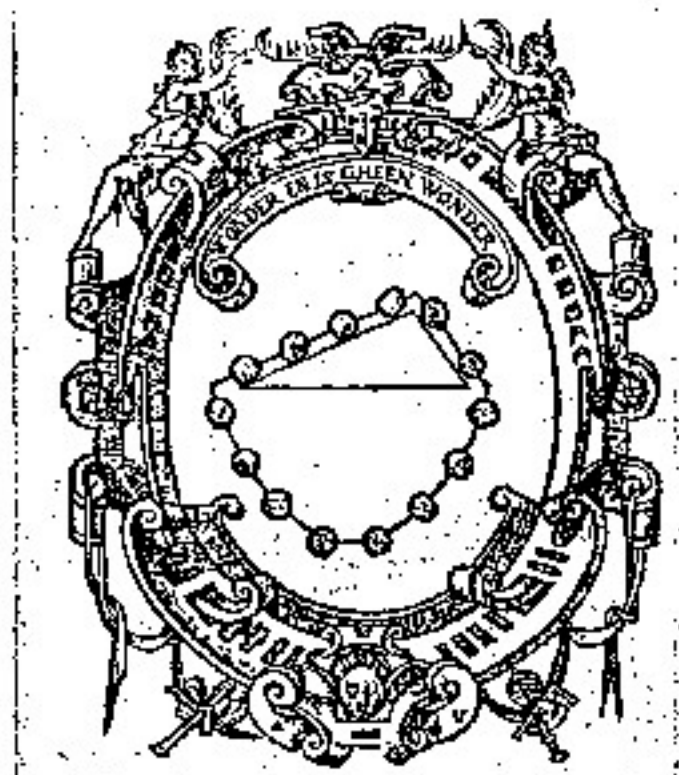


NOTE

Stevin's *Wisconstige Gedachtenissen*

Blanche T. Ebeling-Koning



It is not unusual to find some surprising features when examining a copy of a mathematical work published in the early 1600s. This is the case with the Dutch edition of Simon Stevin's *Wisconstige Gedachtenissen* (Mathematical commentaries), which the Friends of the Harvard College Library recently added to the collection on the history of science. It reveals some elements not recorded in the bibliographical literature.

Simon Stevin (1548–1620) is sometimes referred to as the Dutch Archimedes, since he was the first Renaissance mathematician to continue the latter's work. As the *Wis-*

constige Gedachtenissen makes clear, he formulated many ingenious theories, which he described in clear and concise terms in the vernacular, since he felt that the Dutch language lent itself particularly well to clarity of expression in scientific work. His Dutch translations of Latin terms coined a number of new words for the Dutch language that are still in use today.

One of the most remarkable of Stevin's discoveries deals with the theory of the inclined plane, which he demonstrated by means of a *clootcrans* or wreath of spheres. The diagram that illustrates this theory is shown at the head of this article, bearing the legend "Wonder en is gheen wonder," which asserts that a miracle ceases to represent the miraculous once its underlying principles have been fathomed. (Stevin liked the device so much that he used it on the title pages of his books. His son Hendrick took it over as a family crest and had it depicted in one of the church windows in the city of Alphen a/d Rijn where the family had estates. Eventually, the *Dictionary of Scientific Biography* adopted the *clootcrans* as its device.)¹

¹ Stevin's importance is such that when Harrison D. Horblit '33, Harvard's Honorary Curator of the History of Science, arranged the exhibition "One Hundred Books Famous in Science" at the Grolier Club in 1958, he included Stevin's three-part work, *Beghinselen der Weegbeconst* (Leyden: Plantin, 1586), which forms a major part of the *Wisconstige Gedachtenissen*. In his catalogue, item no. 97, Horblit praised its "important statements in statics and hydrostatics." The rare edition exhibited was lent by David P. Wheatland '22, Harvard's Honorary Curator of the Collection of Historical Scientific Instruments. It is bound in beautiful brown calf, a "Lyonnaise" binding, the covers lettered in gold, for presentation in the year of publication to the city governors of Nuremberg (to whom the third part of the work is dedicated). It was presented to the Houghton Library in December 1972.

