

to others of less exuberant imagination, current astronomy might stand better with the intelligent public.

Of Appendix I. special mention may be made of the following determinations: of the mass of Titan by Professor Eichelberger from observations made by the late Professor Asaph Hall at the old observatory; of the orbits of Deimos and Phobos by Mr. J. C. Hammond, from the observations made by Mr. H. L. Rice, and of the solar parallax by Mr. C. W. Frederick, from observations of Eros made by Professor See. Then follows a long series of determinations of orbits for members of that swarm of tiny planets known as asteroids, which the astronomical student is inclined to believe were designed by an unkind Providence to furnish exercises in computation, but which may yet again develop some new and important interest. Here it is a pleasure to find that Mr. Matt Frederickson employs his ingenuity to derive a simple, explicit equation for a certain unknown in place of the implicit equation solved by previous computers by means of a series of approximations.

Volume VII. might be classed under Archeology, inasmuch as it is presentation of results of observations made on three old meridian instruments in the period 1846-1852. The work of reduction and preparation for publication has only recently been done, under the leadership of Professors Eichelberger and Littell, and seems to owe its completeness very largely to the faithful and intelligent service by Miss Etta M. Eaton. This is a work, both as to observation and computation, which hardly any but a government observatory would be willing to undertake. The exhilaration of spirits arising from such deferred labor is like that due to a campaign of elimination in the garret when a family moving is at hand. Yet unsuspected values may develop amongst its results; and the recent discovery of a large drift in space on the part of a star whose earliest known position is recorded in the old Gilliss Catalogue of 1850, also worked up at our national observatory, is a cheering incident to the patient laborers in this field.

A large part of the transit observations entering into Volume VII., from the earlier part of the period, were made by the eye and ear method, which is still in vogue for occasional observations. In connection with the summary of measures of accidental errors affecting the results in this catalogue, it is interesting to note here, what seems almost incredible to the beginner, that the employment of the electric chronograph reduced the accidental error by only slightly over six per cent. As is well known, the liability to accidental error in the case of the experienced observer is sensibly the same in both methods.

These two volumes are dignified and handsome products from the Government Printing Office. One important economic problem of the day is the condensed presentation of scientific and other data without detracting from a proper appearance and a form intelligible in reference. The present volumes are too expansive in some portions but show in other parts a commendable tendency to compactness.

ALBERT S. FLINT

*Polar Exploration.* By Dr. W. S. BRUCE. New York, Henry Holt & Co. 1911. Pp. 256.

The geographer, the scientist and the intelligent, enquiring reader will alike find this volume of the Home University Library most disappointing. The most that can be said in its favor is the pleasant, though often inconsequential manner in which the author puts forward descriptive phases of polar physics, in which he is personally interested. It is evidently written for the English market only. Entitled "Polar Exploration," it makes no mention of the polar work of Kane, Hayes, Rodgers, De Long, Greely, Lockwood or any other American, save to refer to "the boyish pole hunt," and a sea-sounding by Peary. There are desultory chapters on Plant and Animal Life, Meteorology and Magnetism, but no reference to the incomparable scientific observations of the International Polar Station by thirteen nations, published in forty quarto volumes.

A. W. GREELY