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Series VIII of the Leibniz-Edition: An introduction to a modern presentation of unknown manuscripts

Abstract

This introductory paper will deal with six aspects of the subject:

1. Content, 2. Coming into being, 3. Co-workers / Co-operations, 4. Sponsors, 5. Hitherto published manuscripts (two examples), 6. Method, 7. Internet-Edition.

(1) Introduction

In 1997, the Berlin-Brandenburg Academy of Sciences and Humanities (BBAW) which was founded by Gottfried Wilhelm Leibniz in 1700, decided to establish an international co-operation in order to publish the 8th series of the so-called “Academy edition of Leibniz’ Complete writings and Letters”.

(2) Content

The eighth series of this Academy edition will comprehend all Leibnizian manuscripts dealing with Astronomy, Botany, Zoology, Chemistry, Geography, Geology, Physics (including mechanics): ca. 1400 sheets, Technology: ca 380 sheets, Military devices: ca. 241 sheets, Medicine, Pharmacy: ca. 1260 sheets.

Presumably, the printed version of their edition will result in three volumes “Natural Sciences”, two volumes “Technology, Military Devices”, three volumes “Medicine, Pharmacy, Related Topics”.

(3) Coming into being

The French-German co-operation came into being on September 30, 1997 on the occasion of a meeting in the French Institut in Paris: Claude Debru, member de l’Institut, took on this task for the French side, Eberhard Knobloch, ordinary member of the BBAW, took on this task for the German side.

The Russian-German co-operation came into being on November 20, 1998 on the occasion of a meeting in the Russian Academy of Sciences (RAN) in Moscow. President Osipov of the RAN and President Simon signed a co-operation contract. Russian spokesman became Vladimir Kirsanov, Moscow. German spokesman became Eberhard Knobloch, Berlin.

(4) Co-workers, co-operations

The French co-worker is Anne-Lise Rey, Paris / Lille (since May 2006). The German working group was established on January 1, 2001. Its members are: Hartmut Hecht, Eberhard Knobloch, Lutz Sattler (January 2002–October 2007), Achim Trunk (August 2005 – April 2006), Sebastian Stork (since November 2006). The Russian co-workers are: Olga Fedorova, Vladimir Kirsanov (May 2000 – May 2007).

For the time being, there is a co-operation between the Berlin-Brandenburg (former Prussian) Academy of Sciences, the Russian Academy of Sciences, Moscow, the Université de Lille 1/CNRS, Lille/Paris, the Herzog-August Library, Wolfenbüttel, and the G.W. Leibniz Library, Hannover.

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(5) Sponsors

Four main sponsors helped to establish the edition and the international co-operation:

- Deutsche Forschungsgemeinschaft (German Research Association): During the years 2000–2005 it paid the Russian co-workers and enabled the director of the Leibniz Library Hannover to digitize the Leibnizian manuscripts;
- Versicherungsgruppe Hannover Landschaftliche Brandkasse (Insurance Company against fire, Hannover): It paid the computer scientist Peter Cassiers who put the images into the world wide web (the server is located at the BBAW Berlin);
- Alfried Krupp von Bohlen und Halbach foundation, Essen: It paid the digitisation of the so-called Ritter catalogue that comprehends some 90000 entries. These entries give information about the Leibnizian manuscripts;
- Hermann und Elise geborene Heckmann Wentzel foundation, Berlin: It paid microfiches and paper reproductions.

(6) Hitherto published manuscripts belonging to series VIII

Only very few of the ca. 4000 sheets are known up to now. The following relevant editions appeared in this respect:

- Gottfried Wilhelm Leibniz, *Mathematische Schriften*, herausgegeben von Carl Immanuel Gerhardt, vol. VI *Dynamica*. Halle 1860 (Reprint Hildesheim 1962)
- *Leibnizens nachgelassene Schriften physikalischen, mechanischen und technischen Inhalts*, herausgegeben von Ernst Gerland. Leipzig 1906 = Leibniz 1906 (Hildesheim 1995)
- Gottfried Wilhelm Leibniz, *Specimen dynamicum*, herausgegeben von H.G. Dosch, H.W. Most, E. Rudolph. Hamburg 1982 = Leibniz 1982 (Reviewed in: *Annals of Science* 40 (1983), p. 501–504)
- Domenico Bertoloni Meli, *Equivalence and Priority: Newton versus Leibniz*, including Leibniz' unpublished manuscripts on the *Principia*. Oxford 1993
- Gottfried Wilhelm Leibniz, *La réforme de la dynamique, De corporum concursu* (1678) et autres textes inédits, édition, présentation, traduction et commentaires par Michel Fichant. Paris 1994.

