

It is not worth while to enter into the general nature of the work. It was elementary but original. One or two of the most interesting features, however, deserve mention. The author uses in one place the expressions $\frac{1}{10} d'x$, $\frac{1}{10} d'y$, to represent these fractional parts of x and y , which leads Herr Bopp to suggest that this French symbolism might have suggested to Leibnitz his dx , an idea that is interesting even if far-fetched. He also goes more extensively into the theory of triangular numbers than had any of his predecessors, a fact which shows the influence of the Pascal-Fermat school and the overstepping of the traditional boundaries of geometry. Euclid's parallel postulate is passed with little question, for, he says, "elle a assez de clarté pour s'en contenter et ce seroit perdre de temps inutilement que de se rompre la tête pour la prouver par un long circuit," showing that his vision in this respect was no clearer than that of his contemporaries. He definitely asserts, however, the impossibility of solving the trisection problem by elementary geometry, "c'est à dire en n'y employant que des lignes droites et circulaires." Here, too, is found, five years before Pascal's publication, the latter's method of complete induction, a method which Maurolycus also understood long before either, but which was not generally appreciated. Such phrases as "it is necessary and sufficient" show that his thought was much ahead of the elementary writers of his period, while many of his proofs had a marked influence on the later French school. His generalization of propositions shed a new light on Euclid, and it is probably not too much to say that the French elementary geometry broke away from the Greek traditions largely through the influence of his initiative. The work closes with Arnould's contributions to the theory of magic squares, a contribution that was original and powerful, and exceeded in value anything of the kind that had been attempted before his time.

DAVID EUGENE SMITH.

Annuaire pour l'an 1903, publié par le Bureau des Longitudes.
Paris, Gauthier-Villars.

THERE is, so far as we know, no scientific annual which contains anything like the amount of information which we find in the *Annuaire*. It appears to be an attempt to satisfy the needs of everyone except, perhaps, the pure mathematician. It con-

tains all kinds of astronomical information, both of temporary and permanent value for the benefit of the astronomer; information about weights and measures, and different kinds of money for the business man; tables of insurance and population, geography and statistics; all kinds of physical tables with the latest values of the physical constants; and in fact the results for everything that admits of being measured. The progress of science, however, has made the labor of the editors an increasingly difficult one. Each year of publication has seen an addition of perhaps twenty or thirty pages, until the volume has become of such a size that some new plan is necessary in order to keep it within reasonable limits.

This question has been occupying the attention of the editors for the last twelve months. It seemed undesirable to curtail the information to be inserted to any considerable extent, and at the same time it was necessary to avoid further increase. The problem has been solved on the principle of rotation. Much of the information which is given varies little, if at all, from year to year—for example, weights, measures, geography, statistics, etc.; while other portions—for example, tables of the sun and moon—must be given every year. It is thus possible so to divide the information that two successive volumes of the *Annuaire* shall give everything. In brief, every *Annuaire* will contain about 330 pages of astronomical information, part of which will be published every year, and the other part every two years. The physical constants will be given in the *Annales* of the even years; geographical and statistical constants in those of the odd years. This arrangement will come into force next year, the present number being complete in itself.

There are no special changes to note. All information is of course brought as far as possible up to date. The appendix contains the following notices: On meteorites and comets by M. Radau—an extended history of the subject up to date; a speech on the connection of science and poetry by M. Janssen; the usual report from the Mont Blanc Observatory by the same; the funeral orations of MM. Bassot and Poincaré on M. A. Cornu; and those of MM. Bassot, Bouquet de la Grye, Loewy, Janssen and Van de Sande Bakhuyzen on M. H. Faye.

ERNEST W. BROWN.