Stevin collected his mathematical commentaries in the *Wisconstige Gedachtenissen* and supervised its publication between 1605 and 1608. Willebrord Snell (1581–1626), another Dutch mathematician and friend of the author, translated the entire work from Dutch into Latin, and published it in Leyden in 1608 as the *Hypomnemata Mathematica*. That same year, an incomplete French translation by Jean Tuning, *Mémoires mathématiques*, was also published in Leyden.²

The Dutch version was printed by Jan Bouwensz, the Latin and French by Jan Jacobsz Paedts, the university printer. Since the title pages of the Latin and French versions described themselves as translations of the Dutch edition, it may be assumed to be the original, the first actually to come off the press. When the three editions are laid out next to each other, it soon becomes apparent that the numerous woodcuts used to illustrate the often highly technical language are exactly the same for all three versions. In fact, the printer has frequently used the same layout on the page of text and illustration, although he occasionally needed to make adjustments, to allow for longer or shorter paragraphs, necessitated by the differences in the three languages. In addition to sharing the cuts for the illustrations, the two printers also had access to the same fount for the large (ca. 4½ by 4½ cm.) woodcut historiated initials found in all three editions. These consist of scenes from classical mythology, each letter representing the initial of the character whose story is central



to the scene. Thus, one finds in the Dutch and French editions a charming scene of Latona, gracefully supported by the upright bar of the capital L, as she looks down on her infant twins Apollo and Artemis, the whole set on the floating island Delos, propelled along by a frog on either side. These two editions also share a capital D showing Daedalus looking on as Icarus falls to earth. The O, encircling Orpheus as he chants to his lyre, is found in the Dutch and Latin editions, as is the A, depicting Actaeon being devoured by his hounds. The French and Latin works share a C, giving a dramatic rendering of the Cupid and Psyche story, an S for Semele, and a V with Vulcan at the anvil. Each work has only between five and seven of the large historiated initials so that a comparison for the entire alphabet

is possible. Each work has only between five and seven of the large historiated initials so that a comparison for the entire alphabet

² Harvard acquired its first work by Simon Stevin, the *Hypomnemata Mathematica*, as one of nine hundred volumes from the library of the mathematician Karl Gustav Jacobi (1804–1851). George Philips Bond, second director of the Harvard Observatory, purchased the Jacobi library from the Berlin firm of A. Asher in 1851 with funds bequeathed by Horace Haven, Class of 1842. A century later in 1954, the Library purchased with money from the P. P. F. Degrand Fund a copy of *Mémoires mathématiques*, bearing the bookplate of the French mathematician Michel Chasles.

is impossible. There is no doubt, however, that the two printers borrowed the fount from each other, just as they did the illustrations and some of the decorative material. Bouwensz and Paedts appear to have cooperated earlier. The evidence suggests that Jan Bouwensz, whose shop was probably quite small, had worked with Paedts on various printing enterprises in the years from 1585 to about 1595.³ It seems evident from the printing of Stevin's collected works that Bouwensz and Paedts, who was officially appointed university printer in 1602, continued their cooperation well into the first decade of the seventeenth century.

