, R. D. Cotell, T. F. Sexton, *Arctic* 5, 211 (1952).
3. Research under contract AF 19(604)-1075 between the Air Force Cambridge Research Center and Dartmouth College; R. E. Stoiber and W. T. Elbert, principal investigators.
4. Research under contract AF 19(604)-1144 between the Air Force Cambridge Research Center and Yale University; N. Polunin, principal investigator.
5. E. S. Barghoorn, personal communication.
6. H. W. Son Ahlmann, *Glacier Variations and Climatic Fluctuations*. Bowman Memorial Lectures, ser. 3 (Am. Geograph. Soc., New York, 1953).
7. S. Storkerson, diary, 1918. Copy in Stefansson's Library, Dartmouth College.
8. The investigations at Lamont Geological Observatory were carried out under contract AF 19(604)-1063 with the Air Force Cambridge Research Center.

Traveling High-School Science Libraries

Hilary J. Deason

The AAAS Traveling High School Science Library Program, made possible by a grant from the National Science Foundation, began operation in October, when the first unit of the libraries arrived at each of the 66 high schools selected for the experiment. Announcements of the program and its objectives were made in *Science* [122, 190 (29 July

1955)] and in *The Scientific Monthly* [81, 159 (Sept. 1955)]. The program was organized with assistance from the U.S. Office of Education and the National Education Association and its affiliated organizations.

The general purposes of the project are to stimulate interest in reading science books, to broaden the science back-

ground of high-school students, and to assist students with scientific interests in choosing a career.

The books, which number 150, are divided into six units of 25, each fitted into an attractive case that serves both for display in the school libraries and for shipping the books from school to school. The cases, bearing a display poster on the inside of the raised front cover, are shown in Fig. 1. Each school retains a unit for 4 to 5 weeks while classes are in session; thus, by 15 May 1956, all six units will have been used by the students and teachers at the 66 schools.

The 150 books were selected with the assistance of more than 250 scientists, science teachers, and librarians from a long preliminary list that was compiled from various sources. The 150 volumes are included in each of the 12 libraries;

Dr. Deason is director of the AAAS Traveling High School Science Library Program.

11 libraries are circulating to schools and one is being used for display at meetings of national organizations. Most of the books can be read and understood by anyone with a limited knowledge of mathematics and little or no science background. A very few books may constitute a challenge to the superior high-school student.

As previously mentioned, the program is experimental. A portion of the experiment will be an evaluation of the popularity and suitability of the books for general high-school reading; the evaluation will be based, in part, on a study of the actual circulation records at the 66 schools. There are already indications that some important books were not included and that a few of the books chosen may have been poor selections. These mistakes are regretted and are due to the short time available (July to October) in which to organize the program and place it in operation.

The matter of recommending a list of science books suitable for acquisition by all high-school libraries will continue to be studied by the AAAS during the operation of the traveling library program. The publication of such a recommended list is envisioned as a future undertaking in which the cooperation of all interested persons and organizations is solicited.

The list of books in the libraries follows.

