CATALOGUE 38:

Rare Books and Manuscripts on the History of Science & Medicine

With a Collection of Rare Materials on the Notorious Libri Affair

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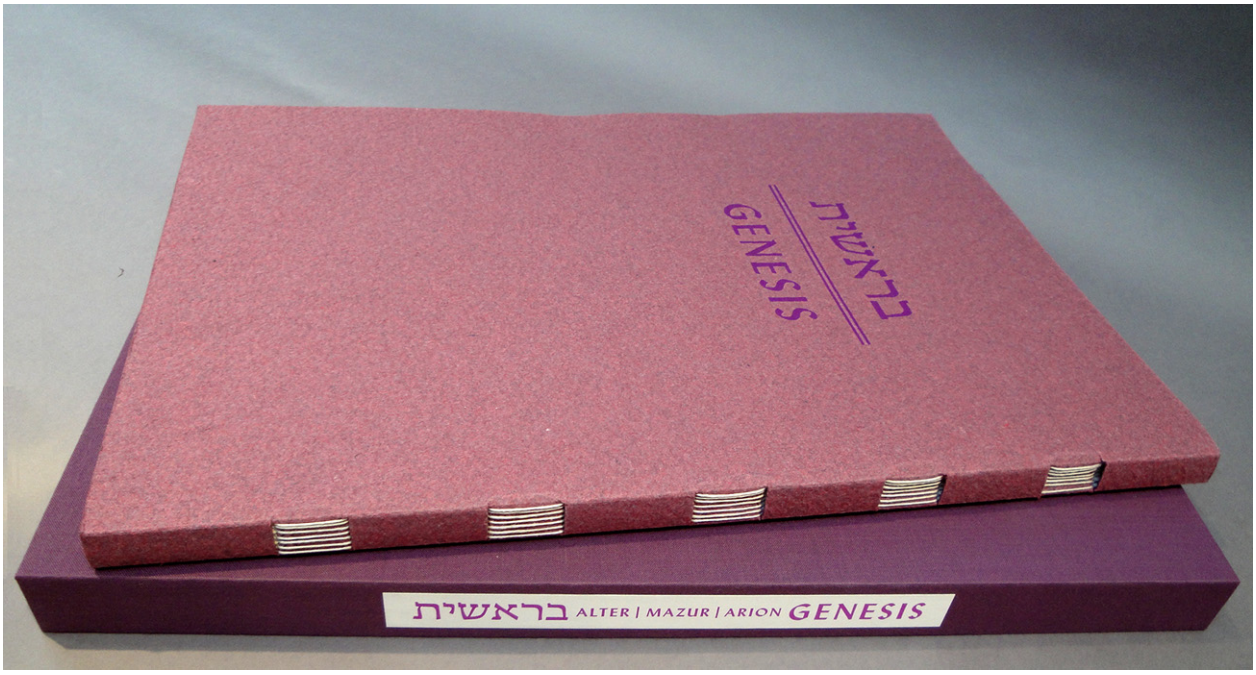


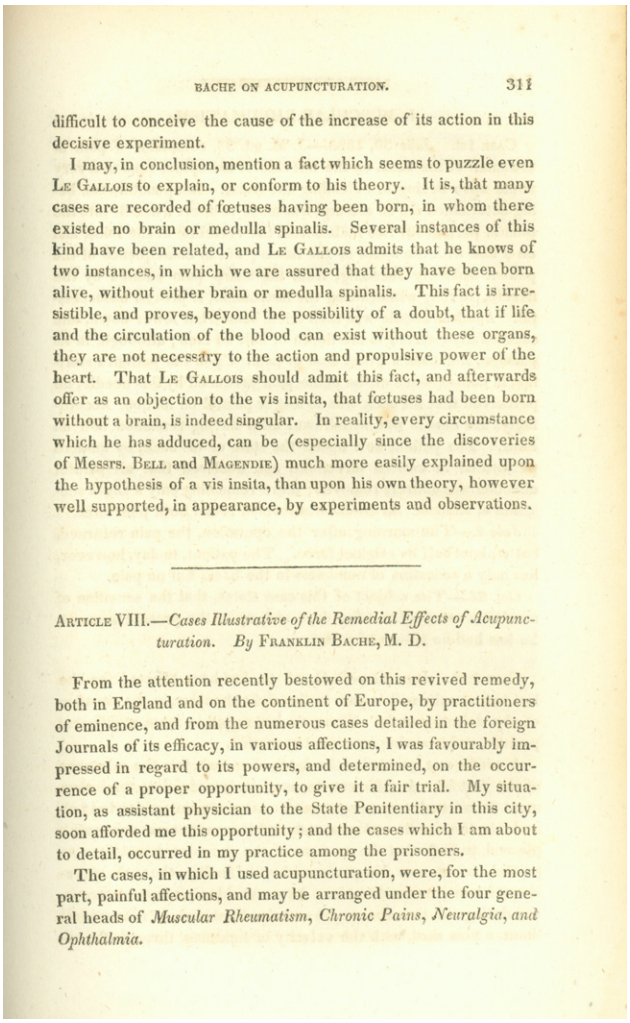
Arion Press "Genesis"

1. **Arion Press.** Genesis. Translated from the Hebrew by Robert Alter. Largo folio, printed in two colors on handmade paper. No. 21 of 200 copies, signed by the translator at the foot of the colophon. Original two-color frontispiece etching by Michael Mazur, signed by the artist. 412 x 293 mm. Original purple handmade paper wrappers, cloth chemise and slipcase. Prospectus included. Mint copy. $1450

"Designed as a large folio, the Arion edition is a typographic monument that balances the Hebrew and English texts on facing pages . . . Robert Alter's translation of Genesis is an experiment in re-presenting the Bible—and, above all, biblical narrative prose—in a language that conveys with some precision the semantic nuances and the lively orchestration of literary effects of the Hebrew and at the same time has stylistic and rhythmic integrity as literary English" (Prospectus). 40851

One of the Earliest American Works on the Alleviation of Pain—First American Study of Acupuncture for Pain, with First English Translation of Ten Rhyne's "De acupunctura"

2. **(1) Bache, Franklin** (1792-1864). Cases illustrative of the remedial effects of acupuncturation. In *North American Medical and Surgical Journal* 1 (1826): 311-321. **(2) [Ten Rhyne, Wilhelm** (1648-1700).] Wilhelmi Ten Rhyne M.D. Transisalano. Daventriensis, Dissertatio de arthritide: Mantissa schematica: De acupunctura, et orationes tres . . . In *ibid.*: 198-204. **(3) Hewson, Thomas.** Case of ecthyma cachecticum, with observations. In *ibid.*: 89-94; 2 hand-colored plates. Whole volume, 8vo. viii, [2], 495, [3, incl. adverts.]pp. 3 plates. 212 x 133 mm. 19th century half calf, marbled boards, leather spine label. Minor foxing and toning, but very good. From the Svenska Läkaresällskapets Bibliotek, with the library's 19th century stamp on the title and front cover and library label inside front cover. $7500



BACHE ON ACUPUNCTURATION. 311

difficult to conceive the cause of the increase of its action in this decisive experiment.

I may, in conclusion, mention a fact which seems to puzzle even LE GALLOIS to explain, or conform to his theory. It is, that many cases are recorded of fœtuses having been born, in whom there existed no brain or medulla spinalis. Several instances of this kind have been related, and LE GALLOIS admits that he knows of two instances, in which we are assured that they have been born alive, without either brain or medulla spinalis. This fact is irresistible, and proves, beyond the possibility of a doubt, that if life and the circulation of the blood can exist without these organs, they are not necessary to the action and propulsive power of the heart. That LE GALLOIS should admit this fact, and afterwards offer as an objection to the vis insita, that fœtuses had been born without a brain, is indeed singular. In reality, every circumstance which he has adduced, can be (especially since the discoveries of Messrs. BELL and MAGENDIE) much more easily explained upon the hypothesis of a vis insita, than upon his own theory, however well supported, in appearance, by experiments and observations.

ARTICLE VIII.—*Cases Illustrative of the Remedial Effects of Acupuncturation.* *By* FRANKLIN BACHE, M. D.

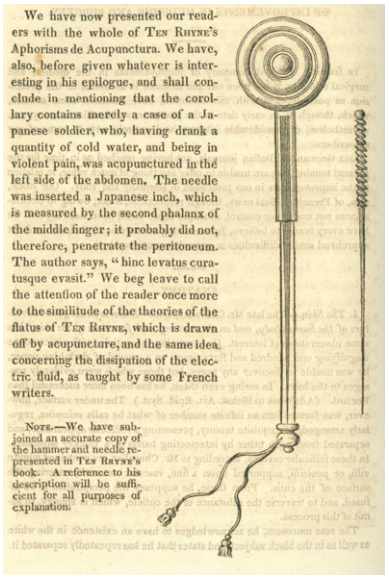
From the attention recently bestowed on this revived remedy, both in England and on the continent of Europe, by practitioners of eminence, and from the numerous cases detailed in the foreign Journals of its efficacy, in various affections, I was favourably impressed in regard to its powers, and determined, on the occurrence of a proper opportunity, to give it a fair trial. My situation, as assistant physician to the State Penitentiary in this city, soon afforded me this opportunity; and the cases which I am about to detail, occurred in my practice among the prisoners.

The cases, in which I used acupuncturation, were, for the most part, painful affections, and may be arranged under the four general heads of *Muscular Rheumatism*, *Chronic Pains*, *Neuralgia*, *and Ophthalmia.*

(1) First Edition of the **first original study of acupuncture published in North America, one of the earliest American medical works on the alleviation of pain.** Franklin Bache, great-grandson of Benjamin Franklin, was the first American to perform original research on acupuncture. In 1825 Bache had issued his translation of J. Morand's *Mémoire sur l'acupuncture* (1825) under the title *Memoir on Acupuncturation*; this was the first book on acupuncture to be published in America (see Garrison-Morton 6374.15). The same year, Bache conducted his own experimental study of acupuncture, which he recorded in the present paper.

> As assistant physician at the state penitentiary in Philadelphia, Bache determined in 1825 to test acupuncture on the prisoners whom he was called upon to serve. With the aid of a colleague, he used the needles to treat 12 different prisoners who were suffering from highly painful afflictions: three with muscular rheumatism, four with "chronic pains," three with neuralgia, and two with ophthalmia. He also used acupuncture among the prisoners in relieving several lesser pains, including a headache accompanying bilious fever, the head pain of an epileptic, an elastic tumor near the elbow joint, and a dull pain caused by pulmonic inflammation.
>
> Bache reported varying successes. In summarizing 17 subsequent cases, some of which were not among the prisoners, he noted that seven "were completely cured, seven considerably relieved, and in the remaining three cases, the remedy produced no effect." Over all, Bache was convinced that the measure offered great promise for "removing and mitigating pain." He concluded that it could well be "a proper remedy in almost all diseases, whose prominent symptom is pain" (Cassedy, pp. 894-895).

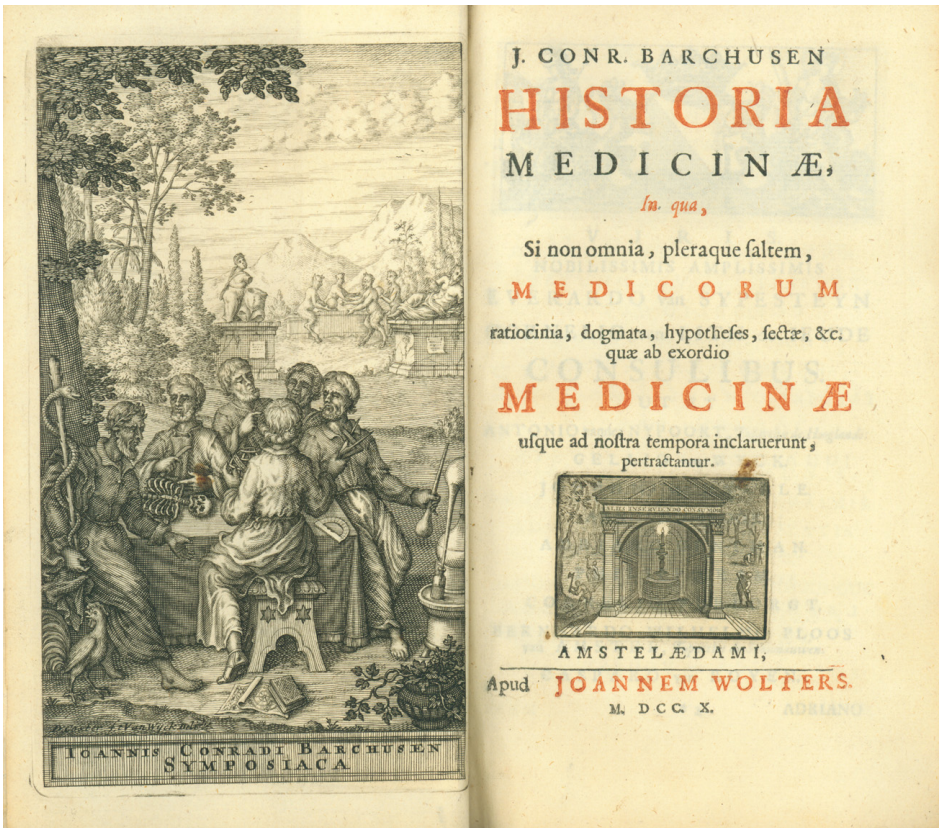
Bache was one of the very few American physicians in the early nineteenth century to adopt acupuncture as a method of pain relief, despite the fact that the practice was enjoying a considerable vogue in Europe at the time. This volume of the *North American Medical and Surgical Journal* includes several brief abstracts from European journals on the uses of acupuncture; see pp. 225-227 and 448-449.



We have now presented our readers with the whole of TEN RHYNE'S Aphorisms de Acupunctura. We have, also, before given whatever is interesting in his epilogue, and shall conclude in mentioning that the corollary contains merely a case of a Japanese soldier, who, having drank a quantity of cold water, and being in violent pain, was acupunctured in the left side of the abdomen. The needle was inserted a Japanese inch, which is measured by the second phalanx of the middle finger; it probably did not, therefore, penetrate the peritoneum. The author says, "hinc levatus curatusque evasit." We beg leave to call the attention of the reader once more to the similitude of the theories of the flatus of TEN RHYNE, which is drawn off by acupuncture, and the same idea concerning the dissipation of the electric fluid, as taught by some French writers.

NOTE.—We have subjoined an accurate copy of the hammer and needle represented in TEN RHYNE'S book. A reference to his description will be sufficient for all purposes of explanation.

(2) First English Translation of Ten Rhyne's aphorisms on acupuncture, originally included in his *Dissertatio de arthritide* (1683; see Garrison-Morton 6374.10). Ten Rhyne's "De acupuntura" represents the first detailed description of acupuncture published in the West. The anonymous translators added a brief historical introduction and a copy of Ten Rhyne's illustration of an acupuncture needle and hammer.



(3) First Edition. Hewson's article on ecthyma (a skin infection similar to impetigo) is remarkable for its hand-colored plates, which are among the earliest to appear in an American medical periodical.

Volume 1 of the *North American Medical and Surgical Journal* is *very rare on the market*; and we have never heard of an offprint of this work. This is the first copy we have handled in 40 years of trading. Cassedy, "Early uses of acupuncture in the United States, with an addendum (1826) by Franklin Bache, M.D.," *Bulletin of the New York Academy of Medicine* 50 (1974): 892-906. "Wilhelm Ten Rhyne's *De acupunctura*: An 1826 translation," *Journal of the History of Medicine and Allied Sciences* 34 (1979): 81-92. Lu & Needham, *Celestial Lancets,* p. 299. 40833

"Drug of Forgetfulness"; Blood Transfusion; Acupuncture

3. **Barchusen, Johann Conrad** (1666-1723). Historia medicinae, in qua, si non omnia, pleraque saltem, medicorum ratiocinia, dogmata, hypotheses, sectae, &c. quae ab exordio medicinae usque ad nostra tempora inclaruerunt, pertractantur. 8vo. [18], 632, [36]pp. Title in red and black. Engraved frontispiece, woodcut diagrams. Amsterdam: apud Joannem Wolters, 1710. 200 x 119 m. Vellum ca. 1710, gilt-lettered spine. Fine copy. $2500

First Edition. Barchusen (also spelled Barkhuysen, Barckhausen, etc.), a professor of medicine and chemistry at Utrecht, wrote a number of works on chemistry and pharmacology, as well as this early and little-known history of medicine. The last chapter of Barchusen's *Historia medicinae,* pp. 610-32, consists of his "Oratio de Nepenthe," a discussion of the "drug of forgetfulness" mentioned in ancient Greek literature and mythology (in the *Odyssey*, an Egyptian queen gives Helen of Troy a dose of "*nepenthe pharmakos*" to make her forget her sorrows). Barchusen appears to agree with most modern scholars that opium was the primary ingredient of this legendary drug; others have speculated that the compound might also have included belladonna or wormwood, noted for their painkilling and amnesiac properties.

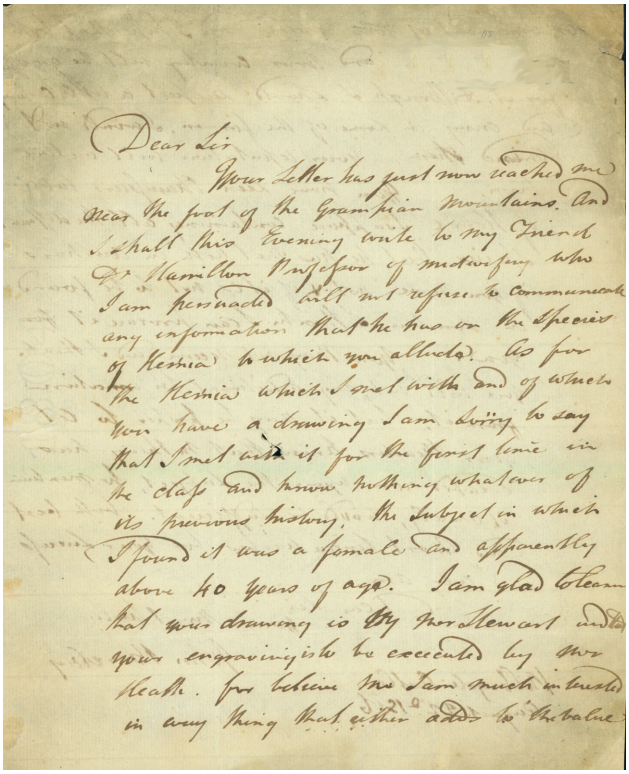
Barchusen's contribution to the early literature of anesthesia seems to have escaped the notice of scholars of

the history of anesthesia. We could find no reference to him in the indexes of any of our references on the subject.

Page 489 of Barchusen's treatise contains a brief discussion of the operation of blood transfusion, citing the attempt at human-to-human transfusion made by Johann Daniel Major in 1666; Barchusen calls Major the "auctor seu inventor hujus operationis"(author or inventor of this operation). On pp. 370-73, 379-80 Barchusen discusses the writings of Cleyer and ten Rhyne on Chinese medicine and acupuncture, with a diagram concerning pulse medicine p. 380.

See Ferguson, *Bibliotheca chemica,* I, p. 72; Partington, *A History of Chemistry,* II, pp. 700-2. The first edition of Barchusen's book is *scarce*. This is the first copy we have handled in 40 years. 40697

"I am Much Interested in Any Thing that Either Adds to the Value or Ornament of your Work"


Dear Sir

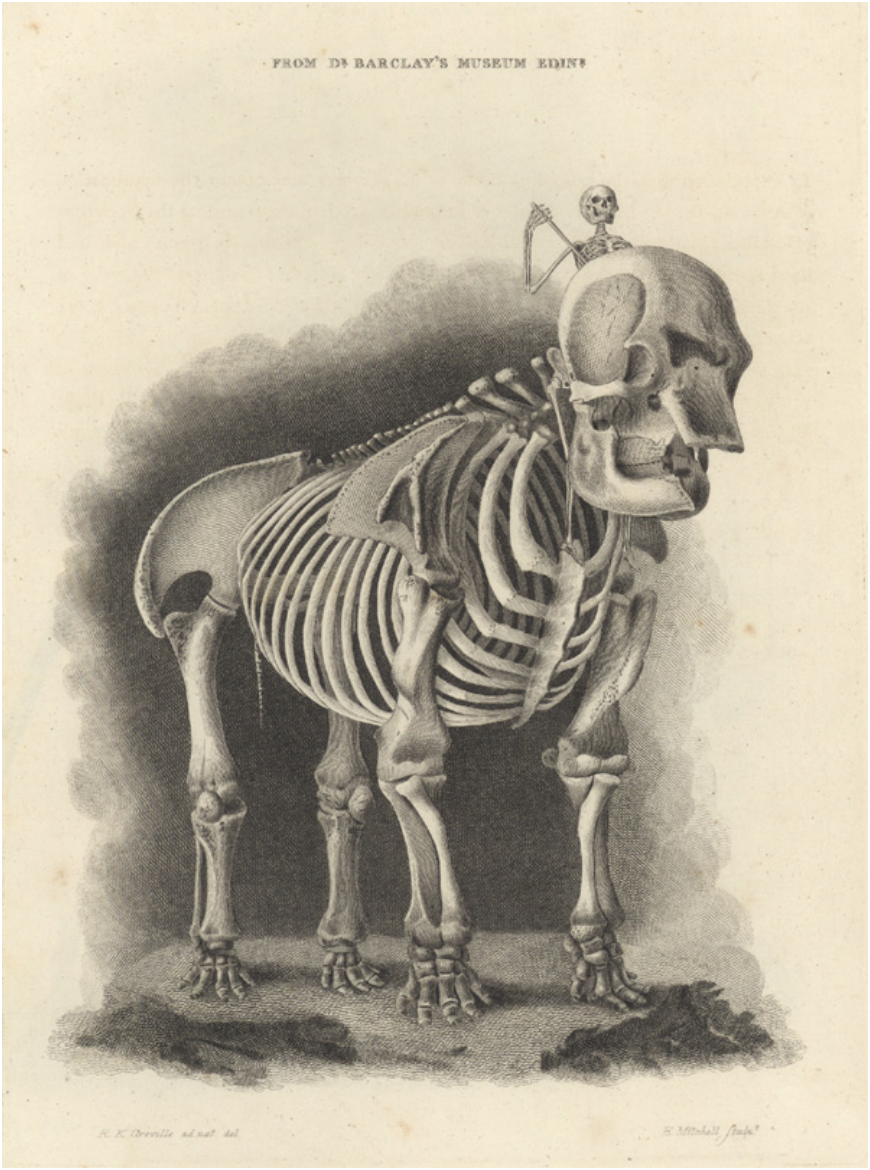
Your Letter has just now reached me near the foot of the Grampian Mountains. And I shall this Evening write to my Friend Dr Hamilton Professor of midwifery who I am persuaded will not refuse to communicate any information that he has on the species of Hernia to which you allude. As for the Hernia which I met with and of which you have a drawing I am sorry to say that I met with it for the first time in the class and know nothing whatever of its previous history, the subject in which I found it was a female and apparently above 40 years of age. I am glad to learn that your drawing is by Mr Stewart and that your engraving is to be executed by Mr Heath. For believe me I am much interested in any thing that either adds to the value

4. **Barclay, John** (1758-1826). Autograph letter signed to an unidentified recipient, almost certainly **Astley Cooper** (1768-1841). Kilbryde Castle [Scotland], August 22, 1806. 2pp. 227 x 187 mm. Minor dust-soiling, 2 or 3 small marginal tears, tiny paper flaw slightly affecting 1 word. Very good. $850

From John Barclay, one of the most distinguished teachers of anatomy in Edinburgh during the first decades of the 19th century, discussing different types of hernia. The recipient was almost certainly British surgeon Astley Cooper, who at the time this letter was written was in the midst of preparing the second volume of his classic work on the surgical treatment of hernia, published in 1807 (see Garrison-Morton 3581). William Fergusson, in his "Lectures on the progress of surgery during the present century" (*Medical Times and Gazette* 1 [June 11, 1864]: 635-38), noted that "when Astley Cooper was engaged in his great and interesting labours on hernia nothing would satisfy him but a sight of the fact that the obdurator artery might encircle the inner side of the neck of a crural hernia. The first preparation that gave this proof was in the museum of the famous professor of anatomy in Edinburgh, John Barclay (now incorporated in the collection of the Royal College of Surgeons in that city), who actually forwarded it to London to satisfy the hesitation of the great surgeon. It was returned with complimentary thanks, and this anatomical fact, now familiar to the simplest novice, was soon after made extensively known to the professional world" (p. 636).

Barclay's letter reads in part as follows:

> I shall this evening write to my friend Dr. Hamilton Professor of midwifery who I am persuaded will not refuse to communicate any information that he has on the species of hernia to which you allude. As for the hernia which I met with and of which you have a drawing I am sorry to say that I met with it for the first time in the class and know nothing whatever of its previous history. The subject in which I found it was a female and apparently above 40 years of age. I am glad to learn that your drawing is by Mr. Stewart and that your engraving is to be executed by Mr. Heath for believe me I am much interested in any thing that either adds to the value or ornament of your work and I hope that both your profession and your country will be grateful for it . . .



"Dr. Hamilton" refers to Alexander Hamilton (1739-1802), professor of midwifery at Edinburgh University and author of several works on obstetrics and gynecology. The engraver Barclay mentioned was James Heath (1757-1834); the artist is less easy to identify, but could have been Anthony Stewart (1773-1846). 32503

The Author's Copy

5. **Barclay, John** (1758-1826). A series of engravings representing the bones of the human skeleton with the skeletons of some of the lower animals. 2 volumes in one, folio (varying sizes: 353 x 261 mm and 363 x 261 mm). 36 engraved plates (32 numbered and 4 additional plates). Edinburgh: printed for E. Mitchell, 1819-1820. 19th century blind-stamped calf (rebacked). The author's copy, with his bookplate. Gift inscription on flyleaf. $3750

First Edition, The Author's Copy. Barclay was one of the most distinguished teachers of anatomy in Edinburgh during the first decades of the 19th century. He taught mostly at his private anatomy school from 1797 until 1825. During the winter sessions Barclay taught anatomy, physiology and surgery, while in the summer sessions he taught comparative anatomy.

When Barclay retired from teaching his classes were taken over by his partner Robert Knox, who would later gain notoriety and ruin as a purchaser of bodies from resurrectionists/criminals Burke and Hare.The work was published in two parts, part one being issued in slightly smaller format. Most of the plates for this work were based on prior atlases, and the source is given in the heading of each plate: Albinus for human standing skeletons, horses from George Stubbs, most images of bones from Sue's French translation of Monro's osteology. The last three unnumbered plates are a prospectus for a work on vertebrate skeletons which Mitchell never published, including a striking image of an elephant with a skeleton elephant driver, or mahout. 40090

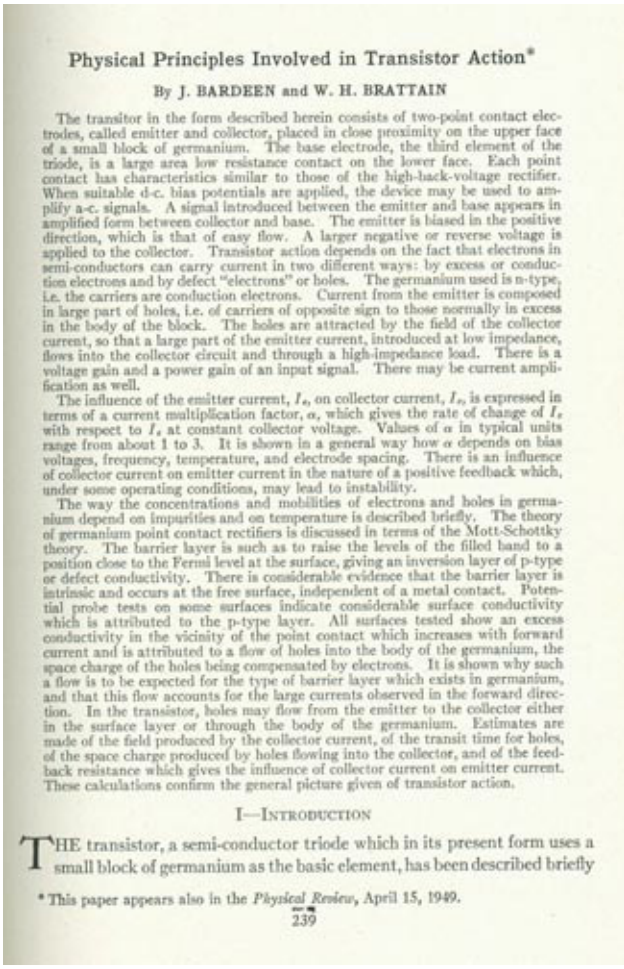
The Transistor; Foundation of Modern Cryptography

6. **(1) Bardeen, John** (1908–91) and **Brattain, Walter** (1902–87). Physical principles involved in transistor action. In *Bell System Technical Journal* 28, no. 2 (April 1949): 239–77. **(2) Shockley, William** (1910-89). The theory of p-n junctions in semiconductors and p-n junction transistors. In *ibid.*: 435-89. **(3) Shannon, Claude** (1916-2001). Communication theory of secrecy systems. In *ibid.*: 656-715. Whole volume. iv, 753, [1], v-viii pp. Illustrated. 221 x 148 mm. Library buckram. Very good. Library stamps and label on endpapers.