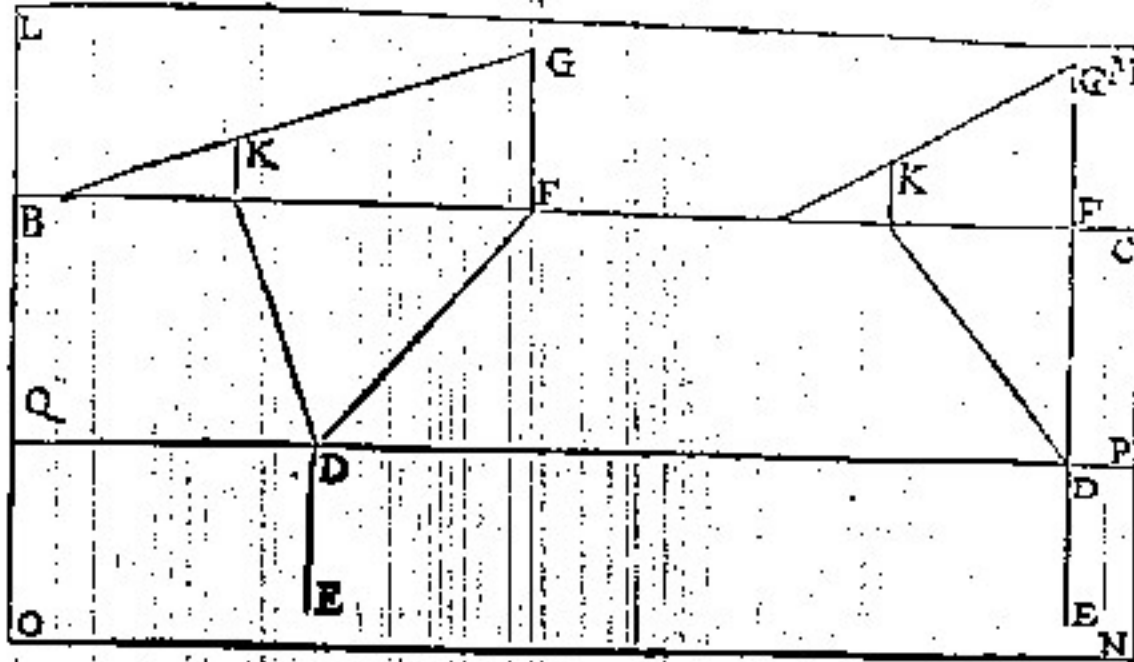
The collected editions of Stevin's work are described in the *Bibliotheca belgica* and the *Bibliographie néerlandaise scientifique* but not in the *National Union Catalogue* or the published catalogues of the British Library and the Bibliothèque Nationale. A comparison of the Dutch, Latin, and French versions with each other and with their descriptions in the *Bibl. néerl.* shows a few small differences: in the first part of the *Wisconstige Gedachtenissen* the Harvard copy has six leaves, not six pages, as the *Bibl. néerl.* seems to indicate; in the third part, it has 108 pages, not the 102 pages of the *Bibl. néerl.*; in the fifth part, there are two additional leaves not mentioned by the *Bibl. néerl.*, so that the description of the Harvard copy reads: 10, 21, 1 leaf, 6, 58, 1 leaf, 8, 117 pp. And there is a difference shared with the *Bibl. belg.*

The Dutch and Latin versions agree with the description given in the *Bibl. belg.* except for one detail in the third part, which deals with perspectives. The intriguing feature not recorded is that the *Hypomnemata* has an extra leaf, unnumbered, without signature, with diagrams and instructions to the binder/bookseller on the recto, blank on the verso, inserted after p. 16 in the "Tomus Tertius . . . De Optica," as shown in figure 1. It forms no part of the gathering but is sewn in between B2 and B3. The stub of the conjugate is visible at the inner edge of B3 (p. 17). In the *Wisconstige Gedachtenissen* the binder followed the instructions, cut out the diagram LMNO, pasted it to section T on p. 23 (see figure 2) and did the same for diagram efgh and the two strips lo, putting these in their proper place on p. 27 (see figure 3). Over the years the glue dried out, and the diagrams came loose. Someone, most likely unacquainted with the Dutch language, pasted the diagrams and the binder's instructions to the inner margins of the appropriate pages 23 and 27, but the last part of the printed instructions was glued to p. 135, where its presence may have puzzled some readers. In the fifth part of the *Wisconstige Gedachtenissen*, at the end of the first gathering A, there is the clearly visible stub of a cancel, conjugate with A1, indicating that A6 has been removed. A6 may have been the printer's sheet with diagrams and instructions now found pasted on three different pages.