Books in the Libraries

- Alter, D., and C. H. Clemminshaw. *Pictorial Astronomy*. Crowell, 1952.
- Andrews, R. C. *Beyond Adventure: The Lives of Three Explorers*. Duell, Sloan and Pearce, 1954.
- Andrews, R. C. *This Amazing Planet*. Putnam's, 1940.
- Armitage, A. *Sun, Stand Thou Still: The Life and Work of Copernicus the Astronomer*. Schuman, 1947.
- Baitsell, G. A. (Ed.) *Science in Progress*. Yale Univ. 1st ser., 1939; 4th ser., 1945; 5th ser., 1947; 6th ser., 1949; 7th ser., 1951; 8th ser., 1953.
- Bakst, A. *Mathematics: Its Magic and Mastery*. Van Nostrand, 1952.
- Ball, M. W. *This Fascinating Oil Business*. Bobbs-Merrill, 1940.
- Bates, M. *The Nature of Natural History*. Scribner's, 1954.
- Bates, M. *The Prevalence of People*. Scribner's, 1955.
- Beebe, W. *Half Mile Down*. Duell, Sloan and Pearce, 1951.
- Benedict, R. *The Chrysanthemum and the Sword*. Houghton Mifflin, 1946.
- Berrill, N. J. *Journey into Wonder*. Dodd, Mead, 1952.
- Berrill, N. J. *Sex and the Nature of Things*. Dodd, Mead, 1953.
- Borek, E. *Man, The Chemical Machine*. Columbia Univ., 1952.
- Bremner, M. D. K. *The Story of Dentistry*. Dental Items of Interest, 1954.
- Brinton, C. *Ideas and Men: The Story of Western Thought*. Prentice-Hall, 1950.
- Bronowski, J. *The Common Sense of Science*. Harvard Univ., 1955.
- Buchsbaum, R. M. *Animals without Backbones*. Univ. of Chicago, 1948.
- Burnet, Sir M. *Natural History of Infectious Disease*. Cambridge Univ., 1953.
- Carlson, A. J., and V. Johnson. *The Machinery of the Body*. Univ. of Chicago, 1953.
- Carson, R. *The Sea Around Us*. Oxford Univ., 1951.
- Ceram, C. W. *Gods, Graves, and Scholars: The Story of Archaeology*. Knopf, 1954.
- Christensen, C. M. *The Molds and Man*. Univ. of Minnesota, 1951.
- Clapesattle, H. *The Doctors Mayo*. Univ. of Minnesota, 1954.
- Cohen, I. B. *Science, Servant of Man*. Little, Brown, 1948.
- Collis, J. S. *The Triumph of the Tree*. Sloane, 1954.
- Cooley, D. G. *The Science Book of Wonder Drugs*. Franklin Watts, 1954.
- Coombs, C. *Skyrocketing into the Unknown*. Morrow, 1954.
- Courant, R., and H. Robbins. *What is Mathematics?* Oxford Univ., 1941.
- Crombie, A. C. *Augustine to Galileo: The History of Science A.D. 400-1650*. Harvard Univ., 1953.
- Croneis, C., and W. C. Krumbein. *Down to Earth: An Introduction to Geology*. Univ. of Chicago, 1936.
- Curie, E. *Madame Curie*. Doubleday, 1953.
- Dampier, Sir W. *A History of Science and its Relations with Philosophy and Religion*. Cambridge Univ., 1952.
- Dantzig, T. *Number: The Language of Science*. Macmillan, 1954.
- Darwin, C. *The Voyage of the Beagle*. Dutton, 1906.
- Dean, G. *Report on the Atom*. Knopf, 1954.
- de Kruif, P. *Microbe Hunters*. Harcourt, Brace, 1932.
- Desch, H. E. *Timber: Its Structure and Properties*. St. Martin's, 1953.
- Diebold, J. *Automation: The Advent of the Automatic Factory*. Van Nostrand, 1952.
- Ditmars, R. L. *Reptiles of the World*. Macmillan, 1955.
- Douglas, J. S. *The Story of the Oceans*. Dodd, Mead, 1952.
- Dubos, R. J. *Louis Pasteur: Free Lance of Science*. Little, Brown, 1950.
- Dubos, R., and J. Dubos. *The White Plague: Tuberculosis, Man and Society*. Little, Brown, 1952.
- Eaton, J. R. *Beginning Electricity*. Macmillan, 1952.
- Eddington, A. S. *The Nature of the Physical World*. Cambridge University, 1953.
- Fairchild, D. *The World Was My Garden*. Scribner's, 1954.
- Farber, E. *The Evolution of Chemistry*. Ronald, 1952.
- Faxon, N. W. (Ed.) *The Hospital in Contemporary Life*. Harvard Univ., 1949.
- Fenton, C. L., and M. A. Fenton. *Giants of Geology*. Doubleday, 1952.
- Finch, J. K. *Engineering and Western Civilization*. McGraw-Hill, 1951.
- Fleming, D. *William H. Welch and the Rise of Modern Medicine*. Little, Brown, 1954.
- Fox, R. *Great Men of Medicine*. Random House, 1947.
- Fox, R. *Milestones of Medicine*. Random House, 1950.
- Friend, J. N. *Man and the Chemical Elements*. Scribner's, 1953.
- Friend, J. N. *Numbers: Fun and Facts*. Scribner's, 1954.
- Gabrielson, I. N. *Wildlife Conservation*. Macmillan, 1952.
- Gamow, G. *Mr Tompkins Explores the Atom*. Cambridge Univ., 1955.
- Gamow, G. *Mr Tompkins in Wonderland*. Cambridge Univ., 1953.
- Gamow, G. *One, Two, Three . . . Infinity*. Viking, 1954.
- Gamow, G. *The Moon*. Schuman, 1953.
- Garrett, H. E. *Great Experiments in Psychology*. Appleton-Century-Crofts, 1951.
- Gibberd, F. *Town Design*. Reinhold, 1953.
- Glasstone, S. *Sourcebook on Atomic Energy*. Van Nostrand, 1950.
- Grabbe, P. *We Call It Human Nature*. Harper, 1939.
- Gray, J. *How Animals Move*. Cambridge Univ., 1953.
- Grinter, L. E., H. N. Holmes, et al. *Engineering Preview*. Macmillan, 1947.
- Haggard, H. W. *Devils, Drugs, and Doctors*. Harper, 1929.
- Hamilton, W. J., Jr. *American Mammals: Their Lives, Habits and Economic Relations*. McGraw-Hill, 1939.
- Harrow, B. *Casimir Funk: Pioneer in Vitamins and Hormones*. Dodd, Mead, 1955.
- Hegner, R. *Parade of the Animal Kingdom*. Macmillan, 1955.
- Heyerdahl, T. *Kon-Tiki: Across the Pacific by Raft*. Rand McNally, 1950.
- Hodgman, C. C., R. C. Weast, et al. *Handbook of Chemistry and Physics*. Chemical Rubber, 1954.
- Hogben, L. *Mathematics for the Million*. Norton, 1951.
- Hogben, L. *Science for the Citizen*. Norton.
- Holland, R., Jr. *The Physical Nature of Flight*. Norton, 1951.