$1750

(1) First Editions. No. **(1)**, Bardeen and Brattain's paper, is the first comprehensive report on the point-contact transistor, created in December 1947 and announced in three brief papers published in the *Physical Review* in 1948. The transistor gradually replaced the bulkier vacuum tube, allowing heat reduction and miniaturization of electronic devices. Transistors began to be employed on a large scale in computer manufacturing in the late 1950s; they were eventually miniaturized and incorporated into microprocessors.

Bardeen and Brattain shared the 1956 Nobel Prize for physics with William Shockley (see below) for their investigations of semiconductors (the materials of



Physical Principles Involved in Transistor Action*

By J. BARDEEN and W. H. BRATTAIN

The transitor in the form described herein consists of two-point contact electrodes, called emitter and collector, placed in close proximity on the upper face of a small block of germanium. The base electrode, the third element of the triode, is a large area low resistance contact on the lower face. Each point contact has characteristics similar to those of the high-back-voltage rectifier. When suitable d-c. bias potentials are applied, the device may be used to amplify a-c. signals. A signal introduced between the emitter and base appears in amplified form between collector and base. The emitter is biased in the positive direction, which is that of easy flow. A larger negative or reverse voltage is applied to the collector. Transistor action depends on the fact that electrons in semi-conductors can carry current in two different ways: by excess or conduction electrons and by defect "electrons" or holes. The germanium used is n-type, i.e. the carriers are conduction electrons. Current from the emitter is composed in large part of holes, i.e. of carriers of opposite sign to those normally in excess in the body of the block. The holes are attracted by the field of the collector current, so that a large part of the emitter current, introduced at low impedance, flows into the collector circuit and through a high-impedance load. There is a voltage gain and a power gain of an input signal. There may be current amplification as well.

The influence of the emitter current, I_e, on collector current, I_c, is expressed in terms of a current multiplication factor, α, which gives the rate of change of I_c with respect to I_e at constant collector voltage. Values of α in typical units range from about 1 to 3. It is shown in a general way how α depends on bias voltages, frequency, temperature, and electrode spacing. There is an influence of collector current on emitter current in the nature of a positive feedback which, under some operating conditions, may lead to instability.

The way the concentrations and mobilities of electrons and holes in germanium depend on impurities and on temperature is described briefly. The theory of germanium point contact rectifiers is discussed in terms of the Mott-Schottky theory. The barrier layer is such as to raise the levels of the filled band to a position close to the Fermi level at the surface, giving an inversion layer of p-type or defect conductivity. There is considerable evidence that the barrier layer is intrinsic and occurs at the free surface, independent of a metal contact. Potential probe tests on some surfaces indicate considerable surface conductivity which is attributed to the p-type layer. All surfaces tested show an excess conductivity in the vicinity of the point contact which increases with forward current and is attributed to a flow of holes into the body of the germanium, the space charge of the holes being compensated by electrons. It is shown why such a flow is to be expected for the type of barrier layer which exists in germanium, and that this flow accounts for the large currents observed in the forward direction. In the transistor, holes may flow from the emitter to the collector either in the surface layer or through the body of the germanium. Estimates are made of the field produced by the collector current, of the transit time for holes, of the space charge produced by holes flowing into the collector, and of the feedback resistance which gives the influence of collector current on emitter current. These calculations confirm the general picture given of transistor action.

I—Introduction

THE transistor, a semi-conductor triode which in its present form uses a small block of germanium as the basic element, has been described briefly

* This paper appears also in the *Physical Review*, April 15, 1949.

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which transistors are made) and for their discovery of the transistor. *Origins of Cyberspace* 450.

No. **(2)** is a detailed account of the junction transistor invented by Shockley shortly after Bardeen and Brattain's invention of the point-contact transistor. Shockley's design marked a substantial improvement over the point-contact transistor, whose "delicate mechanical configuration would be difficult to manufacture in high volume with sufficient reliability" (Computer History Museum, "The silicon engine: A timeline of semiconductors in computers" [internet reference]). Shockley disagreed with Bardeen and Brattain's explanation of how the transistor worked, claiming that "positively charged holes could also penetrate through the bulk germanium material—not only trickle along a surface layer. Called 'minority carrier injection,' this phenomenon was crucial to operation of his junction transistor, a three-layer sandwich of n-type and p-type semiconductors separated by p-n junctions. This is how all 'bipolar' junction transistors work today"

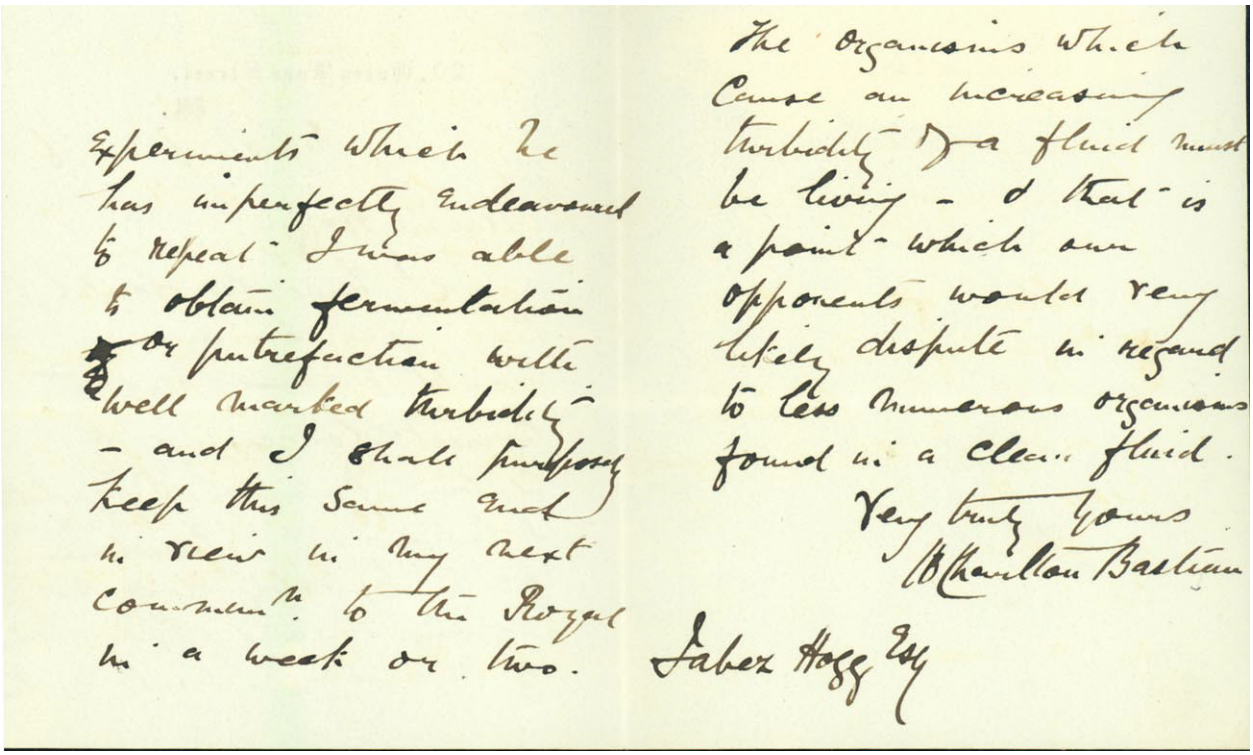
(*ibid.*). Bell Laboratories began manufacturing junction transistors in quantity in 1951; they dominated the market for many years. Magill, *Nobel Prize Winners: Physics,* pp. 675-704.

No. **(3)**, Shannon's discussion of cryptography from the viewpoint of information theory, "is one of the foundational treatments (arguably *the* foundational treatment) of modern cryptography. It is also a proof that all theoretically unbreakable ciphers must have the same requirements as the one-time pad [a secret random key used only once]" (Wikipedia). Shannon published an earlier version of his cryptography research in the classified report *A Mathematical Theory of* Cryptography (Memorandum MM 45-110-02, Bell Laboratories, Sept. 1, 1945). Shannon, *Collected Papers,* no. 25. 40610

First Successful Artificial Joint

7. **Barton, John Rhea** (1794-1871). On the treatment of anchylosis, by the formation of artificial joints. In *North American Medical and Surgical Journal* 3 (1827): 279-292; plate. Whole volume, 8vo. vii, [1], [v]-vi, 432pp. 2 plates. 210 x 133 mm. 19th century half calf, marbled boards, leather spine label. Fine apart from occasional light foxing. From the Svenska Läkaresällskapets Bibliotek, with the library's 19th century stamp on the title. $2500

First Edition. Barton, a Philadelphia surgeon, was the first to create an artificial joint as a remedy for ankylosis (solid fusion of a joint). "His conception of an operation to restore motion to a fused hip joint was


Experiments which he has imperfectly endeavoured to repeat. I was able to obtain fermentation or putrefaction with well marked turbidity – and I shall purpose to keep this same end in view in my next communication to the Royal in a week or two.

The organisms which cause an increasing turbidity of a fluid must be living – & that is a point which our opponents would very likely dispute in regard to less numerous organisms found in a clear fluid.

Very truly yours
H Charlton Bastian

Jabez Hogg Esq

brilliant. His patient was a twenty-one-year-old sailor who had been injured in a fall on shipboard in which he sustained an injury to the right hip. The hip became stiff in a position of flexion and adduction. Barton reasoned that if he divided the bone and persisted in moving the osteotomy site during the convalescent period that a pseudoarthrosis [false joint] would develop, the ends of the bond becoming covered with fibrocartilage and held together by a fibrous capsule. This complication of diaphyseal fractures was well known to the surgeons of the day" (Peltier. p. 245). The success of Barton's operation paved the way for the use of osteotomy to correct joint deformities and preserve joint motion, eventually leading to modern artificial joint surgery. *Rare.* This is the first copy we have offered in 40 years of trading. Peltier, *Orthopedics,* pp. 245-46. Garrison-Morton 4451. 40849

"I Was Able to Obtain Fermentation or Putrefaction with Well Marked Turbidity"

8. **Bastian, Henry Charlton** (1837-1915). Autograph letter signed to **Jabez Hogg** (1817-99). [London,] March 6, 1876. 3pp. 114 x 90 mm. Traces of mounting on blank verso of second leaf, but fine otherwise. $750

From Henry Bastian, a physician who made notable contributions to the emerging specialty of clinical neurology, and a pioneer writer on theories of the origin of life; to Jabez Hogg, ophthalmologist, microscopist and early adopter of the germ theory of disease.

Bastian published important papers on aphasia (see Garrison-Morton 4622, 4629) and was the first to demonstrate "Bastian's law": that complete section of the upper spinal cord abolishes reflexes and muscular tone below the level of the lesion. Bastian is best known, however, for his defense of the doctrine of spontaneous generation (abiogenesis) in the face of accepted scientific opinion. In opposition to Pasteur, Koch, Tyndall and other bacteriologists, Bastian argued that there was no fixed boundary between organic and inorganic life, stating that "since living matter must have arisen from nonliving matter at an early stage in evolution, such a process could still be taking place" (*Dictionary of Scientific Biography*). He can thus be seen as one of the first to consider the question of the origins of life from a scientific standpoint. Some of Bastian's experimental work in support of his views on abiogenesis (contrary to his intent) ended up advancing the progress of bacteriology. It was Bastian,

for example, who showed that boiling did not destroy all bacteria, a finding that led to the discovery of heat-resistant spores.

Bastian's letter to Hogg critiques the findings of John Tyndall, whose recent experiments had shown that air from which all dust and floating particles had been removed was incapable of generating bacterial life. The letter reads in part as follows:

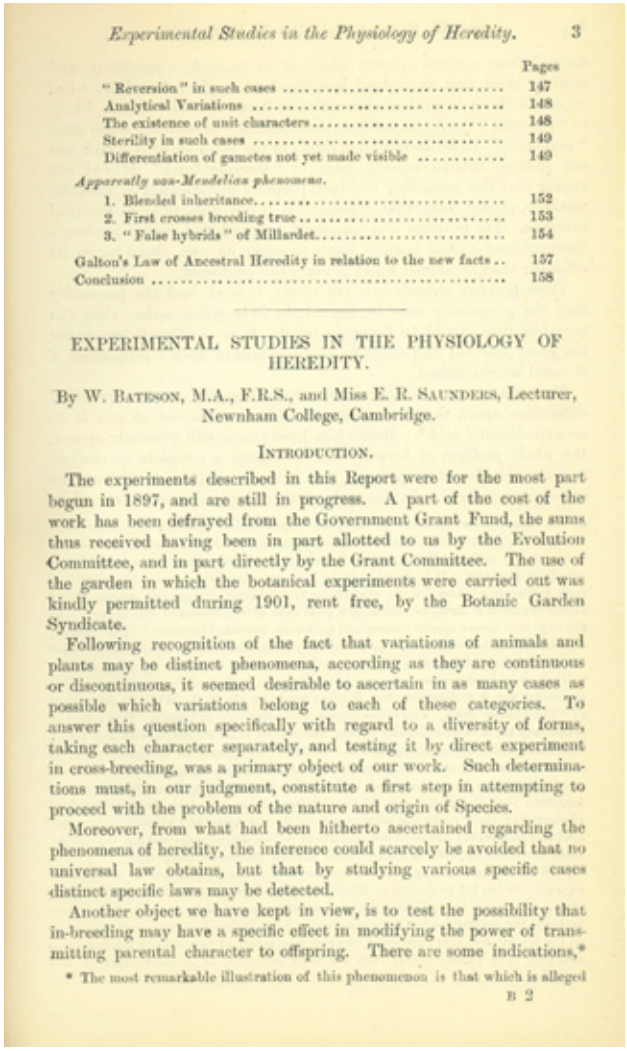
> I have no doubt that your surmises would prove perfectly correct concerning a certain number of Tyndall's solutions. Freedom from turbidity does not by any means imply absence of organisms—but in the experiments which he has imperfectly endeavored to repeat I was able to obtain fermentation or putrefaction with well marked turbidity . . .

Tyndall had undertaken his experiments specifically to discredit Bastian's theories of spontaneous generation. *Oxford Dictionary of National Biography. Dictionary of Scientific Biography.* 40225

Introduction of Genetics Terminology

9. **Bateson, William** (1861-1926) *et al.* Reports to the Evolution Committee of the Royal Society [running head: Experimental studies in the physiology of heredity]. 5 parts in 1, 8vo. 160; 154; 53 [1]; 60; 78 (of 79)pp., *lacking last leaf of part 5* (part 5 does not contain any contributions by Bateson). 2 (of 3) plates, folding table, all in part 5. [London: Harrison & Sons, 1902-9]. 208 x 134 mm. Library buckram, original printed front wrappers (a little stained and frayed) bound in at the back. Very good. Library stamps and markings (Bedford College) on front endpapers and wrappers. $1500

Rare First Editions of these reports, which helped to lay the foundations for analysis of the mechanism of transmission of hereditary characteristics. The reports "contain the detailed results of breeding experiments by Bateson and his collaborators, Miss E. R. Saunders, and, later, R. C. Punnett, C. C. Hurst, Florence M. Durham, L. Doncaster, and others. Mendel's rules were confirmed and extended in a number of different plate species, and the first 'Mendelian' characters



Experimental Studies in the Physiology of Heredity. 3

EXPERIMENTAL STUDIES IN THE PHYSIOLOGY OF HEREDITY.

By W. Bateson, M.A., F.R.S., and Miss E. R. Saunders, Lecturer, Newnham College, Cambridge.

Introduction.

The experiments described in this Report were for the most part begun in 1897, and are still in progress. A part of the cost of the work has been defrayed from the Government Grant Fund, the sums thus received having been in part allotted to us by the Evolution Committee, and in part directly by the Grant Committee. The use of the garden in which the botanical experiments were carried out was kindly permitted during 1901, rent free, by the Botanic Garden Syndicate.

Following recognition of the fact that variations of animals and plants may be distinct phenomena, according as they are continuous or discontinuous, it seemed desirable to ascertain in as many cases as possible which variations belong to each of these categories. To answer this question specifically with regard to a diversity of forms, taking each character separately, and testing it by direct experiment in cross-breeding, was a primary object of our work. Such determinations must, in our judgment, constitute a first step in attempting to proceed with the problem of the nature and origin of Species.

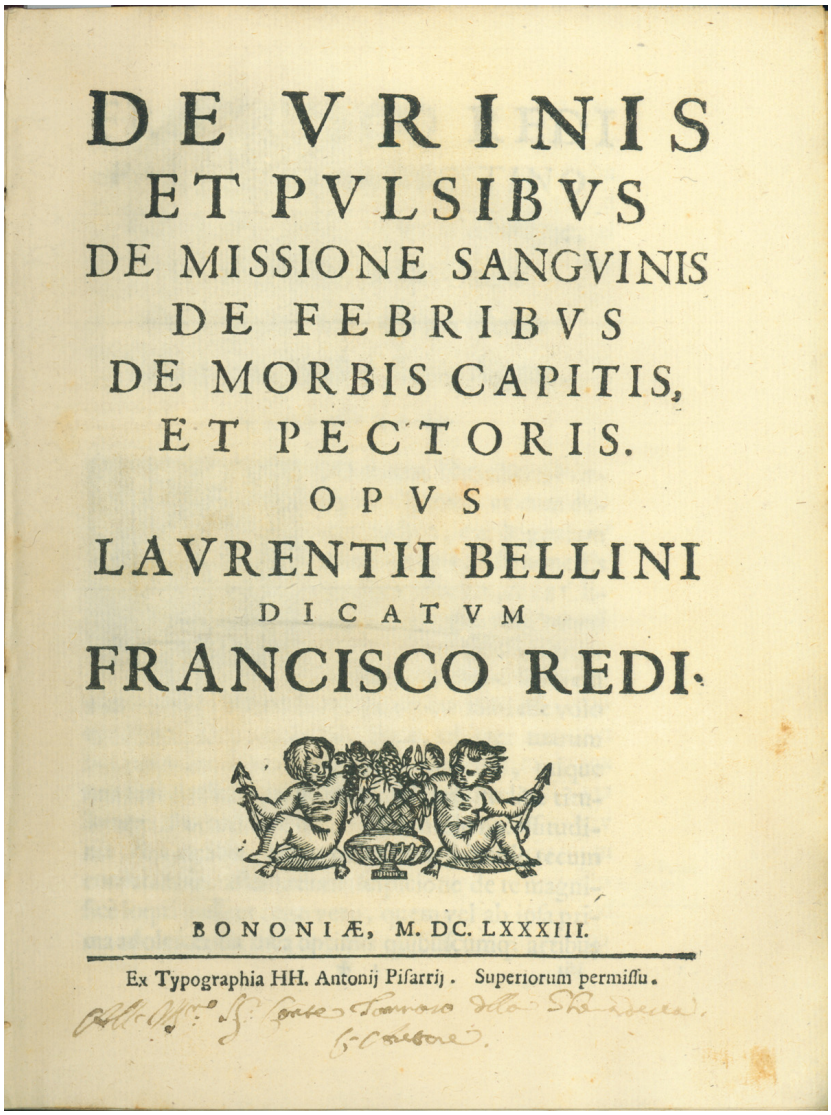
Moreover, from what had been hitherto ascertained regarding the phenomena of heredity, the inference could scarcely be avoided that no universal law obtains, but that by studying various specific cases distinct specific laws may be detected.

Another object we have kept in view, is to test the possibility that in-breeding may have a specific effect in modifying the power of transmitting parental character to offspring. There are some indications,*

* The most remarkable illustration of this phenomenon is that which is alleged

B 2

in animals (poultry) were reported. . . . In Bateson's introduction to Report No. 1 (1902, p. 12) we find the clear recognition of the essence of Mendelism [i.e. discontinuity]" (Dunn, *Short History of Genetics,* pp. 65-66). At the end of this report Bateson introduced the genetics terminology—allelomorph, heterozygote, homozygote, etc.—that is now in use today (Bateson was also responsible for the name "genetics," which he first used in a book review published in 1906). The fifth report (1909), which does not contain any contributions by Bateson and does not bear his name, is incomplete in this set, lacking the last leaf (containing corrigenda for part 4) and a plate. Stubbe, *History of Genetics,* pp. 272-72. 40684


DE VRINIS
ET PVLSIBVS
DE MISSIONE SANGVINIS
DE FEBRIBVS
DE MORBIS CAPITIS,
ET PECTORIS.
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FRANCISCO REDI.
BONONIÆ, M. DC. LXXXIII.
Ex Typographia HH. Antonij Piſarrij. Superiorum permiſſu.

Inscribed Presentation Copy of a Seventeenth-Century Cardiology Classic—Exceptionally Rare

10. **Bellini, Lorenzo** (1643-1704). De urinis et pulsibus de missione sanguinis de febribus de morbis capitis, et pectoris. 4to. [20], 606 [i.e., 608]pp. Woodcut ornaments. Bologna: ex typographia HH. Antonij Pisarrii, 1683. 216 x 161 mm. Vellum c. 1683, title hand-inked on spine. Leaf Aaaa2 torn and repaired at an early date without loss of text, otherwise a fine copy. *Presentation copy from the author, inscribed at the foot of the titlepage:* "All' Illmo Conte Tommaso della Gherardesca. l'Autore." $7500

First Edition, Inscribed by the Author. To the best of our knowledge, this is the first inscribed copy of a major seventeenth century medical classic that has been on the market in more than a decade. Bellini, professor of anatomy and medical theory at Pisa, was one of the Italian founders of iatromechanics, a system that framed physiologic events such as the circulation of the blood in terms of mathematical and physical principles. Bellini's *De urinis et pulsibus* represents one of the first attempts to systematically apply iatromechanics to medical theory. "William Harvey's theory of the circulation was of fundamental importance to Bellini and other proponents of iatromecha-

nism. Bellini asserted that good health depended on optimal function of the circulation of the blood, and that disease was a manifestation of an inefficient circulation. Rejecting ancient humoral pathology, he viewed blood as a physical fluid with specific properties that could be interpreted in terms of mathematical and physical principles. . . . Bellini emphasized that disease was often due to alterations in the elasticity or 'tone' of the solids, or in the density of the fluids which hindered their motion. This, in turn, could cause local congestion or stagnation. Bellini's enthusiastic support of therapeutic bleeding reflected this pathophysiologic concept. He tried to prove that this phlebotomy increased the velocity of the circulation, thereby washing away 'morbid matter' and restoring health" (Fye, pp. 181-82).

In the book's section on diseases of the chest, Bellini reported "several forms of heart disease, especially of the syncopal type . . . in his book *De urinis et pulsibus,* Bellini discusses the state of the coronary arteries and admits that the condition which he calls 'pressio' is dangerous and may cause the contraction of the heart to be abolished (p. 541). He also has in mind external pressure by tumors, fat and so on. However, an intra-arterial coronary impediment of blood-flow by calcification was clearly described by this author. Bellini reported on a patient who died of a condition similar to the clinical picture of coronary disease as we now understand it, in whose coronary arteries he found a 'stone.' It seems quite reasonable to deduce that Bellini saw in the post-mortem a coronary occlusion" (Leibowitz, *History of Coronary Heart Disease,* p. 71).

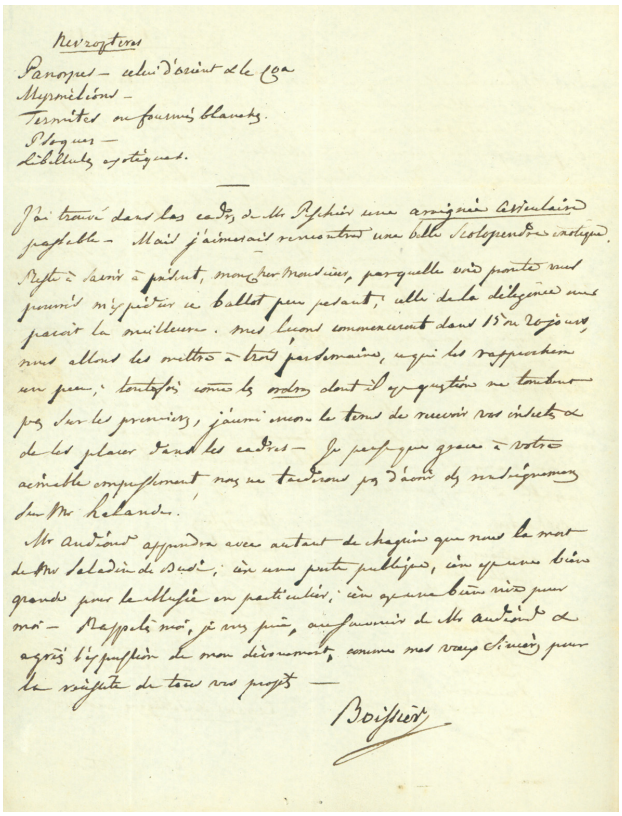
Bellini's work is also important in the history of urology, as it marks the first important contribution to the chemical analysis of urine. Recognizing the value of urine as a diagnostic aid, Bellini insisted on its chemical analysis in pathologic conditions.

Bellini presented this copy of *De urinis et pulsibus* to Count Tommaso della Gherardesca (1654-1721), a distinguished member of an important Tuscan aristocratic family and as such a likely patron of scientific and medical research at the time. Gherardesca was appointed bishop of Fiesole in 1702 and archbishop of Florence in 1703; he also founded the Seminario Maggiori di Firenze in 1712. The rarity of this inscription by Bellini cannot be overestimated. This is the first inscribed book by Bellini we have seen on the market in more than 40 years and it is also the first inscribed copy of a major seventeenth century classic on any aspect of medicine that we have seen on the market in more than a decade, possibly longer. In addition this copy is clearly in the original binding in which it was presented, and with the exception of one leaf, which was inexplicably torn through and repaired, the copy is in fine, even very fine condition for a work of this period. Garrison-Morton 762.1, 4162. Fye, "Lorenzo Bellini," *Clinical Cardiology* 20 (1997): 181-82. *Dictionary of Scientific Biography.* Willius & Dry, *History of the Heart and the Circulation,* p. 64. Murphy, *History of Urology,* pp. 147-48. 40699

"Several Good Butterflies and Foreign Insects"

11. **Boissier, Henri** (1762-1845). Autograph letter signed to André Melly (1802-51). Geneva, 21 March 1822. 2pp. plus integral address leaf. 202 x 155 mm. Docketed. $750

From Professor Henri Boissier, founder of Geneva's natural history museum, to the young Swiss businessman André Melly, acting as the museum's purchasing agent in England, regarding the purchase of insect specimens for the museum. Boissier informs Melly that the museum's collections have recently been augmented "par un don de coléopteres de M. le Dr. Peschier où il y a de bonnes choses, & par un achast de quelques bons papillons & insectes exotiques que m'a procuré M. Prévost" [by a gift of coleoptera from Dr. Peschier containing some good things, and by a purchase of several good butterflies and foreign insects from M. Prévost].This last purchase "a un peu réduit la somme que la cours avait mit à ma disposition. Je ne peut donc vous faire payer pour le moment qu'un bon de f. 400 que je vous prie d'employer, comme vous le jugerai convenable, surtout en orthoptères, hémiptères & névroptères dont nous sommes très mal fournis" [has reduced somewhat the amount made available to me from the course. At this moment I can only pay you the sum of 400 francs which I urge you to use, as you see fit, primarily for orthoptera, hemiptera and neuroptera, which we greatly lack]. Boissier lists several species of each that he wishes to acquire, including "criquets & sauter[elles] exotiq[ues]" [foreign crickets and grasshoppers] and "termites ou fourmis blanches" [termites



or white ants]. He instructs Melly to expedite the shipment of insects to him so that he will have enough time to unpack them and put them in cases.

