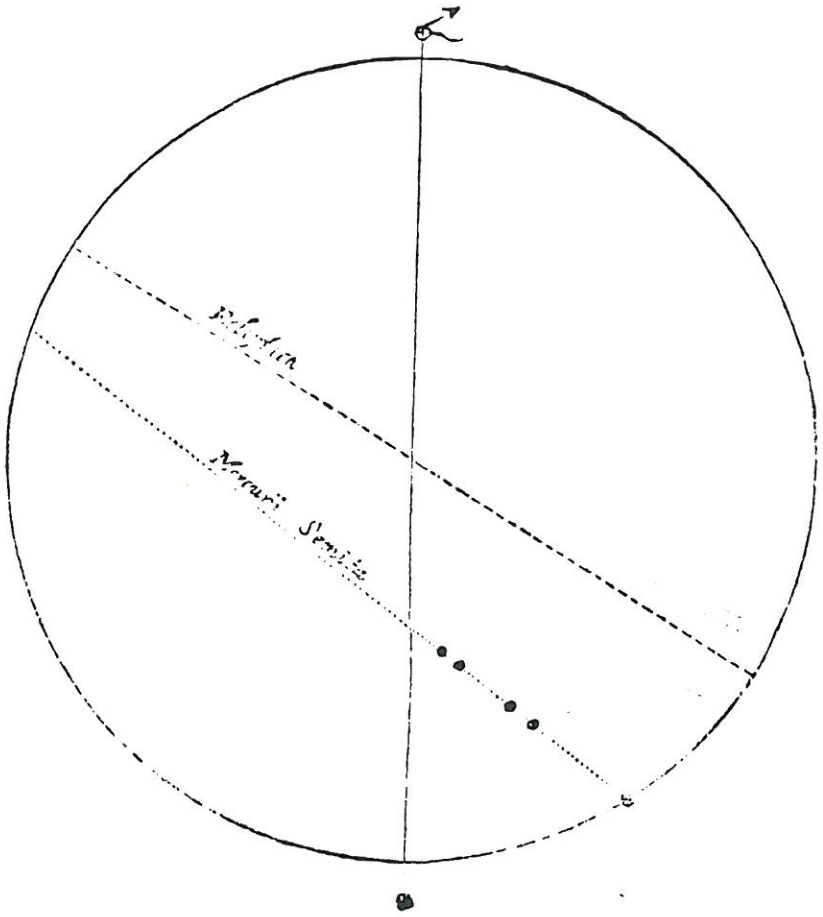
Discus Solis cum trajiciente Mercurio, prout intra obscuram Scenam sa inverse in Circul. citra Telescopium objecto exhibuit.



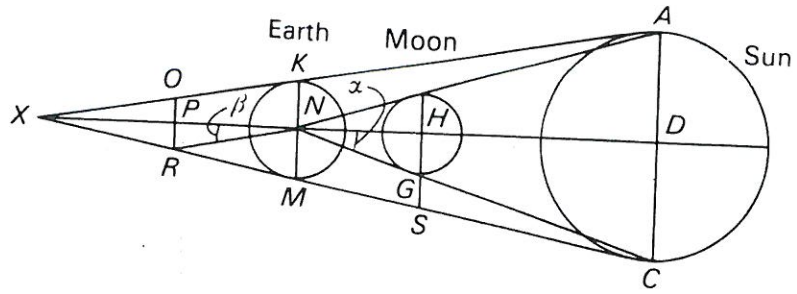
7.2. The 1631 transit of Mercury, from Gassendi's *Institutio astronomica* (1656).

Gassendi, Hortensius, and the Transit of Mercury of 1631 *

TABLE 13 Hortensius's Planetary Sizes

Planet	Apparent Diameter at Apogee	Apparent Diameter at Perigee	[Actual Diameter] [Earth = 1][a]	Volume (Earth = 1)
Mercury	10″	28″	1/18.7	1/6510
Venus	15⅓″	1′40″	1/10.35	1/1109
Mars	9″	1′4″	1/11.53	1/1534
Jupiter	38½″	1′1⅔″	1/1.08	1/1.25
Saturn	31″	42⅓″	1.30	2⅓

[a]Not given by Hortensius.



7.1. Ptolemy's use of an eclipse diagram to determine the solar distance.

Table 7.1 *Cosmic dimensions according to Al-Farghānī (c. AD 850)*

Body	Absolute distance in e.r.			Apparent Diameter at mean distance (Sun = 1)	Actual Diameter (Earth = 1)	Volume (Earth = 1)
	Least	Greatest	Mean			
Moon	$33\frac{1}{2}+\frac{1}{20}$	$64\frac{1}{6}$	$48\frac{5}{6}$	$[1\frac{1}{3}]$	$\frac{1}{3\frac{2}{3}}$	$\frac{1}{39}$
Mercury	$64\frac{1}{6}$	167	$115\frac{1}{2}$	$\frac{1}{15}$	$\frac{1}{28}$	$\frac{1}{22000}$
Venus	167	1 120	$643\frac{1}{2}$	$\frac{1}{10}$	$\frac{1}{31}$	$\frac{1}{37}$
Sun	1 120	1 220	1 170	1	$5\frac{1}{2}$	166
Mars	1 220	8 876	5 048	$\frac{1}{20}$	$1\frac{1}{6}$	$1\frac{1}{2}+\frac{1}{8}$
Jupiter	8 876	14 405	11 640	$\frac{1}{12}$	$4\frac{1}{2}+\frac{1}{16}$	95
Saturn	14 405	20 110	17 258	$\frac{1}{18}$	$4\frac{1}{2}$	91
Fixed stars						
1st mag	—	—	20 110	$\frac{1}{20}$	$4\frac{1}{2}+\frac{1}{4}$	107
2nd mag	—	—	20 110	not given	not given	90
3rd mag	—	—	20 110	not given	not given	72
4th mag	—	—	20 110	not given	not given	54
5th mag	—	—	20 110	not given	not given	36
6th mag	—	—	20 110	not given	not given	18

1e.r. = 3 250 miles.