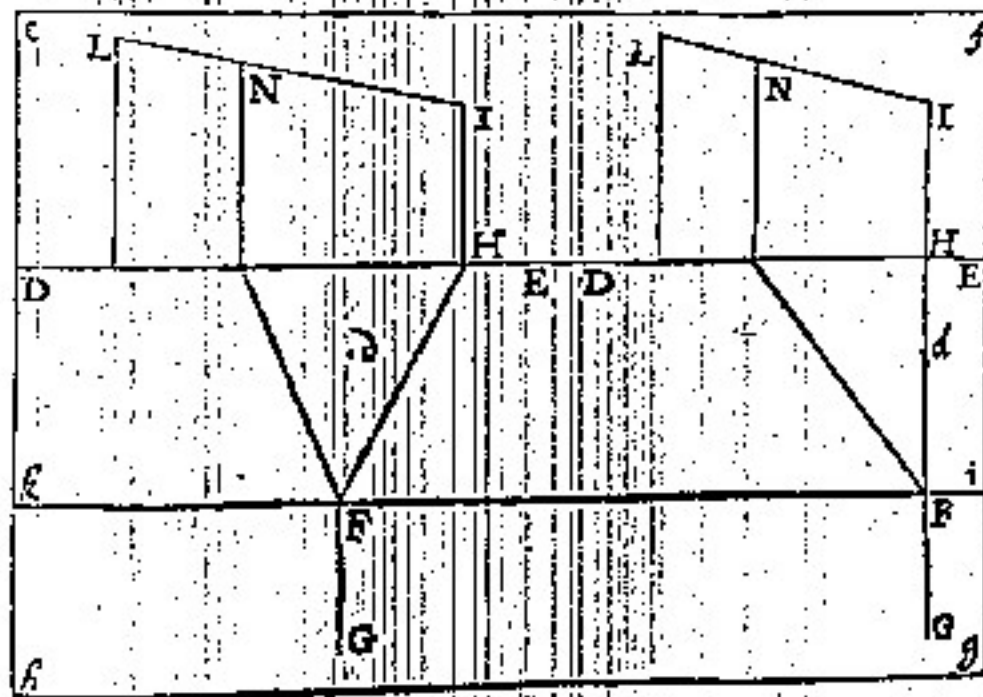
The Harvard copy of *Mémoires mathématiques*, the French version of Stevin's collected works, shows what the author had in mind when he gave specific instructions for these diagrams. The first diagram, LMNO, was to be pasted with its center section BCPQ on the page indicated by the binder to the section in the diagram marked T, in such a way that sections LMCB and QPNO would be folded

³ J. G. Briels, *Zuidnederlandse boekdrukkers en boekverkopers in de Republiek der Verenigde Nederlanden omstreeks 1570-1630* (Nieuwkoop: B. de Graaf, 1974), pp. 83 and 88.

Meminerit Bibliopagus ut quadrangulum LMNO excindat per latera sua LM MN NO OL, tumque quadrangulum BCPQ applicet agglutinetur quadrangu- lo T pagina 21 libri Sciagraphia: sed ita ut duo quadrangula LMCB, & QPNO ad perpendicularum erigi, & rursus ad planum libri, cum opus erit, exportari possint.



Eodem modo excindatur quadrangulum efgh, per latera sua ef fg gh be, tumque agglutinetur quadrangulum DEik ad quadrangulum cui applici est nota pagina 25 libro primo Sciagraphia: sed ita ut quadrangula duo efED, & kigh erigi, & rursus ad libri planum possint exportari.



Denique etiam duo haec oblonga notata literis IO excindenda sunt, quadrangulaque / agglutinanda quadrangulis Y, ut infimus lineae O terminus statuat in A, ut & ista ad perpendicularum erigi, & rursus in planitiam, cum necesse erit, exportari possint.