"Dr. Peschier" may refer to Geneva native Charles Gaspard Peschier (1782-1853), a pioneer of homeopathic medicine in French-speaking countries. M. Prévost, another Genevan, was a founder of the firm of Prévost and Morris in London. Boissier's correspondent, André Melly, ended up settling in England in 1822 (the year that this letter was written), and becoming a prominent businessman in northern England. He acted as agent to the Viceroy of India and then to the Egyptian Government, dying of fever while on a tour of the Nile in 1851. 40466

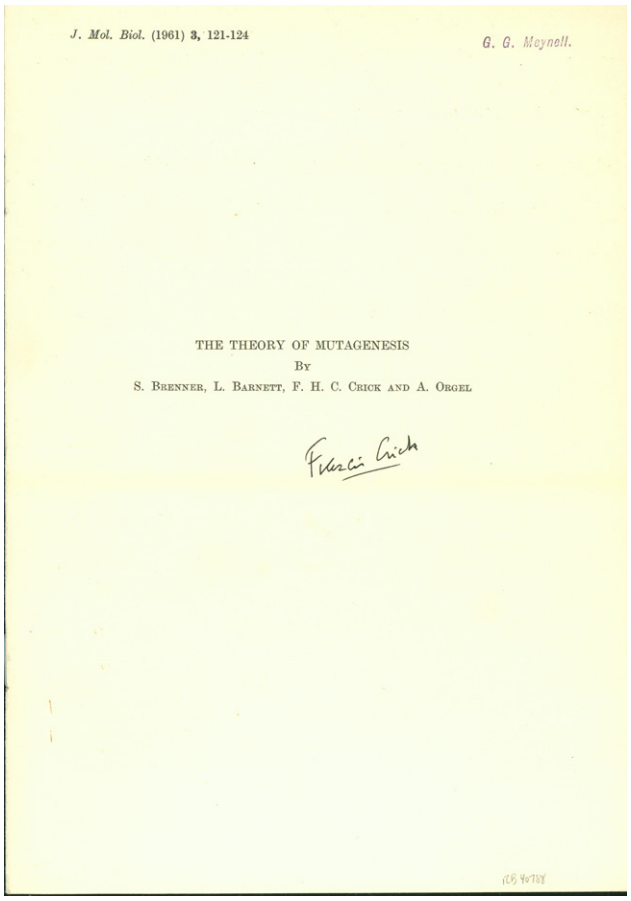
12. **Boscovich, Roger Joseph** (1711-87). A theory of natural philosophy . . . Latin-English edition, from the text of the first Venetian edition . . . with a short life of Boscovich. Folio. xix [1], 463, [7]pp. Frontispiece facsimile of the title to the 1763 Venetian edition, in red and black. Text diagrams. Chicago & London: Open Court Publishing Co., 1922. 375 x 277 mm. Original green cloth, gilt-lettered spine, a little shaken, lightly worn at extremities and hinges. Slightly browned, but very good. $450

First Edition in English of Boscovich's *Philosophiae naturalis theoria redacta ad unicam legem* (first edition 1758). This translation, financed by the Yugoslavian government, was based the text of the 1763 Venetian edition, revised and enlarged under Boscovich's supervision from the 1758 first edition. Boscovich's *Theory* contains his law of forces, which replaced the massy corpuscles of Newtonian natural philosophy with insubstantial points possessed only of inertia and the capability of mutual interaction. Boscovich's theory influenced the position of 19th-century field physics with regard to the relations between space and matter; it was employed by Faraday and Kelvin, and J. J. Thomson used its curve of forces to introduce the earliest concepts of atomic physics. Norman 278. See *Printing and the Mind of Man* 203 (first ed.). 40587

Signed by Francis Crick

13. **Brenner, Sydney** (1927-), **Barnett, Leslie, Crick, Francis H. C.** (1916-2002) and **Orgel, Alice.** The theory of mutagenesis. Offprint from *Journal of Molecular Biology* 3 (1961). 121-124pp. 253 x 173 mm. Original printed self-wrappers, creased horizontally. Very good copy, *signed by Francis Crick* on the front wrapper. Stamp of G. G. Meynell, co-author of *Theory and Practice in Experimental Biology* (1970). **Sold**

First Edition, Offprint Issue of Brenner and Crick's classic paper on mutagenesis. "They distinguished two different kinds of mutagens, chemicals which induce mutations in DNA: those that induce the change of one base into another (as happens in sickle-cell disease) and those that *insert* an extra base into the DNA sequence. This latter class was called acridine mutations" ("Francis Crick" [obituary], *The Independent,* 3 August 2004). Both Crick and Brenner received the Nobel Prize in physiology or medicine, Crick for his role in discovering the double-helix structure of DNA (1962; with James Watson and Maurice Wilkins), and Brenner for discoveries concerning genetic regulation of organ development and programmed cell death (2002; with H. Robert Horvitz



J. Mol. Biol. (1961) **3**, 121-124

G. G. Meynell.

THE THEORY OF MUTAGENESIS

By

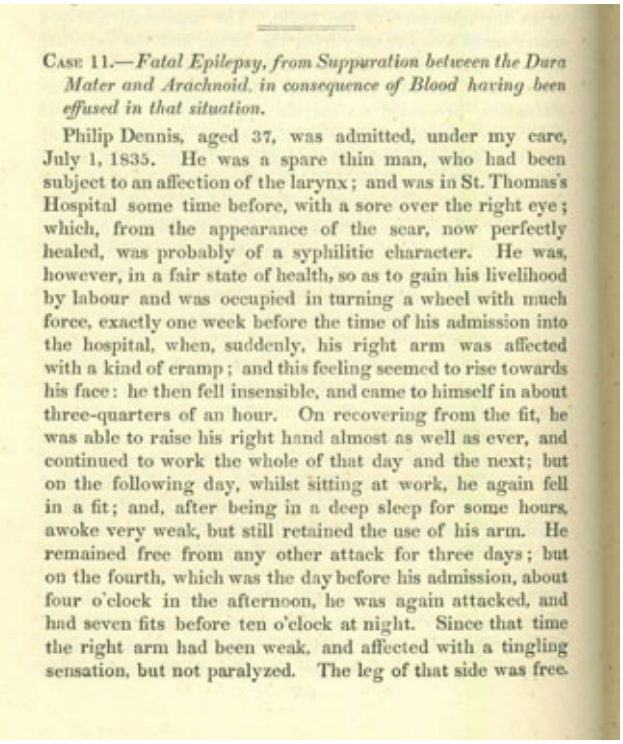
S. Brenner, L. Barnett, F. H. C. Crick and A. Orgel

Francis Crick

and John E. Sulston). Judson, *Eighth Day of Creation,* p. 439. 40788

Three Important Papers by Bright, Together with Five Other Papers Cited in Garrison-Morton

14. **Bright, Richard** (1789-1858). (1) Fatal epilepsy, from suppuration between the dura mater and arachnoid, in consequence of blood having been effused in that situation. In *Guy's Hosp. Reports* 1 (1836): 36-40. (2) Cases and observations, illustrative of renal disease accompanied with the secretion of albuminous urine [part 1 only]. In *ibid.,* 338-400. (3) Observations on jaundice. In *ibid.*, 604-37. Whole volume, 8vo. [4], xii, 188, [8], 189-414, [14], 415-660, [24]pp. 29 plates (some hand-colored). London: Samuel Highley, 1836. 216 x 135 mm. Half calf, marbled



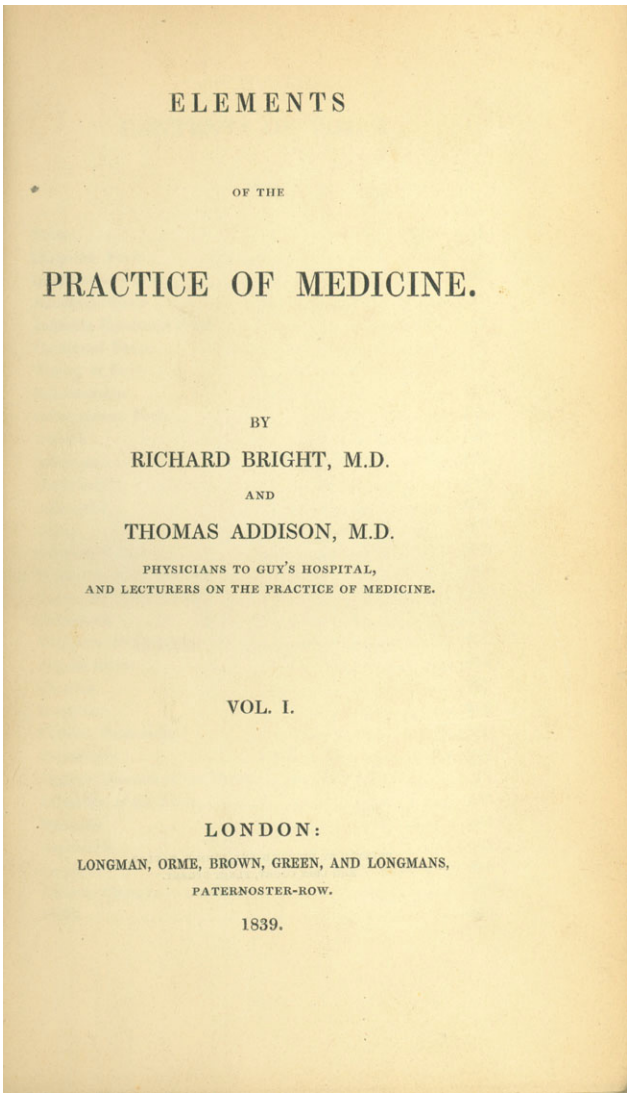
Case 11.—*Fatal Epilepsy, from Suppuration between the Dura Mater and Arachnoid, in consequence of Blood having been effused in that situation.*

Philip Dennis, aged 37, was admitted, under my care, July 1, 1835. He was a spare thin man, who had been subject to an affection of the larynx; and was in St. Thomas's Hospital some time before, with a sore over the right eye; which, from the appearance of the scar, now perfectly healed, was probably of a syphilitic character. He was, however, in a fair state of health, so as to gain his livelihood by labour and was occupied in turning a wheel with much force, exactly one week before the time of his admission into the hospital, when, suddenly, his right arm was affected with a kind of cramp; and this feeling seemed to rise towards his face: he then fell insensible, and came to himself in about three-quarters of an hour. On recovering from the fit, he was able to raise his right hand almost as well as ever, and continued to work the whole of that day and the next; but on the following day, whilst sitting at work, he again fell in a fit; and, after being in a deep sleep for some hours, awoke very weak, but still retained the use of his arm. He remained free from any other attack for three days; but on the fourth, which was the day before his admission, about four o'clock in the afternoon, he was again attacked, and had seven fits before ten o'clock at night. Since that time the right arm had been weak, and affected with a tingling sensation, but not paralyzed. The leg of that side was free.

boards c. 1836, rebacked, a bit rubbed. Minor browning and foxing, some of the plates trimmed a little closely touching some keywords and images, otherwise very good. $3750

First Editions of these three papers, the first containing the earliest description of unilateral ("Jacksonian") epilepsy (G-M 4811); the second representing the first part of G-M 4207, in which Bright recorded his extended observations of kidney disease; and the third containing the original description of acute yellow atrophy of the liver (G-M 3617). The second part of Bright's paper on kidney disease was published in *Guy's Hospital Reports* 5 (1840): 101-61.

Volume 1 of *Guy's Hospital Reports,* in which Bright's three papers appear, contains more Garrison-Morton citations than any other—eight in all. Besides those mentioned above, there are the following: (1) **Astley Cooper,** "Case of femoral aneurism for which the external iliac artery was tied" (pp. 43-52; G-M 2954); (2) **Cooper,** "Account of the first successful operation, performed on the common carotid artery, for aneurism, in the year 1808 . . ." (pp. 53-58; G-M 2955); **Cooper,** "Some experiments and observations on tying the carotid and vertebral arteries, and the pneumo-gastric, phrenic and sympathetic nerves" (pp.



ELEMENTS

OF THE

PRACTICE OF MEDICINE.

BY

RICHARD BRIGHT, M.D.

AND

THOMAS ADDISON, M.D.

PHYSICIANS TO GUY'S HOSPITAL,
AND LECTURERS ON THE PRACTICE OF MEDICINE.

VOL. I.

LONDON:

LONGMAN, ORME, BROWN, GREEN, AND LONGMANS,
PATERNOSTER-ROW.

1839.

457-75, 654; G-M 2956); (4) **Charles Aston Key,** "Femoral aneurism successfully treated by a ligature of the external iliac artery" (pp. 59-78; G-M 2957); and (5) **Thomas Wilkinson King,** "Observations on the thyroid gland, with notes on the same subject by Sir Astley Cooper," anticipating the endocrine action of the thyroid (pp. 429-56; G-M 1126). 38075

The H. F. Norman Copy

15. **Bright, Richard** (1789-1858) and **Thomas Addison** (1793-1860). Elements of the practice of medicine. Vol. I (all published). [10], 613pp. London: Longman [etc.], 1839. 223 x 141 mm. Original blind-stamped black cloth, rebacked preserving original gilt-lettered spine. Very good copy. The Haskell F. Norman copy, with bookplate. $2750

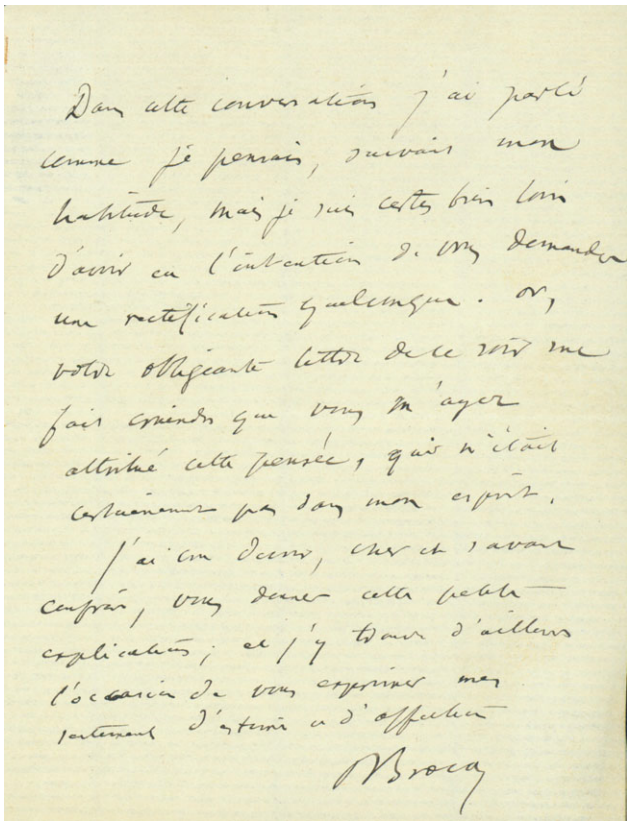
First Edition. Bright and Addison were joint lecturers in medicine at Guy's Hospital when they produced their textbook of general medicine; a projected second volume was never published. The book contains concise descriptions of over sixty diseases and conditions, and includes the first accurate account of appendicitis. According to records in the Longman Archive at the University of Reading, Bright and Addison's work was first published in three parts between 1836 and 1839, which were then issued together as Volume I of what was intended to be a larger work. About 240 copies of the volume were sold by Longman, who published the work on commission from the authors. Very scarce. Garrison-Morton 2215. 40799

Discussing Broca's "Traité des tumeurs"

16. **Broca, Paul** (1824-80). Autograph letter signed, in French, to an unidentified colleague ("Cher et savant confrere"), dated 15 Feb. 1867. 3pp. 128 x 102 mm. Creased horizontally, mounted. Accompanied by a halftone reproduction of a photographic portrait of Broca. $650

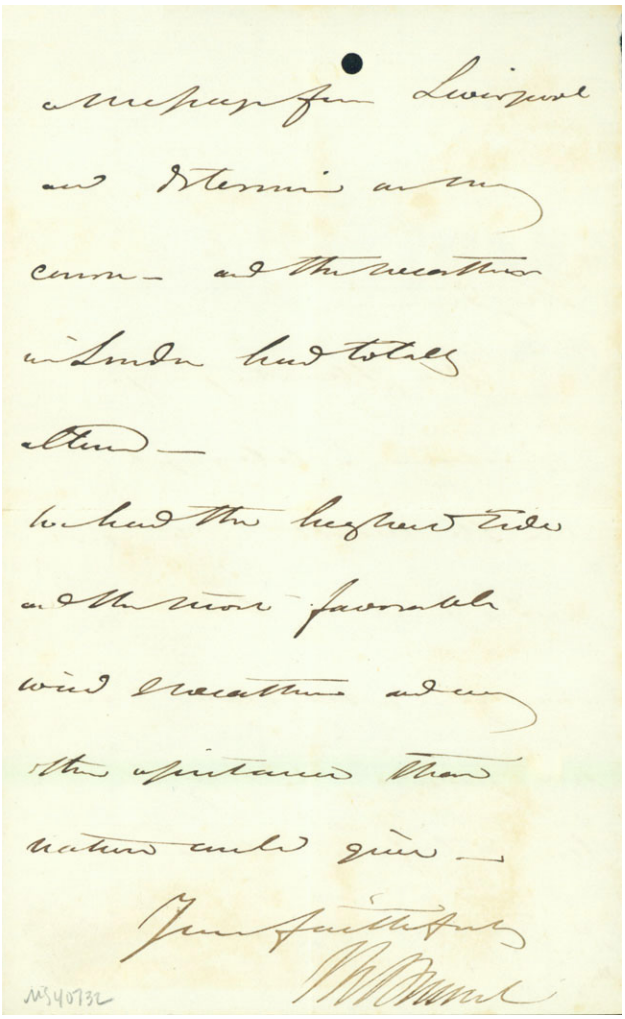
Correcting a misunderstanding that had arisen during a conversation about Broca's *Traité des tumeurs* (1866-69):

> Je serais désolé qu'il restait dans votre esprit le moindre doute sur la nature de notre conversation d'aujourd'hui. Vous vous souvenez sans doute qu'en abordant je vous ai remercié de votre article, puis que je suis allé chercher le livre que je voulais consulter, et qu'enfin, à mon retour, vous retrouvant avec notre ami commun M. R, j'ai repris langue avec vous et que c'est vous qui avez bien voulu remettre la conversation sur mon traité du tumeur. C'est alors que, me souvenant des reproches que m'avait jadis adressé M. R sur mon ardeur trop passionnée pour le [---], j'ai fait allusion au jugement inverse que vous aviez recemment porté sur moi, avec une bienveillance égale à la sienne. Dans cette conversation, j'ai parlé comme je pensais, suivant mon habitude, mais je



suis certes bien loin d'avoir eu l'intention de vous demander une rectification quelconque. Or, votre obligeante lettre de ce soir me fais craindre que vous m'ayez attribué cette pensée, qui n'était certainement pas dans mon esprit.

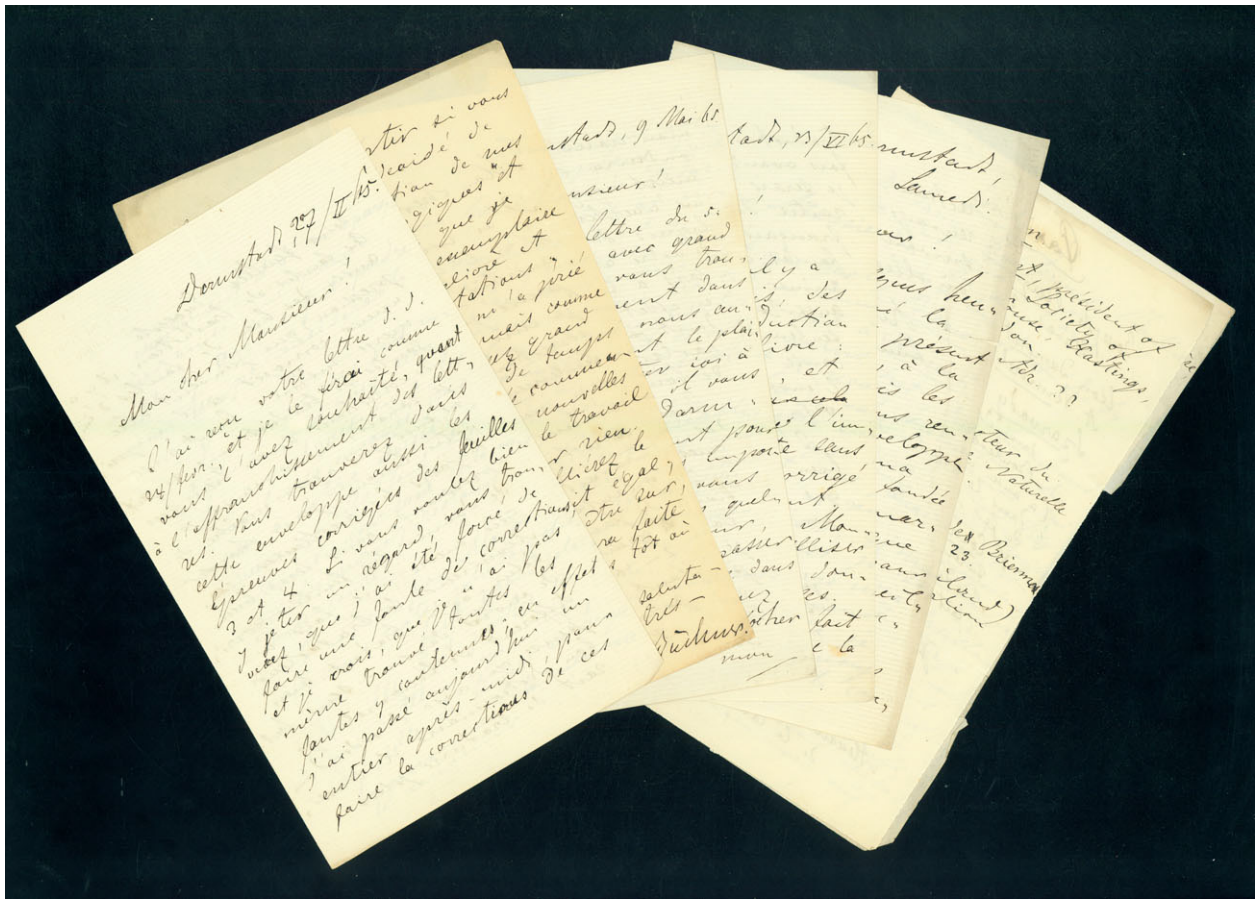
[I would be sorry if there remained in your mind the least doubt about the nature of our conversation today. You undoubtedly remember that when I met you I thanked you for your article, then went to look for the book that I wanted to consult, and that finally, finding you with our mutual friend M. Raige [?], I began talking with you again and that it was you who agreed to postpone the conversation on my treatise on tumors. At this point in time, remembering that M. Raige had formerly reproached me on my excessive enthusiasm for [---], I referred to the opposing judgment that you had recently so kindly related to me. In this conversation I spoke as I thought, as is my practice, but I am certainly far from intending to ask you for an unspecified correction. However, your kind letter of this evening makes me fear that you attributed this thought to me, which was certainly not in my mind.]



Broca is best known for his contributions to neurology, including his role in the discovery of cortical localization in the brain, as well as for his pioneering work in physical anthropology. However, he also wrote extensively on pathology during the early part of his scientific career. *Dictionary of Scientific Biography*. 38730

Launching the "Leviathan," Later Renamed the "Great Eastern"

17. **Brunel, Isambard Kingdom** (1806-59). A.L.s. to an unidentified recipient, probably Latimer Clark. N.p., February 2, 1858. 2pp. 184 x 115 mm. Small hole punched in upper margin. Provenance: Latimer Clark. $950



Brunel, perhaps the most celebrated British engineer of the nineteenth century, designed and supervised the construction of the Great Eastern, by far the largest steamship of its day. Although too big to be commercially successful, the ship proved to be well suited for the laying of submarine telegraph cables, beginning in 1865 and 1866 with the second and third Atlantic cables. Brunel's letter was written a few days after the Great Eastern's maiden launch on January 31, 1858; it thanks the recipient (probably Latimer Clark) for his "assistance in telegraphing me the weather" and states that "we had the highest tide and the most favourable wind." The letter is partly illegible: Brunel suffered a breakdown in health on the day that the ship was launched, which may account for this. Pencil annotations on the first page of the letter, made by Clark, read "Floating the 'Leviathan' afterward called the 'Great Eastern' LC 1877." Origins of Cyberspace 132. 40732

On Preparing the French Edition of his "Aus Natur und Wissenschaft"

18. **Büchner, Friedrich Karl Christian Ludwig** (1824-99). 6 autograph letters signed (5 in French, 1 in German) to the publisher Germer Baillière, plus autograph list most likely of potential recipients or reviewers. 19pp. total. Darmstadt, 15 December 1865 – 24 June 1865 (last letter dated through internal evidence). 223 x 140 mm. Some minor fraying and tiny tears along folds, otherwise very good. $2500

From Ludwig Büchner, one of the founding fathers of materialist philosophy and the author of *Kraft und Stoff* (1855; see *Printing and the Mind of Man* 338), in which he insisted that all natural phenomena, whether organic or inorganic, resulted not from some supernatural "vital spark" but from the actions of physico-mechanical forces alone. Büchner "was the most uncompromising representative of this school.

The thesis pursued in his 'Force and Matter' is that thought is as much an emanation of the brain as bile is an emanation of the liver. The mind and the spirit are products of an animal organism in the same way as motion is a product of a steam-engine" (*Printing and the Mind of Man*). In the aftermath of the Revolution of 1848 Büchner's ideas were considered dangerously radical and he was forced to resign his lectureship at the University of Tübingen. "The kind and extent of the polemic conducted becomes evident on reading the Preface and Notes in subsequent editions of *Kraft und Stoff,* as well as the collection of essays *Aus Natur und Wissenschaft* (1862)" (*Dictionary of Scientific Biography*).

