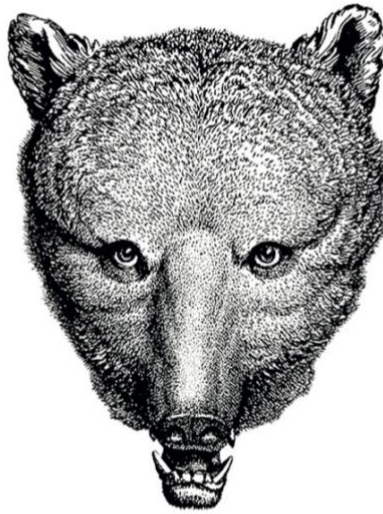# ORSI LIBRI

Géométrie Stéréométrique

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AN ULTRA RARE MATHEMATICAL PUZZLE MADE OF CARDBOARD GEOMETRY MODELS.

DUPIN, Louis. *Géométrie Stéréométrique ou Décomposition du cube en polyèdres réguliers, irréguliers et corps ronds; Formant entre eux plus de 120 solides appliqués à l'étude de la Géométrie, de la Coupe des Pierres de la Charpente et de la Minéralogie.*

[Paris], Par L. Dupin, Ing.eur, [mid 1840s].

€8500

Original mahogany case (12x13x13cm) lined internally with red paper. Printed title-label glued to the inside of the lead. Seller's ink stamp on the label: "Molteni et cie., Paris". A solid geometry set of disassembling cubes containing both regular and irregular polyhedrons, forming more than 120 three-dimensional different shapes between them relating to the study of geometry, stone cutting and mineralogy. The 27 orange-brown cardboard polyhedrons in the case are covered with imitation wood finish, each model shows the geometric properties of the solid printed on it.

Luis Dupin de la Guérinière was a civil engineer, born in 1810. Around 1842, he began to produce and sell folded models that exemplified several characteristics of various polyhedrons. The models can be fit together in a rectangular shape that fits perfectly in the box. Certain models are contained

within others and sections can be removed at a time. There are pyramids, cubes, blocks, cylinders, cones, planes, and so forth. Each object is named and its faces labeled with relevant information. On at least one face per object, the measurements of each edge are marked and each vertex is labeled with a capital letter. Various geometric definitions and facts are printed onto the object faces, including the relative volumes of different shapes. All of the writing is in French, and printed in script with black ink.

Some examples of Dupin's solid geometry sets kept in their cases can be found at the Musée des arts et métiers, CNAM, Paris. The function of this kind of item is well described by the online record of the one that is kept in Harvard's Godfrey Lowell Cabot Science Library:

"The title of Dupin's model collection indicates that the models are designed to assist in the study of geometry, perspective drawing (dessin linéaire), stone cutting (coupe des pierres), and mineralogy. The models are part of the nineteenth century French tradition of synthetic or constructivist geometry that advocated the development of visual and spatial intuition, hands-on pedagogical practices, models, and constructions over purely analytic and algebraic methods. In particular, they preferred solutions of geometric problems to take the form of geometric constructions rather than algebraic equations. Dupin's books are listed in the "Synthetic (construirende) and Analytic (analytische) Geometry" section of the German Bibliotecha Mathematica of 1854.
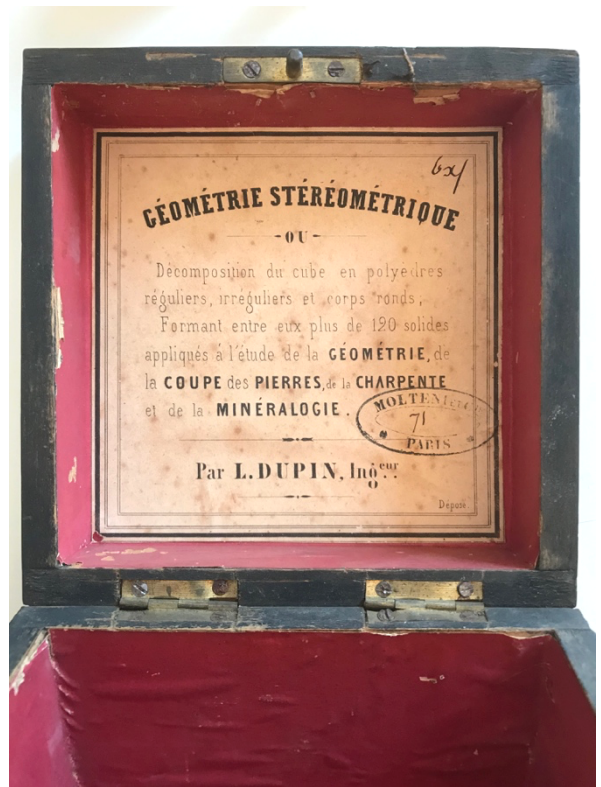
Dupin's models come apart into 120 distinct pieces that fit together in various configurations providing a visual and tactile experience of the relations between different geometric objects. Each object is labeled, named, and described directly on the face. Users could experiment with different configurations of models and relations. Dupin constructed other model sets for the study of geometry."