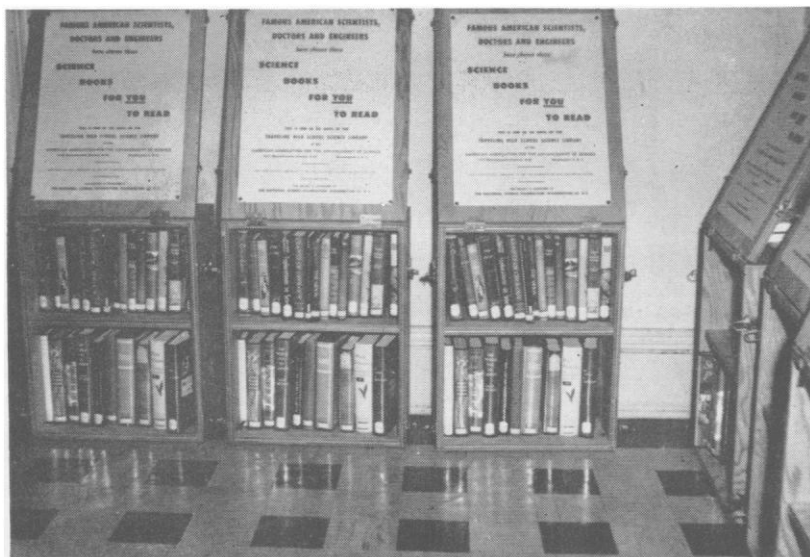


Fig. 1. Units of the traveling high-school science library.

Hooton, E. A. *Up From the Ape*. Macmillan, 1946.

Jaffe, B. *Crucibles: The Story of Chemistry*. Simon and Schuster, 1951.

Jaffe, B. *Men of Science in America*. Simon and Schuster, 1946.

Kaempfert, W. *Explorations in Science*. Viking, 1953.

Kaufert, F. H., and W. H. Cummings. *Forestry and Related Research*. Soc. of American Foresters, 1955.

Kellogg, C. E. *The Soils That Support Us*. Macmillan, 1951.

Kendall, J. *Great Discoveries by Young Chemists*. Crowell, 1953.

Killefer, D. H. *The Genius of Industrial Research*. Reinhold, 1948.

King, T. *Water: Miracle of Nature*. Macmillan, 1955.

Kraus, E. H., and C. B. Slawson. *Gems and Gem Materials*. McGraw-Hill, 1947.

Kugelmass, J. A. J. *Robert Oppenheimer and the Atomic Story*. Messner, 1953.

Laird, C., and R. Laird. *Weathercasting*. Prentice-Hall, 1955.

Lavine, S. A. Steinmetz: *Maker of Lightning*. Dodd, Mead, 1955.

Levinger, E. E. *Albert Einstein*. Messner, 1949.

Levinger, E. E. *Galileo: First Observer of Marvelous Things*. Messner, 1954.

Lieber, L. R. *The Education of T. C. Mils*. Norton, 1944.

Logsdon, M. I. *A Mathematician Explains*. Univ. of Chicago, 1947.

Lull, R. S. *Organic Evolution*. Macmillan, 1945.

MacCurdy, E. (Ed. and Tr.) *The Notebooks of Leonardo da Vinci*. Braziller, 1955.

Macgowan, K. *Early Man in the New World*. Macmillan, 1953.

MacMillan, M. *Green Seas and White Ice*. Dodd, Mead, 1948.

Menzel, D. H. *Our Sun*. Blakiston, 1950.

Morris, L., and K. Smith. *Ceiling Unlimited: The Story of American Aviation from Kitty Hawk to Supersonics*. Macmillan, 1953.