Büchner's letters to the Germer Baillière firm deal with preparation of the French translation of *Aus Natur und Wissenschaft,* issued in 1866 under the title *Science et nature*. Among the topics discussed in the letters are Büchner's ongoing corrections to the proofs, which he found to be full of errors; his complaints about the French translator ("he has translated many notes in a sense quite different from the original; I think that with the help of a good dictionary he will succeed in translating more exactly"); and the possibility of Germer Baillière publishing his "Esquisses physiologiques"—a project that evidently fell through, since we can find no further record of it. Accompanying the letters is a list in Büchner's hand containing the names of several people organized by city (Paris, Caen, London, Rouen, Toulouse, Milan), presumably possible recipients or reviewers of Büchner's book. Among those listed are Dr. James Hunt, president of the Anthropological Society of London; Dr. Victor Cornil, author of *Manuel d'histologie pathologique* (see Garrison-Morton 2300); liberal journalist Frederic Szavardy, correspondent for the *Gazette de Cologne*; and socialist newspaper editor Auguste Vermorel, founder of the *Courrier Français* and *La jeune France*. 2204

"I Shall Present a Notice of my Evidence of Identification, to the Geol. Soc. next Wednesday"

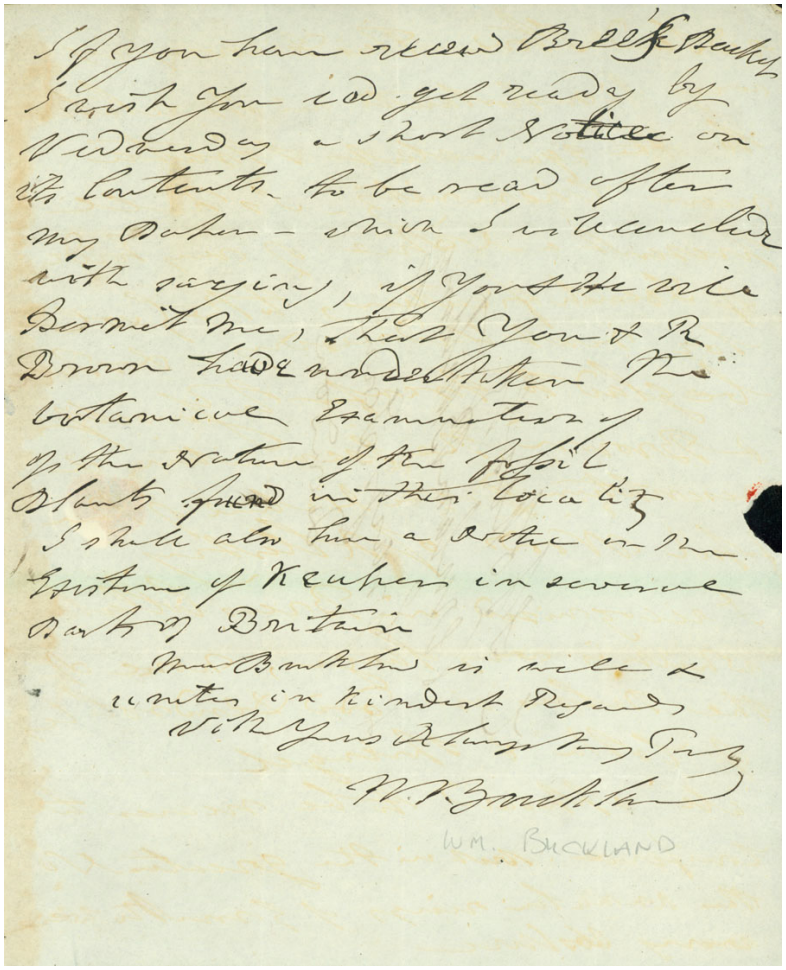
19. **Buckland, William** (1784-1856). Autograph letter signed to Charles Stokes (1783-1853). N.p., 27 Oct. 1836. 3pp. 228 x 187 mm. Small marginal lacuna where seal was broken, light dampstaining along central fold, seal reinforced with clear tape. $2750

Letter with excellent scientific content from geologist and paleontologist William Buckland, founder of the Oxford school of geology and author of the best-selling *Reliquiae Diluvianae* (1823), which promoted a catastrophist version of Earth's history marked by "discontinuous assemblages of organic life being created and dying out" (*Dictionary of Scientific Biography*). Buckland's letter discusses a significant geological discovery—the relationship between the New Red Sandstone strata in England and in Chemnitz, Germany, based on samples of petrified wood found in both regions.

> Many thanks for your letter rec'd at Bristol — I was sorry to miss you in the 1/2 day I was in London last week. I write to ask if you have rec'd from Revd. Mr. Bree of Allesley near Coventry some polished thin slices of silicified wood which he promised me to send up to you. I was at Allesley last week whither I have been longing to go for the last 10 years & have ascertained that the matrix from which the silicified wood in the gravel & on the surface of the fields of that district has been derived is the lower region of the New Red Sandstone — this discovery is very important in its relation to the equivalent strata near Chemnitz.

Chemnitz is the site of a Permian-era petrified forest, remarkable for its "outstanding three-dimensional preservation of particularly large fossil remains, made possible by siliceous permineralization, [which] provides the opportunity to study the gross morphology, anatomy and internal organization of plant tissues in a way not allowed by other preservational states" (Lucas et al., p. 8). Bree's samples from Allesley were apparently of a similar nature.

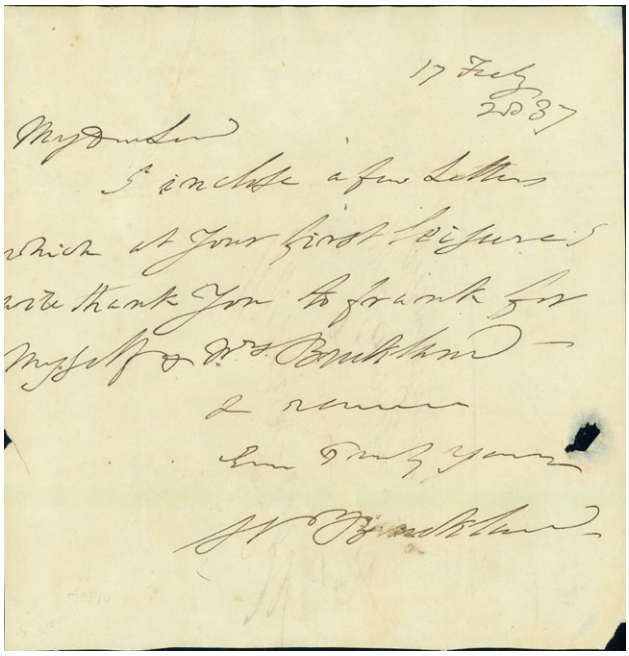
> I shall present a notice of my evidence of identification, to the Geol. Soc. next Wednesday & I shall be glad to transfer to yourself & Brown the examination & description of the nature of the fossil woods of Allesley. I recognized in Bree's collection which is very large, none of the palms and Dendrolites of Cotton and Sprengel all appeared to be nearer to Coniferae but in the greater no. the annular rings of growth were very obscure. If you have received Bree's packet I wish you wd. get ready by Wednesday a short Notice on its contents to be read after my paper which I concluded



with saying, if you will permit me, that you & R. Brown have undertaken the botanical examination of the nature of the fossil plants found in the locality. . . .

"R. Brown" refers to botanist Robert Brown (1773-1858), best known for naming the cell nucleus and for being the first to observe the seemingly random movement of particles suspended in a liquid or gas — what we now call Brownian motion. Brown's investigations of the cellular tissues of fossilized woods are noted in Buckland's *Geology and Mineralogy Considered with Reference to Natural Theology* (1836), published the same year this letter was written. Rev. William Thomas Bree (1786-1863), vicar of All Saints' church in Allesley, was a noted observer of all aspects of natural history who wrote many articles and letters on local plants, insects and bird life, a large number of which were published in *Loudon's Magazine of Natural History* between 1829 and 1837. Buckland's correspondent was Charles Stokes, a stockbroker and amateur geologist who collected specimens of petrified wood.

Buckland stated in his letter that he would present his "notice of my evidence of identification" to the Geological Society on the following Wednesday (Nov. 1); however, he did not do so until December 14 (see *Proceedings of the Geological Society of London* 2 [1838]: 439). Buckland's paper, titled "On the Occurrence of Silicified Trunks of Large Trees in the New Red Sandstone Formation of Poikilitic Series, at Allesley, near Coventry," was followed by "Further Notice on a partially Petrified Piece of Wood from an Ancient Roman Aqueduct at Eilsen, in the Principality of Lippe-Buckeberg," by Stokes. Lucas et al., "Non-Marine Permian Biostratigraphy and Biochronology: An Introduction," *Geological Society, London, Special Publications* 265 (2006): 1-14. 40462

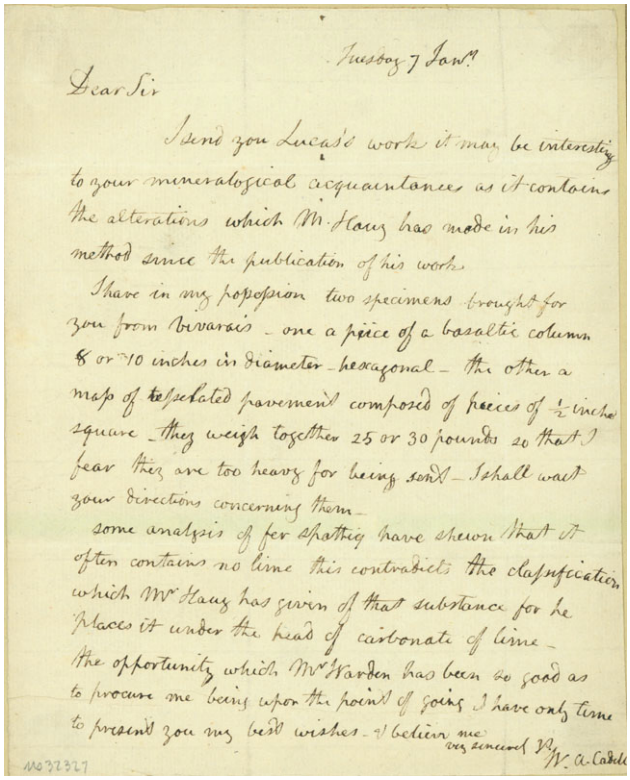


"I inclose a few letters"

20. **Buckland, William** (1784-1856) Autograph note signed to Viscount [William Willoughby] Cole (1807-86). February 17, 1837. 1 page, plus address on verso. 181 x 176 mm. Small hole where seal was broken, otherwise fine.$750

Autograph note signed from geologist and paleontologist William Buckland, author of *Reliquiae Diluvianae* (1823) and the first professor of geology at Oxford University, to his former student William Willoughby Cole, known by his courtesy title of Viscount Cole until 1840, when he assumed the title of third Earl of Enniskillen. Cole, an enthusiastic amateur geologist and paleontologist, amassed one of the world's largest collections of fossil fishes, which is now at the British Museum. He served as an M.P. in the House of Commons from 1831 until his elevation to the peerage.

Buckland's note reads "I inclose a few letters which at your first leisure I will thank you to frank for myself and Mrs. Buckland." As a Member of Parliament Cole enjoyed franking privileges (free postage), which he would have routinely extended to all of his friends and colleagues as was customary at the time. Buckland would have appreciated this service, since postage in England was expensive prior to the introduction of the Penny Post in 1840. 40819



"It may be Interesting to your Mineralogical Acquaintances"

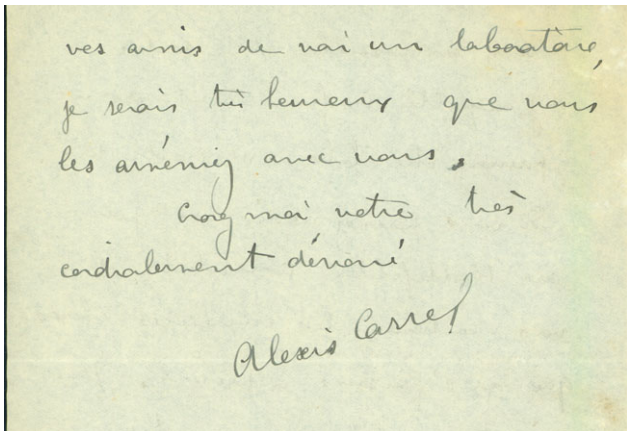
21. **Cadell, William Archibald** (1775-1855). Autograph letter signed to an unidentified recipient. N.p., n.d. (1813 or after). 1 page. 198 x 160 mm. Mounted. Very good. $950

Letter with good geological content from Scottish mathematician and antiquary W. A. Cadell, discussing the recent work of French mineralogist René-Just Hauy (1743-1822), famous for "Hauy's law" stating that every crystal of precise chemical structure and purity has a specific and characteristic shape:

> I send you Lucas's work it may be interesting to your mineralogical acquaintances as it contains the alterations which M. Hauy has made in his method since the publication of his work. . . .
>
> Some analysis of fer spath[…] [iron spar?] have shewn that it often contains no lime this contradicts the classification which Mr. Hauy has given

of that substance for he places it under the head of carbonate of lime. . . .

"Lucas's work" refers to Jean-André-Henri Lucas's *Tableau méthodique des espèces minérales, extraite du Tableau cristallographique publié par M. Hauy en 1809* (1813). *Dictionary of National Biography.* 32327



"I will Show you the Remarkable Things that We are Doing at Present"

22. **Carrel, Alexis** (1873-1944). Autograph letter signed, in French, to an unidentified recipient. New York, 29 November 1910. 2 – 1/2 pp. 172 x 148 mm. Minor staining along fold, but very good. $750

From Alexis Carrel, the first to succeed at cultivating warm-blooded animal cells *in vitro*, and the first to successfully transplant blood vessels and organs. "In January, 1912, Carrel transplanted heart tissue from a chick embryo into an in vitro culture. . . . By bathing the tissue in fresh nutrients and by discarding the used medium to ensure the elimination of waste products, Carrel and his assistants kept the culture in a living state for thirty-eight years" (Magee, I, p. 165). Carrel received the 1912 Nobel Prize in physiology / medicine for this work, most of which was carried out at the Rockefeller Institute in New York.

Carrel's letter, written while he was at the Institute, alludes to his researches and gives an indication of how much time he devoted to his work:

> Je vous remercie de votre très aimable invitation, et je serais charmé de diner mercredi soir avec vous et M. et Mme. Vigoureux. Mais je dois vous dire franchement que jusqu'au mois de janvier mon travail m'occupera, pour ainsi dire, chaque soir. . . .
>
> Si vous pouvez venir un jour au Rockefeller Institute, je vous montrerai les curieuses choses que nous faisons à présent. Je suis toujours libre pendant une demie heure environ, entre une heure et une heure et demi. Dans le cas ou cela intéresseront vos amis de voir un laboratoire je serais très heureux que vous les améniez avec vous.
>
> [I thank you for your kind invitation, and would be delighted to dine with you and Mr. and Mrs. Vigoureux on Wednesday night. But I must tell you frankly that my work will occupy me every night until the month of January. . . .
>
> If you can come some day to the Rockefeller Institute, I will show you the remarkable things that we are doing at present. I am always free for about half an hour between one and one-thirty. If it will interest your friends to see a laboratory I would be very happy for you to bring them with you.]

Magee, ed. *The Nobel Prize Winners: Physiology or Medicine,* I, pp. 161-69. 34281

The Origin of Bibliography—Large Paper Copy

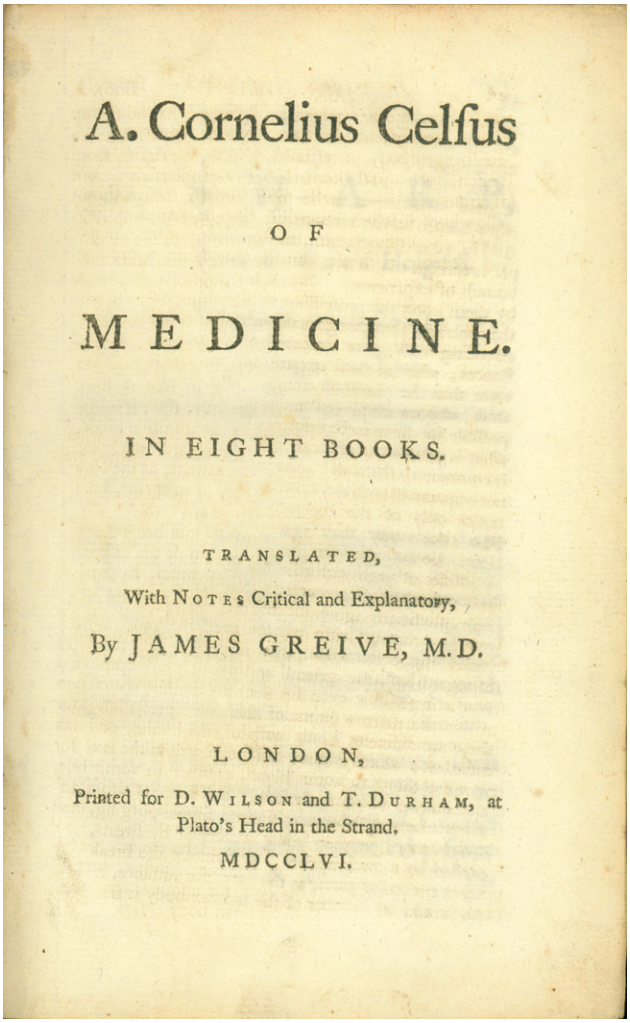
23. **Callimachus** (ca. 310-240 B.C.) Pinakes. In *Hymni, epigrammata et fragmenta,* ed. Theodor J. G. F. Graevius et al. (Utrecht: F. Halma and W. van de Water, 1697), pp. 350-353. 2 vols., 8vo. [32], 438, [369]-496, 24], [114]; [16] 758, [64]pp. 6 plates, engraved text illustrations. 263 x 145 mm. (large paper). Modern half calf gilt, cloth boards. Minor foxing and offsetting from plates, but very good. $1750

Editio princeps of Callimachus's *Pinakes* ("Lists"), the earliest library catalogue, and the origin of bibliography. Callimachus, a renowned Hellenistic poet, spent most of his life in Alexandria, where he served as director of the city's great library and began compiling the first catalogue of its holdings. Only a few fragments of the catalogue survive, together with a scattering of references to it in other ancient works. The

most important of these fragments is Callimachus's *Pinakes* of Greek authors and their works, which at one time filled 120 papyrus rolls and "amounted to a systematic survey of Greek literature up to the first half of the third century B.C." (Breslauer and Folter, p. 21). Callimachus's bibliographical methods would not be out of place in a modern library; an analysis of the eight fragments of the *Pinakes* that remain shows that Callimachus

1. divided the authors into classes and within these classes if necessary into subdivisions;
2. arranged the authors in the classes or subdivisions alphabetically;
3. added to the name of each author (if possible) biographical data;
4. listed under an author's name the titles of his works, combining works of the same kind to groups (no more than that can be deduced from the eight citations); and
5. cited the opening words of each work as well as
6. its extent, i.e., the number of lines (Blum, p. 152).

The first printed version of the *Pinakes* is contained in the 17th-century variorum edition of Callimachus's extant works edited by T. J. G. F. Graevius, which includes the first edition of the monumental commentary by Ezechiel Spanheim. The edition also incorporates the 420 fragments collected and elucidated by the great English classical scholar Richard Bentley, whose reading of these fragments represents "the earliest



A. Cornelius Celsus

OF

MEDICINE.

IN EIGHT BOOKS.

TRANSLATED,

With NOTES Critical and Explanatory,

By JAMES GREIVE, M.D.

LONDON,

Printed for D. WILSON and T. DURHAM, at Plato's Head in the Strand.

MDCCLVI.

example of a really critical method applied to such a work (*Dictionary of National Biography*). Blum, *Kallimachos, the Alexandrian Library and the Origins of Bibliography,* ch. 4. Breslauer and Folter, *Bibliography: Its History and Development,* p. 21. 40868

Origin of the Medical Term "Cancer"

24. **Celsus, Aulus Cornelius** (fl. 1st cent. A.D.). Of medicine. In eight books. Translated, with notes critical and explanatory, by James Greive, M.D. 8vo. xxxii, 519, [7]pp. London: D. Wilson and T. Durham, 1756. 208 x 131 mm. Calf c. 1756, rebacked, corners repaired, endpapers renewed. Light toning, occasional spotting, but very good. 18th century owner's signature ("George Howell January 21 1757") on the front flyleaf. $3750

First Edition in English. Celsus' *De medicina,* written circa 30 C.E., is the oldest Western medical document after the Hippocratic writings, the earliest major medical treatise written in Latin to survive, and the first of the treatises on medicine from the ancient world to be published in English. Prior to this edition of Celsus, fragments of Hippocrates, such as the Hippocratic Oath, were translated into English , but virtually all of Hippocrates, Galen and other classical writers on medicine and surgery waited until the nineteenth or twentieth century to be translated.

Celsus remains the most important source of present-day knowledge of medicine in the Roman empire. *De medicina* was originally part of a larger encyclopedic work covering agriculture, military science, rhetoric, government, law, philosophy and medicine, but only

the eight books on medicine survived intact. Like many of the ancient classics, the text was lost during the Middle Ages, and rediscovered by humanists in the Renaissance. In this case manuscripts were discovered in 1427 in the Laurentian Library, Florence, from which the first printed edition, edited by Bartholomaeus Fontinus, was published in 1478.

While there has been much debate as to whether Celsus was truly a "physician" (a term that in ancient times referred to someone who practiced medicine for money), it is clear from the text of *De medicina* that he had considerable first-hand medical expertise. "From his writing we may conclude that his professional skills were excellent and that his knowledge of medicine was exhaustive. He was also endowed with superior literary skills. . . . His contributions to medicine are major: he wrote the first major medical treatise in Latin; he created, almost single-handedly, scientific Latin; and he wrote the first systematic review of all that was known in medicine up to his time" (Prioreschi, pp. 210-11).

Book I of *De medicina* contains a historical overview of medicine; Book II deals with the course and general treatment of diseases; Books III and IV with special therapy; Books V and VI with pharmacology (drugs and medication); Book VII with surgery; and Book VIII with bone diseases. Celsus is credited with recording the cardinal signs of inflammation: *calor* (warmth), *dolor* (pain), *tumor* (swelling) and *rubor* (redness and hyperaemia). He goes into great detail regarding the preparation of numerous ancient medicinal remedies including the preparation of opioids. In addition, he describes many first-century Roman surgical procedures which included removal of a cataract, treatment for bladder stones, and the setting of fractures.

In compiling *De medicina* Celsus drew heavily upon the Hippocratic corpus, referencing some 80 Greek medical writers, some of whom are now known only from Celsus's work. He translated Greek medical terms into Latin, and many of these Latin terms have remained standard in medicine to the present day. Included among these terms is the word "cancer" (Latin for the Greek *karkinos* [crab]), which Celsus used to describe various types of non-malignant ulceration such as erysipelas and gangrene. In discussing malignant disease Celsus used the words *carcinoma* and *carcinode*, terms derived directly from the Greek. In his principal account of the disease (pp. 302-4 in the 1757 Greive translation),

> he starts by saying that it is not very dangerous unless interfered with by injudicious treatment, but goes on to mention a more dangerous form which he describes as *cacoethe*s (κακοηθεσ), malignant, using the Greek adjective which is often applied to the disease by Hippocrates. For this variety alone he suggests operative treatment though he gives no details.
>
> He goes on to refer to several varieties of local superficial cancer or rodent ulcer using the terms *carcinode* and *carcinoma* and mentions the disease as occurring on the face, nose, ears, lips, corner of the eye and in the breast; he also speaks of cancerous nasal polypus and carcinoma at the umbilicus.
>
> Celsus says nothing about internal cancer—the κρυπτοι καρκινοι known to Hippocrates and stated by him to be incurable and untreatable (Celsus, *De medicina,* ed. and trans. by W. G. Spencer [1935], vol. III, p. 592).

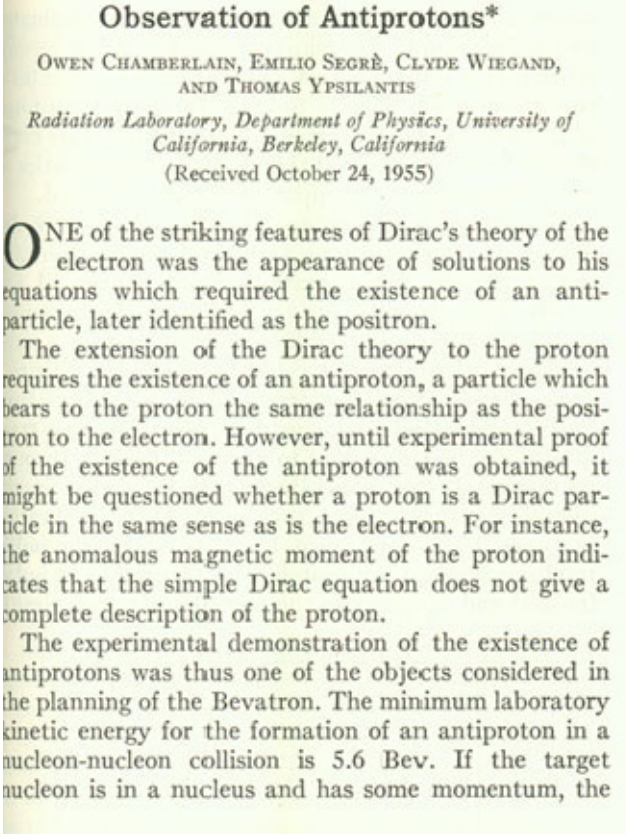
Dictionary of Scientific Biography. Prioreschi, *A History of Medicine*, vol. III, pp. 182-211. Garrison-Morton 21 (note). 40803

The Antiproton

25. **Chamberlain, Owen** (1920-2006), **Emilio Segrè** (1905-89) *et al.* Observation of antiprotons. In *The Physical Review,* 2nd series, 100 (1955): 947-50. Whole number. 763-979pp. 268 x 202 mm. Original printed wrappers, vertical crease in back wrapper. Boxed. $1500

First Edition, journal issue. Segrè and Chamberlain, colleagues at the University of California, Berkeley, shared the 1959 Nobel Prize in physics for their discovery of the antiproton, a particle with the same mass and spin as the proton but with opposite charge and magnetic moment. Such antiparticles had been predicted in 1928 by Dirac's relativistic theory of the electron, and the first such particle, the positron, had been discovered by C. D. Anderson in 1932. Several rival groups at Berkeley also entered the antiproton hunt, but the Segrè team's experimental ingenuity insured its triumph:

> I decided to attack the problem in two ways. One was based on the determination of the charge and mass of the particle. The other concentrated on



Observation of Antiprotons*

OWEN CHAMBERLAIN, EMILIO SEGRÈ, CLYDE WIEGAND, AND THOMAS YPSILANTIS

Radiation Laboratory, Department of Physics, University of California, Berkeley, California

(Received October 24, 1955)

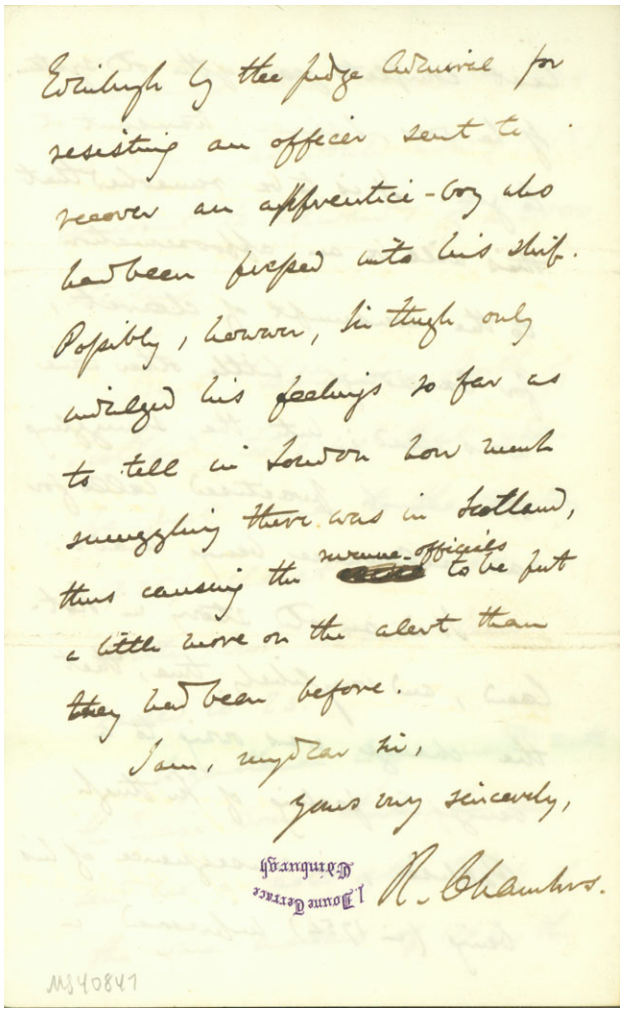
ONE of the striking features of Dirac's theory of the electron was the appearance of solutions to his equations which required the existence of an antiparticle, later identified as the positron.