Science historian Michael Friedman has recently described and illustrated in depth Dupin's invention in his A History of Folding in Mathematics… (2018, p. 127; see references section below):

"Folded models of polyhedra, made out of cardboard or paper, were not a new invention. … this tradition was already taken into account by Durer and his contemporaries. Yet… most of these nets were an appendix to a text or were accompanied by a text in the form of a book. This was indeed obvious with Durer's

1525 *Unerweysung zur Messung*, as well as in Cowley's 1758 *An Appendix to Euclid's Elements* or the French 1835 adaptation of his book by Marie's *Géométrie stéréographique ou relifs des polyèdres*. Nevertherless, the folded models of polyhedra manufactured by Louis Dupin mark a distinctive turn in the history of the technical instrumentation of folding. ... the main epistemological importance of these folded models is the integration of the material with the written text: the properties of each folded polyhedron are written on the folded cardboard itself. At the same time, there is also a separation from the text: neither book nor separate text accompanies the folded models – the box of models is given as such, without any instructions."
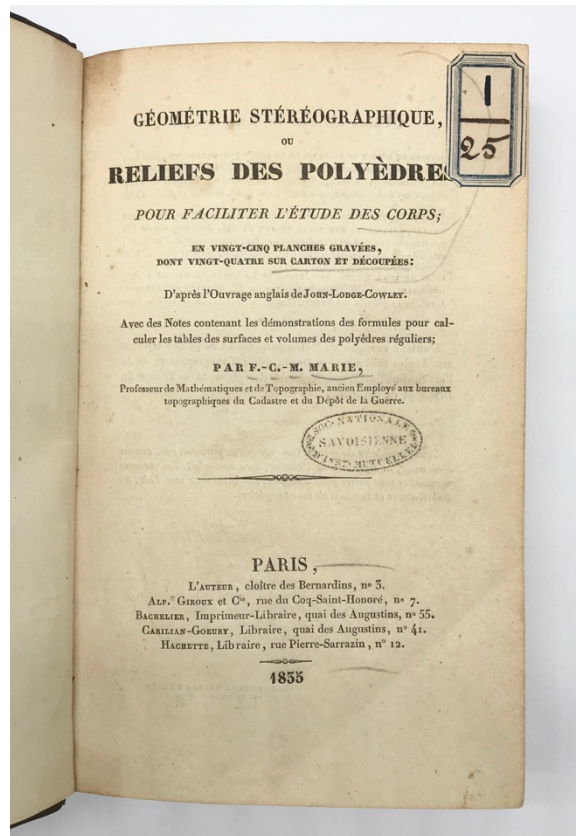
RARE WORK ABOUT GEOMETRY AND SPACE.

