NATURAL HISTORY MUSEUMS
Philip Ursprung

SAN ROCCO
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tanto possiede più di ben ciascuno
Dante, Purgatorio, XV, 55-56

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The number of books of copies to be produced is not fixed.
The action that produces books of copies is that of selection: the recognition of beauty (not just actual beauty, but potential beauty as well – the fragile, incomplete beauty of so many clumsy buildings of the past that are begging for completion and plenitude in the architecture of the future).
The production of books of copies relies on the existence of a collective knowledge (provisionally named Architecture). Books of copies depend on and, at the same time, redefine this collective knowledge.

SAN ROCCO
BOOK OF COPIES

Walter Benjamin, The Arcades Project

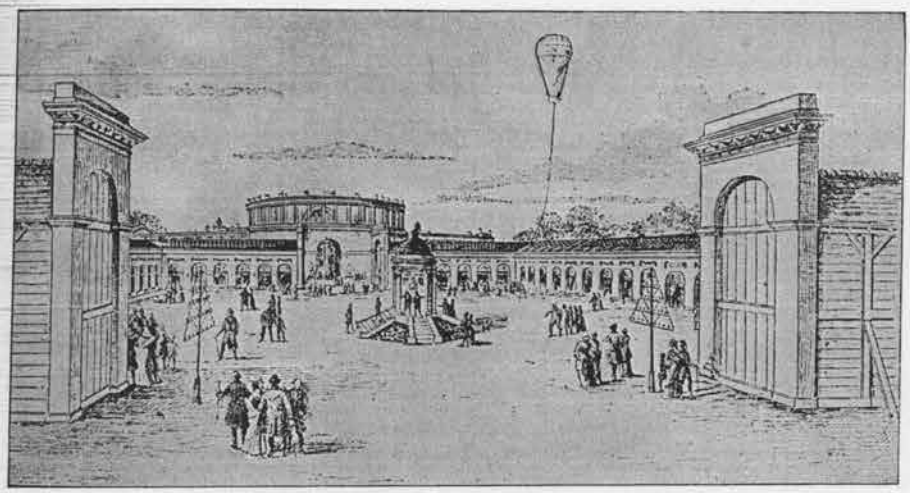
Shops in the Passage Véro-Dodat. Courtesy of the Musée Carnavalet, Paris. Photo copyright © Photothèque des Musées de la Ville de Paris. See A1a,4.

Years of reckless financial speculation under Louis XVIII. With the dram
signage of the *magasins de nouveautés,* art enters the service of the businessman

"After the Passage de Panoramas, which went back to the year 1800 and
had an established reputation in society, there was, by way of example, the
that was opened in 1826 by the butchers Véro and Dodat and that was pictur
the 1832 lithograph by Arnout. After 1800 we must go all the way to 1822 to
with a new arcade: it is between this date and 1834 that the majority of
singular passageways are constructed. The most important of them are grou

S. Giedion, Space, Time, Architecture [1963]

herent in French architecture. The urge to hollow out interior spaces to the greatest extent possible appears in French buildings from Romanesque times onward. It is visible in those daring Gothic choirs which seem to have been left almost too fragile to stand, and in the latest works of our own day. The audacity of French engineering is only a modified expression of this same trend.



One of the key images in the history of exhibitions.

142. First Industrial Exposition, Champ-de-Mars, Paris, 1798.

THE GREAT EXHIBITIONS

The exhibitions

In the second half of the nineteenth century, with industry undergoing its greatest expansion, industrial exhibitions afforded truly creative architecture its best opportunities. Toward the end of the century, when industry had come to be taken as a matter of course and was no longer looked upon as new and marvelous, they lost their creative force. New problems had emerged in the meantime which demanded new solutions.

Facilitated comparison of products

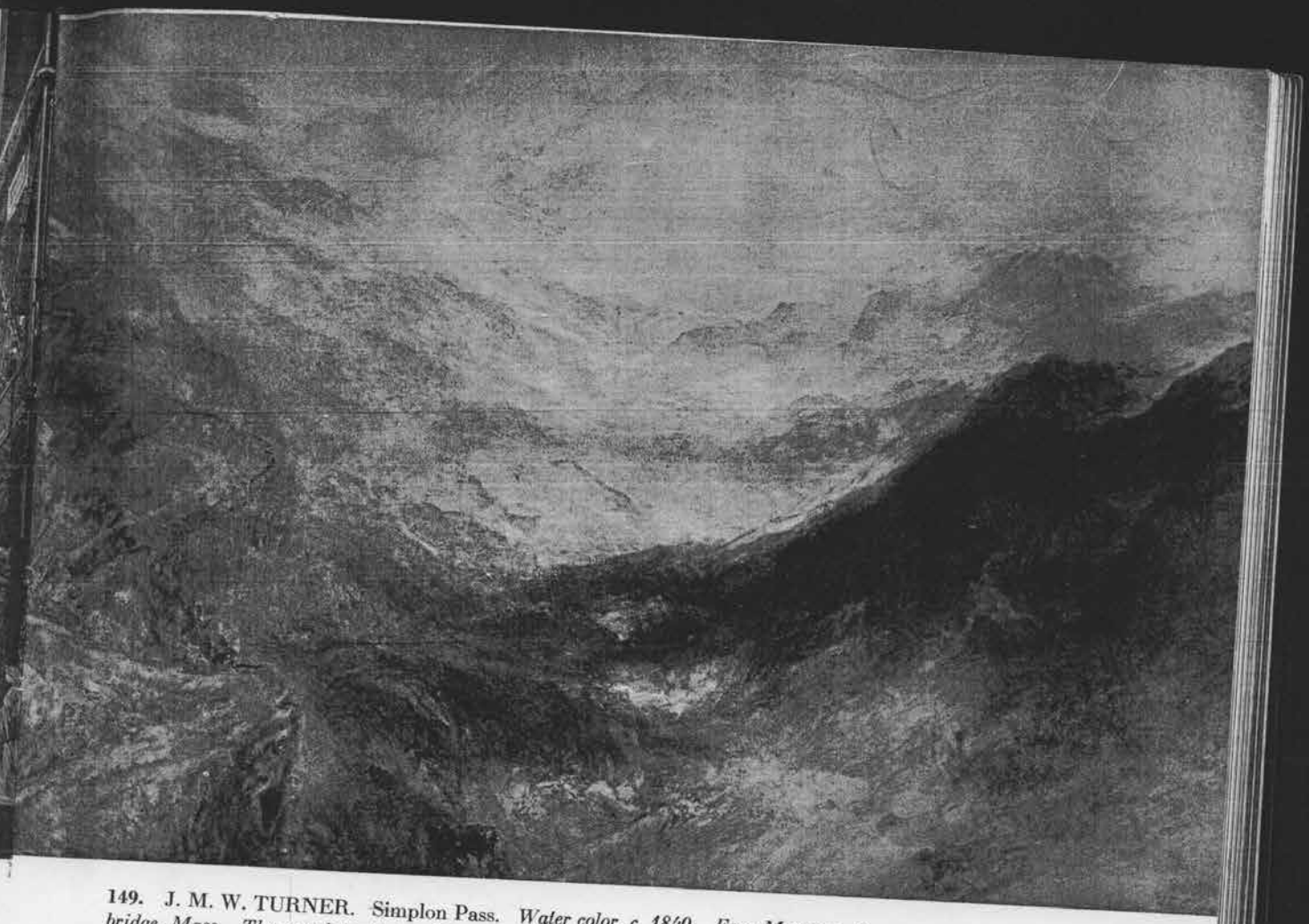
The exhibitions were born almost simultaneously with modern industry; they appeared at the time when the shift from handwork to machine production made itself obvious. Throughout that period people in many countries were working feverishly to invent new machines and new processes. The chief purpose

148. Crystal Palace, Interior. *"We see a delicate network of lines without any clue by means of which we might judge their distance from the eye, or the real size"* (*Lothar Bucher, 1851*).

tions. At first people were anxious not to commit themselves; finally new applications for exhibition space were made in such numbers that the area originally fixed upon proved too small. The exhibition consequently ended by showing numerous additions.

Scheme for the exhibition of 1855

Ground plan (*fig.* **151**): The Palais de l'Industrie was a rectangular structure with a high center aisle which was surrounded by a double row of galleries. The low side aisles were supported by numerous cast-iron pillars. The center aisle connected with one of those circular panoramas so popular at the time and with the twelve-hundred-meter Galerie des Machines which extended along the Seine. The Galerie des Machines (*fig.* **152**), in spite of the narrow barrel vault which seems to link it with Fontaine's gallery in the Palais d'Orléans, was the starting point for that succession of *halles des machines*



149. J. M. W. TURNER. Simplon Pass. *Water color, c. 1840. Fogg Museum, Cambridge, Mass. The unsubstantial and hovering effect of the Crystal Palace is achieved here through a humid atmosphere which dematerializes the landscape and dissolves it into infinity.*

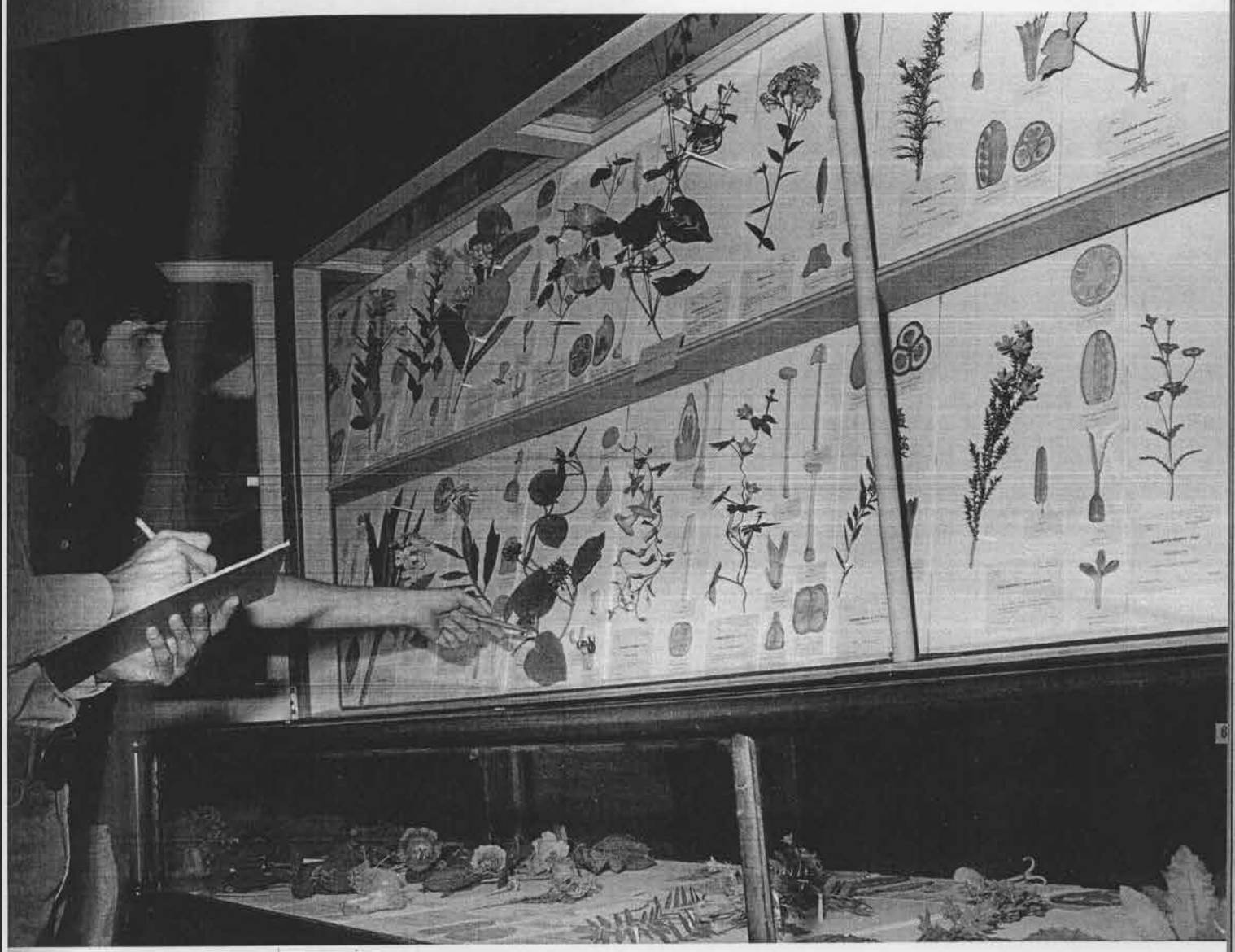
which produced the most daring solutions to the vaulting problem.