The extension of the Dirac theory to the proton requires the existence of an antiproton, a particle which bears to the proton the same relationship as the positron to the electron. However, until experimental proof of the existence of the antiproton was obtained, it might be questioned whether a proton is a Dirac particle in the same sense as is the electron. For instance, the anomalous magnetic moment of the proton indicates that the simple Dirac equation does not give a complete description of the proton.

The experimental demonstration of the existence of antiprotons was thus one of the objects considered in the planning of the Bevatron. The minimum laboratory kinetic energy for the formation of an antiproton in a nucleon-nucleon collision is 5.6 Bev. If the target nucleon is in a nucleus and has some momentum, the

the observation of the phenomena attendant on the annihilation of a stopping antiproton. The stopping antiproton and a proton of the target should mutually annihilate each other, and the rest mass of the two particles should transform itself in one of many possible ways into other particles such as pions. These would leave tracks in a photographic emulsion and the annihilation would thus become evident. . . .

We started the run on August 25, 1955, and after a few days of tuning up, we began observing antiproton signals. We based the identification on measurement of the velocity, momentum, and charge of a particle. The signals for velocity were oscilloscope traces recording the passage of a particle through a velocity-selecting Cerenkov detector. . . . We detected about one antiproton for every few hundred thousand other particles crossing our apparatus. . . . We decided to write a letter to the *Physical Review* and an article for *Nature*. . . . The mass-spectrograph experiment concluded on October 1, 1955, having proved the existence of the antiproton, and soon thereafter the emulsion work confirmed it (Segrè, *A Mind Always in Motion*, pp. 256-57). 40520



Edinburgh by the judge Advocate for resisting an officer sent to recover an apprentice-boy who had been pressed into his ship. Possibly, however, his sight only misled his feelings so far as to tell in London how much smuggling there was in Scotland, thus causing the revenue-officers to be put a little more on the alert than they had been before.

I am, my dear sir,

yours very sincerely,

R. Chambers.

Lauriston Terrace Edinburgh

MS 40841

"I Can Tell You . . . That the Consumption was Very Lavish"

26. **Chambers, Robert** (1802-71). Autograph letter signed to an unidentified correspondent. 8pp. Edinburgh, Feb. 29, 1860. 182 x 115 mm. Light soiling along folds, otherwise fine. $650

From the author of *Vestiges of the Natural History of Creation* (1844), the first full-length exposition in English of an evolutionary theory of biology, and the most sensational book on its subject to appear prior to Darwin's *On the Origin of Species*. Chambers's work was one of the greatest scientific best-sellers of the Victorian age, going through at least twelve large editions in England, numerous American editions, and several foreign-language translations. Chambers was also the author of numerous other works, a partner with his brother William in the publishing firm W. & R. Chambers, and a joint editor of *Chambers's Edinburgh*

Journal. He was highly influential in the mid-19th century in both scientific and political circles.

In his letter Chambers thanks his correspondent for letting him know of his election to the Athenaeum Club, "which I feel to be one of the most flattering events of my life, and a step likely to be serviceable for making my latter years pleasant." He then goes on to discuss at length the question of how much French wine was consumed in Scotland prior to "the great change of the [customs] duties in 1763," relating several colorful anecdotes about the Scottish thirst for French wine in the 18th century:

> I can tell you . . . that the consumption was very lavish. You may judge from such a fact as this—when Lord Cockburn's father was living with his uncle President Dundas [i.e., Scottish judge Robert Dundas, Lord Arniston (1713–1787)] at Arniston between 1750 and 1760, there were sixteen hogs-heads of claret [roughly 880 gallons] consumed in that house annually. A hogs-head contains 22 dozen. It could cost from £10 to £15 per hogs-head. . . .
>
> . . . the Earl of Leven had all his six grown-up sons living with him at once in the house together. A hogs-head of good claret arrived, and they were all so much pleased with it, that they agreed to keep it flowing with the help of casual company. Accordingly, one or the other of them, in greater or lesser number, continued at table with such friends as came, drinking the claret, and in ten days the butt was exhausted. . . .

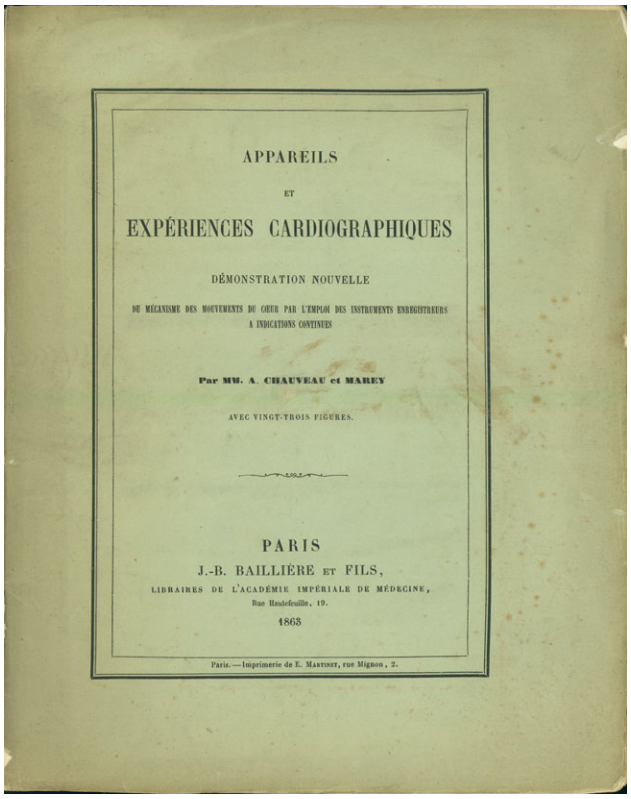
40847

Rare Charcot Medallion by Vernon

27. **Charcot, Jean Martin** (1825-93). Docteur J. M. Charcot. Cast bronze medallion by **Frédéric Vernon** (1858-1912), together with smaller medallion of the Salpetrière. Charcot medallion signed "F. Vernon 1883" in the metal. Charcot medallion measures 75 mm. in diameter, Salpetrière medallion measures 54 mm. in diameter. Both medallions mounted on velvet-covered board, velvet a little worn. $5000

Rare medallion by the noted French sculptor Frédéric Vernon, the obverse showing Charcot's head in profile looking to the right (the reverse is blank). This is the first of two medallions by Vernon commemorating Charcot; the second medallion, made after Charcot's death, is of gilt bronze and is slightly smaller. Jacobs, in his forward to M. E. Abbott's *Classified and Annotated Bibliography of Sir William Osler's Publications* (2nd ed. 1939), notes that Sir William Osler was persuaded to sit for Vernon in 1905 after being shown a medal of Charcot's likeness—possibly a copy of this 1883 medallion.

Charcot, known as the "founder of modern neurology," taught at the Salpetrière Hospital in Paris for 33



APPAREILS

ET

EXPÉRIENCES CARDIOGRAPHIQUES

DÉMONSTRATION NOUVELLE

DU MÉCANISME DES MOUVEMENTS DU CŒUR PAR L'EMPLOI DES INSTRUMENTS ENREGISTREURS A INDICATIONS CONTINUES

Par MM. A. CHAUVEAU et MAREY

AVEC VINGT-TROIS FIGURES.

PARIS

J.-B. BAILLIÈRE ET FILS,

LIBRAIRES DE L'ACADÉMIE IMPÉRIALE DE MÉDECINE,

Rue Hautefeuille, 19.

1863

Paris. — Imprimerie de E. MARTINET, rue Mignon, 2.

years. He is associated with at least 15 medical eponyms, including Charcot-Marie-Tooth disease (peroneal muscular atrophy) and amyotrophic lateral sclerosis. Charcot had a great influence on the developing fields of neurology and psychology, both through his own work and through that of his students, among whom were Sigmund Freud, Pierre Janet, William James, Georges Gilles de la Tourette and Alfred Binet. Storer, *Medicina in nummis,* 603. 40704

Introduction of Cardiac Catheterization to Record Changes in Intracardiac Pressure

28. **Chauveau, Auguste (1827-1917) and Marey, Étienne Jules** (1830-1904). Appareils et expériences cardiographiques. Démonstration nouvelle du mécanisme des mouvements du coeur par l'emploi des instruments enregistreurs à indications continues. Offprint from *Mémoires de l'Académie impériale de Médecine* 26 (1863). [4], 52 pages, including half-title. 23 text illustrations,

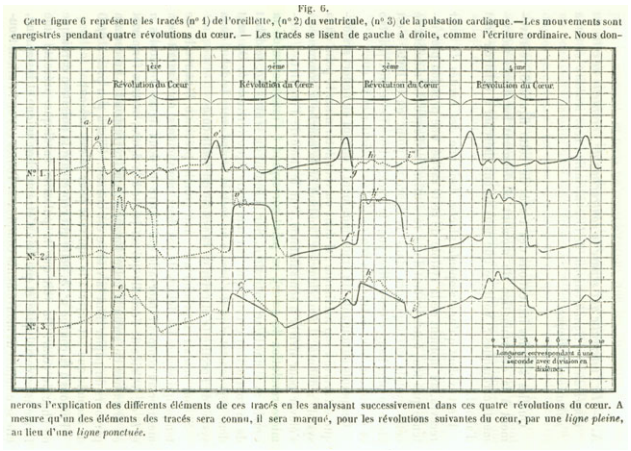


Fig. 6.

Cette figure 6 représente les tracés (n° 1) de l'oreillette, (n° 2) du ventricule, (n° 3) de la pulsation cardiaque. — Les mouvements sont enregistrés pendant quatre révolutions du cœur. — Les tracés se lisent de gauche à droite, comme l'écriture ordinaire. Nous donnerons l'explication des différents éléments de ces tracés en les analysant successivement dans ces quatre révolutions du cœur. A mesure qu'un des éléments des tracés sera connu, il sera marqué, pour les révolutions suivantes du cœur, par une *ligne pleine*, au lieu d'une *ligne ponctuée*.

mostly of cardiac tracings. Original wrappers, backstrip and cover edges chipped in several places, front cover and preliminaries foxed, but very good. $2250

First Edition, Rare Offprint Issue. Marey pioneered the use of graphic methods to record physiological phenomena; his friend Auguste Chauveau, *chef de service* of physiology and anatomy at the Veterinary Institute of Lyons, was an expert on the equine cardiovascular system. Their collaboration, described as "one of the most important cooperative ventures in medical history" (Braun, p. 18), resulted in the world's first cardiographic recording.

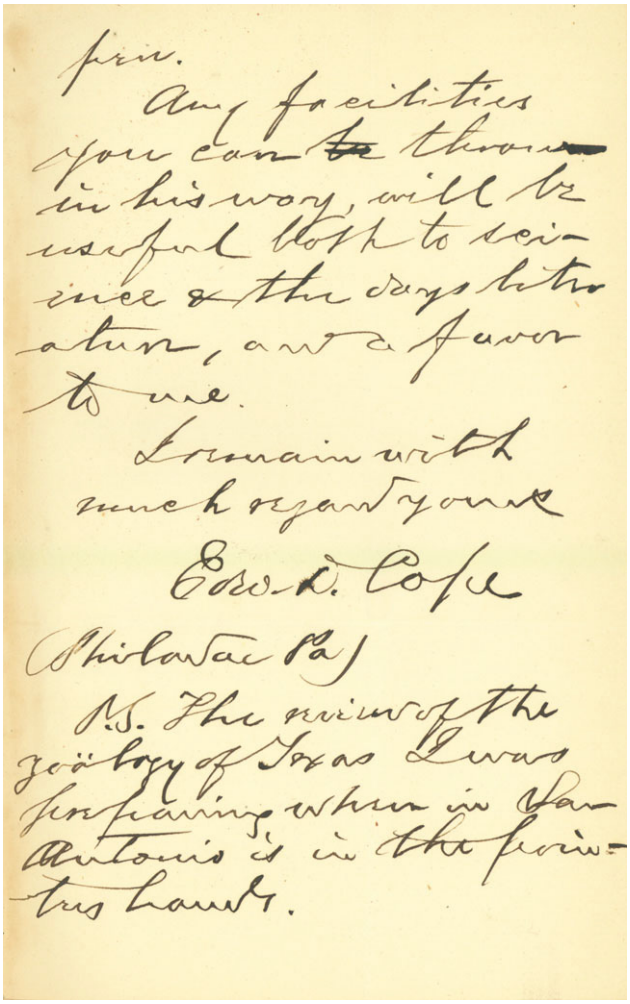
> Chauveau's experience in cardiac physiology combined with Marey's skill and knowledge of instrumentation produced a revolutionary monitoring and recording technique: they radically extended the possibilities of cardiac catheterization by using it to record changes in intracardiac pressure. Experimenting on a horse (chosen because of the large size of the animal's heart), Chauveau introduced thin rubber bulbs that Marey had fashioned into two of the horse's heart chambers. Marey had attached each of the two bulbs to another outside the horse's body by means of a long rubber tube and had connected each of these exterior bulbs to a stylus. As one chamber of the heart expanded, the displacement of the first bulb was transmitted to the second and to the stylus, pushing it upward against a sheet of paper wrapped around a cylinder. As the chamber contracted, the line made by the stylus descended, forming the characteristic curve of the cardiogram. The expansion and contraction of the second chamber, alternating with

that of the first, was recorded in the same way, and the result was two sinuous lines that not only showed the pressure changes in each of the heart's two chambers, but also recorded their exact sequence. With this procedure, for the first time a reliable indication was given both of the moments of contraction and distension for each heart chamber and of the order in which these changes in pressure occurred. . . .

They published their cardiographic tracings in 1861 and 1862; in 1863, with improvements made to their recording procedures, they published graphs that demonstrated cardiac hemodynamics in complete detail. These remarkable tracings and the accompanying summary table of their experiments on the horse won them the physiology prize given by the Académie des Sciences that year. . . . The accuracy of their records was surpassed only in 1931 when electronic tracing of human subjects was introduced (Braun, pp. 19-20).

Braun, Marta, *Picturing Time: The Work of Etienne-Jules Marey (1830-1904)* (1994), pp. 18-20. Garrison-Morton 816. 40800

From a Pioneer American Paleontologist


Any facilities you can ~~to~~ throw in his way, will be useful both to science & the days literature, and a favor to me.

I remain with much regard yours

Edw. D. Cope

Philadelphia Pa

P.S. The review of the geology of Texas I was professing when in San Antonio is in the printers hands.

29. **Cope, Edward Drinker** (1840-97). (1) Autograph letter signed to General Edward O. C. Ord (1818-83). Denver, July 25, 1879. 2pp. (2) Letter signed to Edward Ingersoll (1852-1946), with postscript in Cope's hand. Philadelphia, February 16, 1883. 2pp. Both letters tipped into Ingersoll's copy of Cope's *The Crocodilians, Lizards, and Snakes of North America* (Washington, D.C.: Government Printing Office, 1900), with bookplate of the Explorers Club Library stating that this copy had been donated by Ingersoll. Book is bound in cloth ca. 1900, leather spine label (worn, cracked), cover detached but present, minor toning and dampstaining. $1500

From renowned naturalist Edward Drinker Cope, pioneer in the development of American vertebrate paleontology, originator of "Cope's Law" stating that population lineages tend to increase in body size over evolutionary time, and author of an astonishing 1500-plus scientific books and papers. From 1871 to 1879 Cope traveled all over the American West with the Hayden and Wheeler geological surveys, where he explored previously undiscovered fossil fields, discovered and named dozens of new dinosaur species, and published an enormous number of scientific papers on his findings—76 in one year alone! Cope's prodigious output during this period brought him into conflict with fellow American paleontologist Othniel C. Marsh, resulting in the famous "Bone Wars," a 20-year-long controversy between the two men over priority of discovery, validity of achievements and access to publication.

Cope's 1879 letter was written to General Edward O. C. Ord, a hero of the American Civil War who at the time was serving as commander of the U. S. Army's

Department of Texas. Cope's letter introduced Ernest Ingersoll, a rising young naturalist and science writer:

> Dear Sir:—
>
> I presume on the various facilities you have at different times granted me, to introduce to your notice my friend Mr. Ernest Ingersoll who is both naturalist and literateur [sic]. He is now visiting Texas under the auspices of Harper Bros. N. York, and I suspect will find in San Antonio and its neighborhood various themes for his pen.
>
> Any facilities you can throw in his way, will be useful both to science & the days literature, and a favor to me.
>
> I remain with much regard yours Edw. D. Cope
>
> (Philada., Pa)
>
> P.S. The review of the zoology of Texas I was preparing when in San Antonio is in the printer's hands.

Ernest Ingersoll trained as a naturalist under the eminent zoologist Louis Agassiz and served as a zoologist with the Hayden geological survey expedition, authoring the expedition's *Report on the Natural History of the United States Geological and Geographical Survey of the Territories* (1874). It is more than likely that Ingersoll made the acquaintance of Edward Cope during the expedition. While on the Hayden survey, Ingersoll and his friend William Henry Jackson were the first trained scientists to see and describe the ancient Mesa Verde cliff dwellings. Ingersoll worked as a science writer for most of his life, contributing articles to numerous journals and publishing two important monographs on the shellfisheries of the United States and Canada, as well as several other works on natural history and geology. The 1879 letter of introduction to Gen. Ord that Cope wrote for Ingersoll must have remained in Ingersoll's hands, as he was able to paste it, together with the 1883 letter, into his copy of Cope's posthumous *Crocodilians, Lizards, and Snakes of North America*.

Cope's 1883 letter, written to Ingersoll himself, touches on Ingersoll's profession as a science writer:

> Dear Sir
>
> In reply to yours in which you ask me to examine your manuscript with a view to your proposition, I will send the Naturalist to you.
>
> You will find the latest information upon the American species of rattlesnakes in Wheeler's survey – zoology. See also Proceedings Academy Natural Science, Philada. for Jan. 83.
>
> Please accept my thanks for your article.
>
> I remain yours very truly, Edw. D. Cope
>
> P.S. Will you please kindly give your address.

"Naturalist" refers to the journal *American Naturalist,* the first scientific journal devoted exclusively to biology. Cope bought half the rights to the journal in 1877, and used it as a venue for his numerous scientific papers. "Wheeler's survey - zoology" refers to Volume 5 of *Report upon United States Geographical Surveys West of the One Hundredth Meridian in charge of First Lieut. Geo. M. Wheeler*; the Wheeler survey (1872-79) was the last of the four great surveys of the American West undertaken before the formation of the U. S. Geological Survey. *Dictionary of Scientific Biography.* MacKenzie, "Biographic Memoir of Ernest Ingersoll," *Marine Fisheries Review* 53 (1991): 23-29. 40655

Signed by Crick

30. **Crick, Francis H. C.** (1916-2004). The biochemistry of genetics. Offprint from *Proceedings of the Plenary Sessions, Sixth International Congress of Biochemistry* (1964). [20]pp. 281 x 217 mm. Original printed wrappers, *signed by Francis Crick* on the front wrapper. Fine copy. **Sold**

First Edition, Offprint Issue of Crick's review of current progress in molecular biology and the biochemistry of genetics. Crick received a share of the Nobel Prize in physiology or medicine in 1962 for his role in discovering the double-helix structure of DNA (with James Watson and Maurice Wilkins). 40789

Rare Darwin Caricature

31. **Darwin, Charles** (1809-82). Prof. Darwin. Chromolithograph caricature of Darwin by Faustin Betbeder, from *Figaro's London Sketch Book of Celebrities* (18 Feb. 1874). Mounted on a leaf from the *Sketch Book* (trimmed) with wood-engraved frame and printed caption. 208 x 121 mm. Small lacuna in left margin of mount, margins of mount irregularly trimmed, minor creasing. $400

One of the best-known and rarest caricatures of Darwin, showing him as an ape inviting another ape to contemplate himself in a mirror. Darwin was often caricatured as an ape after the publication of *Descent of Man* (1871), the first of his works to discuss human evolution; it was in this work that he stated that the extinct ancestors of *Homo sapiens* would have to be classed among the primates. Caricatures like this one both reflected and perpetuated the popular misconception that Darwin had posited man's direct descent from apes as we know them today. See Browne, "Darwin in caricature: A study in the popularization and dissemination of evolutionary theory," in Larson, *The Art of Evolution: Darwin, Darwinisms and Visual Culture* (2009), p. 26. 40855

Inscribed by the Author

32. **Delondre, Auguste & Bouchardat, Apollinaire** (1806-86). Quinologie: Des quinquinas. . . . 4to. [4] 48pp. 23 hand-colored lithographed plates (each with tissue guard), double-page hand-colored engraved map. Paris: Germer Baillière, 1854. 340 x 257 mm. Marbled boards, cloth backstrip c. 1854, somewhat rubbed & faded, small splits in front hinge. Minor foxing, but very good. *Inscribed by Delondre* on the flyleaf: "à Monsieur Dublanc Membre de l'Académie Impériale de Médecine &c. &c. / Souvenir bien affectueux /

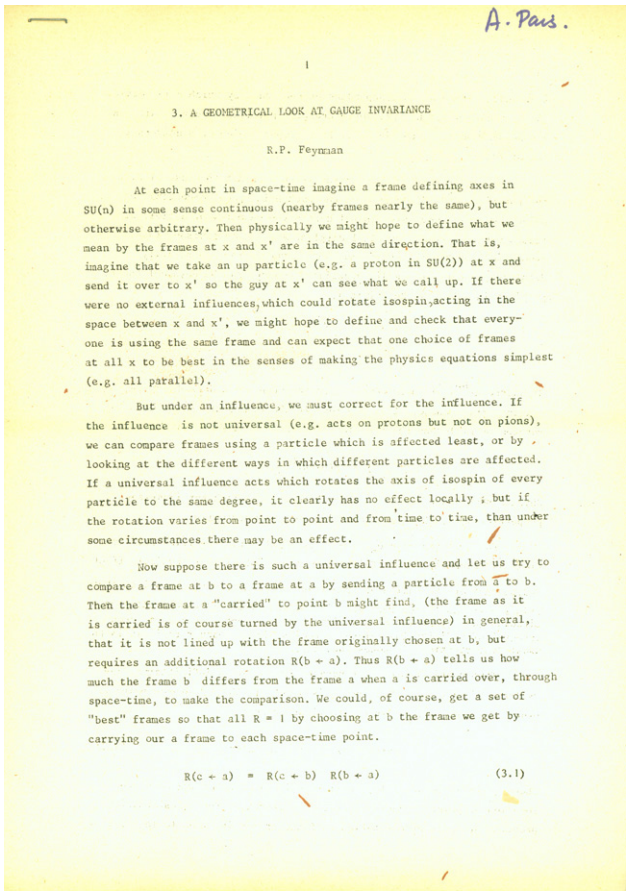
Graville-Havre 8 novb. 1856 / Auguste Delondre." $1500

First Edition. "This work contains twenty-three good coloured plates, exhibiting all the barks then met with in commerce" (Flückiger & Hanbury, quoted in Waring, p. 355). Delondre, a pharmacist and quinine manufacturer, was interested in both the scientific and commercial aspects of quinine; his book illustrates and describes 33 different varieties of both true and false cinchona from the mountainous regions of South America, which at the time were the sole source of cinchona bark. Drug manufacturers continue to extract quinine from cinchona even today, as it is not commercially feasible to synthesize it in the laboratory. 34516

Three by Feynman

33. **Feynman, Richard** (1918-88). (1) The present situation in fundamental theoretical physics. Offprint from *Anais da Academia Brasileira de Ciências* 26 (1954). [2], 51-59pp. 270 x 185 mm. Original printed wrappers, one corner a little creased. (2) Photocopy of typed letter signed to V. K. Weisskopf. Pasadena, Jan. 4 – Feb. 11, 1961. 15pp. Stapled. 281 x 217 mm. (3) Gauge theories. Photocopied and mimeographed typescript. N.p., 1976. 298 x 212 mm. Together 3 items, from the library of **Abraham Pais** (1918-2000), physicist and historian of physics, with his signature and initials in several places. Very good. $750

First Edition of no. (1). Feynman received a share of the 1965 Nobel Prize in physics for his fundamental



A. Pais.

1

3. A GEOMETRICAL LOOK AT GAUGE INVARIANCE

R.P. Feynman

At each point in space-time imagine a frame defining axes in SU(n) in some sense continuous (nearby frames nearly the same), but otherwise arbitrary. Then physically we might hope to define what we mean by the frames at x and x' are in the same direction. That is, imagine that we take an up particle (e.g. a proton in SU(2)) at x and send it over to x' so the guy at x' can see what we call up. If there were no external influences, which could rotate isospin, acting in the space between x and x', we might hope to define and check that everyone is using the same frame and can expect that one choice of frames at all x to be best in the senses of making the physics equations simplest (e.g. all parallel).

But under an influence, we must correct for the influence. If the influence is not universal (e.g. acts on protons but not on pions), we can compare frames using a particle which is affected least, or by looking at the different ways in which different particles are affected. If a universal influence acts which rotates the axis of isospin of every particle to the same degree, it clearly has no effect locally ; but if the rotation varies from point to point and from time to time, than under some circumstances there may be an effect.

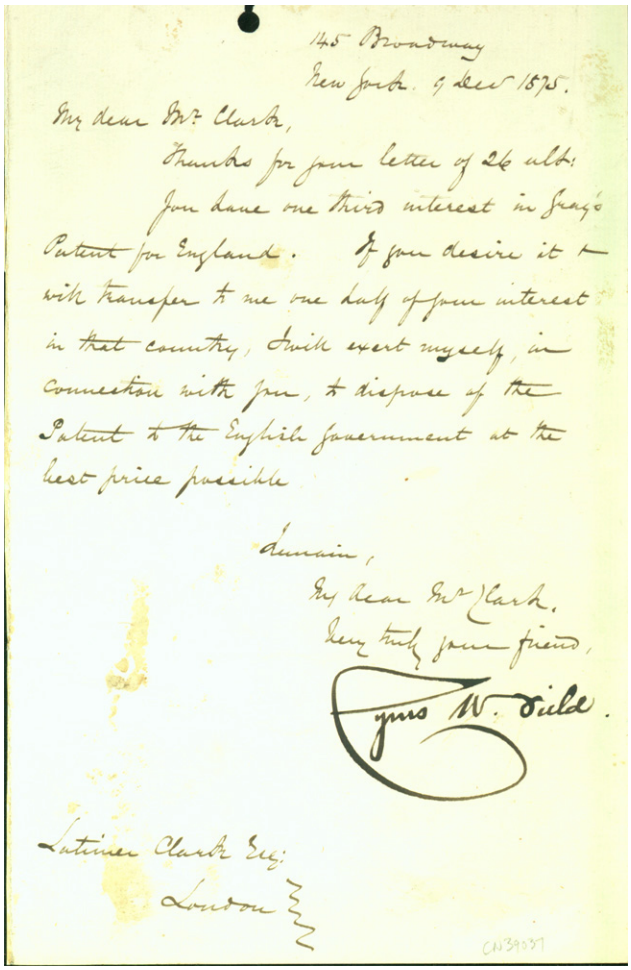
Now suppose there is such a universal influence and let us try to compare a frame at b to a frame at a by sending a particle from a to b. Then the frame at a "carried" to point b might find, (the frame as it is carried is of course turned by the universal influence) in general, that it is not lined up with the frame originally chosen at b, but requires an additional rotation R(b ← a). Thus R(b ← a) tells us how much the frame b differs from the frame a when a is carried over, through space-time, to make the comparison. We could, of course, get a set of "best" frames so that all R = 1 by choosing at b the frame we get by carrying our a frame to each space-time point.

$$R(c \leftarrow a) = R(c \leftarrow b)\ R(b \leftarrow a) \qquad (3.1)$$

work in quantum electrodynamics; he also worked on the Manhattan Project, and became known to a wide audience for his irreverent personality and his quirky and humorous books and lectures on popular science. The present collection includes a photocopied / mimeographed typescript of his 1976 paper on gauge studies, included in *Selected Papers of Richard Feynman* (2000). These items are from the library of Abraham Pais, author of *Subtle is the Lord, Inward Bound, Niels Bohr's Times* and other seminal works on the history of modern physics. 40865

From the Man behind the Atlantic Cable

34. **Field, Cyrus West** (1819-92). Letter signed to Latimer Clark. New York, December 9, 1875. 1 page. 202 x 128 mm. A few light stains, small hole punched in top margin not affecting text. Provenance: Latimer Clark. $2750



145 Broadway
New York 9 Dec 1875.

My dear Mr Clark,

Thanks for your letter of 26 ult:
You have one third interest in Gray's
Patent for England. If you desire it —
with transfer to me one half of your interest
in that country, I will exert myself, in
connection with you, to dispose of the
Patent to the English government at the
best price possible

Remain,
My dear Mr Clark,
Very truly your friend,
Cyrus W. Field.