MARIE, François-Charles-Michel, COWLEY, John Lodge. *Géométrie stéréographique ou reliefs des polyèdres pour faciliter l'étude des corps.*

Paris, chez l 'auteur, 1835.

€1280

FIRST EDITION. 8vo (20,2x12,5cm.), iv, 44 pp., ill.: 24 plates with cut-out movable figures printed on card, one final folding engraved plate. Soc. Nationale d'Inst. Mutuelle Savoisienne, with stamps on title and plates. One library shelf mark label on top outer corner of t-p. With Marie's signature of authorisation on title verso. Contemporary calf-backed boards, front joint slightly cracked though holding well. Marbled paper. A rare and important French adaption of Cowley. A very good copy.

First edition in French of Cowley's 1757 An Appendix to Euclid's Elements, employing plates with folding parts to facilitate the study of polyhedra. Marie was professor of mathematics and topography. He also worked as cadastre and at the French "dépôt de la guerre".

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ou

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DONT VINGT-QUATRE SUR CARTON ET DÉCOUPÉES:

D'après l'Ouvrage anglais de JOHN-LODGE-COWLEY.

Avec des Notes contenant les démonstrations des formules pour cal-
culer les tables des surfaces et volumes des polyèdres réguliers;

PAR F.-C.-M. MARIE,

Professeur de Mathématiques et de Topographie, ancien Employé aux bureaux
topographiques du Cadastre et du Dépôt de la Guerre.

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HACHETTE, Libraire, rue Pierre-Sarrazin, n° 12.

1835

REFERENCES:

SOHNCKE, Leonhard A. (ed.), *Bibliotecha Mathematica; Verzeichniss der Bücher über die gesammten Zweige de Mathematik, als; arithmetik, höhere Analysis, construirende und analytische Geometrie, Mechanik, Astronomie und Geodäsie, welche in Deutchland und dem Auslande vom Jahre 1830 bis Mitte des Jahres 1854 - erchienen sind* (Leigzip, Wilhem Engelman, 1854). See pp. 147-148.

FRIEDMAN, Michael. *A History of Folding in Mathematics: Mathematizing the Margins (Science Networks. Historical Studies, 59)*, Berlin, Birkhäuser, 2018. See pp. 126-141.

Louis Dupin, *Géométrie Stériométrique, ou collection de figures en carton, pour faciliter l'étude de la géométrie,* avec 48 fig. In-4 (Paris, 1842).

Louis Dupin, *Géométrie, ou collection de polyèdre ou solides réguliers et irréguliers, donnant à volonté la solidité et le développement de ces corps appliqués à la demonstration de la stéréographie,* in-plano de 12 feuilles lithographiées, plus une boîte contenant des figures collées ou imprimées sur carton, et découpés (Saint-Quentin, 1842).

Louis Dupin, *Géométrie Stéréométrique, ou Décomposition du cube en polyèdres réguliers, irréguliers et corps ronds forment entre eux plus de 120 polyèdres, appliqués à l'études de la géométrie, etc,* in-12. avec 12 pl. (Paris, 1844).
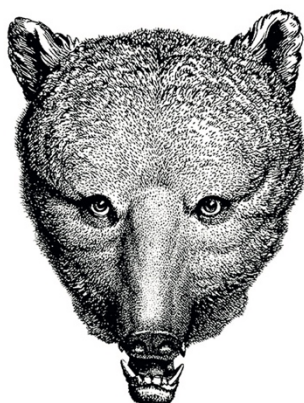
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— OU —

Décomposition du cube en polyèdres
réguliers, irréguliers et corps ronds;
Formant entre eux plus de 120 solides
appliqués à l'étude de la **GÉOMÉTRIE**, de
la **COUPE** des **PIERRES**, de la **CHARPENTE**
et de la **MINÉRALOGIE**.

Par **L. DUPIN**, Ing.eur.

Déposé.