Widest vaulting of the period

Span: The Palais de l'Industrie had a span of forty-eight meters. This was the widest vaulting attempted in the period. It represents a great advance over what was achieved in the Crystal Palace, with its span of about twenty-two meters.[7] Wrought-iron lattice girders, partially hand-forged, were used. It was the first time they had been employed for vaulting. The enormous areas of glass introduced into the vaulting almost blinded contemporary spectators, who were unaccustomed to the amount of light that was admitted. The form of the vaulting recalls the manner in which great halls and staircases were covered during the first and second empires. Even

[7] Long before this, Gothic builders had attained a span of twenty-nine meters in the wooden vaulting of the Salone at Padua.

S. Giedion, Space, Time, Architecture



Harvard students Brad Jacoby and John Brown in 1976 examining specimens in the Ware Collection of Blaschka Glass Models of Plants.

names in several languages or by long descriptive terms in Latin. There was no standardization—only chaos.

In the eighteenth century a Swedish scientist named Carolus Linnaeus created a binomial system of nomenclature; each plant had two words in its name: one for the genus, the second for the species. Thus, the potato was to be called *Solanum tuberosum* because it belonged to the large genus *Solanum;* and, as it had a tuberous underground stem, the species was called *tuberosum.* Latin was the language of science at the time, and Linnaeus published in that language. Because Latin is a dead language and therefore not subject to change, botany has retained it as its official language. For this reason, the binomials—even the names given today to newly discovered species—are Latinized.

Now, by international agreement, all nomenclature of plants takes 1753—the year in which Linnaeus published his important work *Species Plantarum*—as its official starting point. Linnaeus did more than establish the binomial system of nomenclature: he created a herbarium of dried plant specimens—now preserved in

R. Evans Schultes, The Glass Flowers at Harvard 1992

oben:
Foto der Blossfeldt-Klasse
um 1920–1930, 13,5 x 8,5 cm
Der Schüler in der Bildmitte zeichnet von einem schräg aufgestellten Herbariumskasten ab. Auf dem Tisch am linken Bildrand sind Vintage-Prints von Karl Blossfeldt ausgebreitet.
HdK-Archiv, Berlin

Foto der Blossfeldt-Klasse
um 1920–1930, 12,7 x 17,8 cm
Die Schülerin im weißen Kittel fertigt gerade ein stark vergrößertes Gipsmodell von der Spitze eines Ahornzweigs, auf den der rechts neben ihr stehende Studienkollege deutet.
HdK-Archiv, Berlin

wechsel als veraltet angesehen. Die Schülerzahlen in den Klassen Homolkas sanken 1907 schlagartig auf ein Drittel im Vergleich zu den vorangegangenen Jahren, wobei die Schülerzahlen Blossfeldts schon vorher auf niedrigstem Niveau stagnierten.[30]

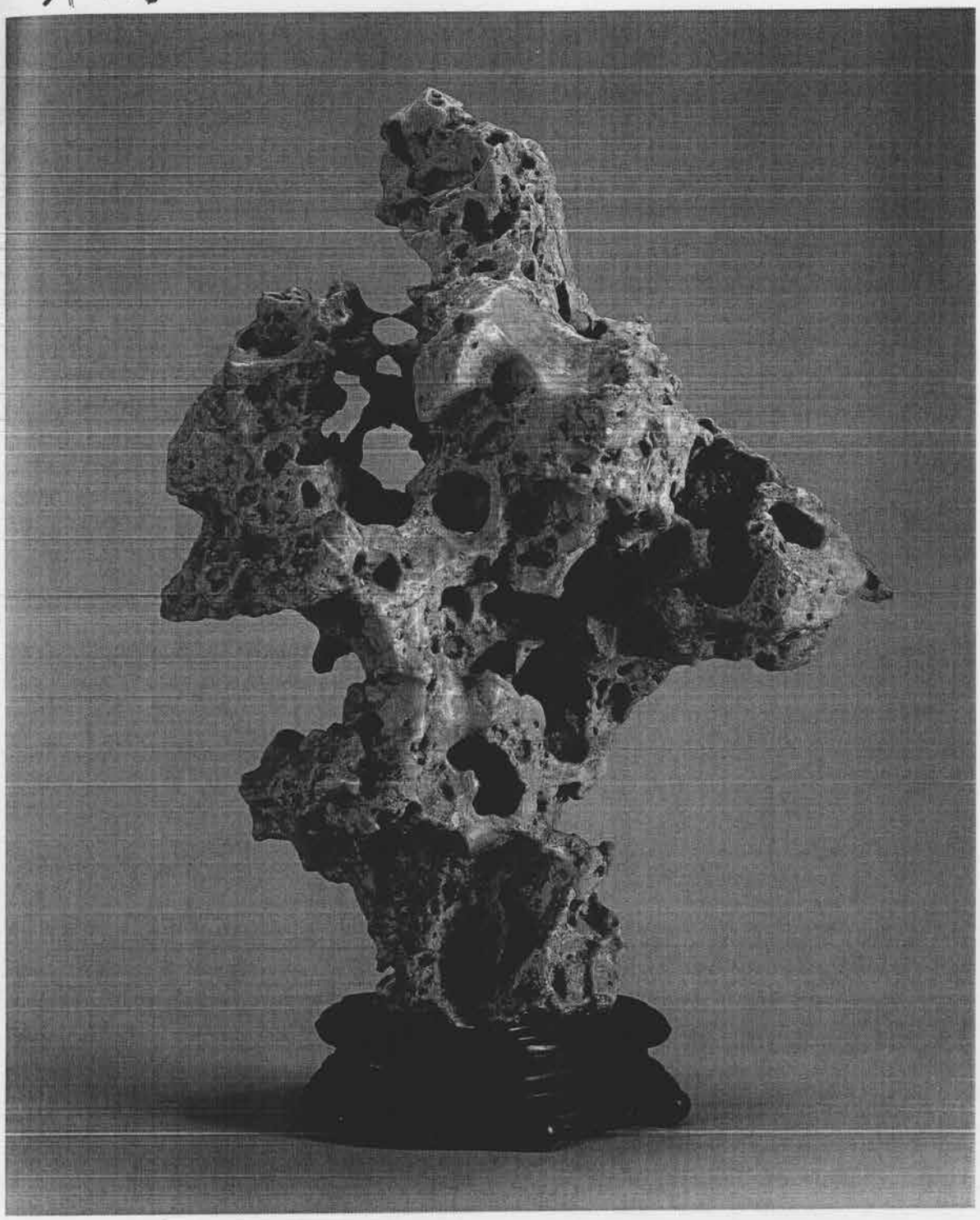
Blossfeldt war schon zu Zeiten von Ernst Ewald ein Außenseiter. Seinen Bitten um Änderungen im Lehrplan und eine bessere Positionierung seines Unterrichts wurde nur zögerlich entsprochen. Ab dem Schuljahr 1901/02 unterrichtete er dreimal wöchentlich eine Abendklassse im Pflanzenmodellieren und zusätzlich von April bis Juni einen Kompaktkurs mit 18 Wochenstunden. Bis zu seiner Emeritierung im Oktober 1930 sollte dies so bleiben.

Aufschlussreich ist ein Schreiben Bruno Pauls von 1912 an das Kultusministerium: „Der Unterricht des Bildhauers Blossfeldt im Pflanzenmodellieren läßt sich nur noch gezwungen in den Lehrplan der U. A. (Unterrichtsanstalt, Anm. d. Verf.) einfügen. Das künstlerische System des Herrn Blossfeldt beruht im Wesentlichen darin, nach einem eigenen Verfahren stilisierte Pflanzenpräparate herzustellen, die er dann kunstgewerblichen Arbeiten als Motiv zugrunde zu legen sich bestrebt. Diese fast wissenschaftlich zu nennende Methode, in den neunziger Jahren des vorigen Jahrhunderts aufgekommen, gilt nach unseren heutigen Anschauungen als völlig überwunden. [...] Jene Technik würde vielmehr für ein botanisches Institut von höchstem Werte sein. Die unternommenen Versuche Herrn Blossfeldt zu einer für die U.A. ersprießlichen Art der Tätigkeit zu gewinnen, müssen als mißglückt bezeichnet werden."[31]

Zwei wohl in den zwanziger Jahren entstandene Fotografien aus der Klasse für Pflanzenmodellieren geben einen Eindruck von Blossfeldts statischen Lehrprinzipien.[32] So zeichnet ein in seine Arbeit vertiefter Schüler getrocknete Pflanzen ab, und zwar von einem Herbariumskasten, wie ihn schon Moritz Meurer in Rom verwendet hatte und wie sie auch in der Sammlung der HdK erhalten sind.[33] Bemerkenswert sind vor allem die auf beiden Bildern erkennbaren Blossfeldt-Fotos, von denen sowohl abgezeichnet als

Angela Lammert, Konstruktionen v. Natur. – 31
Von Blossfeldt zu Virtualität, 2001

Worlds within Worlds, The R. Rosenblum Collection, 1996



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scholar's study, probably because they were considered "outdoor materials." Those examples selected for display indoors were relatively small (compared to garden rocks) and included only a limited number of perforations; in addition, they were typically cleaned and polished to differentiate them from their garden cousins, and perhaps to make them resemble marble. With their love of double entendres, the literati of the Ming and Qing no doubt took occasional delight in presenting studio rocks that mirrored the color, shape, and foraminous (or perforated) structure of Taihu garden rocks, but that

Nature ~ Culture

Welten Harmonie, Die Kunstkammer u. d. Ordnung der Wissen. 2000

...ten verschiedene deutsche Fürsten eigene höfische Werk-...ätten. Sie dienten nicht nur zur Deckung des eigenen ...edarfs an Steinarbeiten, sondern auch dazu, dem Vorkom-...en von wertvollen Steinen im eigenen Land repräsentativen ...usdruck zu verleihen. Als fürstliche Kunstkammerstücke ...erwiesen die geschnittenen Steine ganz unmittelbar auf die ...erbindung des Makrokosmos mit dem Mikrokosmos, weil ...e sich in ihrer äußeren Erscheinung sowohl als Schöpfun-...en der Natur als auch des Menschen zu erkennen gaben.

