1896 a Chinese fisherman, who had accidentally brought to the surface on trawl lines some eggs of *Bdellostoma stouti* near Monterey, California, collected a number of the eggs for G. C. Price, Bashford Dean and others. The fisherman would reveal to no one how or where he secured the eggs, and his secret died with him.

Through the courtesy of the Boston Society of Natural History, the Committee on the Permanent Science Fund of the American Academy of Arts and Sciences, the Bashford Dean Memorial Committee of the American Museum of Natural History and the National Research Council, I have been able to search during several summers for the naturally deposited eggs of Myxine and Bdellostoma. In the summer of 1930 I succeeded in collecting between five and six hundred naturally deposited eggs of *Bdellostoma stouti* near Monterey, California; at least 130 of the eggs had embryos.

No one has succeeded in finding naturally deposited eggs of Myxine, and the many attempts to obtain fertilized eggs by keeping the eels in captivity have failed. While fishing during the months of July, August and September, 1931, near the mouth of Frenchman Bay, five miles from Bar Harbor, Maine, I succeeded in collecting about fifty naturally deposited eggs of *Myxine glutinosa*. The eggs were brought up from the bottom of the ocean in from thirty to thirty-five fathoms of water.

My experience in searching for the eggs of both Bdellostoma and Myxine leads me to the conclusion that the eels do not migrate, and that they deposit their eggs at all seasons of the year in certain favorable spots very near their feeding grounds.

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SEDIMENTATION AND SEDIMENTOLOGY

"SEDIMENTATION," as generally understood, is that branch of geology which deals with the processes of sedimentation and the origin of the sedimentary rocks.

Webster's New International Dictionary for year 1929 says: "Sedimentation is an act or process of depositing sediments."

The current use of the term in geology is ambiguous and in some cases incorrect. Geologists in general have not taken very kindly to the term "sedimentationists," but resort to cumbersome phrases such as "petrologists interested in sedimentary rocks" or "petrologists working on sedimentary deposits." It is questionable if the use of the phrases "sedimentary petrology," and "sedimentary petrologist" side by side with "sedimentary deposists," *i. e.*, deposits formed by sedimentation, is correct.

Sedimentology is here suggested as a term for the subject taught, retaining *sedimentation* for the act or process of deposition. The new term and its derivatives *sedimentologist, sedimentologic and sedimentological,* will tend toward clearness. *Sedimentology* and *sedimentation* have their analogies in *glaciology* and glaciation, respectively.

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REPORTS

SCIENCE BOOKLETS FROM THE AMERICAN ASSOCIATION

IN 1929, a suggestion to the council of the American Association for the Advancement of Science brought about the appointment of a special committee on the preparation of a series of science booklets for distribution to the American public.

This committee was to arrange for selecting the most appropriate books on each of twenty-seven subjects deemed most important in the field of pure science, and to secure the cooperation and collaboration of numerous scientists, librarians and others familiar with these books. The committee was also to find funds with which to pay for the printing of the lists when ready.

In this series the applications of science to industry and invention are not developed to any great extent; it is hoped that lists on the industrial sciences, especially on the applications of the physical sciences, may be worked up into similar lists by some other national body.

In the fall of 1929, tentative title lists, containing a considerable surplus of titles beyond the twenty-five which had been set as the maximum number for any one list, were mailed to a large number of prominent scientists and to some of the larger public libraries and museums, asking for votes on the most suitable books and cancellation of the least desirable titles, as well as for editorial suggestions that would make the lists most useful for the purpose.

This purpose was very carefully defined; it appears on each of the printed lists:

These lists have a three-fold object: (1) To select and describe a few authentic and especially interesting books acceptable to the "general reader"; (2) to supplement these with several introductory treatises in understandable style; (3) to suggest a group of text-books for more advanced study by ambitious amateurs, or persons studying by themselves. Books written in America, recent and not out of print, nor too expensive, have been favored, but there are numerous exceptions. The books can generally be borrowed from libraries, or bought from bookstores. Libraries which lack these titles may able to borrow them

from the state library commission, or some other large library, by the inter-library loan system.