To a large extent, the editions dating from 1906 and 1982 are useless because they are extremely defective and fragmentary. Some examples might suffice to emphasize the importance of a new edition. In (Leibniz 1906, 90) Gerland published a Leibnizian text on optics. Leibniz is speaking about the hyperbolic or elliptic shape of lenses saying:

Hinc fieri potest figura optica quasi perfecta constans ex meris vel Ellipsis Hyperbolicis sibi appositis quasi mechanica quadam construendi ratione.

Thus a so to speak perfect optical figure can be made consisting of mere ellipses and hyperbolas which are united to each other by a nearly mechanical way of construction.

Gerland's senseless and fragmentary text reads:

Hinc fieri ut figura. Optica quasi perfecta ... 2) vel Ellipsis Hyperbolicis sibi oppositis, quasi mechanice quidam construendi ... 3)

He remarks regarding 2): unreadable, presumably “non circulis utitur”, regarding 3): unreadable, maybe “arte”. For the correct version see our Internet presentation:

http://leibnizviii.bbaw.de/Leibniz_Reihe_8/Problemata+optica+nova+reperta/LH037%252C02_001r/index.html.

In (Leibniz 1982, 84 f) Most published and “translated” Leibniz' first “Pattern of dynamics” which remained unpublished during Leibniz' lifetime. Leibniz is speaking about the collision of several bodies saying:

In pluribus, in se invicem nitentibus, procedit in unoquoque motus secundum nisum compositum ex suo et recepto vel ex suo et compositis ex receptis, unde si in gravi

conatus contrarius ex receptis compositus sit aequalis gravitationi, et in ipsa linea directionis, sistitur grave.

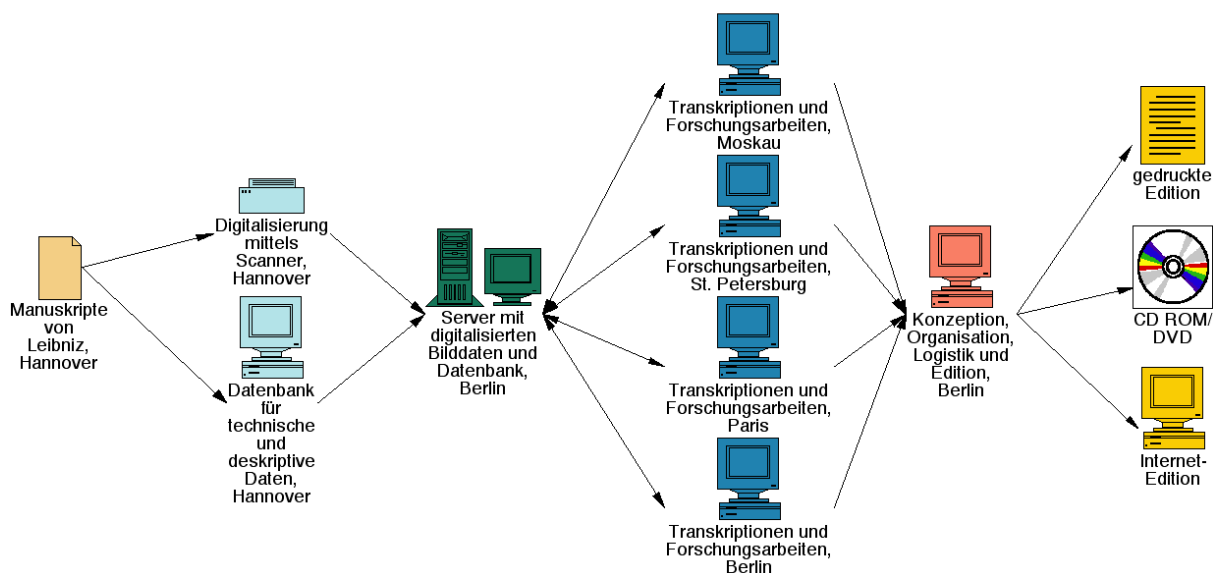
If there are several bodies striving against each other, the motion in each proceeds according to the striving which is composed of its own and of the received or of its own and that which is composed of the received. Hence if in a heavy body the opposite striving being composed of the received strivings is equal to the gravitation and exactly on the line of the direction the heavy body is stopped.