...n der Vorliebe der frühen Neuzeit für bunte, gemusterte Stei-...e spiegelt sich die bereits angesprochene Vorstellung von ...er den Mineralien innewohnenden Lebenskraft, die nach ...amaliger Auffassung in einer Wechselwirkung mit den Kräf-...en des Makrokosmos stand. Alle in der Natur vorkommen-...en Strukturen durften demnach als Abbilder, Spuren oder Zeichen anderer Einheiten als derjenigen gedeutet werden, ...er sie selbst angehörten. So erkannte man in den meist ...geschnittenen Oberflächen von Steinen unter anderem Landschaften, Wolken, Gewässer, Ruinen, Feuer und Rauch, Himmelskörper und eine zahllose Vielfalt von figürlichen Erscheinungen. Die durch den glatten Schnitt mehr oder weniger zufällig ent-deckten Bilder wurden häufig zu einer geometrisch regelmäßigen Platte zugeschnitten, gerahmt und auf diese Weise als Tafelbilder definiert. Manche der in den Sammlungen aufbewahrten Steine mit naturgeschaffenen Bildern erschienen als graphische Abbildungen in Büchern, so z. B. in Athanasius Kirchers „Die unterirdische Welt". Die Darstellungen zeigen häufig so erstaunlich klare Zufallsfigu-...ren, daß das „Nachhelfen" des Zeichners sowie des Stechers allzu offensichtlich ist. Eine weitere Stufe der menschlichen Interpretationsfähigkeit war erreicht, wenn die Steinstrukturen als Landschaftskulisse gedeutet wurden, denen die Hand eines Malers – sozusagen als Ergänzungen – figürliche Sze-...nen hinzufügte. Noch wirkungsvoller als bei den geschnitte-...nen Steinen verkörpern diese Arbeiten eine sinnfällige Syn-...these zwischen Makrokosmos und Mikrokosmos: Die Natur des Steins bildet den Makrokosmos ab und ist zugleich

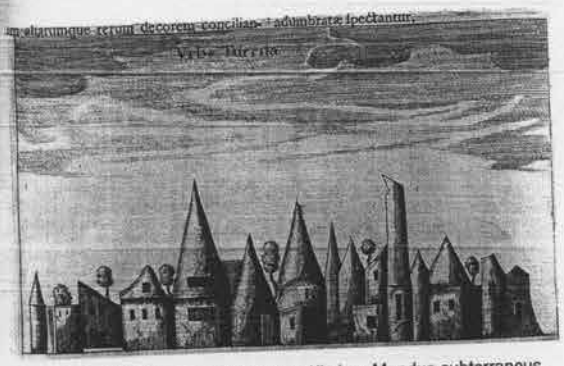


Abb. 18: Zufallsbilder, aus Athanasius Kircher, Mundus subterraneus, 1664/65, (Herzog Anton Ulrich-Museum, Kupferstichkabinett)

Kat.-Nr. 138

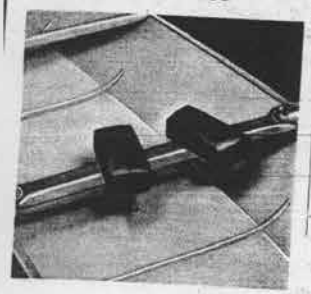
Matrix für die vom Maler einzufügende Darstellung, die allein schon aufgrund ihres menschlichen Ursprungs nur mikrokosmischer Natur sein kann. Aus dieser Denkweise ergibt sich die Schlußfolgerung, daß bei der Entstehung der Steinstruktur die gemalte Szene bereits mitbedacht gewesen sein mußte. Sie wurde gleichsam freigehalten, um dem Menschen die Möglichkeit zu geben, sich mit der Natur auf schöpferische Weise zu verbinden.

Bevor sich die Erkenntnis durchzusetzen begann, daß es sich bei den Fossilien um versteinerte Lebewesen handelt, wurden diese den Steinen mit Zufallsbildern und den sogenannten Figurensteinen, Steinen mit einer zufällig entstandenen, abbildenden Gestalt, zugeordnet. Denn laut den Erklärungen der Naturmagie zeugten alle diese Mineralien gleichermaßen von den geheimnisvollen, bildnerischen Kräften, die in den Steinen wirksam werden. Von Interesse waren zunächst all jene Versteinerungen, die man auch als lebende Pflanzen oder Tiere kannte. Nach den Sammlungsinventaren zu urteilen, scheinen jedoch die botanisch oder zoologisch nicht bestimmbaren Formen eine größere Attraktivität gehabt zu haben als jene, da sie in vielen Kunstkammerinventaren – sozusagen als „Leitfossilien" der Steinsammlungen – nachweisbar sind. Unter diesen verbreiteten diejenigen eine besondere Faszination, deren Gestalt einfachen geometrischen Körpern glich, so daß man sie teilweise für Gegenstände technischer Art hielt und auch dementsprechend benannte. Hingewiesen werden kann beispielsweise auf die Belemniten (Pfeilsteine). Andere Fossilien wurden für steinerne Ausformungen bzw. Versteinerungen von bestimmten Lebewesen oder Teilen von Lebewesen gehalten, denen sie zufälligerweise ihrer Form nach ähnelten, wie z. B. die Fungi-

market. Costs about $50-$75 more than other makes but workmanship is far superior. It's well worth the price if you intend to use the boat heavily. Very durable; I got mine at a discount after it had been blown down a wooded hill during a tornado and it was fine after I pounded out the dents. Can be equipped with a sail which you can buy complete at considerable expense or buy the basic parts and make the rest yourself. Catalog also lists rowboats and sailboats, with which I've had no experience. Grumman sends along a complete list of franchised dealers in your states; it's wise to check with several before buying as reductions from the list price are not uncommon.

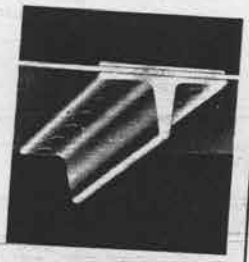
[Reviewed by Phil Schrodt]

Grumman Boats
Grumman Allied Industries, Inc.
General Sales Office
Marathon, N.Y. 13803



GRUMMAN CARRYING YOKE — Clamps to gunwales over center thwart. Two cushioned pads, scientifically spaced and positioned to rest easily on shoulders, make portaging light and comfortable. Catalog #905

'RAY RAIL All Grumman square-stern canoe odels and the Sportcanoe™ are equipped with ientifically designed spray rails for driest oper- on with outboards or sailing. All Grumman ay rails are full-length!



CANOE KEEL Heavy extrusion, heat-treated, full-length keel and keelson sandwich type construction. Neoprene seal with close-spaced rivets on ⅝" centers. Built-in clips for mast step and floorboards. Easy installation of accessories and positive watertight seal.

Build it all winter. Put it in the stream when the ice breaks up. Paddle to the sea.

—SB

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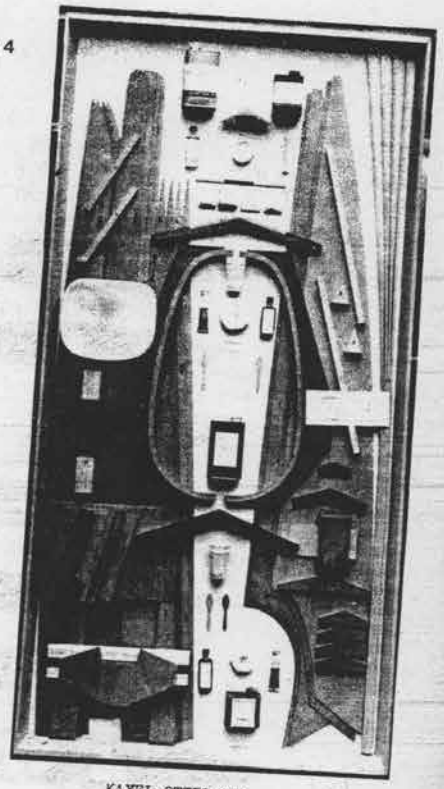

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Absolutely Complete

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KAYEL-OTTER CANADIAN

KAYEL-OTTER SPORTS SINGLE
A 33 pound beauty.

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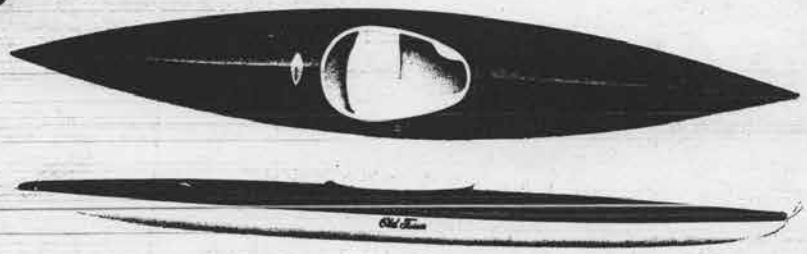
cial Model Canoe. Wood-canvas ith reinforced plastic in place of bout same weight. Stock color:

Depth	Wt.	Packed Wt.	Price
2"	70 lbs.	100 lbs.	$495.00
2"	85 lbs.	110 lbs.	$525.00
3¼"	100 lbs.	135 lbs.	$565.00