The routine work in handling the correspondence, in gathering, sorting, challenging and preparing titles was handled largely on the personal time, out-of-hours, of the librarian and one member of the staff of the Enoch Pratt Free Library of Baltimore, with some clerical help from the Library, where the latter work was justified on the basis of the advantages which it gave to the scientific department of the library in reorganizing and understanding its own collections. Valuable help was given by Miss Jeannette Lucas, Assistant in the Library of the American Museum of Natural History, Mr. Leslie T. Little, of the Waltham Public Library, and by Mr. Gilbert Ward, Head of the Science Department of the Cleveland Public Library.

In February, 1931, a semi-final mimeographed list was sent out again to over 400 names. The 300 new returns made it fairly easy to decide on the final lists. Even here, however, the fresh arrival of newly published books made some complications, and the experience of some libraries with the demands of their readers, warranted challenging some of the decisions from the view-point of the public. In many cases, special letters were sent back and forth to the cooperators in discussing points raised. Where a decision was difficult, special memoranda were prepared and sent to a new group for additional votes on which to base final decisions.

What should be done, for example, when one of the officers of a national group marks one nature handbook as "the only one worth consideration," while several colleagues cross it off altogether, and crosses off a study guide which another professor considers good enough to star? The votes usually settled such questions.

If anything, the lists are solid and scientific, rather than "popular." Many books actively advertised and sold are not here, while numerous advanced books are included. In general, only books of scientific accuracy are included, but when two of the best known scientific explorers and writers of the present day are voted down by a few scientists for "trying to be too popular" (with considerable success), while their books are well reviewed by other scientists, it is evident that there is a feeling against books written by men of scientific training and standing who are able to hold the limelight too prominently. Some authorities do not favor books written by those who are not full-fledged scientists, even though able and on the whole accurate.

Nearly 400 individuals had a part in this work, nearly 2,000 books were carefully examined, more than 2,000 reviews consulted, and it is felt that the final lists are worthy of being published for general use by individual readers, and as buying lists for libraries and schools. The Committee extends its hearty thanks to all who have so generously cooperated.

The descriptive notes were prepared with the readers in mind. Chief reliance was placed on the *Book Review Digest,* and the various reviews in scientific and popular magazines to which it is the key. In addition, however, such excellent annotated and selected lists as the A. L. A. Catalog, A. L. A. Booklist, Standard Catalog, Scientific Book of the Month Club Review, were used, and the English magazine *Science Progress,* (of which unfortunately there is no American counterpart). *The Scientific American* the *Science News-Letter* and numerous special American scientific magazines were carefully scanned. In preparing the final notes, no less than a dozen sources of critical comment and description were in many instances at hand. The full entry, as to edition, pagination, publisher and price is given in each list.

In the summer of 1930, the Carnegie Corporation of New York generously made a grant of $4,000 to the American Association for the Advancement of Science to meet the expense of printing approximately 40,000 copies of each of these lists, so that they might be distributed free under careful restrictions. In November, 1931, the manuscript was completed on the "Teaching of Science," a subject which was suggested after the main project had been outlined.

The lists, in six-page folder form, the size of a large business envelope, were distributed during November, 1931 (from the association office at Washington), a certain number being sent free to public libraries according to population. Other consignments will be sent to certain universities and museums. Beyond this first distribution, additional copies will be supplied by the American Association for the Advancement of Science from its Washington headquarters, Smithsonian Institution Building, at the cost of additional printing (one cent apiece in quantities of ten and over, of one kind). Individual copies will be sent to readers, for a 5c stamp to cover the cost of handling, one complete set for 30 cents. The lists cover the following subjects: "Science Today" (General); "History of Science"; "Exploring for Science"; "Mathematics"; "Astronomy"; "Geology"; "Meteorology"; "Physics"; "Chemistry"; "Microscope"; "Biology"; "Bacteriology"; "Botany"; "Wild Flowers"; "Ferns, Mosses and Fungi"; "Trees and Shrubs"; "Zoology"; "Animals"; "Birds"; "Insects"; "The Sea and the Shore"; "Inland Waters"; "Fishes and Reptiles"; "Paleontology"; "Evolution and Heredity"; "Anthropology and Ethnology"; "Teaching of Science." Allowing for the occurrence of some titles in more than one list, there are 539 dif-

ferent titles in the entire series, including some books published as late as June, 1931.

The Committee on Booklists consists of Dean Edward W. Berry, paleontologist, Johns Hopkins University; Dr. Paul R. Heyl, physicist, U. S. Bureau of Standards; Dr. Burton E. Livingston, professor of plant physiology and forest ecology, Johns Hopkins University, and General Secretary, A. A. A. S., and Joseph L. Wheeler, public librarian, Baltimore, chairman.

