would be surprising if this taste difference did not manifest itself in giving meats distinctive flavors for different individuals. Especially should this be so for soups made from lean meat which must contain a considerable quantity of extracted creatine. Possibly the taste which creatine has for certain individuals is destroyed by the presence of other food constituents.

The problem is associated with the more general one of individual metabolic idiosyncrasies, which calls for extensive study. It is a fact which is not always recognized in medical practice that occasional individuals react in quite a distinctive way toward particular drugs, among which are such familiar ones as morphine and novocaine. A man of my acquaintance who has a normal sense of smell in other respects is unable to detect the odor of skunk. Even a sample of n-butyl mercaptan, which is the perfume carried by these animals, had no unpleasant odor for him.

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SCIENTIFIC BOOKS

The History and Work of Harvard Observatory, 1839–1927. By SOLON I. BAILEY. New York and London, McGraw-Hill Book Company, Inc., 1931. (Harvard Observatory Monographs, no. 4.)

SELDOM, if ever, has a subject concerned with the history of science received as interesting a treatment as in the book under review. The volume "The History and Work of the Harvard Observatory, 1839–1927" is the fourth of the well-known monographic series issued by this observatory. It is from the pen of the late Dr. Solon I. Bailey, who was Phillips professor of astronomy, emeritus, at Harvard University, and one of the oldest and most distinguished members of the Harvard Observatory staff. Dr. Bailey's long connection with the practical research of the observatory made him intimately acquainted with every phase of the important work carried on there, and he was therefore well prepared to write a unique historical account as set forth in this book. It is indeed fortunate when one who reaches the honored title emeritus can give his time to introspection and reflection upon the accomplishments of his period and of his institution. Harvard College Observatory ranks as the oldest research observatory in the United States, and it is therefore peculiarly fitting that a historical review should be placed before scholars. This observatory may be said to have found its roots deep in our early Colonial period—for astronomy seems to have been taught and "practiced" almost from the date of the founding of this Puritan college in 1636.

The summary of the vast contributions of the observatory is written in Dr. Bailey's simple and characteristic narrative form, which is not lacking in vividness and humor and is so presented as to be of service to both the layman and the professional scholar. The book is composed of three large divisions, in logical sequence, with a total of twenty-one chapters. The first part gives briefly the historical outline of the ancestry of the observatory, showing how the pioneer efforts in organizing research in astronomy were developed, and an account of the first astronomical expedition in this country by Harvard College to observe the transit of Venus in 1761. There is also given a short life sketch of the first Colonial astronomer, John Winthrop (1714–1779). Unfortunately this chapter contains several minor errors in historical facts and dates. Thomas and William Brattle were brothers and not father and son. Both were prominent scholars, Thomas Brattle furnishing observations on the Comet of 1681 which were highly important to Halley and Newton in developing the first calculations of the orbit of a comet. William Brattle was the first tutor in philosophy at Harvard College. Dr. Bailey calls attention to the great influence exerted upon science by John Quincy Adams, the sixth President of the United States, who was the godfather of three observatories in the United States, which were called by his critics the "lighthouses of the sky." The chapter continues with a description of the temporary quarters of the observatory, known as the Dana House, which housed the few instruments in possession of the first director, William Cranch Bond. The present observatory owes its origin to the public interest shown at the appearance of the Comet of 1843. A complete account is given of the gradual enlargement of the instrument equipment and the notable number of expeditions to observe solar eclipses and to determine the location of new sites for auxiliary observatories. The final chapter of this historical part treats of the various publications of the observatory which afford to students of practical and theoretical astronomy unlimited resources for further researches.