Price
$195.00

The Whole Earth catalog
Access to tools, 1971 p. 283

B.M. Stafford, Devices of Wonder, 2001

Terpak

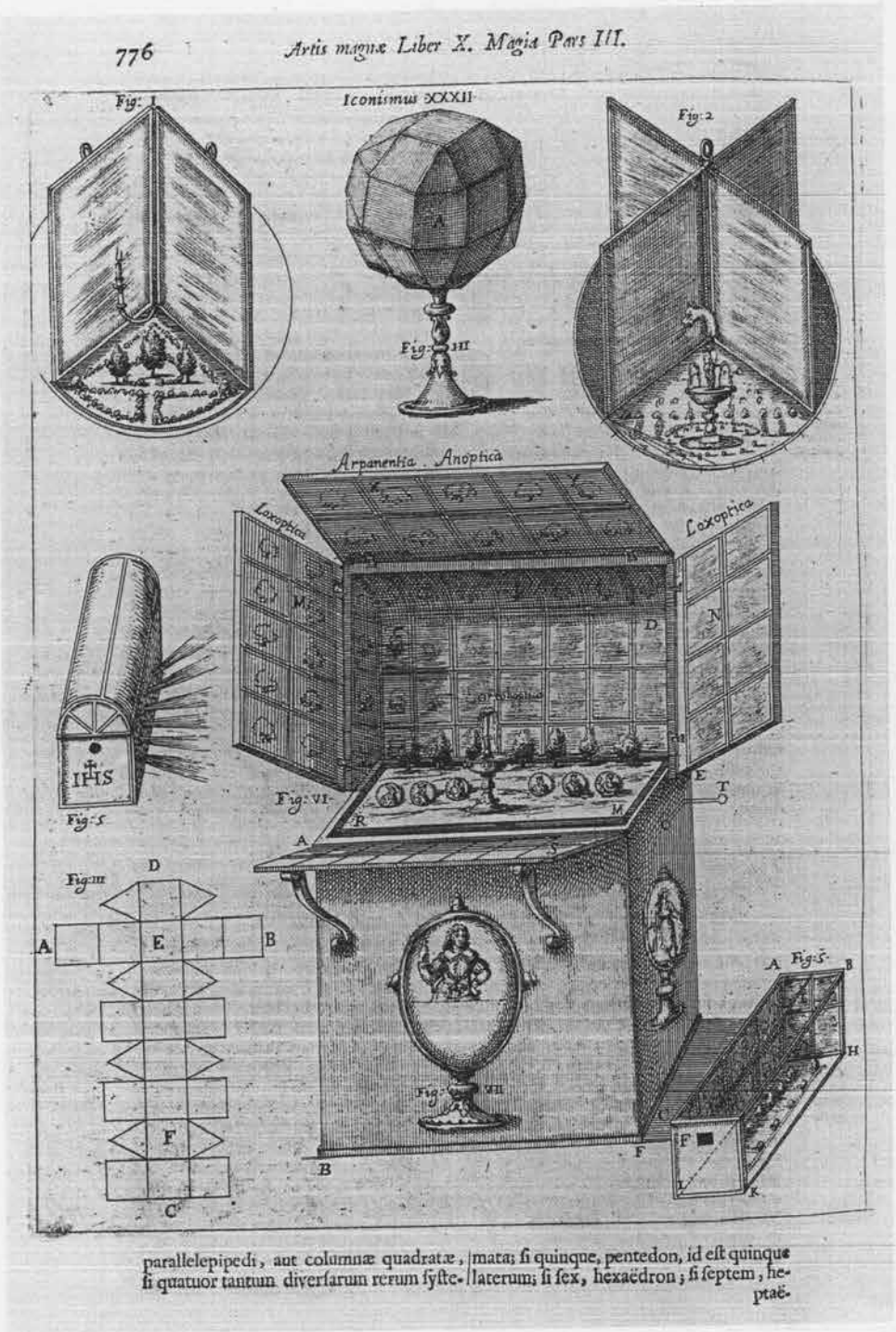
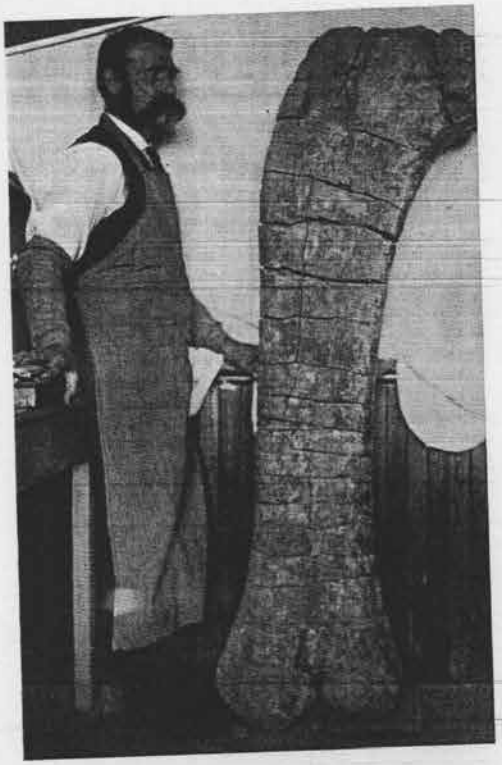


Fig. 90. ***Theatrum catoptricum***
1671, engraving, 27.6 x 20 cm (10⅞ x 7⅞ in.)
From Athanasius Kircher, *Ars Magna Lucis et Umbrae . . .*,
2d ed. (Amsterdam: Apud Joannem Janssonium à
Waesberge & haeredes Elizaei Weyerstraet, 1671), 776

Left: Throughout the 84 years of his life, Dr. William J. Holland was pastor of Bellefield Presbyterian Church, naturalist for the U.S. Eclipse Expedition to Japan, Chancellor of the University of Pittsburgh, Director of Carnegie Museum of Natural History, and an authority on natural history, world law and entomology. Here Holland holds a page from the revised edition of his publication, The Butterfly Book. *Courtesy of Carnegie Library of Pittsburgh.*



↑ Curators →

***Below:** Carnegie Museum Vertebrate Fossil Preparation Lab, 1903. In this early photo, staff members are removing dinosaur bones from matrix rock. John Bell Hatcher, then curator of Paleontology and Osteology, is shown seated to the far right.* ***Right:** William H. Reed, credited with discovering the famous dinosaur quarry at Como Bluff, Wyoming, along with O.C. Marsh. An 1898* New York Journal *headline announcing that Reed had found the "Most Colossal Animal Ever on Earth..." spurred Andrew Carnegie's interest in dinosaurs. Courtesy of American Heritage Center, University of Wyoming.*

Carnegie's Dinosaurs, by H. McGinnis 1982

Top: Reed, working with fossils prepared for shipment from Como Bluff, Wyoming. The dinosaur fossils, after excavation had been wrapped in burlap and plaster and numbered for identification when they arrived in Pittsburgh. Courtesy of American Heritage Center, University of Wyoming. ***Bottom:*** *Removing fossil bone. An early Section of Vertebrate Fossils staff member painstakingly removes fossil bone from a block of rock.*

Page 15: *Digging up* Diplodocus. *During his visit to "Camp Carnegie" in August, 1899, Dr. Holland examined the* Diplodocus *bones exposed over the past month's work. Holland (foreground) and Dr. Wortman are pictured here uncovering new portions of the* Diplodocus *skeleton.*

(As a boy I saw
the sites in South Dakota)

H. McGinnis, Carnegie's Dinosaurs, 1982


C. Oldenburg Store Days 1962
Bungalow
MELO

Werner Hofmann, Zauber der Medusa, 1987

Georg Hoefnagel, Groteskenblatt mit Fledermaus, 1595 (Kat. VIII. 20 B)

Manierismus a)

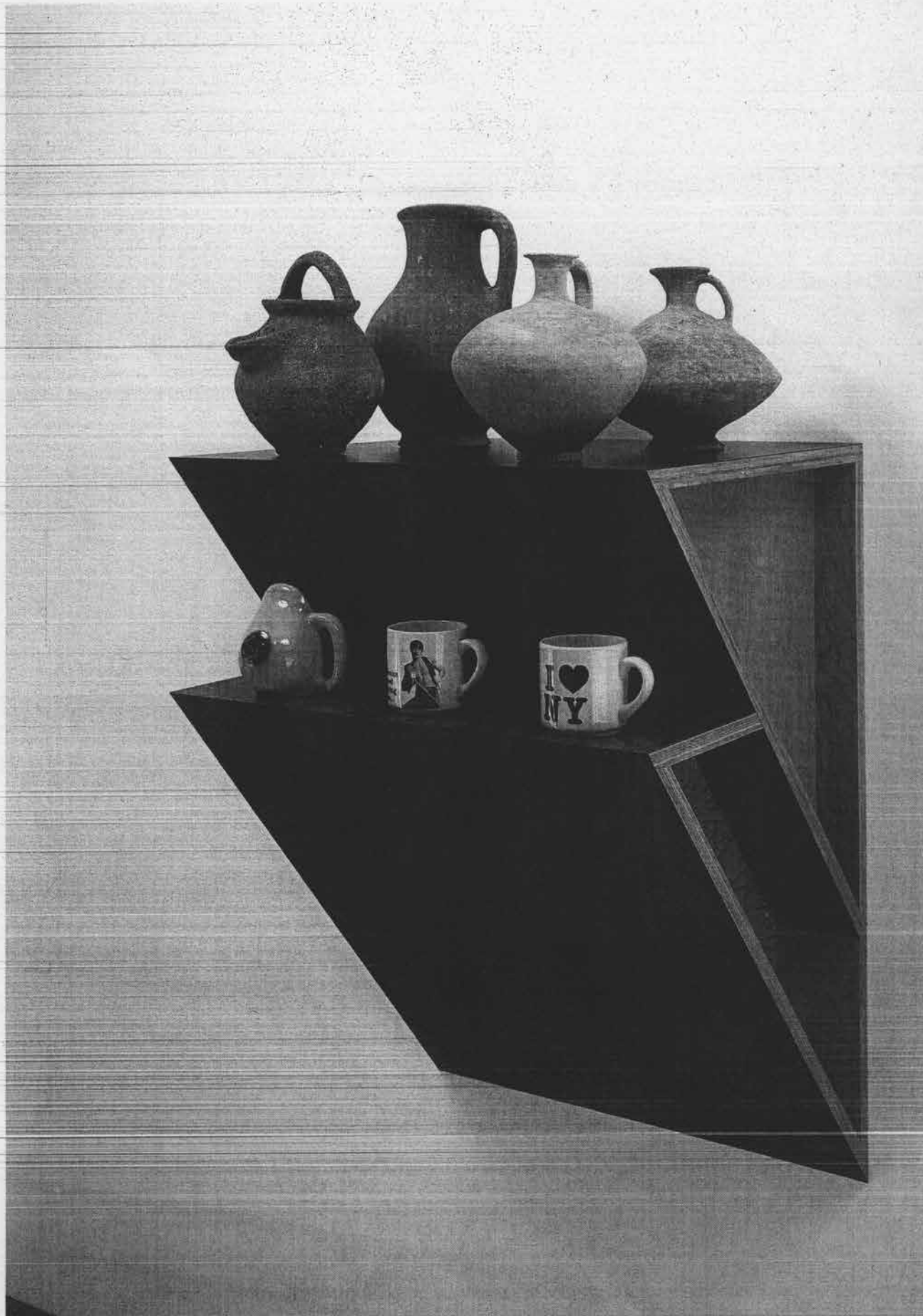
horizontal

Concz Welcz, Handstein mit Darstellung der Caritas, Mitte 16. Jahrhundert (Kat. VIII. 75)

Horn of Plenty, Stedelijk Museum, 1987

HAIM STEINBACH

Untitled (jugs, mugs) no 1 1987



The book pedestals.