Most's widely senseless text reads:

In pluribus, in se invicem nitentibus, procedit unoquoque motus secundum nisum compositum ex suo et recepto vel ex suo et communi ex receptis, unde si in gravi conatus contrarius ex receptis compositus fit aequalis gravitationi, et in ipsa linea directionis, distatur grave.

(7) Method

The following scheme gives an impression of the project structure of series VIII.

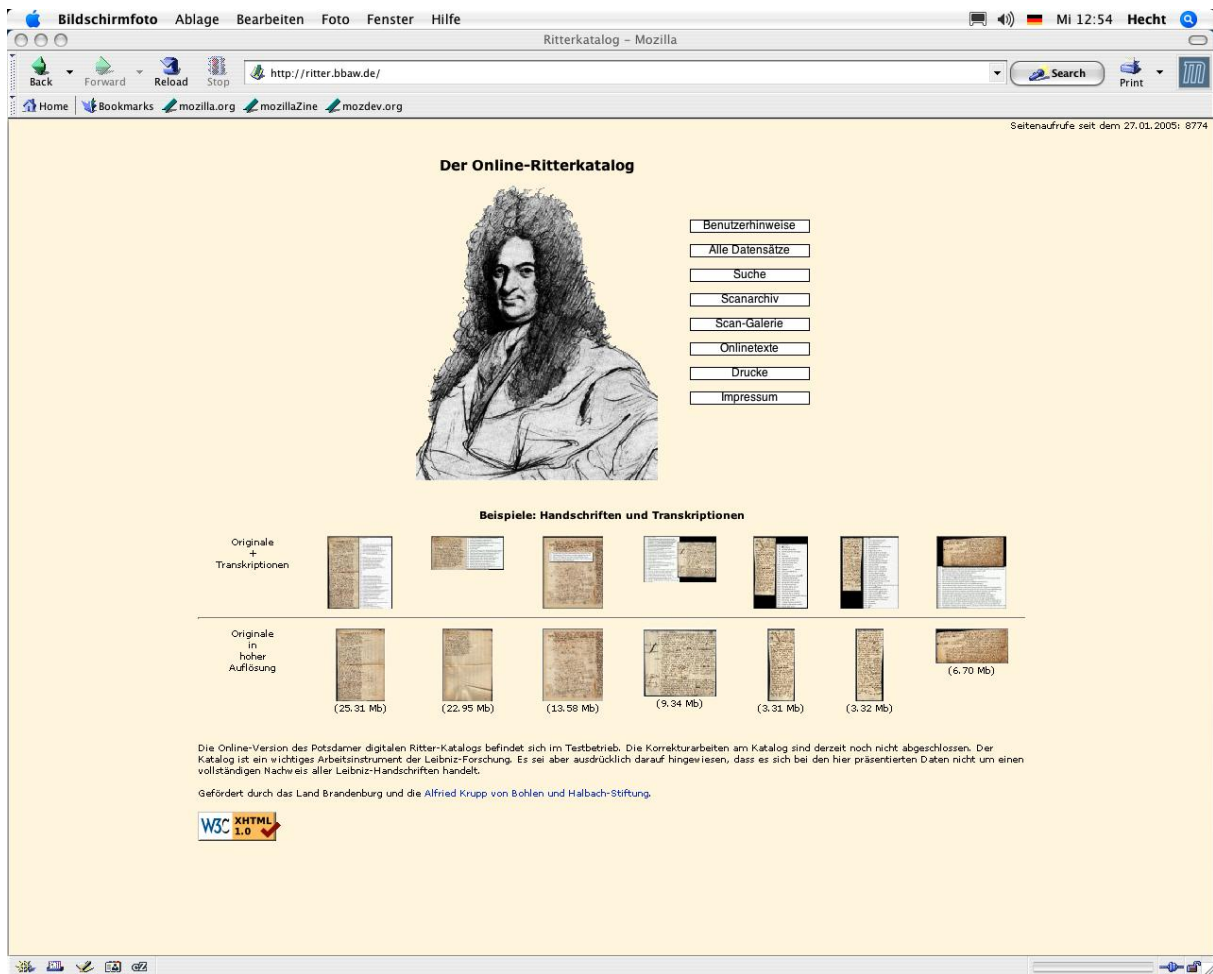


It shows that the original manuscript sheets dealing with the above mentioned subjects are scanned in Hanover at the Gottfried Wilhelm Leibniz Library. All of the about 4000 sheets are scanned three times: the front, the back, and the watermark and each of them is available in three sizes so that there are at large 40000 image files on the image server in Berlin. The co-workers of the different research groups in Berlin, Moscow and Lille base their transcriptions on these files, which they download from the Berlin server. As soon as the collaborators in Moscow and Lille finished their work on a manuscript they send it via email to the Leibniz-Edition in Berlin, where the manuscripts will be collected, systematically ordered and prepared for publication. The results of the editorial work will be presented as in print, by means of a DVD and as an Internet-Edition.