Moulton, F. R., and J. J. Schifferes. *The Autobiography of Science*. Doubleday, 1953.

Munn, N. L. *The Evolution and Growth of Human Behavior*. Houghton Mifflin, 1955.

Murchie, G., Jr. *Song of the Sky*. Houghton Mifflin, 1954.

Nakaya, U. *Snow Crystals, Natural and Artificial*. Harvard University, 1954.

Norman, J. R. *A History of Fishes*. Wyn, 1948.

Oehser, P. H. *Sons of Science: The Story of the Smithsonian Institution and its Leaders*. Schuman, 1949.

Payne-Gaposchkin, C. *Stars in the Making*. Harvard Univ., 1952.

Peattie, D. C. *Flowering Earth*. Putnam's, 1939.

Reid, C. *From Zero to Infinity*. Crowell, 1955.

Riegel, E. R. *Industrial Chemistry*. Reinhold, 1949.

Robinson, M. L. *Runner of the Mountain Tops: The Life of Louis Agassiz*. Random House, 1939.

Roe, A. *The Making of a Scientist*. Dodd, Mead, 1953.

Rogers, B. A. *The Nature of Metals*. Iowa State Coll., 1951.

Roueché, B. *Eleven Blue Men, and Other Narratives of Medical Detection*. Little, Brown, 1954.

Schück, H., R. Sohlman, et al. *Nobel: The Man and His Prizes*. Univ. of Oklahoma, 1951.

Seton, E. T. *Trail of an Artist Naturalist*. Scribner's, 1948.

Shapley, H. (Ed.) *Climatic Change: Evidence, Causes, and Effects*. Harvard Univ., 1953.

Shapley, H., S. Rapport, and H. Wright. *A Treasury of Science*. Harper, 1954.

Shaw, Sir N. *The Drama of Weather*. Cambridge Univ., 1940.

Silverman, M. *Magic in a Bottle*. Macmillan, 1953.

Simpson, G. G. *Life of the Past: An Introduction to Palaeontology*. Yale Univ., 1953.

Singer, C. *A History of Biology*. Schuman, 1951.

Slaughter, F. G. *Immortal Magyar: Semmelweis, Conqueror of Childbed Fever*. Schuman, 1950.

Sloop, M. T. M. *Miracle in the Hills*. McGraw-Hill, 1953.

Smart, W. M. *The Origin of the Earth*. Cambridge Univ., 1953.

Smith, F. G. W., and H. Chapin. *The Sun, the Sea and Tomorrow*. Scribner's, 1954.

Sootin, H. *Isaac Newton*. Messner, 1955.

Sootin, H. *Michael Faraday: From Errand Boy to Master Physicist*. Messner, 1954.

Spencer, S. M. *Wonders of Modern Medicine*. McGraw-Hill, 1953.

Sproul, E. E. *The Science Book of the Human Body*. Franklin Watts, 1955.

Storck, J., and W. D. Teague. *Flour for Man's Bread: A History of Milling*. Univ. of Minnesota, 1952.

Sullivan, J. W. W. *The Story of Metals*. Iowa State Coll., 1951.

Taylor, F. S. *A Short History of Science and Scientific Thought*. Norton, 1949.

Teale, E. W. *Grassroot Jungles: A Book of Insects*. Dodd, Mead, 1950.

Teale, E. W. *North with the Spring*. Dodd, Mead, 1951.

Teale, E. W. (Ed.) *The Insect World of J. Henri Fabre*. Dodd, Mead, 1950.

Tunnard, C., and H. H. Reed. *American Skyline*. Houghton Mifflin, 1955.

U. S. Dept. of Agriculture. *Insects: The Yearbook of Agriculture*. U.S. Govt. Printing Office, 1952.

U. S. Dept. of Agriculture. *Plant Diseases: The Yearbook of Agriculture*. U.S. Govt. Printing Office, 1953.

U. S. Dept. of Agriculture. *Trees: The Yearbook of Agriculture*. U.S. Govt. Printing Office, 1949.

von Frisch, K. *The Dancing Bees*. Harcourt, Brace, 1955.

Walker, K. *The Story of Medicine*. Oxford Univ., 1955.

Wallace, G. J. *An Introduction to Ornithology*. Macmillan, 1955.

White, A. T. *Lost Worlds: The Romance of Archaeology*. Random House, 1941.

Williams, B., and S. Epstein. *William*

Crawford Gorgas: Tropic Fever Fighter. Messner, 1953.

Woodham-Smith, C. *Lonely Crusader: The Life of Florence Nightingale.* McGraw-Hill, 1951.