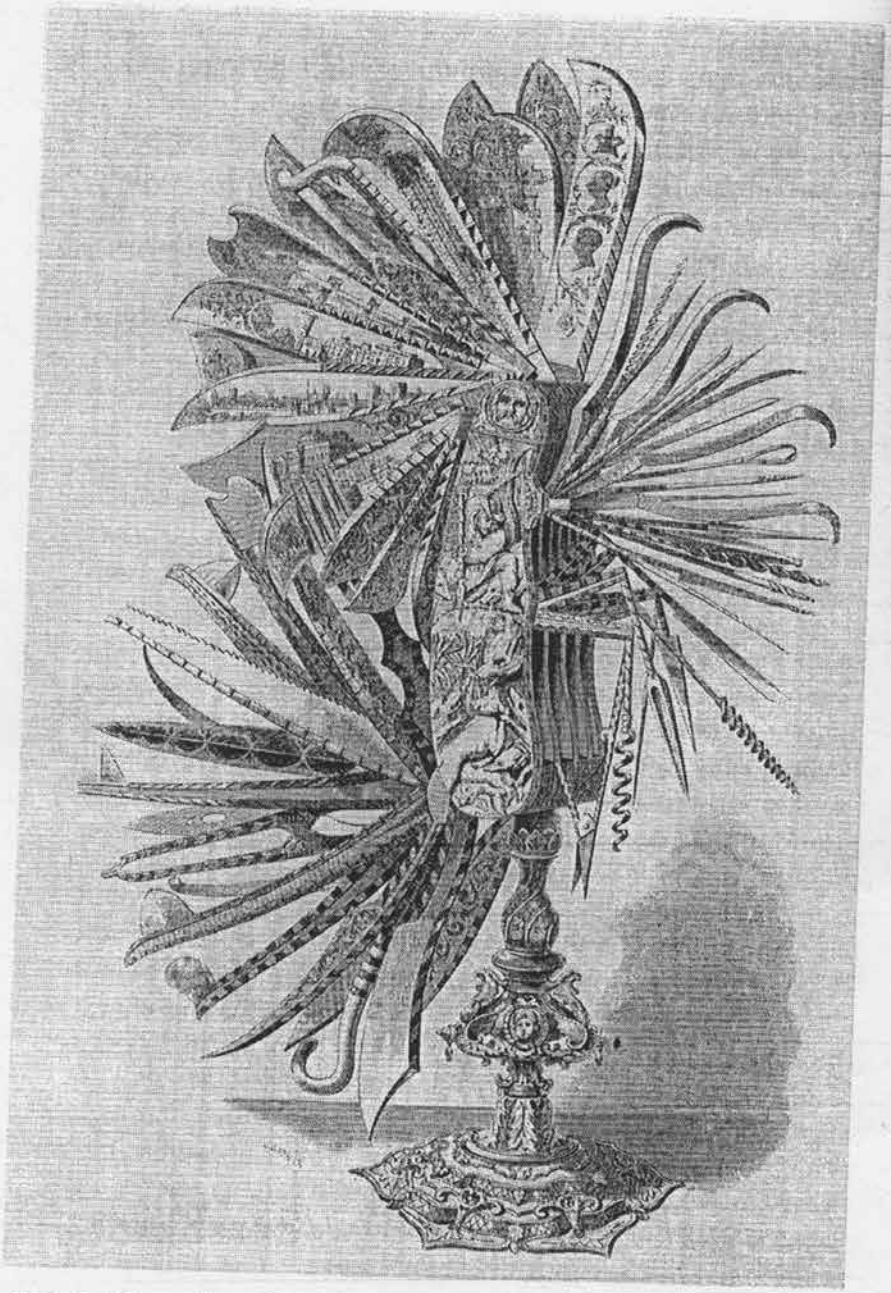
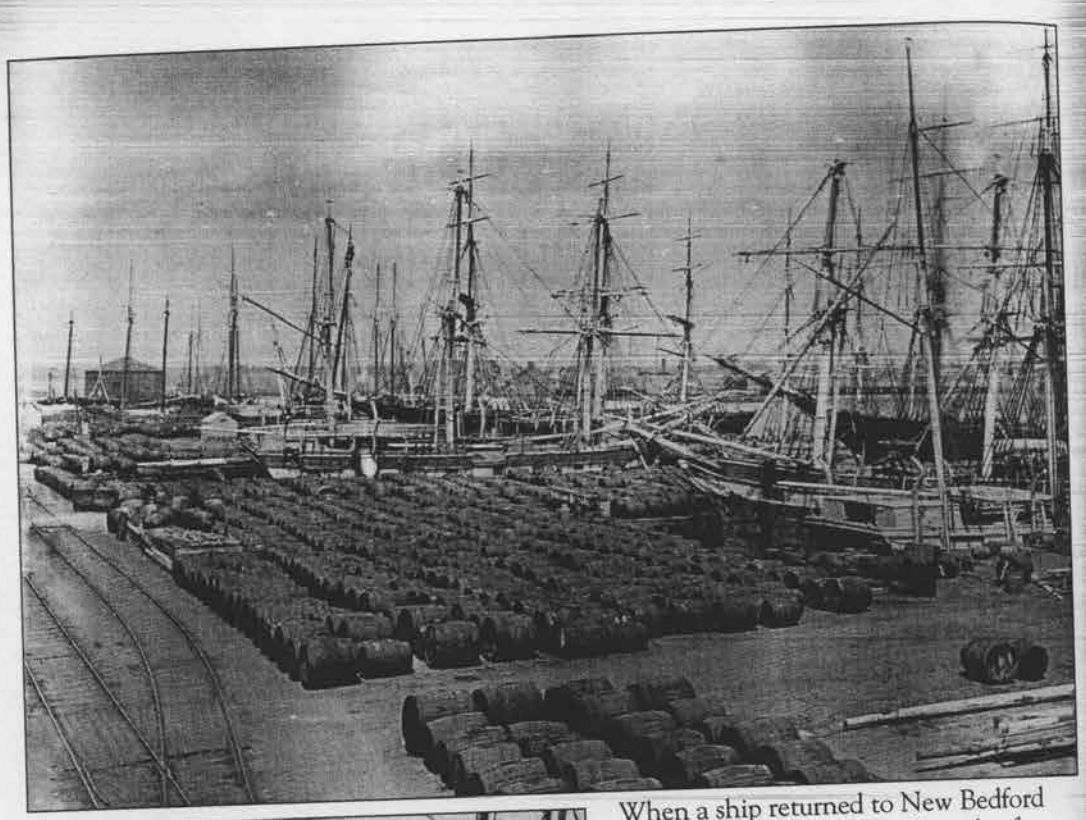
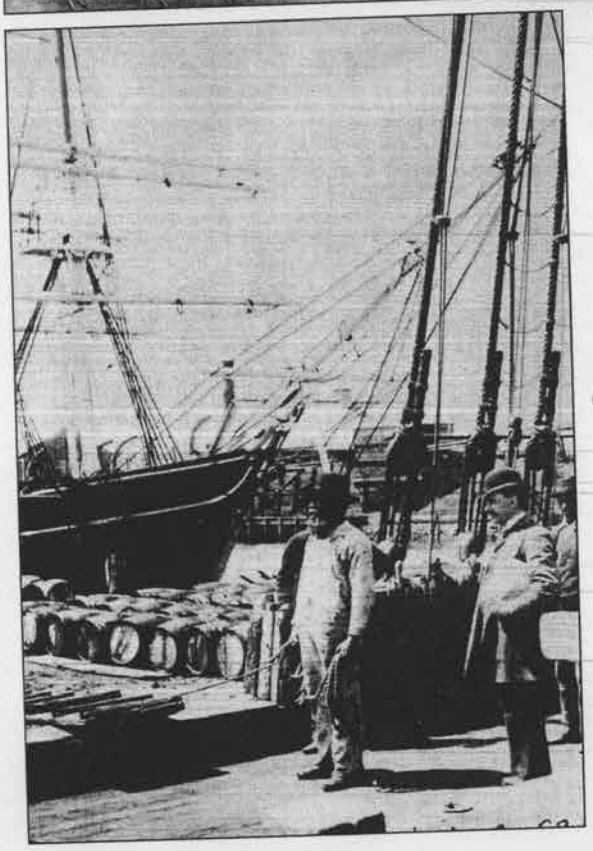


FIG. 5. The useless object (*Catalogue*).

Thomas Richards, The Commodity Culture of Victorian England, 1990



When a ship returned to New Bedford after whaling, hundreds of barrels of whale oil would be unloaded and stored on the pier until brought to a warehouse.



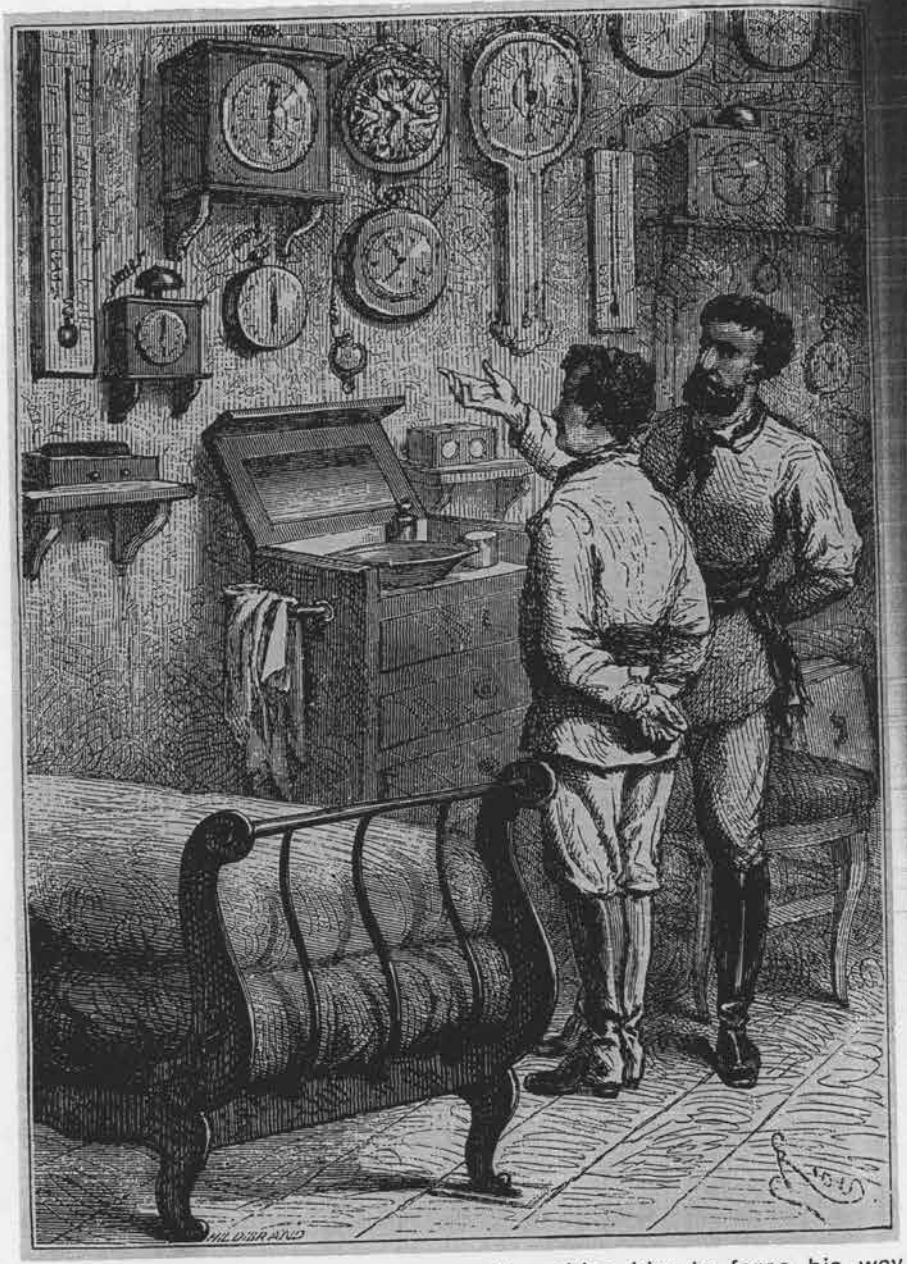
These men were coopers who created a wood barrel out of staves and metal bands. Coopering is now almost a lost art, but a century ago it was a well-known industry in New Bedford.