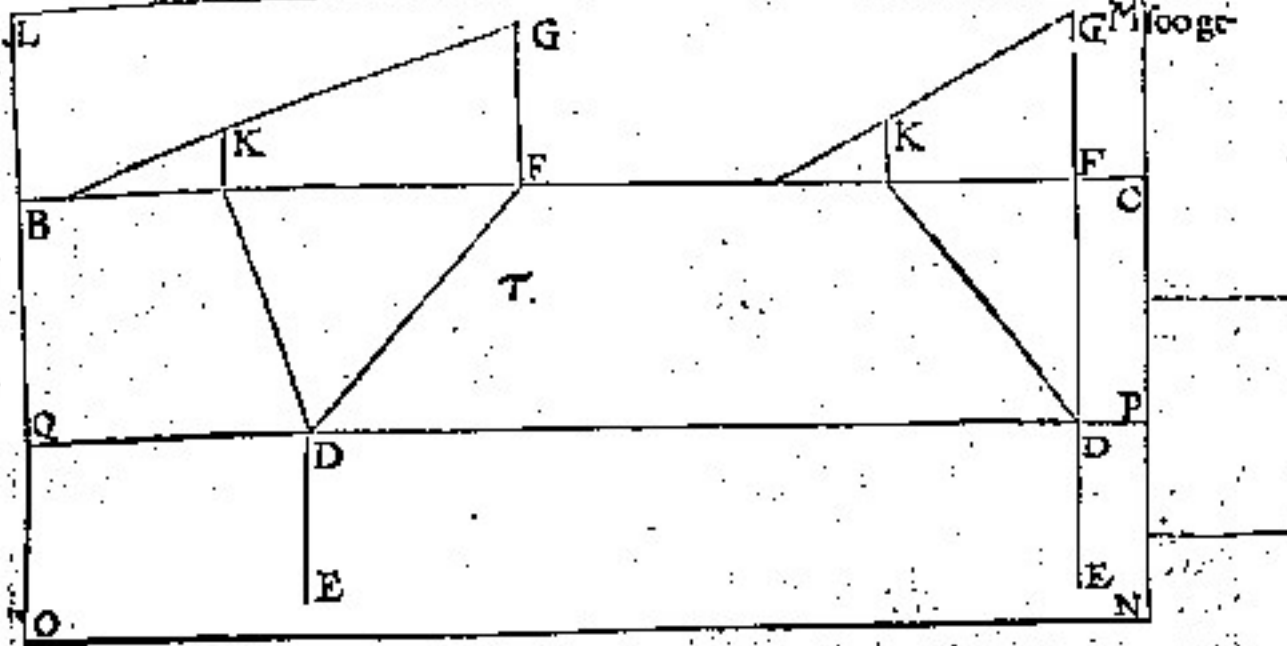
Photo: W. H. Bond

Houghton Library

Figure 1. *Hypomnemata Mathematica*, unnumbered leaf, inserted in vol. 3 between leaves B2 and B3, with diagrams and instructions to the binder for cutting out and placing.

VANDE VERSCHAEVWING.

kening inde vloer, datmen oock de ghegheven siendermaet DE inde vloer als sienderlijn overeynde mach stellen drayende i' glas op den glasgrondt BC als en de sienderlijn on de voet D. om alsoo i' glas en de sienderlijn beide rechte



Angheffen i' glas daer K in is, en de sienderlijn DE, deur t'bercyfel nu beyde rechthouckich op de vloer staen, soo segh ick dat de rechte lini vant oogh E deur t'glas tottet verschaeulick punt A, i' selve glas deurboort in K, als schaeu van A, i'welck aldus behoont wort; T'verdocht strael van E tot G is ewewijdich met DF, en DF ewewijdich met HA deur t'werck derde lidt, waer deur EG ewewijdeghe is met HA, en daerom is G saempunt der voortghetrocken schaeu vande verschaeulicke HA deur het 3 voorstel, waer deur de schaeu van HA inde saemlijn GH moet sijn, en daerom is oock de schaeu van A in HG: Sy is oock int oneyndelick plat streckende deur AED: Maer i' selve plat snijt HG in K, daerom K is de schaeu van A.

MERCKT.

