GILLAIN ON EGYPTIAN SCIENCE

La Science Égyptienne. L'Arithmétique au Moyen Empire. By O. Gillain,
avec une préface de H. Bosmans, S. J. Brussels, 1927. xvi+326 pp.

This work is one of the publications of the Fondation Égyptologique
Reine Élizabeth, and like the other works bearing the same imprint it
represents a standard of scholarship as well of typography which commends
it both to students and to general readers. Not the least of its merits is the
preface written by the late and widely lamented Père Bosmans, a scholar
and a "gentleman of the old school," whose knowledge of the history of
mathematics, as also of medieval ecclesiastical literature, was the result of
the labors of a long and useful life.

The title of the book does not indicate very clearly the nature of the
work, which is chiefly a treatise upon and quite largely a translation of
the Rhind (Ahmes) Papyrus, but with a brief consideration of other manu-
scripts in the Introduction and in Chapter IV. In one way such a work
may be thought to be superfluous in-as-much as we have two editions of
Eisenlohr's translation, the much better edition of Peet, and the still
better and more elaborate one by Dr. Chace, the second volume of which is
just appearing. In another sense, however, it is to be welcomed, since it
gives to French readers who may not be familiar with German or English
a good idea of the oldest mathematical treatise of any extent that has come
down to us.

Since the nature of this papyrus is now so well known to American and
British readers, both through the editions above mentioned and through
recent reviews, it is sufficient at this time to call attention to the general
line of treatment followed by M. Gillain. His Introduction (pp. 1–22)
sets forth the nature of Egyptian mathematics of the period, describes the
measures then in use, mentions the fantastic theories of the Pyramid
measurers, and concludes with a brief history and description of the work
of Ahmes. He also refers to the earlier fragments of a mathematical nature,
including the Moscow manuscript made known by Turaev (Touraieff) in
1917, and soon to be published in translation. As to the Pyramid theorists,
M. Gillain expresses the very sane opinion, "La Grande Pyramide est sans
contredit, admirable, mais ses constructeurs n'étaient point sorciers."

The work is divided into four chapters, as follows: Chapter I,—Ele-
mentary computations, in which are explained the general methods used
in what we call the four fundamental operations, both with integers and
with fractions, illustrative examples being selected from the Ahmes text.
Chapter II,—The tables of fractions, in which a comparison is made between
the cumbersome method used by the Egyptians in, say, dividing 37 by
$1+2/3+1/2+1/7$,—a problem which the Egyptian calculator might have
had to solve,—and the simple division of 37 by the equivalent fraction
97/42, which might conceivably be required in our day. This is followed by
the usual tables of $2/(2n+1)$ for values of n from 1 to 50, and by examples
from the text illustrating its use. Chapter III,—Problems, in which the

author considers such topics as the rule of three, false position, proportion, progressions, and roots. Chapter IV,—The spirit of arithmetic, in which he briefly discusses other sources than the Rhind Papyrus and considers Egyptian calculation in general and the nature of the Egyptian mind as revealed by the arithmetical sources known to us. His conclusion is clear and succinct,—"Telle que nous la connaissons, l'arithmétique égyptienne n'est ni plus ni moins qu'une physique des nombres,"—it never reached the metaphysical stage.

The chief merit of the work lies in the fact that the author has set forth, for French scholars, the general nature of Egyptian arithmetic in about the 17th century B.C., or a little before, illustrating his points by translations. These translations are chiefly if not wholly from the Peet edition of the Rhind Papyrus. The interpretation of Ahmes and of Egyptian arithmetic in general, shows a considerable range of reading from such standard writers as Bobynin, Eisenlohr, Favaro, Griffith, Gunn, Hultsch, Loria, Neugebauer, Révillout, Schack-Schackenburg, and Sethe.

As to the interpretation of the obscure passages in Ahmes, the student will do better to consult Dr. Chace's monumental work, and as to a bibliography of the subject M. Gillain's list is not in the same class as the remarkable one by Professor Archibald which is published in volume I of the same treatise.

One thing that frequently strikes the reader of scientific works in French, rather more than in other languages, is the carelessness shown in proofreading. Possibly the trouble is primarily due to French chirography, which renders it difficult for compositors to distinguish between certain letters; possibly the French scholar sacrifices niceness of typographical detail to niceness of expression; and possibly the habit of author proofreading, which did not characterize the early products of the press has not been as fully established in the Gallic regions as in those under Teutonic or British intellectual influence. Whatever may be the cause, the work of M. Gillain suffers, like so many other works in the same language, from this defect. Thus we have such spelling as Karpinsky for Karpinski, Piazzi Smith for Piazzi Smyth, Schackenbourg as well as Schackenburg, Brunschwigg for Brunschvicg, together with Sepher ha-mmispar and Gottingsche, to select only a few examples. These are mentioned not primarily as criticisms of M. Gillain's work, but rather as a problem in race psychology which is here illustrated. As already stated, the work itself has distinct merit and will be very helpful to French and Belgian students.

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