Whaling industry as equivalent to oil industry of the 20th century

Images of America, New Bedford, 1997

K. Paul Klee, The Machine, MOMA 1968

Measuring the expedition...



Alphonse M.A. de Neuville
French, 1835—1885
Captain Nemo's Bedchamber on the "Nautilus"
(from Jules Verne's *Voyages Extraordinaires: Vingt Mille Lieues sous les Mers)*
Paris, 1870
Woodcut, 5×3½"
Private collection, Stockholm

Jules Verne represents an optimism based on unlimited confidence in science and the scientist, during the peak of the nineteenth century's belief in progress and industry. He did not see the despair that mechanization and industrialization were bringing to a large part of Europe's population in his day; and he dismissed the Commune as "a trifle." His many books attracted an enormous public that gladly mingled fact with fiction.

Captain Nemo's "Nautilus" ran on electricity. "There is a powerful agent," he said, "which is the soul of my mechanical devices. That agent is electricity." Nemo believed in electricity with the same conviction that Lenin was later to hold; his concern, however, was not with society, but exclusively with himself and his ship. He is the incarnation of the lone technician whose genius dominates nature and enables him to force his way through the world.

Verne's books are filled with these mastermen, the epitome of the century's engineers. His romantic science-fiction was based on a conception of science that believed the universe could be mapped out in mechanical terms, and that its structure was built upon "laws" that would last forever. His supermen heroes make use of these laws to attain mastery, just as the ruling classes in his day laid down supposedly natural laws to govern society. It never seems to have occurred to them that their laws were empirical and inevitably reflect the imperfections of the minds that formulated them. In any event, the instrument room of the "Nautilus" as depicted by Neuville does not inspire great confidence!

158 Robert Smithson, Nonsite (Oberhausen) 1968

From: Radical Nature, Barbican Art Gallery 2009

Portable Orchard, 1972
Orange trees, wooden pots, soil and grow lights
Dimensions variable

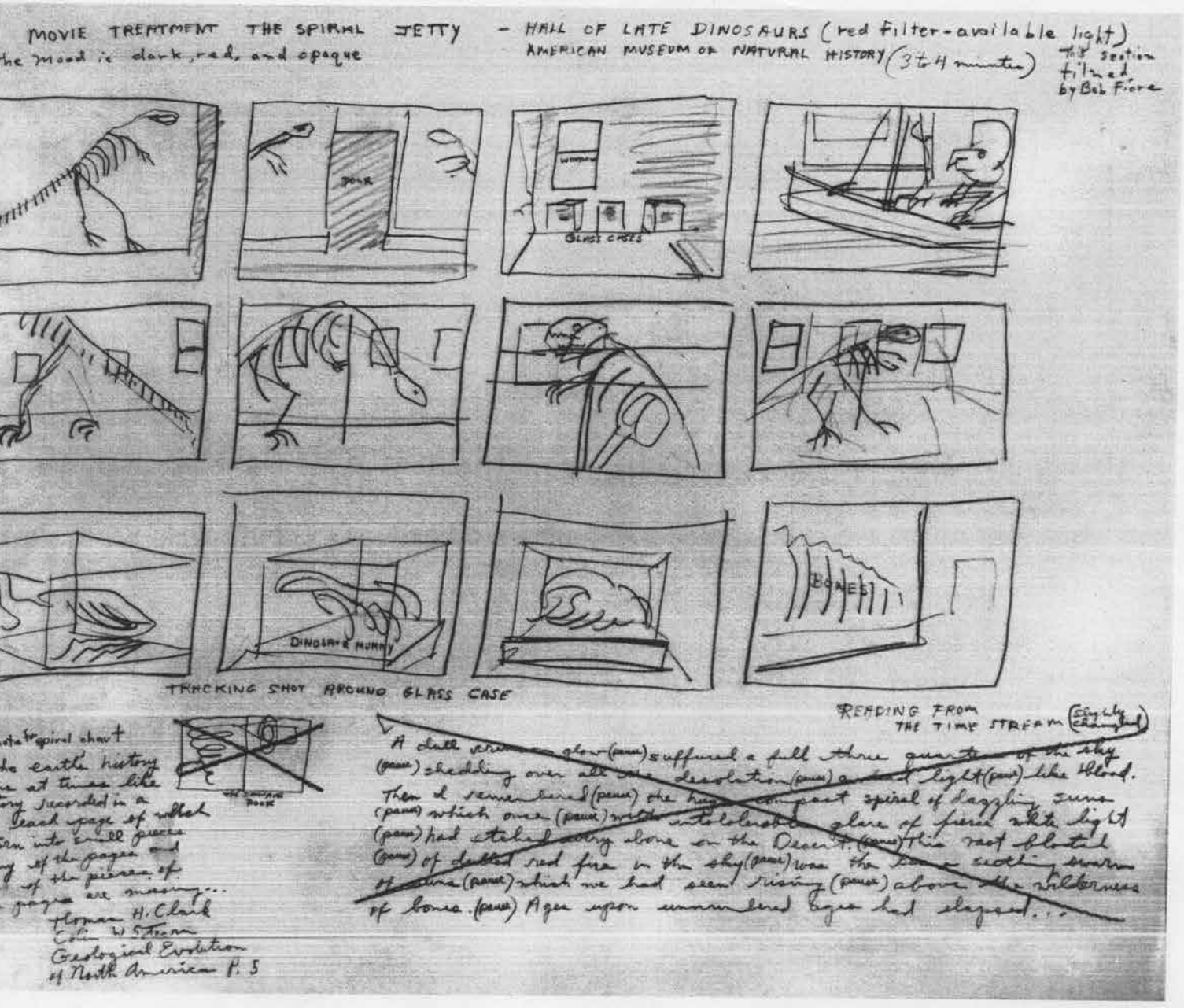
the *Spiral Jetty* about restoring a sense of scale to our
otions?

RS: Well, that might be an aspect of it but I can't really say that's part of the intention. I mean in a sense language got me to that point but I don't know whether that will formulate any kind of new language situation. There's no way to control that. Language to me is just out of control, and there's no way of really stabilizing it. Hopefully the *Jetty* will excite all these different reservoirs within each individual. I can't really present anything that will convince anybody, I mean, there's no program that I have to offer, there's no thing that I'm searching for. There's no point in me saying that I'm trying to get at reality.

ould you comment on the use of the Great Salt Lake as a
, which comes across in the film?

RS: There is a reflective aspect of the lake which involves actual light reflection and that light tends to be rather fugitive. The film uses the sun as it burns through the *Jetty*. Since the sun is what keeps the Earth going, it attracts our attention. I used a stock shot of the sun at the beginning of my film as what I would call entropic footage. Valéry once wrote, "Sun, sun! . . . Brilliant error! You sun, who masks death."

eatment: Hall of Late
s, 1970



Robert Smithson, Spiral Jetty, ed. by L. Cooke + K. Kelly 2005

Mark Dion, Selection from the Endangered Species Library, 1989

(At the end of the Cold War)

Edward Tufte, Visual Explanations, 1997

this particular display should not be taken quite at face value—you had to be there:

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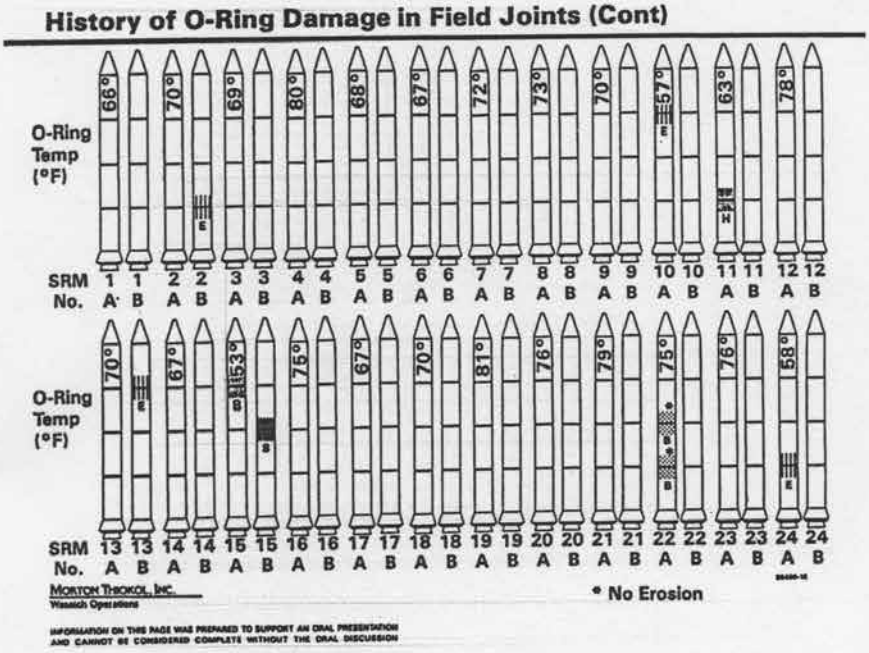
Such defensive formalisms should provoke rambunctious skepticism: they suggest a corporate distrust both of the chartmaker and of any viewers of the chart.[40] In this case, the graph is documented in reports, hearing transcripts, and archives of the shuttle commission.