Latimer Clark Esq:
London

Field, a wealthy American businessman, organized the construction and laying of the first working transatlantic submarine telegraph cables in 1858, 1865, and 1866. Field became obsessed with the idea of a transatlantic telegraph after an encounter in 1854 with F. N. Gisborne, the head of an unsuccessful attempt to lay an underwater cable between New York and Newfoundland. To capitalize his venture, Field organized two companies: the New York, Newfoundland and London Electric Telegraph Company, in which Samuel F. B. Morse received a one-tenth interest to act as "advising electrician"; and the Atlantic Telegraph Company of Great Britain, formed in partnership with Charles Tilston Bright, George Saward, and John Brett.

After obtaining support from the American and British governments, Field appointed Dr. Edward Orange Wildman Whitehouse, a self-taught amateur electrician, to supervise the monumental task of designing and manufacturing transatlantic telegraphy equipment and twenty-five hundred miles of insulated cable

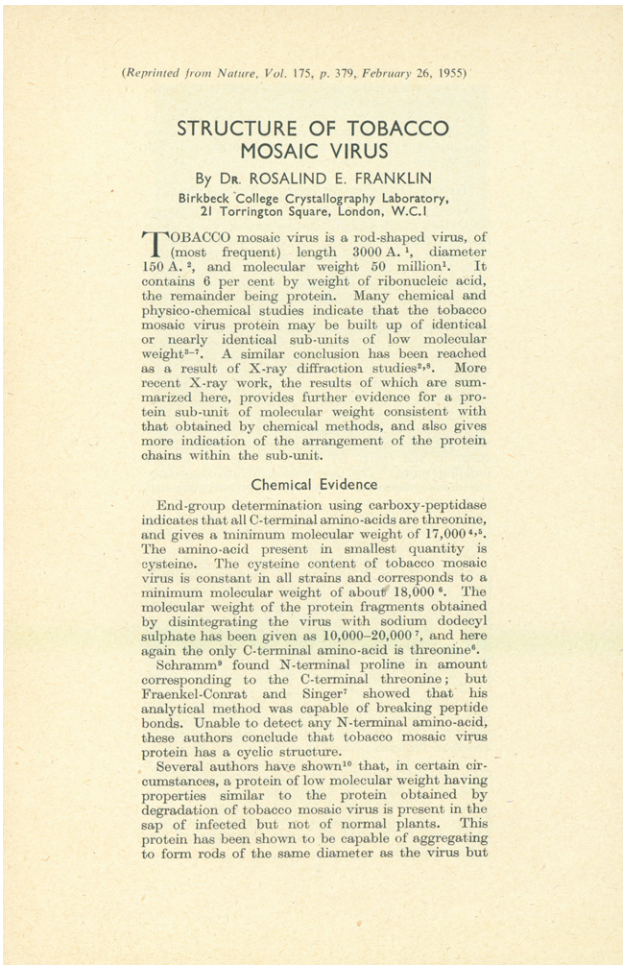
for laying between Newfoundland and Ireland. In August 1858, after several abortive attempts, the first complete transatlantic cable was laid by crews aboard the USS *Niagara* and HMS *Agamemnon*. Shortly afterward the cable began to malfunction, and failed permanently a few weeks after its installation.

In 1859 the British government appointed a joint committee to investigate the causes of the cable's failure. During the course of the investigation it was discovered that the cable and transmitting system suffered from fatal design flaws, and steps were taken to correct these based on the recommendations of the physicist William Thomson (later Lord Kelvin). In 1865 Field and his companies launched another cable-laying voyage, this time aboard Isambard Kingdom Brunel's enormous steamship Great Eastern, but the cable snapped and sank after two-thirds of the job had been completed. A third voyage, attempted the following year, was successful: a new cable was laid, and the cable lost the previous year was grappled for and recovered. Rapid telegraphic communication between North America and Europe was finally possible.

Field's association with Latimer Clark began when Clark was hired as an engineer by the Atlantic Telegraph Company some months after the failure of the 1858 cable. In the present letter, Field offers Clark his services in selling Clark's one-third interest in "Gray's patent for England" to the British government. "Gray" refers to Elisha Gray, the American inventor; a few months earlier, Field had obtained from Gray a one-third share in Gray's British patents in return for his assistance in marketing the patent rights and instruments. *Origins of Cyberspace* 142. 39037

Rosalind Franklin Discovers the First Geometry of a Protein Structure: Six Offprints

35. **Franklin, Rosalind** (1920-58). **(1)** Structure of tobacco mosaic virus. Offprint from Nature 175 (1955). 7, [1]pp. Text illustrations. Without wrappers as issued. 215 x 146 mm. Fine. **(2)** Five offprints by Franklin and her colleagues on tobacco mosaic virus, as listed below. 1955-1959. Overall fine. $7500



(Reprinted from Nature, Vol. 175, p. 379, February 26, 1955)

STRUCTURE OF TOBACCO MOSAIC VIRUS

By Dr. ROSALIND E. FRANKLIN

Birkbeck College Crystallography Laboratory, 21 Torrington Square, London, W.C.1

TOBACCO mosaic virus is a rod-shaped virus, of (most frequent) length 3000 A.[1], diameter 150 A.[2], and molecular weight 50 million[1]. It contains 6 per cent by weight of ribonucleic acid, the remainder being protein. Many chemical and physico-chemical studies indicate that the tobacco mosaic virus protein may be built up of identical or nearly identical sub-units of low molecular weight[3–7]. A similar conclusion has been reached as a result of X-ray diffraction studies[2,8]. More recent X-ray work, the results of which are summarized here, provides further evidence for a protein sub-unit of molecular weight consistent with that obtained by chemical methods, and also gives more indication of the arrangement of the protein chains within the sub-unit.

Chemical Evidence

End-group determination using carboxy-peptidase indicates that all C-terminal amino-acids are threonine, and gives a minimum molecular weight of 17,000[4,5]. The amino-acid present in smallest quantity is cysteine. The cysteine content of tobacco mosaic virus is constant in all strains and corresponds to a minimum molecular weight of about 18,000[6]. The molecular weight of the protein fragments obtained by disintegrating the virus with sodium dodecyl sulphate has been given as 10,000–20,000[7], and here again the only C-terminal amino-acid is threonine[6].

Schramm[9] found N-terminal proline in amount corresponding to the C-terminal threonine; but Fraenkel-Conrat and Singer[7] showed that his analytical method was capable of breaking peptide bonds. Unable to detect any N-terminal amino-acid, these authors conclude that tobacco mosaic virus protein has a cyclic structure.

Several authors have shown[10] that, in certain circumstances, a protein of low molecular weight having properties similar to the protein obtained by degradation of tobacco mosaic virus is present in the sap of infected but not of normal plants. This protein has been shown to be capable of aggregating to form rods of the same diameter as the virus but

(1) First Edition, Offprint Issue. Rosalind Franklin, whose X-ray photographs of DNA were crucial to Watson and Crick's discovery of the molecule's double helix structure in 1953, began researching the molecular structure of the tobacco mosaic virus (TMV) after moving from King's College to Birkbeck College in mid-1953. Between 1953 and her death in 1958, Franklin and her team of researchers made enormous and profoundly significant advances in our knowledge of the virus's molecular structure, beginning with the present paper announcing her discovery, based on her X-ray photographs, that the rod-shaped TMV units are all the same length and that they are made up of identical protein subunits. Preceding Perutz and Kendrew's mapping of the structures of myoglobin and haemoglobin by several years, this was the first discovery of the geometry of a protein structure.

Regarding Franklin's groundbreaking work on TMV, J. D. Bernal, her supervisor at Birkbeck College, wrote the following

> [James] Watson had put forth the hypothesis that the [TMV] virus structure was . . . spiral, but one of a different order from that which existed in proteins and in deoxyribonucleic acid. Miss Franklin, with the help of very much better X-ray photographs than had hitherto been obtained, was able in essence to verify this hypothesis and to correct it in detail. . . . Using the method of isomorphous replacement, she showed that the virus particle was not solid, as had previously been thought, but actually a hollow tube. . . . The combined methods of chemical preparation and X-ray examination in the hands of Miss Franklin and her associates was a valuable, and indeed a decisive, weapon in the analysis of these complex structures (Bernal, "Obituary notice of Rosalind Franklin," Nature 152 [1958]: 154).

Aaron Klug, who worked closely with Franklin on the TMV virus at Birkbeck, notes that Franklin "determined the precise helical geometry of the protein units, and above all showed that the ribonucleic acid (RNA) of the virus, the carrier of the infectivity, in other words of the genetic information, formed a long single chain embedded deeply within the protein framework" (Klug, "Rosalind Franklin obituary," The Times [London], April 19, 1958). Maddox, *Rosalind Franklin: The Dark Lady of DNA*, pp. 250-253.

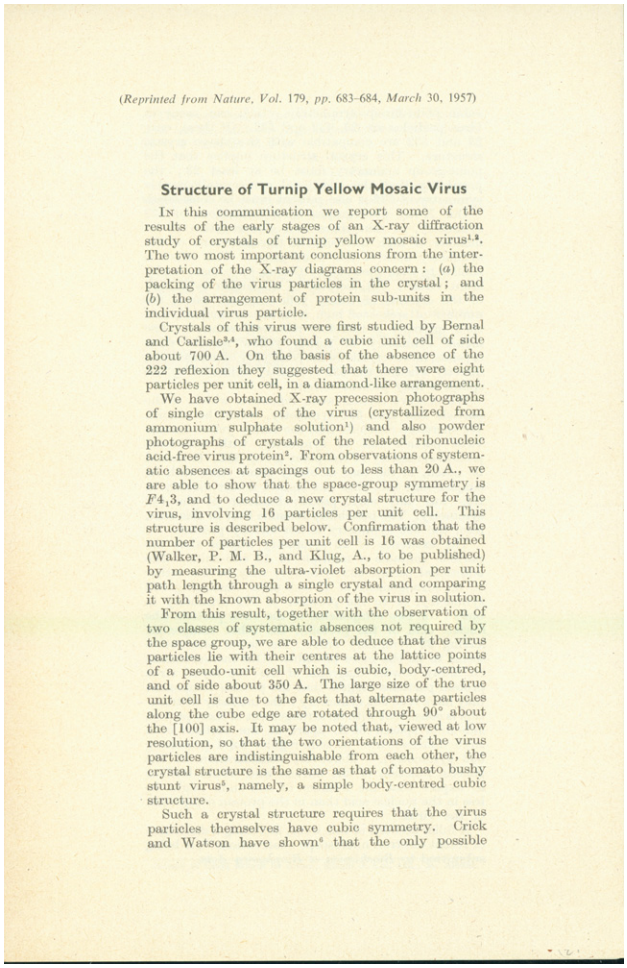
The remaining papers in this collection are listed below:

1. Structural resemblance between Schramm's repolymerised A-protein and tobacco mosaic virus. Offprint from *Biochem. et Bioph. Acta* 18 (1955). 2pp., on single unbound sheet. Text illustration. 245 x 166 mm.

2. (with K. C. Holmes). The helical arrangement of the protein sub-units in tobacco mosaic virus. Offprint from *Biochem. et Bioph. Acta* 21 (1956). 405-406pp., on single unbound sheet. 244 x 168 mm.

3. Ribonucleic acid in the TMV particle. Extract from unidentified periodical, tipped to blank sheet. N.p., n.d. (ca. 1958). 159 x 152 mm.

4. (with A. Klug, J. T. Finch and K. C. Holmes). On the structure of some ribonucleoprotein particles. Offprint from *The Faraday Society Discussions* (1958). 197-198pp., on single unbound sheet (corners lightly creased). 246 x 154 mm. Ms. correction in margin.



(*Reprinted from Nature, Vol.* 179, *pp.* 683–684, *March* 30, 1957)

Structure of Turnip Yellow Mosaic Virus

In this communication we report some of the results of the early stages of an X-ray diffraction study of crystals of turnip yellow mosaic virus[1,2]. The two most important conclusions from the interpretation of the X-ray diagrams concern: (*a*) the packing of the virus particles in the crystal; and (*b*) the arrangement of protein sub-units in the individual virus particle.

Crystals of this virus were first studied by Bernal and Carlisle[3,4], who found a cubic unit cell of side about 700 A. On the basis of the absence of the 222 reflexion they suggested that there were eight particles per unit cell, in a diamond-like arrangement.

We have obtained X-ray precession photographs of single crystals of the virus (crystallized from ammonium sulphate solution[1]) and also powder photographs of crystals of the related ribonucleic acid-free virus protein[2]. From observations of systematic absences at spacings out to less than 20 A., we are able to show that the space-group symmetry is $F4_132$, and to deduce a new crystal structure for the virus, involving 16 particles per unit cell. This structure is described below. Confirmation that the number of particles per unit cell is 16 was obtained (Walker, P. M. B., and Klug, A., to be published) by measuring the ultra-violet absorption per unit path length through a single crystal and comparing it with the known absorption of the virus in solution.

From this result, together with the observation of two classes of systematic absences not required by the space group, we are able to deduce that the virus particles lie with their centres at the lattice points of a pseudo-unit cell which is cubic, body-centred, and of side about 350 A. The large size of the true unit cell is due to the fact that alternate particles along the cube edge are rotated through 90° about the [100] axis. It may be noted that, viewed at low resolution, so that the two orientations of the virus particles are indistinguishable from each other, the crystal structure is the same as that of tomato bushy stunt virus[5], namely, a simple body-centred cubic structure.

Such a crystal structure requires that the virus particles themselves have cubic symmetry. Crick and Watson have shown[6] that the only possible

5. The structure of RNA in tobacco mosaic virus and in some other ribonucleoproteins [abstract]. In: The structure and physical chemistry of nucleic acids and nucleoproteins (offprint from *The Transactions of the Faraday Society* 55 [1959]): 494-95. Whole offprint. 487-499pp. 249 x 156 mm. Original printed self-wrappers. 40705

36. [**Franklin, Rosalind** (1920-58).] **Klug, Aaron** (1926-); **Franklin, Rosalind**; and **John Finch. (1)** Structure of turnip yellow mosaic virus. Offprint from *Nature* 179 (1957). [3]pp. 218 x 141 mm. Without wrappers as issued. **(2)** The structure of turnip yellow mosaic virus: X-ray diffraction studies. Offprint from *Biochimica et biophysica acta* 25 (1957). 242-252pp. Text illustrations. 244 x 168 mm. Without wrappers as issued. Together 2 items. Fine. $1250

First Editions, offprint issue. Rosalind Franklin, whose X-ray photographs of DNA were crucial to Watson and Crick's discovery of the molecule's double helix structure in 1953, began researching the molecular structure of selected plant viruses after moving from King's College to Birkbeck College in mid-1953. She was aided in this work by Aaron Klug, who would later win the 1982 Nobel Prize in chemistry for developing crystallographic electron microscopy and for elucidating the structure of biologically important nucleic acid-protein complexes. The two began investigating the structure of tobacco mosaic virus (TMV), making several important discoveries regarding the arrangement of the virus's protein subunits and RNA strand; later in their researches Klug and Franklin agreed to divide the work, with Franklin taking on TMV and other rod-shaped plant viruses, and Klug concentrating on spherical plant viruses such as turnip yellow mosaic virus (TYMV). Klug continued his virus researches after Franklin's death, first at Birkbeck and later at Cambridge University's MRC Laboratory of Molecular Biology, which he joined in 1962.

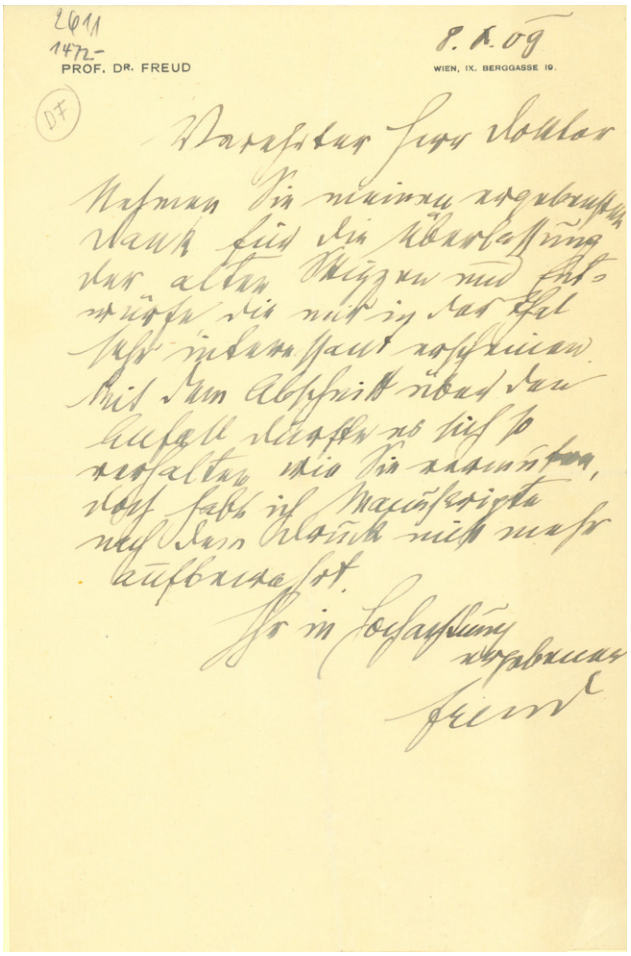
The present papers report "the early stages of an X-ray diffraction study of crystals of turnip yellow mosaic virus (TYMV). This has shown that the virus particle has cubic symmetry, with a strong pseudo-symmetry higher than that of the cubic unit cell of the crystal, and has given an indication of what the actual arrangement of the protein sub-units might be" ("The structure of turnip yellow mosaic virus: X-ray diffraction studies," p. 242). Klug, Franklin and Finch briefly announced their findings in *Nature* (no. **[1]** above), following up with a longer paper published in *Biochimica et biophysica acta* (no. **[2]** above). 40706

"I No Longer Kept Manuscripts after Printing"

37. **Freud, Sigmund** (1856-1939). Autograph letter signed to an unidentified medical correspondent. Vienna, 8 October 1909. 1 page, on Freud's stationery. Fine condition. 212 x 137 mm. Transcription and English translation included.

$6000

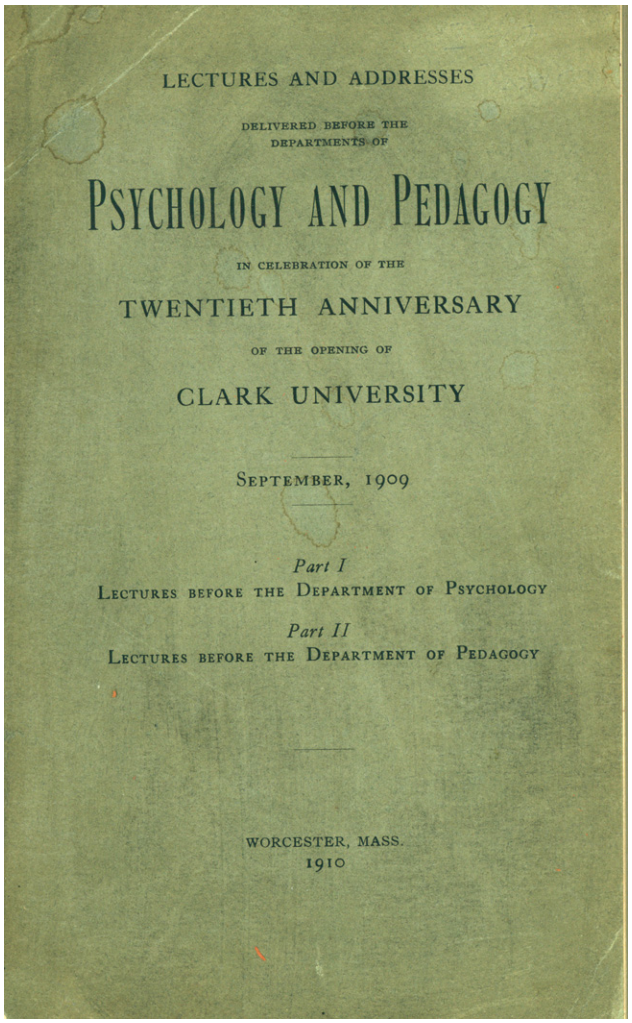
Referring to Freud's habits as a writer:


2611
1472-
PROF. DR. FREUD
8. X. 09
WIEN, IX. BERGGASSE 19.

Nehmen Sie meinen ergebensten Dank für die Überlassung der alten Skizzen und Entwürfe die mir in der That sehr interessant erscheinen. Mit dem Abschnitt über den Anfall dürfte es sich so verhalten, wie Sie vermuten, doch habe ich Manuscripte nach dem Druck nicht mehr aufbewahrt.

[Accept my humblest thanks for allowing me to have the old sketches and drafts, which indeed appear to be very interesting. With respect to the section about the seizure, the case is probably as you surmise, but I no longer kept manuscripts after the printing.]

Freud's correspondent apparently wanted Freud to review the drafts of some of his early writings to explain some technical details about a case regarding a seizure. This could have been something in Freud's early neurological writings, and it may have concerned a psychogenic or hysterical seizure. In the letter Freud thanks the recipient for sending the early manuscripts, and



points out that he did not retain manuscripts after works were published. This explains why so few early Freud manuscripts have survived. 40590

Freud's Only Visit to the U.S.

38. **Freud, Sigmund** (1856-1939). The origin and development of psychoanalysis. Translated by Harry W. Chase. In: *Lectures and Addresses Delivered before the Departments of Psychology and Pedagogy in Celebration of the Twentieth Anniversary of the Opening of Clark University, September 1909* (Worcester, Mass. [n.p.], 1910), pp. 1-38. Whole volume. viii, [6], 175; vi, [2], 80pp. Frontispiece, text illustrations. 224 x 146 mm. Library buckram; original gray printed front wrapper bound in. Bookplate of Haskell F. Norman. $950

First Book-Form Edition in English. In 1909 Stanley Hall, president of Clark University in Worcester, Massachusetts, invited Freud to give a course of lectures at the university to help celebrate the twentieth anniversary of its founding. The lectures, delivered extempore in German, summarized the history, scope and techniques of psychoanalysis; they proved to be quite popular, going through eight German editions and translations into ten foreign languages. Freud also received an honorary doctorate from Clark University, which constituted the first official recognition of his life's work. The lectures were first published in an English translation in the *American Journal of Psychology*, Vol. 21 (1910); a German version appeared a few months later. These lectures document Freud's only trip to the United States; he formed a bad impression of the country and never returned.

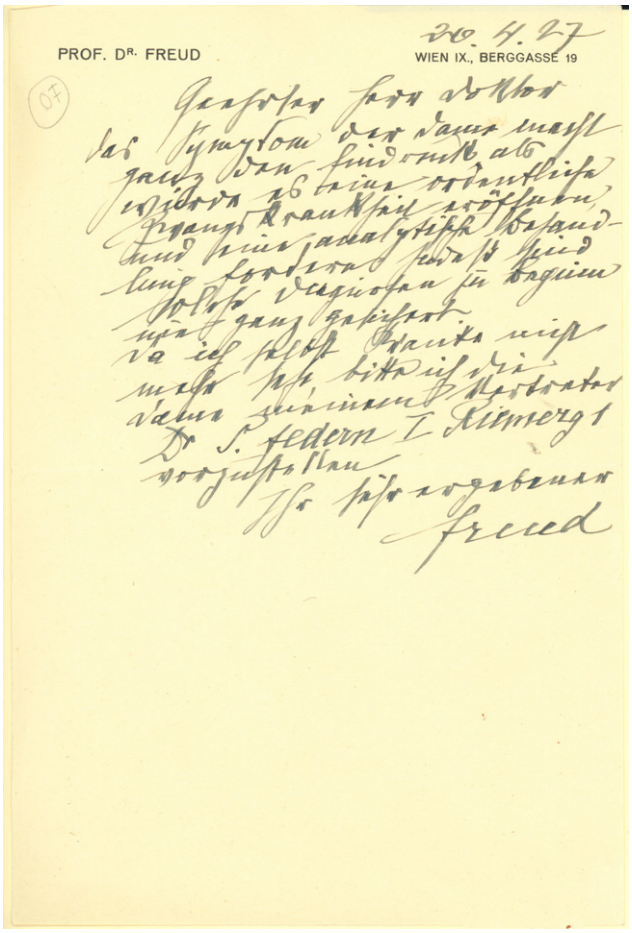
The present volume also includes Carl Jung's lecture on "The association method," as well as papers by William Stern, H. S. Jennings, Franz Boas, Adolf Meyer and E. B. Titchener. The frontispiece is a group portrait of 42 participants in the Clark University celebration, including Freud, Jung, William James, Ernest Jones, A. A. Brill and Sandor Ferenczi. Grinstein 186. Norman F77. 40683

"The Beginning of a True Compulsive Disorder that Would Require Analytic Treatment"

39. **Freud, Sigmund** (1856-1939). Autograph letter signed to an unidentified medical correspondent. Vienna, 26 April 1927. 1 page, on Freud's stationery. Fine. Transcript and English translation included. $7500

A very fine one-page letter signed, in which Freud provides a tentative diagnosis of an analytic patient, pointing out, however, that such tentative diagnoses "are never completely certain," and referring the patient to Dr. Paul Federn.

> Das Symptom der Dame macht ganz den Eindruck, als würde es eine ordentliche Zwangskrankheit eröffnen, und eine analytische



Behandlung fordern. Indeß sind solche Diagnosen zu Beginn nie ganz gesichert.

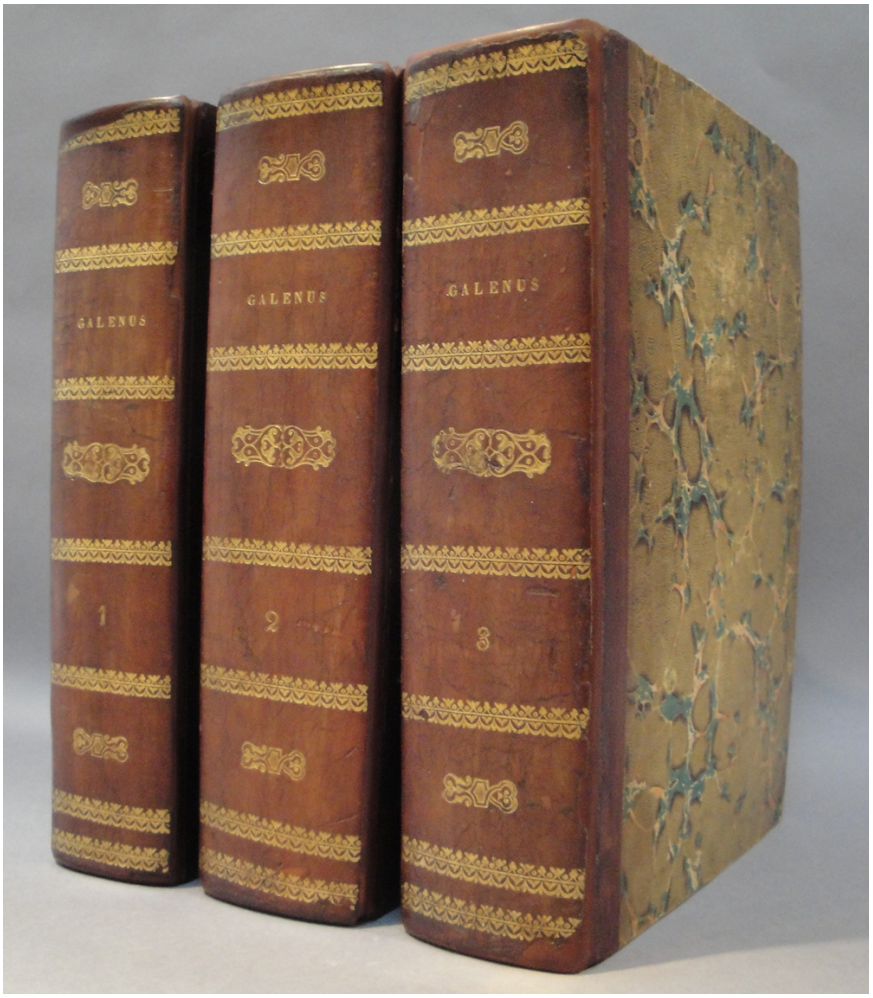
[The lady's symptom certainly gives the impression of the beginning of a true compulsive disorder that would require analytical treatment. However, at the outset such diagnoses are never completely certain.]