(8) Internet-Edition

The Internet-Edition can be understood as our contribution to the development of electronic means for source editions in the history of science. For this purpose we combined two different instruments of the Leibniz edition that previously have been separated from one another, the so-called Ritter catalogue of the Leibnizian letters and writings and the kind of presentation of the edited texts. The combination became possible because of the new perspectives given by the World Wide Web and turns the catalogue, which originally was reserved only for the edition into a fruitful tool for Leibniz research too. Its Internet address reads: <http://ritter.bbaw.de>.

The following picture shows the homepage of the online Ritter catalogue.

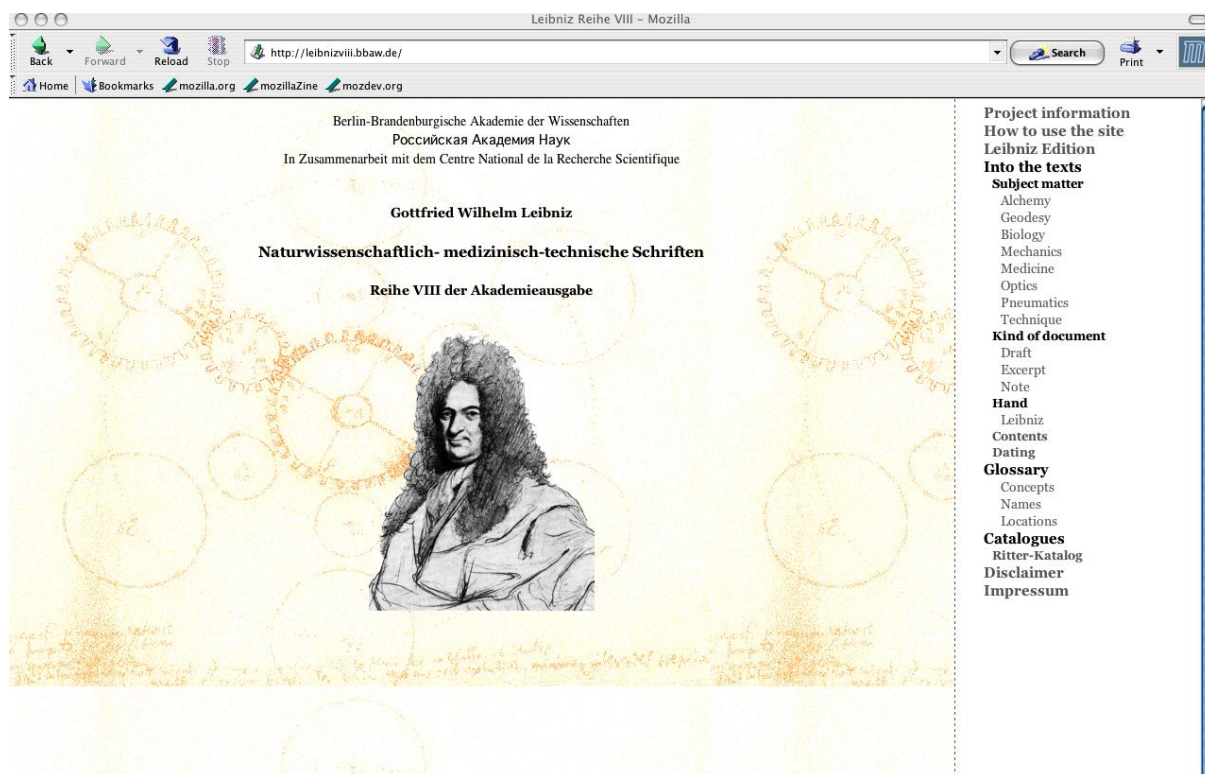


The cut-out below represents in more detail the buttons, which enable an user to navigate through the catalogue. They allow to see all the data sets, to search for particular folio keys, titles or incipits and to find prints, online texts and the above mentioned 40000 scanned images. The latter ones are freely available in the whole wide world without any password. This function of the online version of the catalogue is our special offer to the scientific community and especially to scholars interested in Leibniz. It can be activated by the help of the button “Scan-Galerie”,



Since the catalogue is linked with the presentation program it is possible to open the file of its transcription with an image file of the manuscript simultaneously, insofar a transcription already exists. Nevertheless, all existing online texts can be regarded separately. The address reads: <http://leibnizviii.bbaw.de>.