Int werck eerste lidt is gheseyt dat de voortghetrocken vloerlijn DF, niet strecken en moet deur t'ghegheven punt A: De reden is datmen anders doende, soo soude int derde lidt het vloerlijnaecksel F, en d'eerste glasgrontsne H, al tijt in een selve punt vallen, mettet welcke men openbaerlick tot gheen besluyt en ghetraeckt: Waer uyt noch dit volght: Wanntermen de vloerlijn DF soo treckt, dattet vloerlijnaecksel seer na valt by d'eerste glasgrontsne H, het dadelick werck en heeft de meeste sekerheyt niet, hoe wel daer in * wisconstlich an sien al een selve is.

*Mathema-
gick consider-
vatiou,*

Cortheyt opt werck.

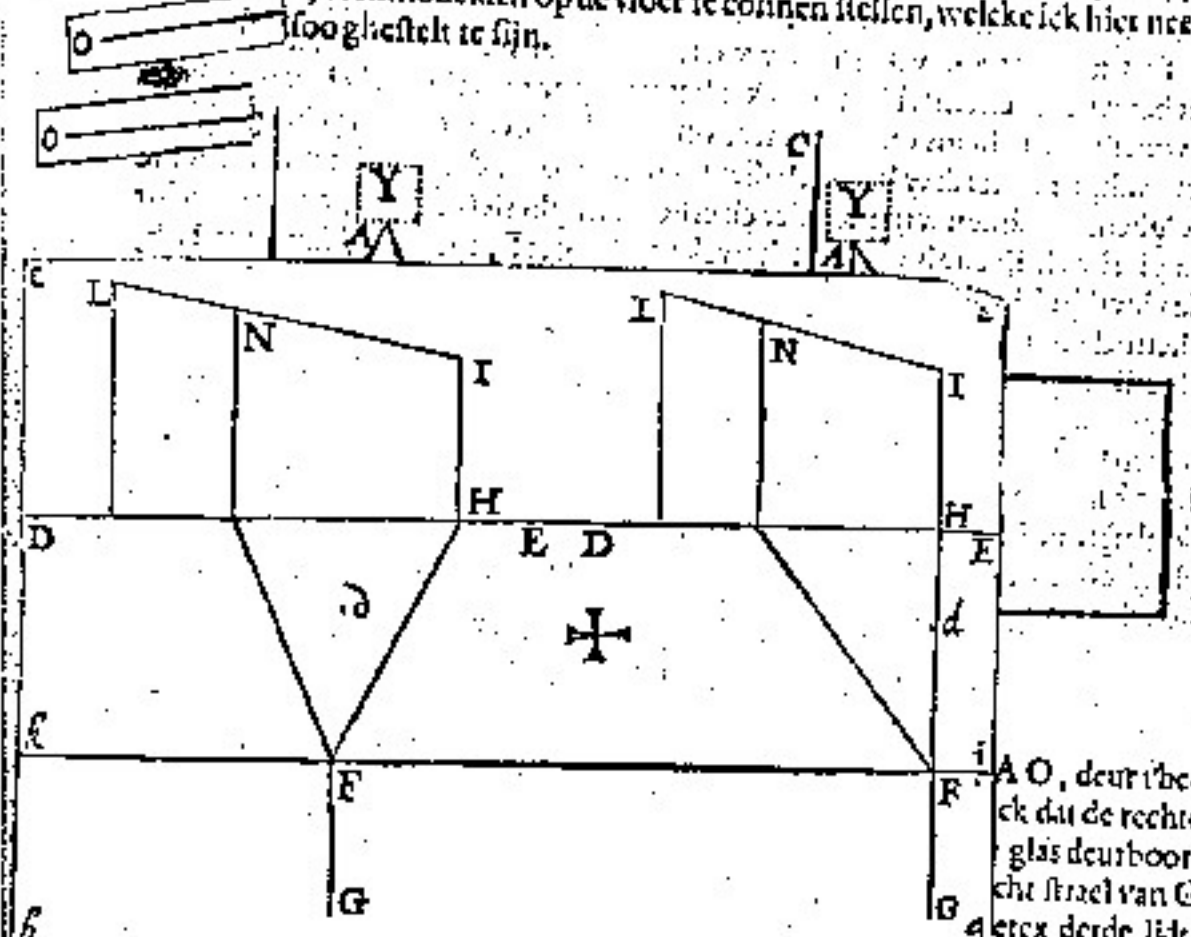
Soodet inde vloer water twee of met ghegheven verschaeulicke punten ghelijck A, vallende alsamen in een rechte lini, men mach cortheytshalven de lini als AH berst deur die twee of meer punten trecken, en de vloerlijn als DF, daer me ewewijdich, op dat de twee linien als AH, GH, in elck verschaeulick punt vinding der schaeu de selve blijven.