Part two, which is devoted to scientific problems, is practically a complete study of the contents of the publications known as the Annals, Bulletins, Monographs, Reports and Circulars. It also reveals the pioneer character of many of the problems undertaken by this observatory, of which, of course, the most interesting is the account of the adoption of photography in the study of celestial phenomena. The difficulty with the so-called "collodian wet-plates" and

the daguerrotype process was finally overcome by the dry, high-speed plates, and to-day the main reliance for advances in practical research is on photographic processes. No observatory to-day contains such a wealth of valuable photographic plates as the Harvard Observatory collection. The invention of this photographic process made possible the first systematic study of stellar spectra, photometry and charts of the standard regions of the sky. The Henry Draper Catalogue of the classification of the spectra is one of the great contributions of this observatory. The later period of the research work of the observatory is centered upon the problem of cosmogony, the study of variable stars, novae, clusters, nebulae and the Magellanic clouds. A survey of the wealth of analytic material here set forth is beyond the limits of this review; suffice it to say, no reader can afford to overlook part two if he wishes to understand the fundamental problems in astronomy and the methods of approach. Dr. Bailey's ability to synthesize the whole of Harvard's contributions to astronomy is abundantly demonstrated here.

The third division of this book is devoted to biographical sketches of the principal members of the staff, beginning with the Bonds (father and son) and ending with the benefactors of the observatory. Dr. Bailey has written of the lives of the first four directors with sympathetic feeling and appreciative understanding of their struggles and labors, and pays tribute to their sturdy New England characters and philosophy coupled with perseverance, purposiveness and idealism. It is interesting to note in passing that William C. Bond installed the first large refractor (15 inch) in this country, and he also made the first electric chronograph. Bond was the first American associate of the Royal Astronomical Society of London. George P. Bond, the second director, was better trained for his duties than his father, having graduated from Harvard College. He was also the first to make systematic observations and critical studies of nebulae. His studies of the Orion nebulae and Donati's comet will probably remain as classics for many years, and as he was mathematically inclined, he carried his researches much further than his father. He was a pioneer in celestial photography, and the sum total of his astronomical contributions brought him the first Gold Medal awarded to an American by the Royal Astronomical Society of London, 1865. Joseph Winlock was the third director, and, like his predecessor, his term was of short duration. His directorship was known as the period of transition, as it carried the observatory out of its pioneer days and over to the modern period which began with E. C. Pickering in 1877. No comment is necessary upon the work of Pickering, as it is well known to contemporary astronomers. The statement that Pickering was the first president of the American Astronomical Society is incorrect and should be corrected in subsequent editions. This honor fell to Simon Newcomb, who presided from the first to the seventh meeting of this society, 1899 to 1905. Pickering was elected in December, 1905, immediately after the New York meeting. This error may have occurred in noting the contents of the title page of Volume 1 of the Publications of the American Astronomical and Astrophysical Society, which is misleading. The number of leading American astronomers, as well as foreign associates, who participated in the work at the observatory, either as graduate students or independently, is notably large. Among the American names that stand out are Asaph Hall, C. W. Tuttle, Truman Stafford, Arthur Searle, S. P. Langley, C. S. Peirce, W. A. Rogers, W. Upton, O. C. Wendell, Seth Chandler, A. L. Rotch, Joel Metcalf and Edward S. King.

Under Pickering's administration it is interesting to note that a large number of women were employed in actual research, and some have made considerable advances in their particular fields, among them being Mrs. W. A. Fleming, Dr. Annie Cannon, Miss H. S. Leavitt, Miss Antonia C. Maury and perhaps a dozen others. Pickering had also a remarkable faculty for interesting younger men and women in research work, and this interest has expressed itself in the formation of a society composed of amateurs for the study of variable stars, known as the American Association of Variable Star Observers.

Following the death of Pickering in 1919, Dr. Bailey served as acting director until 1921, when Dr. Harlow Shapley was elected to guide the future of Harvard Observatory. Shapley's work is too extensive and well known to compress within the limits of this review.

The book contains a double index, one for names and another for subjects, which, together with an extensive list of footnotes, makes it a book easy of reference. The illustrations for the most part are good, the type pleasing, and the paper is such that the book will stand use for years to come.

In this book Dr. Bailey has left a wonderful tribute to the observatory he served so long, and makes too inconspicuous the part he took in the study of practical and theoretical astronomy. The compactness of the study of the accomplishments of the observatory is highly commendable, and great credit is due the author for placing such a volume in the hands of historians. It is particularly recommended to all directors of observatories contemplating a similar volume for their own anniversaries.

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