As it can be seen from the next picture, the right part of the title page contains a list of different items subdivided into several groups. All of them describe different ways to go into the texts. If a user clicks twice on a shadowed item, the corresponding information will appear. For example: he clicks “contents” he will receive the list of the Leibnitian manuscripts edited up to now. It is up to him now to choose the wished manuscript. In any case he can open the original manuscript file and its transcription simultaneously.



If one has opened the transcription window, the left frame contains the text of the page, the right frame clickable strings to transform the text in different stages of genesis. Every “text layer”

represents one stage of text construction by Leibniz. A click on “text replacement” is a step to the next text layer. The first layer to see is always the “last version”, i. e. the final version accepted by Leibniz. “back to index” leads back to the list of manuscripts. “registered links” lists the references made online available to our project by the Herzog August Library Wolfenbüttel.

The text in the left frame is organized strictly following Leibniz' hand. Every number in brackets to the left corresponds with the same line in the original page. Clickable districts in the text are highlighted at gliding over with the mouse. “D” (drawing), “C” (calculation), “C+” (auxiliary calculation), “T” (table) and “M” (marginal note) open parts of transcription corresponding to this spot in the original text. “A” (annotation) gives an editor-explanation.

If one has highlighted the requested word (by mouse-over) and clicked it becomes possible to pass to the glossary. Underlined or crossed parts follow the manuscript in this item. As an example see the picture below.

The screenshot displays a web browser window with the URL http://leibnizviii.bbaw.de/Leibniz_Reihe_8/D02526. The main content area is divided into several sections:

- Left Panel:** A list of 29 numbered text layers, each corresponding to a line in the original manuscript. The list includes the title "Maji 1675." and the problem statement "Probleme: Un bâton estant fiché dans le fonds d'un fossé plein d'eau, et sortant tant soit peu hors de l'eau, juger de la profondeur de l'eau, ou du fossé, sans tirer le bâton, et sans en sçavoir la longueur: pourveu qu'on aye la liberté, de le remuer." It also includes a detailed description of the geometric setup: "Soit le plan de l'eau, (A)(A) le bâton AB fiché perpendiculairement dans le fonds de l'eau B. et dont la partie AC. sorte hors de l'eau. Remuez le bâton, sans le tirer pourtant, et en laissant le bout B immobile remuez le, dis je, à l'entour du centre B du costé gauche jusqu'à ce que le bout A, touche l'eau en (A). Faites la même chose du costé droit, jusqu'à ce que le bout A touche l'eau en ((A)). Ainsi".
- Central Panel:** A diagram showing a horizontal line representing the water surface, with points (A) and ((A)) marked. A vertical line represents the water depth, with point B at the bottom. A dashed arc represents the path of the stick AB as it is moved.
- Right Panel:** A large image of the original handwritten manuscript page, showing the text and the diagram in Leibniz's cursive.
- Bottom Panel:** A table of marginal notes, numbered 1 to 10, with Latin text:

M	marginal note
[1]	Si in ipso
[2]	problemate
[3]	
[4]	fieret mentio
[5]	libertatis commovendi,
[6]	tunc problematis solutio
[7]	non tantum Geometriae, aut Algebrae,
[8]	sed et Combinatoriae esset, hoc
[9]	ipsum enim ingenii est cogitare
[10]	quid nobis sit datum, et quem

By this means we developed an electronic edition that makes it possible to reconstruct parts of a Leibniz text, of its calculations or drawings in a temporal order only by mouse clique. We are sure that following our procedure the sources of history of science will be presented in a more appropriate and dynamic manner that cannot be achieved by the help of prints. It is our conviction that this kind of electronic presentation is not only more comfortable as the traditional one; it also opens new perspectives of reception. Among them it stimulates the modern trends in the humanities called “iconic turn”.

Finally we give an example that shows how original manuscript, transcription and references can be compared and studied at the same time. The first picture shows a part of Leibniz' excerpts of O. v.

Guerickes "Eperimenta nova" as well as its presentation via Internet. In the second picture we we concentrate on a figure of Guerickes book drawn by Leibniz and the editor of this manuscript.