Zinsser, H. *Rats, Lice and History: A Study in Biography.* Little, Brown, 1935.

Schools in the Program

The greatest apparent need for the science books of the traveling libraries is in the smaller high schools located in communities with poor library facilities. Therefore the participating schools were chosen from those with an enrollment of approximately 200 to 350 students in the ninth to 12th grades, inclusive. The schools were selected from recommendations of state departments of education and members of college and university faculties in a given area who had a knowledge of the high schools and of their library and science-teaching facilities. Each school so recommended was informed of the program and its objectives and was invited to indicate its interest in becoming a part of the program. From the replies received, 66 schools representing a diversity of local socioeconomic conditions and a wide geographic distribution were selected. The list of schools follows.

California: Davis Joint Union High School; Live Oak Union High School; Patterson Union High School; Strath-

more Union High School; Sutter Union High School; Weed High School.

Georgia: Cuthbert High School; Fort Valley High School; Manchester High School; Nahunta High School; Ocilla High and Industrial School; Quitman High School.

Indiana: Delphi-Deercreek Township Consolidated School, Delphi; Mooresville High School; Morgan Township School, Valparaiso; Morocco High School; Northwestern High School, Kokomo; Pendleton High School.

Kansas: Atchison County Community High School, Effingham; Buhler Rural High School; Caney High School; Grant County Rural High School, Ulysses; Kingman High School; Neodesha High School.

Kentucky: Campbellsville High School; Harrodsburg High School; Richmond High School; Rosenwald High School, Harlan; Shepherdsville High School; Wolfe County High School, Campton.

Massachusetts: Weston High School; Ipswich High School.

Nebraska: Blair High School; Crete High School; Gordon High School; Ogallala High School; Superior High School; Valentine High School.

New York: Bemus Point High School; Canajoharie Central School; Cassadaga Valley Central School, Sinclairville; Geneseo Central School.

Oregon: Creswell Union High School; Elmira Union High School; Estacada Union High School; Oakridge High

School; Rainier Union High School; Stayton Union High School.

South Dakota: Custer High School; Gregory High School; Central High School, Madison; Sisseton High School; Webster High School; Winner Public Schools.

Tennessee: Alcoa High School; Castle Heights Military Academy, Lebanon; Catholic High School for Boys, Memphis; Ducktown High School; Norris High School; Powell Valley High School, Speedwell.

Wisconsin: Adams-Friendship High School, Adams; Brodhead High School; Central High School, Salem; Hudson High School; Markesan High School; Phillips High School.

Comments and Suggestions Invited

The AAAS requests interested persons to submit their comments and suggestions concerning the Traveling High School Science Library Program in general, to offer their personal evaluations of any books in the list, and to suggest appropriate books currently in print which they would recommend as substitutes or additions. Such observations will assist in perfecting the proposed book list that was mentioned previously and in making substitutions of books in the libraries if means should become available for continuing the program beyond the present school year.

R. E. Himstead, Champion of Academic Freedom

Ralph E. Himstead had a passion for freedom and a passion for integrity. To these, particularly in the academic profession, he devoted a vigorous mind and, until shortly before his death, a vigorous physique.

Himstead was born 31 January 1893, at Blue Mound, Illinois. He received his A.B. from the University of Illinois and his legal education at Northwestern University and Harvard University. After finishing his undergraduate work, but before he completed his legal training, he

taught public speaking and political science at Cornell College; and for 12 years, before he became general secretary of the American Association of University Professors in 1936, he was on the faculty of the Law School at Syracuse University.

In 1935 the American Association of University Professors published a report on the status of academic freedom at the University of Pittsburgh. Himstead was the chairman of the investigating committee. The thoroughness, the courage,

and the judicious nature of this report were at once recognized; and it was clear that Himstead had taken a place of leadership in the profession. In 1936 Himstead was elected to succeed Henry W. Tyler, who for many years had served as secretary of the A.A.U.P. A year later he also followed Tyler as editor of the *Bulletin* of the association. He held both of these offices until his death on 9 June 1955, although he had submitted his resignation as secretary a year earlier, hoping to devote all of his energies to the *Bulletin* after the election of his successor. These 19 years as the chief officer of the A.A.U.P. formed a period of great usefulness. Among many activities I mention four:

1) Himstead carried forward with vigor the work of Committee "A" (Academic Freedom and Tenure). A very large proportion of this work deals with cases of individual professors who believe that their freedom as a scholar has been impaired or that their tenure as a faculty member has been unjustly terminated. Some of these cases are settled by mutual agreement between the individual and the administration of the college, often