In the letter Freud states that he is no longer seeing patients himself, and recommends that the woman consult "meinem Vertreter Dr. P. Federn" [my representative Dr. P. Federn] at Riemerg 1 in Vienna. Dr. Paul Federn (1871-1950) was one of Freud's "most trusted adherents in the Vienna Psychoanalytic Society" (Gay, *Freud: A Life for our Time,* p. 176); in 1924 he became Freud's official representative. Federn, who emigrated from Austria to America in 1938, developed original and influential theories of ego psychology and the therapeutic treatment of psychosis. 40591

The First Bio-Bibliography

40. **Galen** (A.D. 129 / 130–199 / 200). Omnia, quae extant, in Latinum sermonem conversa. Edited by **Conrad Gesner** (1516-65). Folio. 11 vols. in 3. *Vol VIII lacking leaves d3-d4*. Woodcut title border, text woodcuts, initials and headpieces. [Basel: Hieronymus Froben & Nicolas Episcopius, (1561)-1562 (colophons).] 346 x 234 mm. Early 19th century quarter calf, rebacked preserving original spines. Some browning and dampstaining, minor marginal worming in Vol. II, but very good overall. Signature on title of **Jean-Jacques Chifflet** (1588-1660), physician to the city of Besançon and to Philip IV of Spain; Chifflet's marginal annotations in the text. $9500

First Froben Edition, and Best Sixteenth Century Collected Edition in Latin of Galen's works, prepared by the Swiss scholar-physician, naturalist and



bibliographer Conrad Gesner, with a bibliography and preface supplied by Gesner especially for this edition. This bibliography entitled *Prologomena ad Galenum*, which first appeared in this edition, was the first bio-bibliography, and Gesner's most developed bibliography, covering Greek editions, Latin editions, lost works, writers on Galen, and a classified bibliography of Galen's writings. The bio-bibliography occupies 37 unnumbered leaves, following the title to volume 1, and Gesner's two unnumbered leaves of dedication, dated February 1562.

"Galen stands second only to Hippocrates in importance in ancient Greek medicine. His writings dominated Byzantine, Arabic and medieval medicine for over a millenium, being superseded in anatomy only with Vesalius, in physiology with Harvey, and in pathology with Boerhaave" (G-M 27, citing the Aldine Greek *editio princeps* of 1525). Gesner's edition, first published in Lyons in 1549-51, appeared during the height of Renaissance interest in Galen's works, evidenced by the enormous increase in new translations published between 1525 (the year of the Aldine Greek *editio princeps*) and 1560.

Jean-Jacques Chifflet, whose signature and notes appear in our copy, was city physician of Besançon and served as personal physician to the Archduchess Isabella of the Netherlands and Philip IV of Spain; he also published a number of medical and political works (see NBG). Adams G-39. Durling, *Galen*, p. 280. 30721

Fine Set in 17th-Century Binding

41. **Galen** (A.D. 129 / 130–199 / 200). Galeni librorum . . . nona hac nostra editione. 13 vols. in 5, folio. Variously foliated (see below). Woodcut titles illustrating the life of Galen, woodcut illustrations in text. Venice: Giunta, 1625. 341 x 232

mm. 17th century calf, gilt spines, light rubbing. Minor marginal worming in a few places, but a very fine set. $5000

Ninth edition of the monumental Giunta Galen *Opera omnia*, first published in 1541, and probably the most widely-read edition throughout the 16th and early 17th centuries. This is a very fine set, in a contemporary French binding, with most or all of the blank leaves present. The collation and foliation of each volume is available on request.

Prior to the 1541 *Opera omnia* Lucantonio Giunta had issued two earlier editions of Galen's collected works; these, published in 1522 and 1528, were little more than reprints of the 1515-16 Galen *Opera* issued in Pavia. Since these early editions had been financially successful, Giunta "determined not only to continue the venture but to improve the next edition so that it would at once become the standard collection of Galen's writings and prevent competition from other publishers. This new edition required either revisions of older, faulty translations or completely new renderings by competent scholars . . . and some effort was made to collate more manuscripts of Greek texts in order to improve the Latin versions and even to add hitherto unprinted works" (O'Malley, pp. 102-3). Editorship of the venture was given to the scholar-physicians Agostino Gadaldino and Giambattista da Monte, who were responsible for choosing the editors and translators of Galen's individual works. Among those they selected was **Andreas Vesalius**, who edited three Galenic texts: *On the dissection of nerves, On the dissection of veins and arteries,* and *Nine books on anatomical procedures*. This last is Galen's major anatomical work, and the choice of Vesalius to edit its text is indicative of the stature he had attained in Padua as a professor of anatomy just before publication of the *Fabrica*.

The editorial work Vesalius did on the *Anatomical procedures* was no doubt put to good use during his composition of the *Fabrica*, a work that Vesalius intended as a revision of Galen's traditional teachings. The entrenched authority of Galen, whose works had dominated the teaching of the whole of medicine for over 1000 years (and would continue to do so, albeit to a reduced extent, throughout the 17th century), could not be overthrown by any single work, no matter how revolutionary. Nevertheless, editing Galen's texts would have clarified their limitations in Vesalius's mind and perhaps strengthened his resolve to reform the teaching of anatomy. "If any further assurance of Galen's dependence upon the dissection of animals, and so his unreliability as a guide to human anatomy, was required . . . this work of revision must have supplied it" (O'Malley, p. 108). Cushing, *Vesalius,* pp. 65-71. O'Malley, *Andreas Vesalius of Brussels,* pp. 101-8. 40523

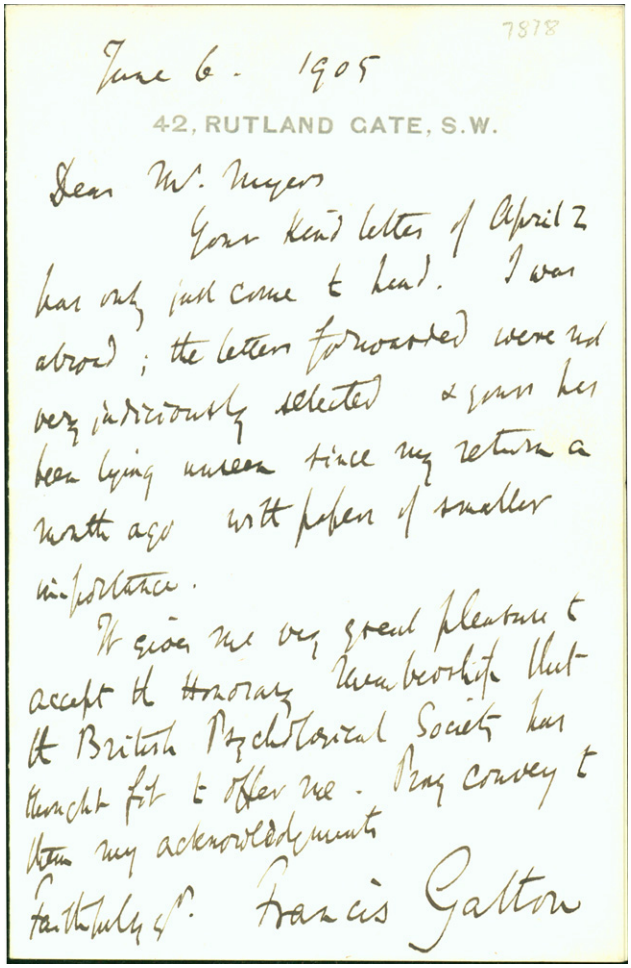
Accepting Membership in the British Psychological Society

42. **Galton, Francis** (1822-1911). Autograph letter signed to Charles Samuel Myers (1873-1946). [London,] June 6, 1905. 1 page plus integral blank. 158 x 102 mm. Fine. $850

To British psychologist Charles S. Myers, Secretary of the British Psychological Society:

> Dear Mr. Myers
>
> Your kind letter of April 2 has only just come to hand. I was abroad; the letters forwarded were not very judiciously selected & yours has been lying unseen since my return a month ago with papers of smaller importance.
>
> It gives me very great pleasure to accept the Honorary Membership that the British Psychological Society has thought fit to offer me. Pray convey to them my acknowledgements. Faithfully yrs. Francis Galton

Galton made substantial contributions to the emerging field of psychology, performing the earliest formal studies on mental imagery, publishing *Inquiries into Human Faculty* in 1883, establishing his Anthropometric Laboratory in 1884 and helping to found the experimental psychology laboratory at University College,


7878

June 6. 1905

42, RUTLAND GATE, S.W.

Dear Mr. Myers

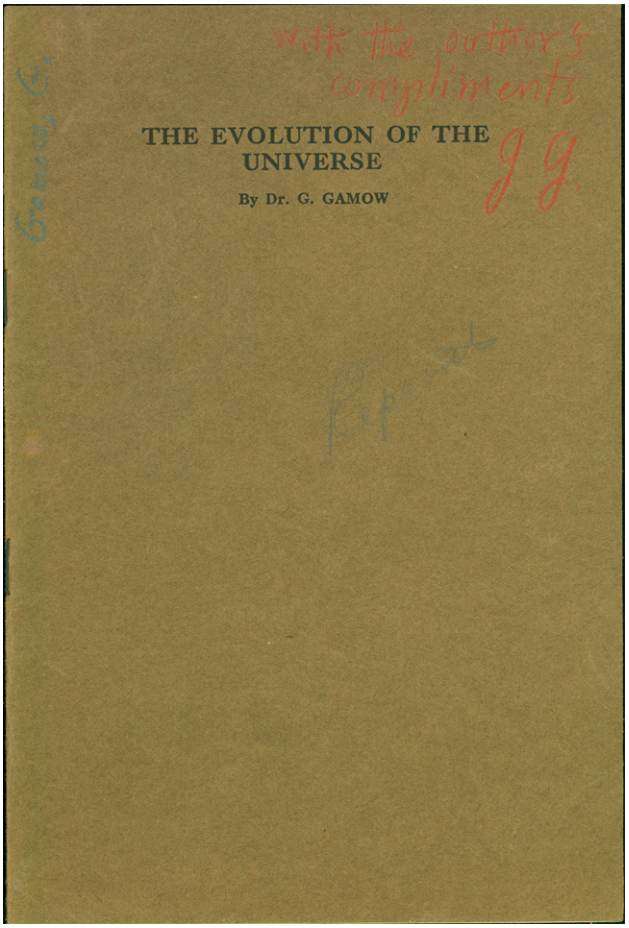
Your kind letter of April 2 has only just come to hand. I was abroad; the letters forwarded were not very judiciously selected & yours has been lying unseen since my return a month ago with papers of smaller importance.

It gives me very great pleasure to accept the Honorary Membership that the British Psychological Society has thought fit to offer me. Pray convey to them my acknowledgements

Faithfully yrs. Francis Galton

London in 1898. "Galton's ultimate impact in the field of experimental psychology was actually quite substantial. He is remembered not just for his pioneering work in mental imagery, but also for developing statistical tools like the correlation coefficient" (Gillham, *A Life of Sir Francis Galton,* p. 226). It was thus highly appropriate that he be offered an honorary membership in the British Psychological Society, which had been founded in 1901.

Galton's correspondent, Charles S. Myers, was an eminent British psychologist who coined the term "shell-shock" (now known as combat stress reaction) in 1915. In 1909 Myers became the first lecturer at Cambridge to devote himself wholly to experimental psychology, and in 1912 he helped to found the Cambridge Laboratory of Experimental Psychology. He co-edited the *British Journal of Psychology* with W. H. R. Rivers from 1911 to 1914, and in 1914 took over as sole editor of the journal, continuing in this post until 1924. In 1920



he was elected the first president of the British Psychological Society. 40608

Presentation Copy

43. **Gamow, George** (1904-68). The evolution of the universe. Offprint from *Nature* 162 (1948). 7, [1]pp. Original printed wrappers. *Presentation copy,* with Gamow's inscription in red pencil on the front wrapper: "With the author's compliments, G. G." From the library of Theodore von Karman (1881-1963), with his characteristic docketing on the front wrapper. $1500

First Edition, Offprint Issue of Gamow's follow-up to the famous 1946 "Alpher, Bethe, Gamow" paper, which was the first to look at the effects of cosmic expansion on the nuclear matter that must have existed in the early universe. In "The evolution of the universe," published two years later, Gamow "developed equations for the mass and radius of a primordial galaxy (which typically contains about one hundred billion stars, each with a mass comparable with that of the sun)" (Wikipedia). This copy is from the library of Theodore von Karman, founder of the Jet Propulsion Laboratory and author of many key advances in aerodynamics, rocketry and supersonic flight. 40666

Large-Scale Lunar Map

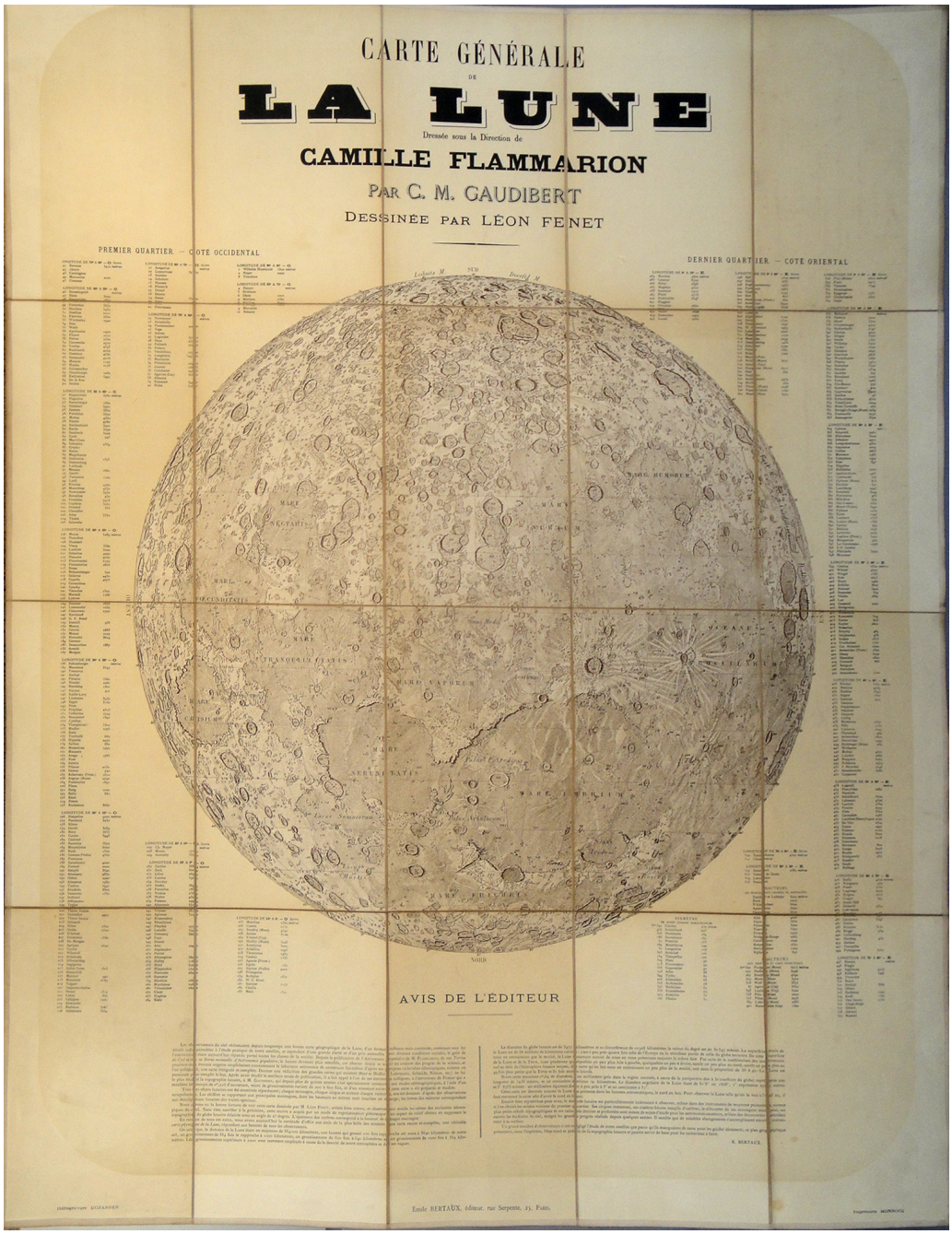
44. **Gaudibert, Casimir Marie** (1823-1901). Carte générale de la lune dressée sous la direction de Camille Flammarion . . . dessinée par Léon Fenet. Lithographed map, cut into sections and mounted on linen; boxed. Paris: Emile Bertaux, n.d. [1887]. 1164 x 1800 mm. Minor spotting and soiling, but very good. $2750

Rare large-scale lunar map prepared by French astronomer Casimir Marie Gaudibert under the direction of Camille Flammarion (1842-1925), founder and the first president of the Société Astronomique de France and author of numerous popular works on astronomy. Gaudibert's map, drawn by Léon Fenet, introduced six crater names later adopted into the International Astronomical Union's original lunar nomenclature (1935): Carpenter, Flammarion, Frères Henry (later changed to Henry Frères), Mouchez, Nasmyth and Rutherfurd. Whitaker, *Mapping and Naming the Moon*, pp. 149-50. 40790

"The Systematic Arrangement of the Fishes into Families"

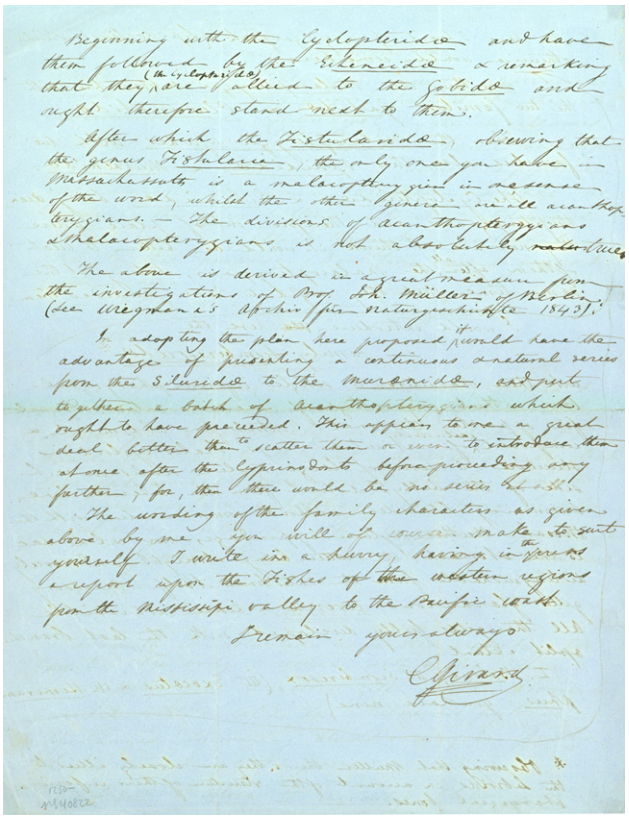
45. **Girard, Charles Frédéric** (1822-95). Autograph letter signed to an unidentified correspondent (most likely **David Humphreys Storer** [1804-91]). [Washington D.C.,] Smithsonian Institution, June 15, 1857. 4pp. 268 x 209 mm. Two tiny tears along central fold, but fine otherwise. $950

A letter with excellent scientific content on the taxonomy of Massachusetts fishes, almost certainly written to David H. Storer in connection with Storer's



monumental survey of Massachusetts fishes and reptiles, then being published in installments in the *Memoirs of the American Academy of Arts and Sciences.* The writer, Charles Girard, was a specialist in ichthyology and herpetology. A native of France, he had studied natural history under Louis Agassiz at Neuchatel, and accompanied Agassiz to the United States as his assistant when Agassiz was appointed professor of zoology and geology at Harvard University in 1847. In 1850 Girard left Harvard for the Smithsonian, where for the next ten years he worked on the institution's growing collection of North American reptiles, amphibians and fishes under the supervision of Spencer Fullerton Baird. While at the Smithsonian Girard published numerous papers on North American fishes, particularly the new species discovered in the western United States during the Mexican Boundary and Pacific Railroad surveys of the 1850s.

Girard's letter begins as follows:



My dear Sir, Your missive of the 8th instant came while absent from this city for a few days.

It just so happens that I am engaged gathering up from the investigations of late years data in reference to the systematic arrangement of the fishes into families. Having not quite done when your letter was read I had to postpone answering it until now.

The point at which you have arrived in the printing will prevent giving the Fistularids their actual position in the System. They are Acanthopterygians and ought to have come somewhere after the Labroids.

Hence I would suggest the following: next to the Cyprinodonts, which is the last family treated of, introduce that of *Scopelidae* . . .

Girard gives a detailed scientific account of this fish family's characteristics and notes that only one genus from this family, *Scopelus,* is found in Massachusetts. He goes on to provide similar accounts for the families *Salmonidae, Esocidae, Clupeidae* and *Scomberesocidae,* along with instructions for classifying various fish families in the proper order. After noting that his information "is derived in great measure from the investigations of Prof. Joh. Müller of Berlin" (i.e., physiologist and comparative anatomist Johannes Peter Müller [1801-58]), Girard concludes as follows:

> In adopting the plan here proposed it would have the advantage of presenting a continuous & natural series from the *Siluridae* to the *Muraenidae*, and put together a batch of Acanthopterygians which ought to have preceded. This appears to me a great deal better than to scatter them or even to introduce them at once after the Cyprinodonts before proceeding any further, for, then there would be no series at all.
>
> The wording of the family characters as given above by me you will of course make to suit yourself. I write in a hurry, having in the press a report upon the Fishes of the western regions from the Mississippi Valley to the Pacific Coast. I remain yours always, C. Girard.

David H. Storer, the likely recipient of Girard's letter, was a physician and naturalist who in 1837 was appointed one of the commissioners of the Natural History Survey of the Massachusetts Commonwealth authorized by the state's legislature. He spent 30 years recording and classifying Massachusetts's fish and reptiles, publishing his findings both as part of the survey and in separate works such as *A History of the Fishes of Massachusetts* (1867). He also enjoyed a distinguished career as a physician, serving as Professor of Obstetrics and Medical Jurisprudence at the Harvard Medical School. Both Storer and Girard exerted a considerable influence on the development of ichthyology in America. Hubbs, "History of ichthyology in the United States after 1850," *Copeia* 1964, no. 1 (Mar. 26, 1964): 42-60. "David Humphreys Storer," *Proceedings of the American Academy of Arts and Sciences* 27 (1893): 388-391. 40822

Portrait of the Discoverer of "Graham's Law"

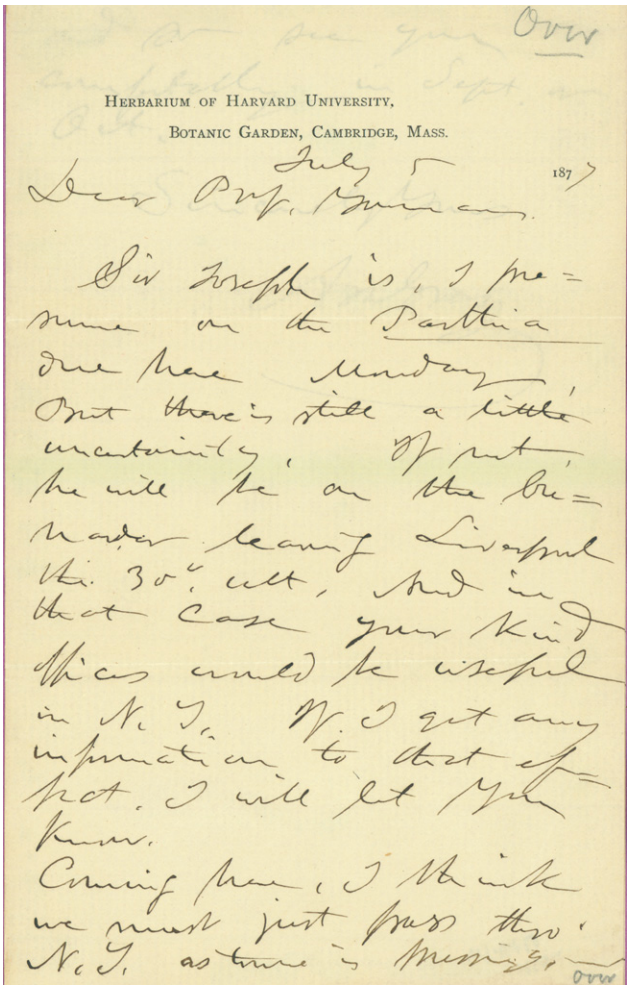
46. **Graham, Thomas** (1805-69). Portrait photograph from *Photographic Portraits of Living Celebrities* (London, 1856-60). 305 x 254 mm. Light browning at edges. $1500

Portrait of Scottish chemist Thomas Graham from Maull and Polyblank's *Photographic Portraits of Living Celebrities* (1856-60). Graham formulated Graham's law of gas diffusion, which states that the rate of effusion of a gas is inversely proportional to the square root of the mass of its particles. He also discovered dialysis (the process of separating molecules in solution by the difference in their rates of diffusion through a semi-permeable membrane), and founded the field of colloid chemistry. 40510

Asa Gray and Joseph Hooker

47. **Gray, Asa** (1810-88). Autograph letter signed to Edward L. Youmans (1821-87). Cambridge, Mass., July 5, 1877. 1–1/2pp., on stationery of the Herbarium of Harvard University. 201 x 126 mm. Mounted on larger sheet. Very good. $1500

From America's leading botanist of the nineteenth century to the founder and editor of *Popular Science,* regarding the impending arrival of British botanist Sir



HERBARIUM OF HARVARD UNIVERSITY,
BOTANIC GARDEN, CAMBRIDGE, MASS.

July 5 187

Dear Prof. Gray.

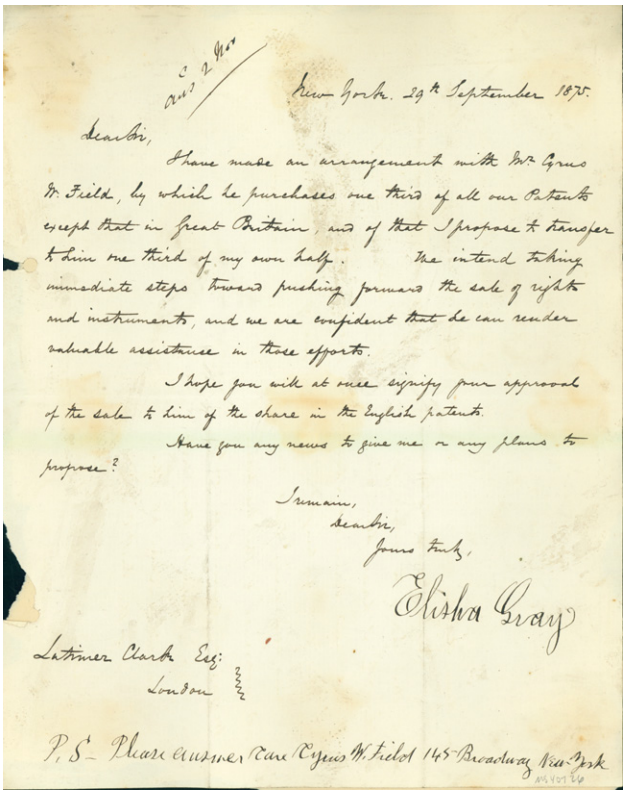
Sir Joseph is, I presume on the Parthia due here Monday. But there is still a little uncertainty. If not, he will be on the Cunarder leaving Liverpool the 30th ult. And in that case your kind offices would be useful in N.Y. If I get any information to that effect I will let you know.