The second chart in the sequence is most significant. Shown below are the O-ring experiences of all 24 previous shuttle launches, with 48 little rockets representing the 24 flight-pairs:



Rockets marked with the damage code show the seven flights with O-ring problems. Launch temperature is given for each pair of rockets. Like the data matrix we saw earlier, this display contains *all* the information necessary to diagnose the relationship between temperature and damage, if we could only see it.[41] The poor design makes it impossible to learn what was going on. In particular:

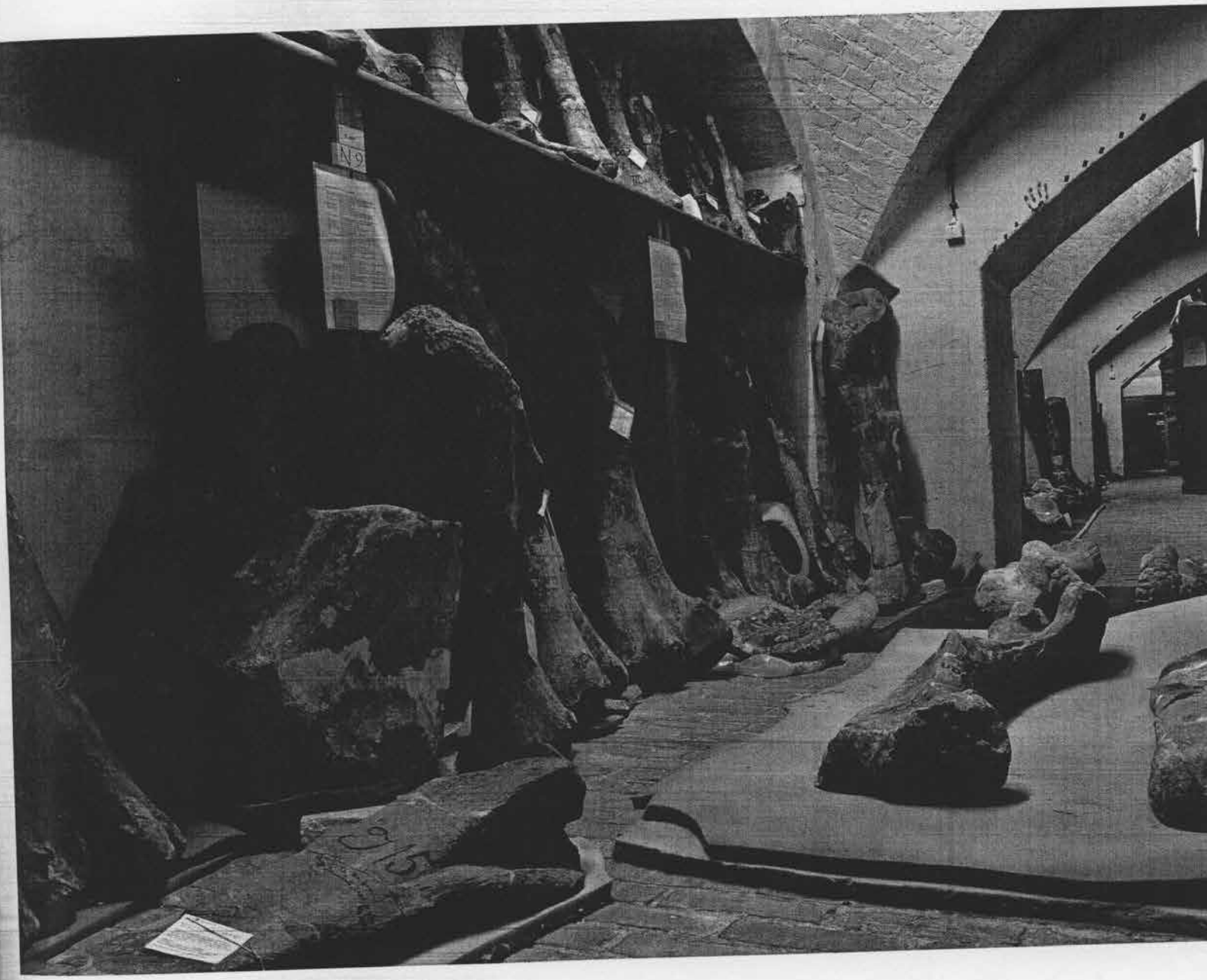
The Disappearing Legend At the hearings, these charts were presented by means of the dreaded overhead projector, which shows one image after another like a slide projector, making it difficult to compare and link images. When the first chart (the nine little rockets) goes away, the visual code calibrating O-ring damage also vanishes. Thus viewers need to memorize the code in order to assess the severity and type of damage sustained by each rocket in the 48-rocket chart.

[40] This caveat, which also appeared on Thiokol's final approval of the Challenger launch (reproduced here with the epigraphs on page 26), was discussed in hearings on Challenger by the House Committee on Science and Technology: "U. Edwin Garrison, President of the Aerospace Group at Thiokol, testified that the caveat at the bottom of the paper in no way 'insinuates . . . that the document doesn't mean what it says.'" *Investigation of the Challenger Accident*, pp. 228–229, note 80.

PCSSCA, volume v, p. 896.

[41] This chart shows the rocket pair SRM 4A, SRM 4B at 80°F, as having *undamaged* O-rings. In fact, those rocket casings were lost at sea and their O-ring history is unknown.

Museum of Natural History, Berlin



↑
Dinosauriergebeine im Knochenkeller
Dinosaur remains in the bone cellar

←
Arbeitsplatz in der alten Wurmsammlung
Workspace in the former worm collection

Robert Smithson, ca. 2004

Floating Island to Travel Around Manhattan Island, 1970

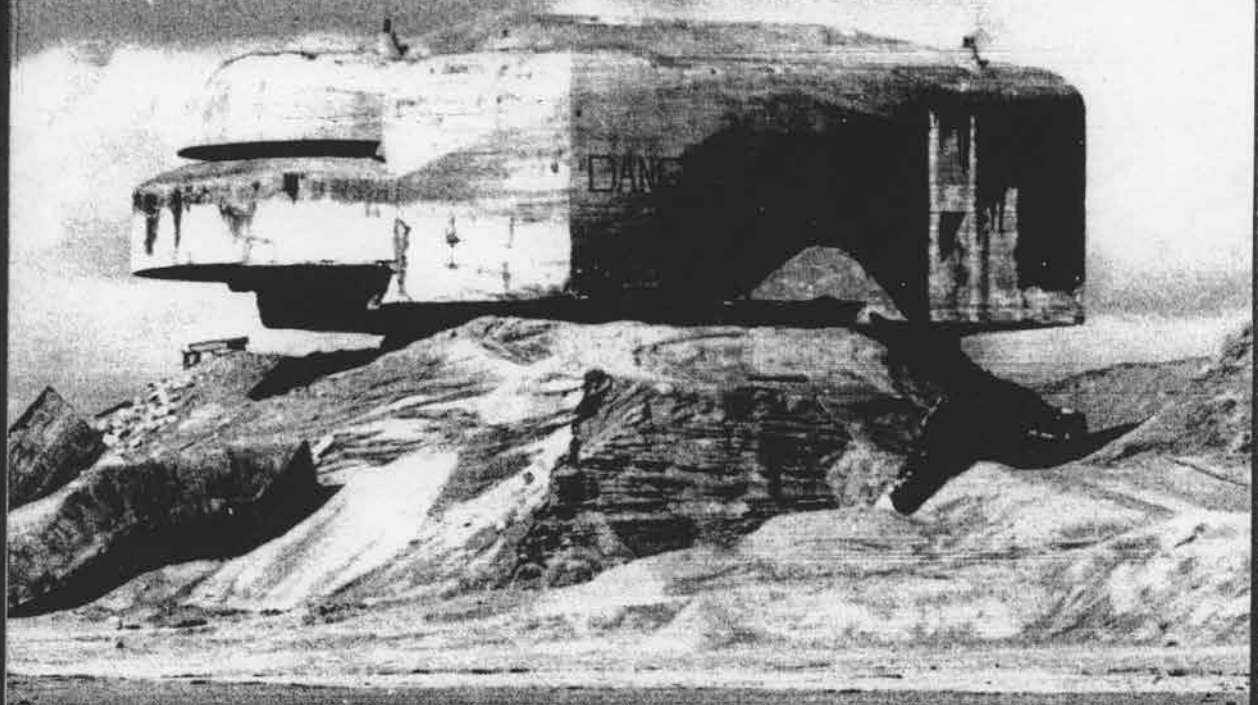
Opposite:
Island Project, 1970

Entropic Landscape, 1970


Die kleine
Tatsache
Siedlung
Lagerhäuser
Paletten
Pflock
Metallisch
Durchlässigkeit
Atmung
Lüftung
Steinbruch
Felsboden
Hölzern
Wirklich
Farbe