2 Voor-

Figure 2. *Wisconstige Gedachtenissen*, vol. 3, p. 23, with diagram LMNO pasted on but misplaced.

VANDE VERSCHAEVING.

vallen, wy sullen die dadelick scheidt als volgh: Laet de twee voorgaende for-
men hier andermael verreyckent worden, doch alsoo datmen deur t'behalp
van dobbel papier, de teyckening die heur verstaer int glas te moeten comen,
scheidt mach vande teyckening inde vloer, datmen oock de ghegheven siender-
dermaer F.G, inde vloer, overeynde mach stellen als sienderlijn, en sghelijcx een
lini op A, even an B.C, als A.O, draeyende t'glas op de glasgrondt D.E als as, en
de sienderlijn F.G op de voet F, en A.O opt punt A, om alsoo t'glas, sienderlijn,
en lijn A.O, rechthouckich op de vloer te connen stellen, welke ick hier neem
soogheestelt te sijn.



is, en daerom is I saempunt der voortghetrocken schaeu vande verschaeulicke
I.O deur het 3 voorstel, waer deur de schaeu van L.O inde sienderlijn I.L moet

Sghelijcx moet uytghesneden worden dese vierhouck *efgh*, deur sijn vier linien *ef, fg,*
gh, he, en alsdan moet den vierhouck *DEIK* ghepapt sijn op den vierhouck gheteyckent
* inde 27 sijde vant eerste bouck der Deursichtige, maer alsoo datmen de twee vierhouc-
ken *efED*, en *ktgh*, mach overeynde stellen, en weerom als men wil plat neerlegghen.

alsamen in een rechte lini, men mach contheytsalven de linijals A.K,
deur die twee of meer punten trecken, en de vloerlijn als F.H daer t'he tye-
ch, op dat d'ander linien als K.L, al vallen inde selve K.L, of in haer ver-

2 Voorbeeldt met * uytchverckelike wercking.

Mechanisch
operatiens.

in sulcke redenen als int 3 voorstel, beschreven is een, 2 voorbeeldt met
werckelike wercking, soo wort hier een dergelijcke tweede voorbeeld
ghestelt

Photo: W. H. Bond

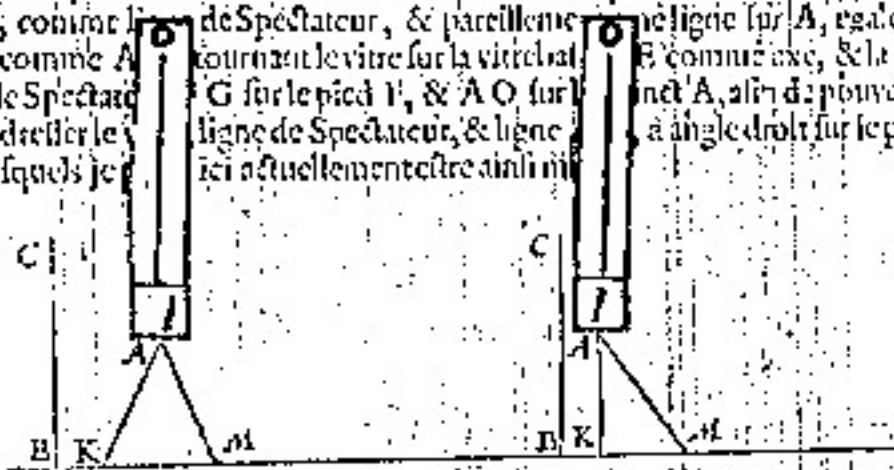
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Figure 3. *Wisconstige Gedachtenissen*, vol. 3, p. 27, with the instructions plus diagram efigh and the two strips lo pasted on but misplaced.

