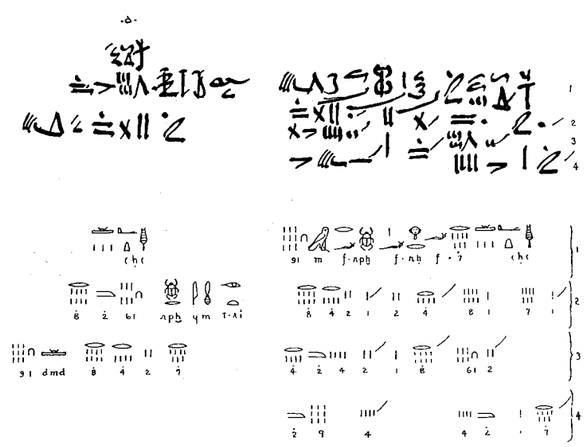
1.D Egyptian Mathematics

For a literate civilization extending over some 4000 years, that of the ancient Egyptians has left disappointingly little evidence of its mathematical attainments. Even though the classical Greeks believed mathematics to have been invented in Egypt (1.D4)—though their accounts are far from unanimous on how this happened—there are now but a handful of papyri and other objects to convey a sense of Egyptian mathematical activity. The largest and best preserved of these is the Rhind papyrus (1.D1, 1.D2), now in the British Museum, a copy made in about 1650 BC of a text from two centuries earlier. A lively picture of one of the contexts in which mathematics was used is provided by a satirical letter (1.D3) from later that millennium (perhaps 1500–1200 BC); the writer adopts a jocular attitude towards his colleague's attempts at quantity surveying. 1.D5–1.D7 are modern commentaries. In 1.D5 the Egyptologist Sir Alan Gardiner explains an initially puzzling feature of Egyptian arithmetic, the Egyptian concept of fraction or part. 1.D6 and 1.D7 are contrasting perceptions of Egyptian mathematics, from the translator of the Rhind papyrus and from a historian of mathematics.

1.D1 Two problems from the Rhind papyrus

(*a*) *Problem 24*



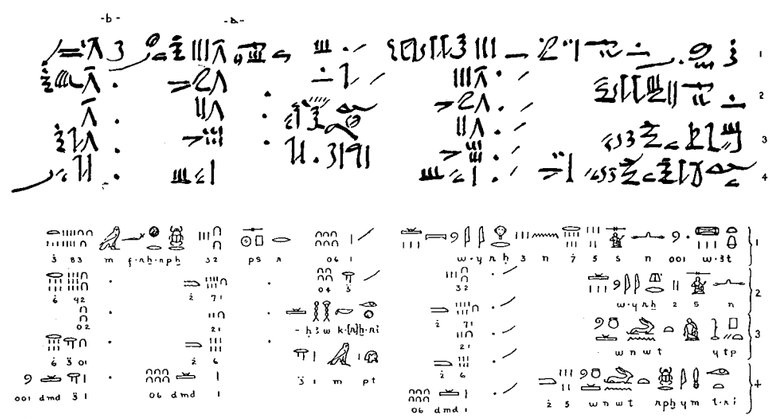
'ḥ' 7·f ḥr·f ḫpr·fm 19.
A quantity, $\frac{1}{7}$ of it added to it, becomes it: 19.

\1	7
\7	1

1	8
\2	16
2̇	4
\4	2
\8	1
\1	2 4 8
\2	4 2 4
\4	9 2

ỉr·t my ḫpr
The doing as it occurs.
'ḥ' 16 2 8
The quantity
7 2 4 8
dmd 19.
Total

(*b*) *Problem 40*



t,·w 100 n s 5 7 n 3 ḫry·w n s 2 ḫry·w pty twnw
Loaves 100 for man 5, $\frac{1}{7}$ of the 3 above to man 2 those below. What is the difference of share?

ỉr·t my ḫpr twnw 5 2 ir·ḫ[r]·k w;ḥ–tp m 1 3
The doing as it occurs. The difference of share being $5\frac{1}{2}$, Make thou the multiplication: $1\frac{2}{3}$

\1	23
\1	17 2
\1	12
\1	6 2
\1	1
dmd	60
Total	
\1	60
\3	40

r sp 23 ḫpr·ḫr·f m 38 3
up to times becomes it:
" 17 2 " 29 6
" 12 " 20
" 6 2 " 10 3 6
" 1 " 1 3
dmd 60 dmd 100.
Total Total

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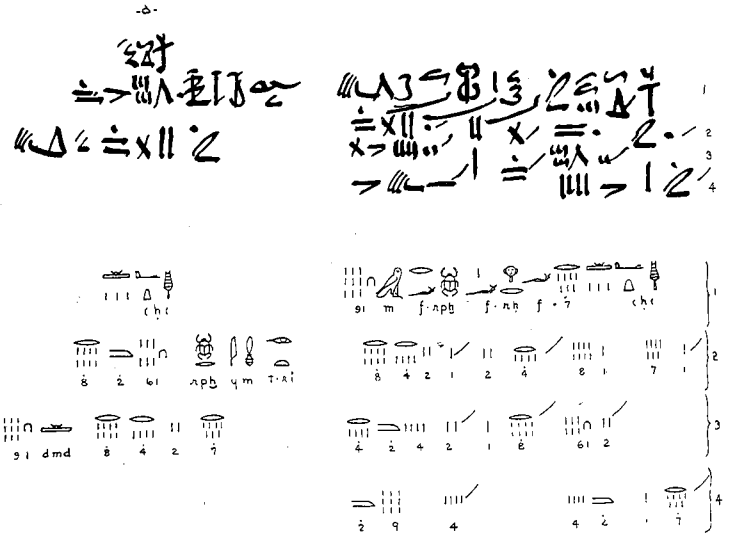
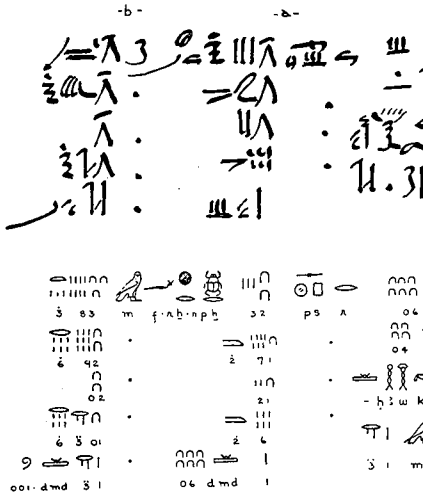


'h' 7·f hr·f hpr·fm 19.

1 8
\2 16
2̇ 4
\4̇ 2
\8̇ 1

\1 2 4̇ 8̇
\2 4 2̇ 4̇
\4 9 2̇

(*b*) *Problem 40*



t,·w 100 n s 5 7̇ n 3 ḥry·w n
Loaves 100 for man 5, $\frac{1}{7}$ of the 3 above to

i̯r·t my ḫpr twnw
The doing as it occurs. The difference of

\1 23
\1 17 2̇
\1 12
\1 6 2̇
\1 1
dmd 60
Total