This project has made it clear that more carefully and interestingly written American books for the public are needed in many fields of science. On such subjects as general and special biology, ethnology, light, atomic and quantum physics and relativity, geology, microscopy and many other subjects, there is serious need for systematic, illustrated works, not necessarily brief "appetizers" at one extreme, nor at the other, the conventional text-book. As to good, attractive text-books, great progress has been made in the last five years. We do, however, need books that have more of the broad outlook, imaginative power and literary background and style which characterize some of the work of our English brethren, such as the recent volumes on biology by Wells and Huxley and by Thomson and Geddes, Gregory's "Discovery," or Singer's "Short History of Biology," and Seward's "Plant Life Through the Ages," not to mention the well-known works of Jeans and Eddington. We have already such worth-while examples as Fairchild's "Exploring for Plants," Allen's "Book of Bird Life," Slosson's books, Cushing's "Osler," Shapley's "Flights from Chaos." These books combine through knowledge and accuracy with some literary style and a sustained vigor; they make a presentation suitable to interest the great army of prospective readers beyond the A-B-C stage. Two 1931 American books which set a high mark are Johnson's "Taxonomy of the Flowering Plants" and Crowder's "Between the Tides."

One definite lack is that of an adequate, interesting history of American science, emphasizing the biographical side. A letter from J. Porter, of Vancouver, well worth reading, appears in the *Literary Supplement* to the London *Times* of August 6, on the lack of American scientific biography. One paragraph says:

> . . . America has not been so fortunate. A generation of the giant workers in geology has passed almost unmarked. Even such interesting characters as Powell and Clarence King and Grove Karl Gilbert have failed to receive adequate notice from writers of biography. In the field of physics a small library has grown up around Franklin, but Joseph Henry and H. A. Rowland have little chance of stimulating future generations.

JOSEPH L. WHEELER

ENOCH PRATT FREE LIBRARY,
BALTIMORE

SCIENTIFIC APPARATUS AND LABORATORY METHODS

CULTURAL AND INOCULATION METHODS WITH TILLETIA SPECIES

IN SCIENCE for October 2, p. 341, E. W. Bodine describes a "Double Plate Method used for Culturing *Tilletia levis*," in which I was much interested and to which I might add some further observations.

A similar inverted-plate method was used by Kluyver and van Niel[1] in making cultures of species of *Sporobolomyces* in 1924–1925. This procedure was possible because the basidiospores of this basidiomycetous yeast are shot away from their sterigmata.

The discovery by Buller and Vanterpool,[2] in 1925, that the so-called secondary conidia of *Tilletia tritici* are violently discharged from their sterigmata revealed a phenomenon which finds application in both cultural and inoculation technique with species of *Tilletia*. Since 1925, I have used the double-plate or inverted-plate method as described by E. W. Bodine, or modifications thereof, in culturing species of *Tilletia* other than *tritici* and *levis*. *Tilletia horrida, T. holci,* and *T. asperifolia* were found to discharge their secondary conidia in a manner similar to that described for *T. tritici* and *T. levis,* and therefore could be readily cultured by the inverted-plate method. Some investigators have experienced difficulty in germinating the chlamydospores of *T. horrida* and obtaining cultures free from contamination; but by using the inverted-plate method pure cultures of *T. horrida* can be obtained quite readily.

By this method monosporous cultures of secondary conidia can be secured and crossing or hybridization experiments conducted with a fair amount of facility.

Further, the method has also found application in the multisporous inoculation of germinating wheat seedlings by inverting a vigorously growing culture of *T. tritici* or *T. levis* and allowing secondary conidia to "rain down" on the seedlings during the first two or three days of germination. A temperature of 10° to 14°C., and probably darkness also, favored infection. After inoculation, the seedlings were carefully potted and brought to maturity, when a large per-

[1] A. J. Kluyver and C. B. van Niel, "Über Spiegelbilder erzeugende Hefenarten und die neue Hefengattung Sporobolomyces." *Centralb. f. Bakteriologie,* Abt. 2, Bd. 63, pp. 1–20, 1924–1925.

[2] A. H. R. Buller and T. C. Vanterpool, "Violent Spore-discharge in *Tilletia tritici*." *Nature* 116: 934–935, 1925.