DE LA SCENOGRAPHIE.

27

PREPARATION DE LA DEMONSTRATION. Parce que la susdite separation imaginée du vitre & du pavé pourroit estre obscure, nous la separerons actuellement comme s'ensuit: Soient les deux figures precedentes autrefois remarquées, ainsi que par l'aide de papier double laquelle la figure s'entend devoit venir dedans le vitre, puisse estre separée de la figure dedans le pavé, qu'on puisse aussi dresser la donnée mesure de Spectateur FG dedans le pavé, comme de Spectateur, & pareillement de ligne sur A, égale à BC, comme A tournant le vitre sur la vitre, & la ligne de Spectateur G sur le pied I, & AO sur le pied A, afin de pouvoir ainsi dresser le ligne de Spectateur, & ligne à angle droit sur le pavé, lesquels je



DEMONSTRATION.

D'autant que le vitre dedans lequel est N, la ligne de Spectateur FG, & la ligne AO, sont tous trois à angle droit sur le pavé, je di que la ligne droite de l'œil G par le vitre jusques au point ombreable O, transportée le même vitre en N, comme ombre de O, ce qui se demontre ainsi: Le rayon imaginaire de G jusques I, est parallele avec FH, & FH parallele avec AK, par le troisieme article de l'operation, & AK avec l'imaginée OL, par quoi GI est parallele avec l'imaginée OL, & pourtant I est point de conjunction de la prolongée ombre de l'ombreable I.O par la proposition, par quoi faut que l'ombre de l'O soit en la ligne de conjunction IL, & pourtant l'ombre de O est aussi en IL: Elle est aussi au plan infini tendant par FG, mais icelui plan coupé IL en N, partant N est l'ombre de O.

Briefveté sur l'operation.

Si dedans le pavé fussent deux ou plusieurs points donnez comme A, tombés tous en une ligne droite, on peut pour briefveté premierement tirer la ligne AK, par iceux deux ou plusieurs points, & la ligne de pavé comme FH, parallele avec icelle, afin que les autres lignes comme KL, tombent tous en une ligne KL, ou en sa prolongée.

2 Exemple avec operation mechanique.

Pour telles raisons qu'à la cinquieme proposition j'ay décrit un second exemple avec operation mechanique, est ici mis un semblable second exemple.

Photo: W. H. Bond

Houghton Library

Figure 4. Mémoires mathematiques, vol. 3, p. 27, with diagram LMNO correctly past on and folded, and with the two strips lo pasted on in such a way that they could be stood upright.

flat with the book closed, but could be stood upright to illustrate the text (see figure 4). The binder of the *Mémoires mathématiques* followed the instructions, and the diagrams are still firmly in place. The *Bibl. belg.* makes due note of this feature, although in the copy (or copies) it examined for its purposes the diagrams apparently were not cut out. As in the Harvard Latin edition, the entire leaf with diagrams and instructions is still intact: "Les figures de ce dernier [feuille] sont destinées à être découpées, pliées et collées sur d'autres figures à la p. 23 et à la p. 27."

The *Bibl. belg.* is extremely detailed in its collation and description of both the *Wisconstige Gedachtenissen* and the *Hypomnemata*, for which it lists eleven and five copies, respectively. Yet for neither one of these editions is there any mention of the leaf with diagrams and binder's instructions. One must assume that the Harvard copies of these two editions are unusual in this respect.

A recent reprint of part of Stevin's *Wisconstige Gedachtenissen* entitled *Principal Works* (Amsterdam, 1955-1958) includes a facsimile edition of the third part, "Van de Deursichtighe," with an English translation on the facing page. The facsimile incorporates all of the text and illustrations found in the original, but there is no trace of the cutout diagrams or binder's instructions. The diagrams on pages 23 and 27 are bare, without the cutout to be glued to sections T and +. The editors make no mention of the movable diagrams, possibly being unaware that these were called for in the original edition.

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