Bunker
Archéologie

PAUL VIRILIO

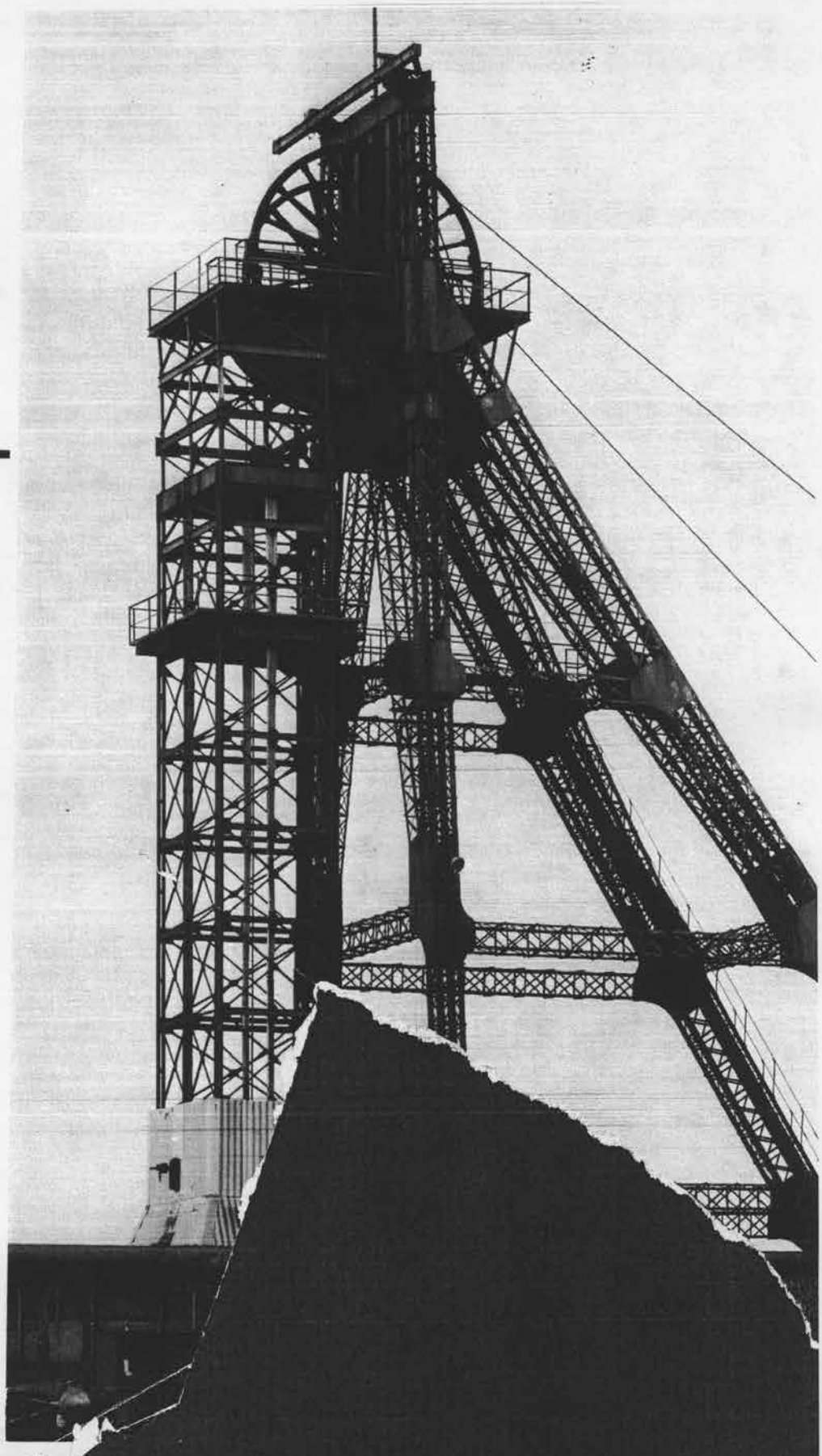


LES ÉDITIONS DU DEMI-CERCLE

»Industriearchitektur des 19. Jah

Bernhard und Hilla Becher

Die Architektur der Förder- und Wassertürme



Heinrich Schönberg
und Jan Werth:
Die
technische Entwicklung

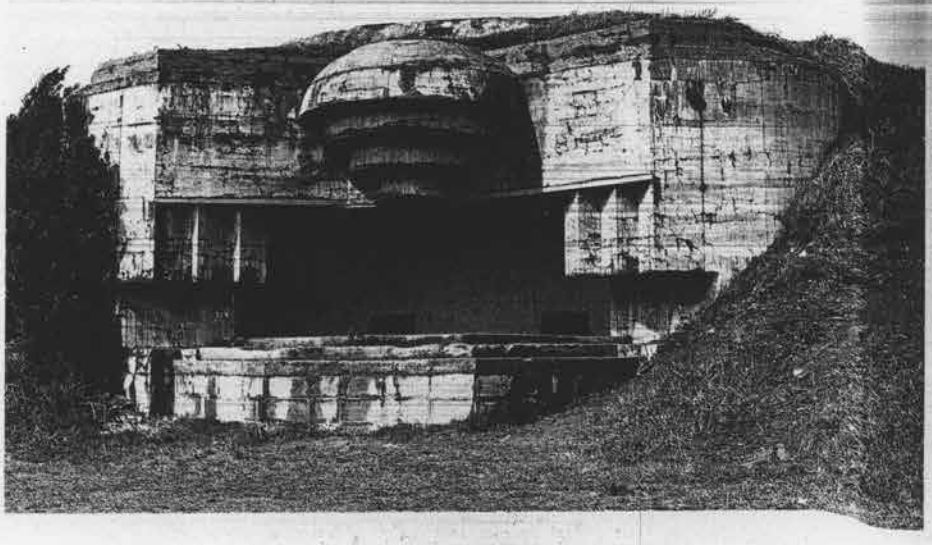
»Neunzehntes Jahrhundert«
Forschungsunternehmen
der Fritz Thyssen Stiftung

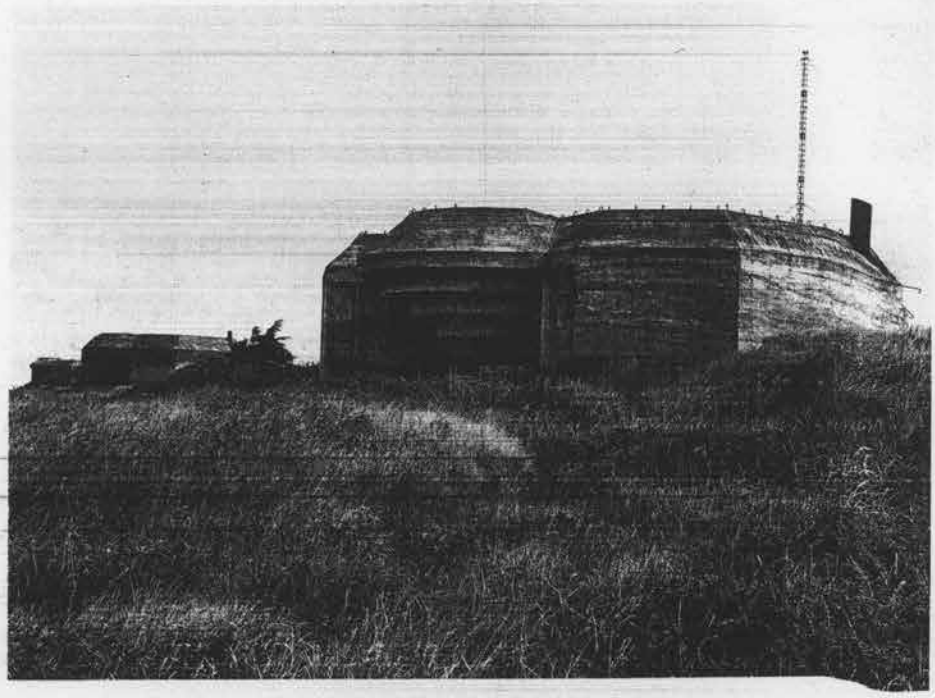
(Prestel, Munich, 1971)

B+H. Becher „Die Architektur d. Förder- u. Waschtürme" 1971

94-95
Förderturm
Zeche Helene
Schacht Helene
Essen-Altenessen
Ruhrgebiet
Malakowturm erbo
Stahlgerüst 1901
abgebrochen 1968

Paul Virilio, Bunker Archäologie, 1976





LE « FRONT TODT » ET SES TRANSFORMATIONS.

J. F. Seitz, Le Passage, 1982

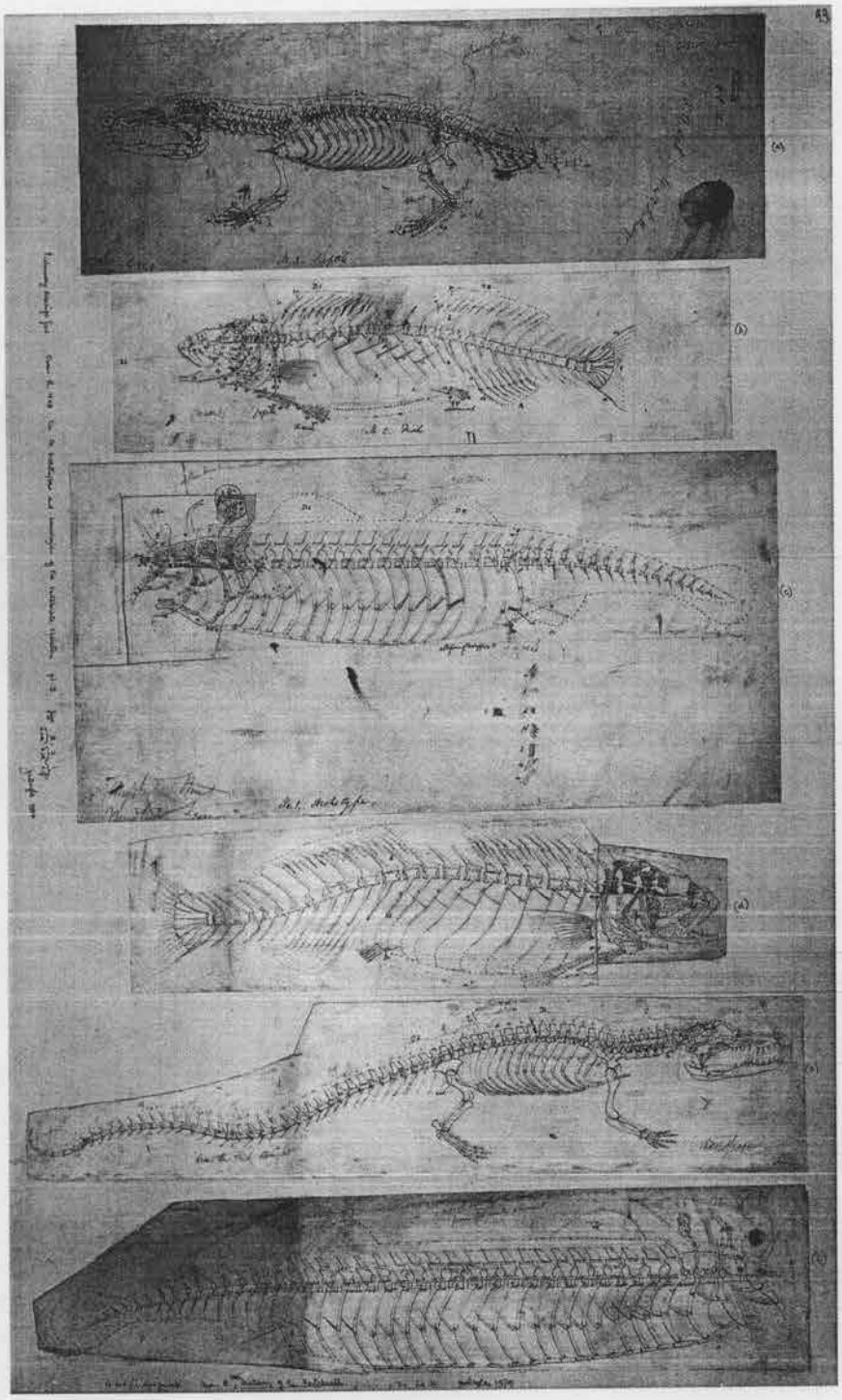
136. La Galerie de l'Argue, page de titre du Journal du Commerce 1.1.1928

Darwin und Darwinismus, 1994

b) Kreuzung aus Pferd und Zebra oder Pferd und Quagga, [*Equus* × *E. zebra* or *E. quagga*] stehend, linke Seitenansicht

c) Quagga (1878 ausgestorben), † (*Equus quagga*) stehend, rechte Seitenansicht

2/107 d) Pferde-Kopf (Equus), linke Seitenansicht



G. u. P. Edwards
1858; Bleistift, aquarelliert; 74,9 × 44,7 cm (ganzes Blatt)
London, The Natural History Museum, General Archives (229.134 Folio 318)

2/109 Pfeilkalamare (*Ommastrephes ensifer*), Gesamtansicht von der Rückenseite (dorsal), und Details der Tentakeln
Richard Owen
Bleistift, Tusche, aquarelliert; 74,9 × 44,7 cm
London, The Natural History Museum, General Archives (229.134 Folio 66)

2/110 Entwurfszeichnungen für das Natural History Museum in London:
a) Einganghalle
b) Skelett-Galerie, 1870/71
c) Sogenannter „Affenbogen", 1870/71
d) Detail einer Säule mit Fischmotiven, 1874
e) Detail einer Wandverkleidung mit Schlangenornament, 1874
Alfred Waterhouse (1830-1905)
Feder, aquarelliert; a) 46,5 × 74 cm, b) 27,5 × 32,5 cm, c) 26,5 × 40 cm d) 5 × 46,5 cm, 68 × 101,5 cm
London, The British Architectural Library, Royal Institute of British Architects

Auf Betreiben von Richard Owen, dem Superintendenten der naturkundlichen Sammlungen im British

Richard Owen (Foto: Royal Society)