The image shows a web browser window displaying a Latin text on the left and a handwritten manuscript on the right. The browser's address bar shows the URL http://leibnizviii.bbaw.de/Leibniz_Reihe. The text on the left is a Latin manuscript, likely from Leibniz's edition of Guericke's works, and includes a list of numbered entries (1-52) and a diagram labeled 'A' and 'B'. The handwritten manuscript on the right is a page from Guericke's 'Eperimenta nova', featuring a diagram of a glass apparatus and handwritten Latin text. The diagram shows a glass globe (A) connected to a tube (B) with a stopcock (C). The text describes the experiment and its results.

[1] Constructio huc redit:
[2] **D** Globus A. aere plenus magnitudine Recipientis ex eo exit Tubus
[3] **B**. cupreus amplitudine pollicaris
[4] **Z**. ulnarum huic conjunctus in C. alius
[5] **DE** cui certa spiritus vini quan-
[6] titas infunditur. Huic in C. immit-
[7] titur tubus alius **KL**. in eo na-
[8] tans, in aequilibrium cum spiritu
[9] vini redactus per injectos globulos
[10] plumbeos ne ejus ex superficie
[11] emineat. Tubus clauditur
[12] inde extrahitur tantum aeris ex
[13] Tubo A. tempore aliqua medio, quo
[14] pruinosae ac frigidae noctes ingruunt,
[15] eousque extrahens donec
[16] icuncula circiter ad medium assurgat, tubo
[17] **KL**. descendente, quia vinum versus A.
[18] ascendit. (Rectus pro primo usu indeter-
[19] minata sumatur longitudo, unus annus
[20] tibi ostendet ubi locus medius, exhauries
[21] ergo pro lubitu. Calida tempestate de-
[22] scendet frigida ascendet virunculus.) Est
[23] et aliud Thermometrum Gerickii imagun-
[24] cula vitrea immittatur in Tubum vitreum
[25] 2 vel 3. ulnarum longum, ita ut in eo libere
[26] pendeat, ea calida descendet, frigida ascendet,
[27] media medium in tubo locum tenebit, item appende
[28] ad bilancem vitreum recipientem apertum invenias ca-
[29] lida tempestate levius, frigida gravius.
[30] Gerick. lib. 4. c. 1. **V**irtutes mundanae sunt viventes,
[31] imo animae sentientis. Virtus est aut corporeum
[32] aut incorporeum effluvium. Olfactus est organon excipi-
[33] endi virtutes corporeae seu odores, ex quibus et aer est. Vir-
[34] tutes incorporeae propagantur etiam per solida,
[35] omnes hoc habent ut in longiore distantia vis
[36] attenuetur ac denique evanescat. Reflectuntur
[37] etiam, ac in subjectis habitibus velut figuntur.
[38] **Cap. 2.** **V**irtus impulsiva, magis reci-
[39] pitur in corpore magis denso compactove, et majore.
[40] Duorum corporum ejusdem materiae et
[41] aequae solidorum, id quod majus est citius descendit.
[42] (Ego dubito.) Globus plumbeus duarum unciarum
[43] citius multo terram attingit quam unius unciae.
[44] (Dubito.) Arcus magnus sagittam justo minorem
[45] non eo projiciet quo majorem. Globus plumbeus
[46] funi alligatus et in gyrum vibratus vel
[47] circumductus quanto major est tanto celerius, inque
[48] majore, circumferentia potest circumduci. Res
[49] parva magnae parum virtutis impulsivae imprimere
[50] potest. Sic malleus incudi non sensibilem imprimet
[51] effectum hujus virtutis, unde solea equorum
[52] ferrea ein Huffeisen super incude hominis

CHAPTER 13. / Symposium R-5.
Leibniz on science, medicine and technology: A European project of the Leibniz-edition

The screenshot displays a Mozilla browser window with two main content areas. On the left is a historical scientific illustration titled "DE PROPRIIS EXPERIMENTIS. ICONISMUS XVII." It features two vertical apparatuses labeled "MOBILE PERPETUUM" (perpetual motion machine) and a central figure of a woman holding a book. The apparatuses are connected to a vertical scale with various labels: "Magnum frigus", "Aer frigidus", "Aer subfrigidus", "Aer temperatus", "Aer subcalidus", and "Magnum calor". On the right is a handwritten manuscript page with a diagram. The diagram shows a vertical tube with a bulb at the top labeled "A" and a figure climbing a ladder-like structure. The diagram is labeled with letters A, B, C, D, E, F, G, H, I, K, L, M. The handwritten text is in Latin and discusses the nature of perpetual motion and the properties of air.