Coming here, I think we must just pass thro' N.Y. as time is pressing.

Joseph Dalton Hooker (1817-1911), director of the Royal Botanical Gardens at Kew:

> Sir Joseph is, I presume on the Parthia due here Monday. But there is still a little uncertainty. If not, he will be on the Cunarder leaving Liverpool the 30th ult. And in that case your kind offices would be useful in N.Y. If I get any information to that effect I will let you know.

Gray was largely responsible for persuading Hooker to travel to the United States in 1877 for what would be the last major botanical expedition of Hooker's lifetime. After visiting a number of cities and botanical institutions in the eastern United States, Hooker traveled with Gray to the western states, where they collected plant specimens in Colorado, Utah, Nevada and California. "Both botanists were interested in the floristic similarities of the eastern United States and eastern continental Asia and Japan. Hooker was of the opinion that the Miocene flora in western North America had been eliminated by glaciations, but that such flora had managed to survive on the eastern side of the continent and in eastern Asia" (*Dictionary of Scientific Biography*). Hooker returned from his American expedition with 1,000 botanical specimens. Dupree, *Asa Gray,* p. 406. 40650



New York. 29th September 1875.

Dear Sir,

I have made an arrangement with Mr. Cyrus W. Field, by which he purchases one third of all our Patents except that in Great Britain, and of that I propose to transfer to him one third of my own half. We intend taking immediate steps towards pushing forward the sale of rights and instruments, and we are confident that he can render valuable assistance in these efforts.

I hope you will at once signify your approval of the sale to him of the share in the English patents.

Have you any news to give me or any plans to propose?

I remain,
dear Sir,
Yours truly,
Elisha Gray

Latimer Clark Esq:
London

P.S. Please address care Cyrus W. Field 145 Broadway New York

Referencing Cyrus Field

48. **Gray, Elisha** (1835-1901). Letter signed, with autograph postscript, to Latimer Clark. New York, September 29, 1875. 1 page. 255 x 205 mm. Traces of mounting on verso, some spotting, small tears in left margin (not affecting text). Provenance: Latimer Clark. $1250

Elisha Gray, a prolific inventor of telegraph and other electrical devices, was a founder of the firm Barton and Gray, an ancestor of the Western Electric Company. In July 1875 Gray obtained two patents for a system of "electro-harmonic telegraphy" for transmitting musical tones as a means of increasing the number of messages that could be sent over a single wire. This led him to consider the possibility of a device that

could transmit speech by wire, and on February 14, 1876, he filed a caveat (a confidential report of an invention not yet fully perfected) for such a device with the United States Patent Office, just hours after the filing of Alexander Graham Bell's patent application for a speaking telephone. Gray's and Bell's patents were later the subject of a bitter infringement battle, which ended with the court's determination that the Bell telephone patents were valid. Although deeply disappointed by this outcome, Gray continued to invent electrical devices, including the "telautograph," an ancestor of the facsimile machine.

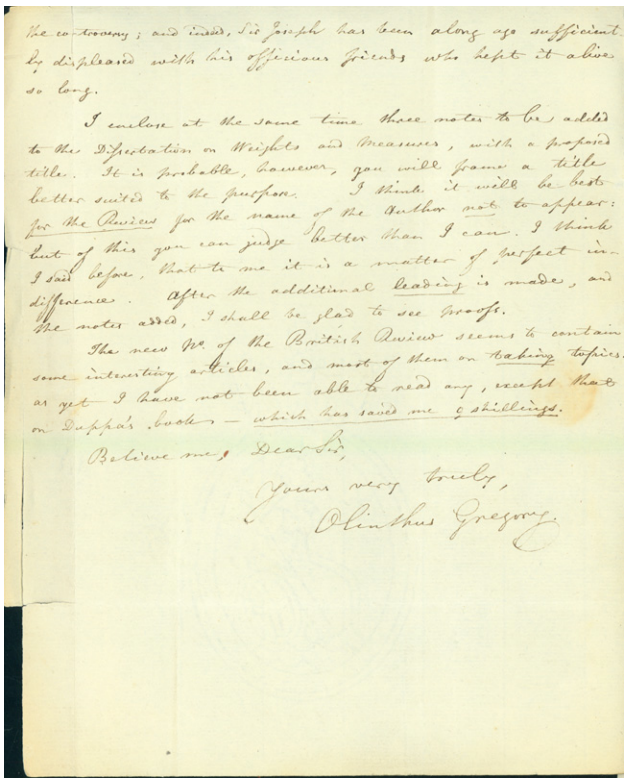
Gray's letter to Clark reads as follows:

> I have made an arrangement with Mr. Cyrus Field, by which he purchases one third of all our Patents except that in Great Britain, and of that I propose to transfer to him one third of my own half. We intend taking immediate steps forward pushing forward the sale of rights and instruments, and we are confident that he can render valuable assistance in these efforts.
>
> I hope you will at once signify your approval of the sale to him of the share in the English patents.
>
> Have you any news to give me or any plans to propose?
>
> I remain, Dear Sir, Yours truly, Elisha Gray
>
> PS: Please answer care Cyrus W. Field 145 Broadway, New York

It appears from both this letter and from Field's letter to Clark of December 9, 1875, that Clark had an interest in some of Gray's patents. Origins of Cyberspace 147. 40726

"Sir Jos. Banks's Party . . . Flatter and Fawn upon Him"

49. **Gregory, Olinthus Gilbert** (1774-1841). Five autograph letters signed, three to Robert Baldwin, of the publishing firm Baldwin, Cradock & Joy, and two to an unidentified officer of the Woolwich Institution for the Advancement of Literary, Scientific and Technical Knowledge. Woolwich, Sept. 28, 1816 - July 16, 1838. 11pp. total. Various sizes (the largest 251 x 203 mm.). One letter mounted with some fraying of the front edge


the controversy; and indeed, Sir Joseph has been already sufficiently displeased with his officious friends who kept it alive so long.

I enclose at the same time three notes to be added to the Dissertation on Weights and Measures, with a proposed title. It is probable, however, you will frame a title better suited to the purpose. I think it will be best for the Review for the name of the Author not to appear: but of this you can judge better than I can. I think I said before, that to me it is a matter of perfect indifference. After the additional leading is made, and the notes added, I shall be glad to see proofs.

The new No. of the British Review seems to contain some interesting articles, and most of them on taking topics. as yet I have not been able to read any, except those on Duppa's books — which has saved me 6 shillings.

Believe me, Dear Sir,

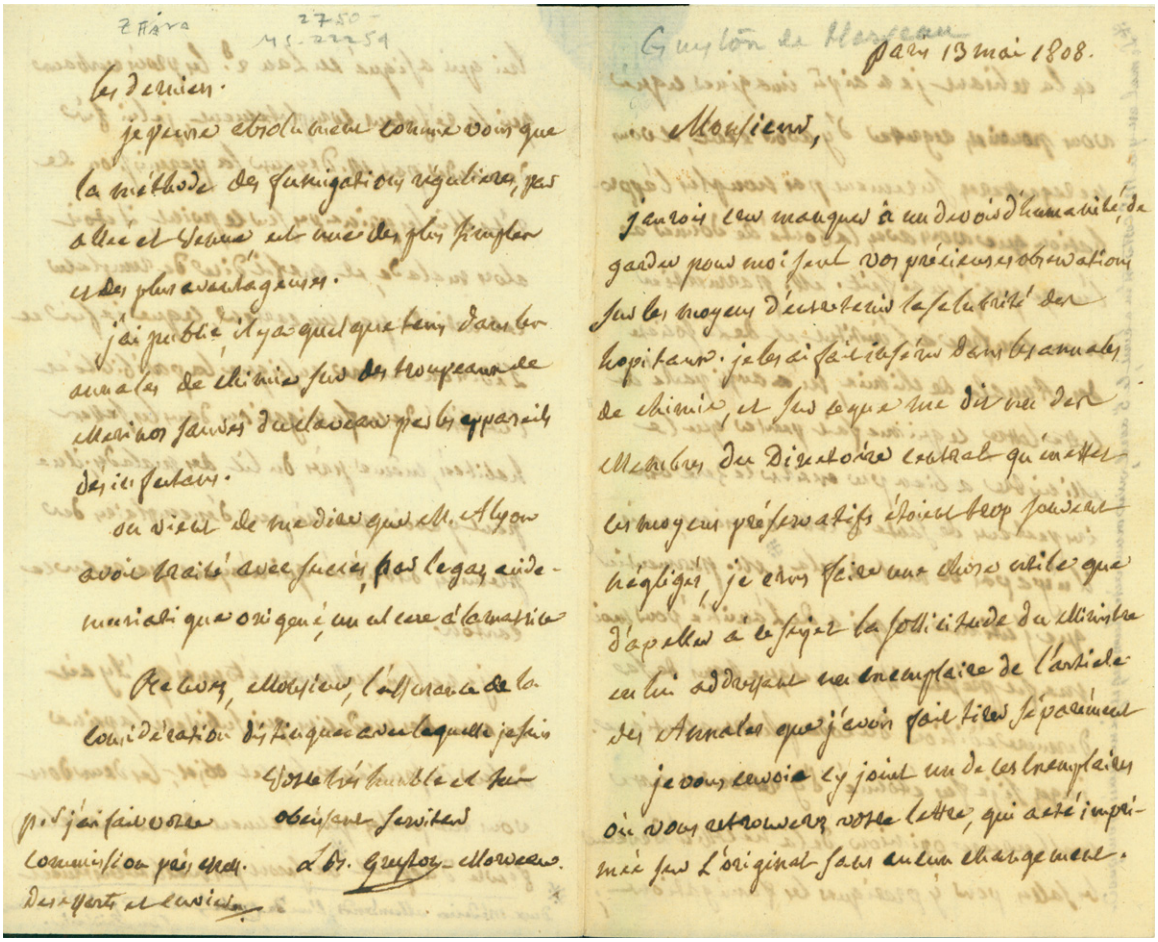
Yours very truly,

Olinthus Gregory

(slightly affecting a few words), another with a small paper flaw, light soiling, but very good.

$1250

From British mathematician and writer Olinthus Gregory, professor of mathematics at the Royal Military Academy at Woolwich, author of works on mathematics, astronomy, mechanics, etc., and editor of both the *Gentleman's Diary* and *Ladies' Diary*. Gregory played a role in the controversy surrounding the Trigonometrical Survey of Great Britain, later known as the Ordnance Survey. The survey, which had begun in 1791, was opposed for political reasons by Royal Society President Sir Joseph Banks, who in 1812 published in the *Philosophical Transactions* a memoir by Don José Rodriguez attacking the survey and its leader, Col. William Mudge. Gregory exposed Banks's machinations in a paper published in the Philosophical Magazine, which was later collected in *Dissertations and Letters, by Don Joseph Rodriguez, the Chevalier Delambre, Baron de Zach, Dr. Thomas Thomson, Dr. Olinthus Gregory, and Others . . . Tending Either to Impugn or to Defend the Trigonometrical Survey of England and Wales* (1815). Gregory's 1817 letter to Baldwin, one of the publishers of the *Annals of Philosophy*, discusses this controversy, noting that its effect had been to produce "a strong cur-



rent in Col. Mudge's favour among all the men of science in Europe . . . the French Institute has made Col. Mudge a member, expressly on account of his survey: and immediately after this, the Royal Society, or I should rather say Sir Jos. Banks's party, who had for years been doing every thing to sink his reputation, change their conduct, flatter and fawn upon him, elect them into their councils . . ."

Gregory's remaining letters to Baldwin discuss literary matters, including his "account of Biot's new work [*Traité de physique* (1816)] for the next no. of the British review." His later letters, written to an unnamed official at Woolwich Institution for the Advancement of Literary, Scientific and Technical Knowledge, include a long discussion as to why the Institution's reading room should not provide daily newspapers for its largely working-class clientele. 40852

On Hospital Fumigation

50. **Guyton de Morveau, Louis Bernard** (1737-1816). Autograph letter signed to an unidentified correspondent. Paris, 13 May 1808. 4pp. 185 x 117 mm. Fine. $2750

Excellent letter from French chemist Guyton de Morveau on hospital fumigation, a practice that he pioneered. In 1773 Guyton de Morveau began using chemical fumigation to control "putrid emanations" in hospitals and other unhealthy environments, believing that epidemic diseases were carried by the foul airs emitted from decaying flesh. He later introduced the practice of chlorine disinfection, which he described in his *Traité des moyens de désinfecter l'air* (1801). He was one of the original editors of the *Annales de chimie*, and worked with Lavoisier, Berthollet and Fourcroy in creating the first systematic method of chemical nomenclature.

Guyton de Morveau's letter, written to someone who had corresponded with him on hospital sanitation, reads in part as follows:

> J'aurais [...] manquer à un devoir d'humanité de garder pour moi seul vos précieuses observations sur les moyens d'entretenir la salubrité des hôpitaux. Je les ai fait insérer dans les Annales de chimie, et sur ce que me dit une des Membres du Directoire central qu'en effet les moyens préservatifs étaient trop souvent négligés je crois faire une chose utile que d'appeler à ce sujet la sollicitude du Ministre en lui adressant un exemplaire de l'article des Annales que j'avais fait tirer séparément.
>
> Je vous envoie cy joint un de ces exemplaires où vous retrouverez votre lettre, qui a été imprimée sur l'original sans aucun changement. En la relisant, je n'ai pu imaginer ce que vous pourriez regretter d'y avoir écrit, et vous ne regretterez surement pas non plus l'approbation que vous avez la bonté de donner à l'image que j'en ai fait. M. Parmentier mon confrère à l'Institut et de la Société des Annales de chimie, m'a aussi parlé de cette lettre, ce qui me fait penser que le Ministre a bien pu exciter le zèle des inspecteurs de santé à cette occasion, mais il n'y a pas de mal à cela . . .
>
> [I would have violated a duty to humanity in keeping your precious observations on maintaining hospital sanitation to myself. I had them inserted into the *Annales de chimie,* and since one of the members of the *Directoire central* tells me that preventive methods are too often overlooked I believe I have done a useful thing in calling this subject to the attention of the Minister by sending him a copy of the article from the *Annales* which I had printed separately.
>
> I send you enclosed one of these copies where you will find your letter printed from the original without any changes. In reading it over, I cannot imagine what you might regret having written there, and you will surely not regret the approval that you kindly grant to the picture I have drawn. M. Parmentier my associate at the Institute and in the Society of the *Annales de chimie,* has also talked to me about this letter, which makes me think that the Minister can very well stir up the health inspectors' enthusiasm on this occasion, but there is no harm in this . . .]

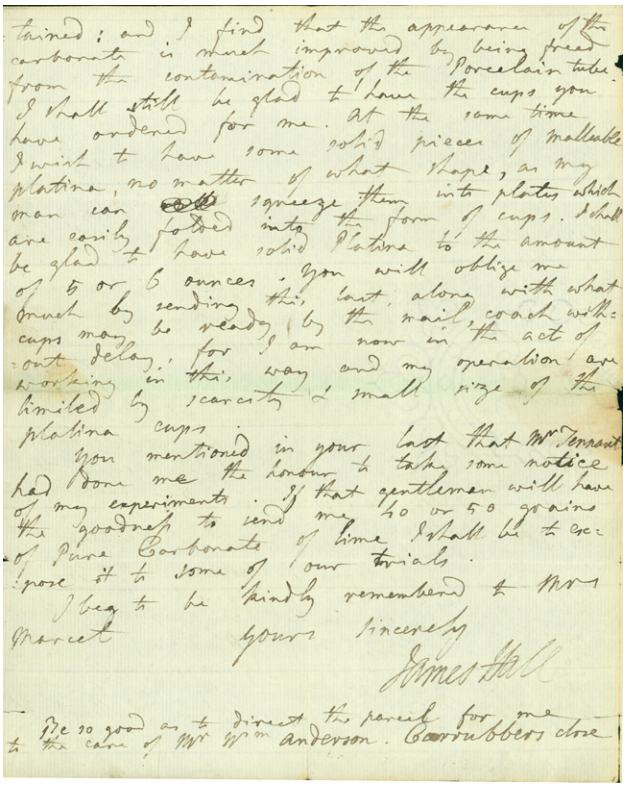
"Parmentier" refers to Antoine-Augustin Parmentier (1737-1813), the famous nutritional chemist and promoter of potatoes as food for humans. *Dictionary of Scientific Biography.* 22254

From the Founder of Experimental Geology, Discussing his Most Important Work

51. **Hall, James** (1761-1832). Autograph letter signed to Dr. Alexander Marcet (1770-1822). Edinburgh, Apr. 28, 1805. 2pp. plus integral address leaf. 252 x 204 mm. Some small tears along folds, lacuna where seal was removed (not affecting text), minor soiling, but very good. Docketed by recipient. $1250

From Sir James Hall, founder of experimental geology, discussing his most important work—the experimental researches he conducted between 1798 and 1805 in order prove some of the geological theories advanced in James Hutton's *Theory of the Earth* (1788). In that landmark work, which was the first to recognize the cyclical, "timeless" nature of geologic processes, Hutton had introduced the theory that the interior of the earth was hot, and that this internal heat was responsible for creating new rock from sediments deposited in the ocean. Objecting to this claim, Hutton's critics protested that "if the consolidation of limestones had been effected in the manner Hutton supposed—by the action of subterranean heat—they would have decomposed with loss of carbon dioxide. Hutton had in fact suggested that this would not happen if the limestones were heated under great pressure, such as that which would be exerted by an overlying mass of seawater" (*Dictionary of Scientific Biography*).

Shortly after Hutton's death in 1797, Hall undertook the extraordinarily difficult task of proving Hutton's theory of limestone creation. "Between 1798 and 1805 he carried out more than 500 separate experiments. It was a classic case of proceeding by trial and error. No apparatus suitable for his purpose existed, and Hall had to design and construct his own. His method was to insert small weighed amounts of various types of limestone or carbonate of lime into a tubular container. Among many difficulties he encountered, the principal



ones were the selection of suitable material for the container (which had to be nonporous and capable of withstanding both high temperature and high pressures) and the devising of an effective method of sealing the container after inserting the carbonate of lime . . . " (*ibid.*). Despite these difficulties, Hall was able to show that limestone can be heated to high temperatures under high pressure without undergoing decomposition. "In the most successful of his experiments the loss in weight of the heated limestone was insignificant. It is probable that in some experiments he produced crystalline marble" (*ibid.*)

Hall's letter, written to physician and chemist Alexander Marcet, describes one of his more successful experimental efforts:

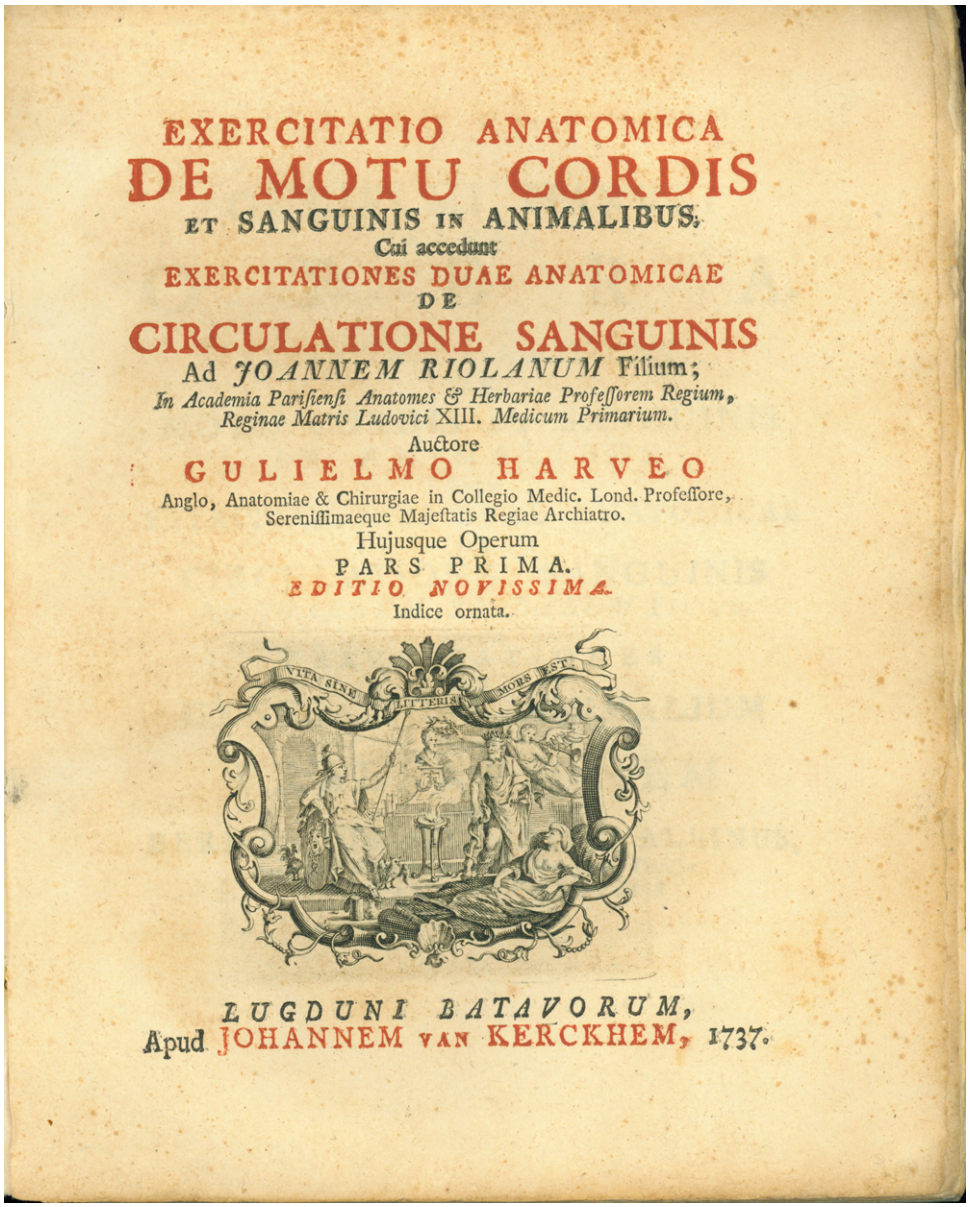
> Some time ago I used the freedom to give you a commission for some Platina tubes; but in the mean time I have been exerting myself to make a shift with what our poor corner could supply. This led me to an expedient which has already been very successful. My workman has attempted in vain to make cups for me but he has supplied me with thin plates of Platina formed by squeezing solid pieces between rollers of steel; these thin plates I form into little conical cups by ~~doub~~ folding them three times as you fold paper to make a filter & these cups are kept upright by ~~pla~~ sinking the apex of the cone into a cup of porcelain. A cover of platina with its edges overlapping is placed upon the cone and the Carbonate is thus exposed to heat under compression without touching anything but Platina. I have made about a dozen of experiments in this way and some of my results tho very small are the most perfect I have hitherto obtained. . .
>
> You mentioned in your last that Mr. Tennant had done me the honour to take some notice of my experiments. If that gentleman will have the goodness to send me 40 or 50 grains of Pure Carbonate of lime I shall be to expose it to some of our trials.

"Mr. Tennant" refers to chemist Smithson Tennant (1761-1815), discoverer of the elements iridium and osmium; the mineral tennantite is named for him. For further information on Alexander Marcet, author of *An Essay on the Chemical History and Medical Treatment of Calculus Disorders* (1817), see the *Dictionary of National Biography.* 40870

Fine Copy of Harvey's Opera Omnia

52. **Harvey, William** (1578-1657). Opera, sive exercitatio anatomica. De motu cordis . . . atque exercitationes duae anatomicae . . . Preface by Bernard Siegfried Albinus. 4to. 2 vols., 4to. [16], 167, [1]; [24], 404, [38]pp. 2 engraved plates in Vol. I. Leiden: J. van Kerckhem, 1737. 210 x 165 mm. Uncut. 18th century Italian stiff paper covers, paper spines with hand-lettered labels; preserved in cloth drop-back box. Fine copy. $5750

First Collected Edition in Latin. "Harvey's chief works in Latin have only twice been printed in a collected form, first by van Kerckhem at Leiden in 1737 and secondly by Bowyer for the Royal College of Physicians in 1766" (Keynes, p. 100). This edition of Harvey's works is one of a series of collected works of anatomists edited by Bernard Siegfried Albinus (1697-1770), author of the monumental *Tabulae sceleti et musculorum corporis humani* (1737-47; G-M 399). Other collections in the series edited by Albinus include the collected works of Vesalius (1725) and of



EXERCITATIO ANATOMICA

DE MOTU CORDIS

ET SANGUINIS IN ANIMALIBUS.

Cui accedunt

EXERCITATIONES DUAE ANATOMICAE

DE

CIRCULATIONE SANGUINIS

Ad *JOANNEM RIOLANUM* Filium;

In Academia Parisiensi Anatomes & Herbariae Professorem Regium, Reginae Matris Ludovici XIII. *Medicum Primarium.*

Auctore

GULIELMO HARVEO

Anglo, Anatomiae & Chirurgiae in Collegio Medic. Lond. Professore, Sereniſſimaeque Majestatis Regiae Archiatro.

Hujusque Operum

PARS PRIMA.

EDITIO NOVISSIMA.

Indice ornata.

VITA SINE LITTERIS MORS EST

LUGDUNI BATAVORUM,

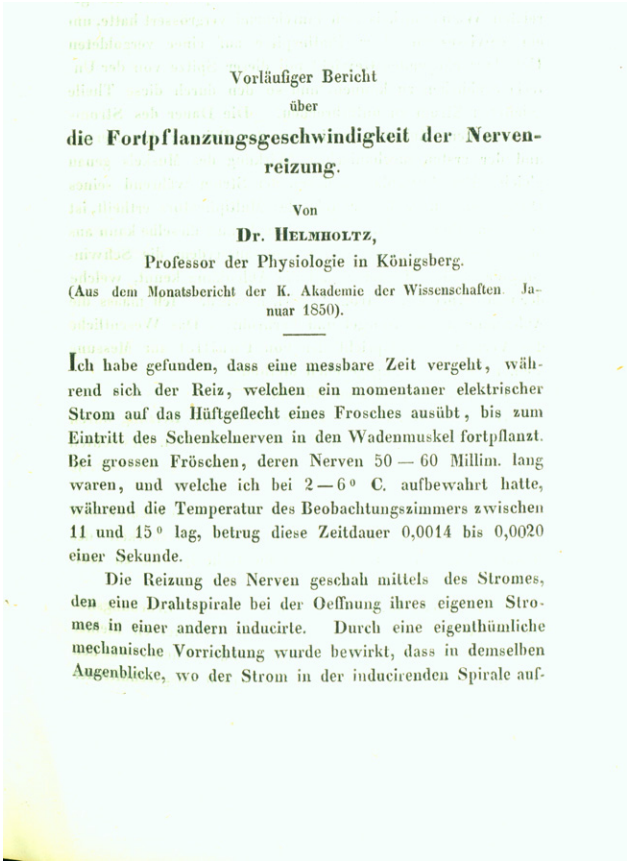
Apud JOHANNEM VAN KERCKHEM, 1737.

Fabricius (1738); the Albinus Harvey, however, is much rarer on the market—this is the third copy we have handled in our nearly four decades in business. A few copies of Vol. I were separately issued with a title-page dated 1736; however, "this form of van Kerckhem's edition is rare, the sheets of the greater part of the issue having been published in 1737 as Part 1 of the *Opera*" (Keynes, p. 49). Keynes, *Harvey* (3rd ed.), 46. 40679

Velocity of the Nervous Impulse

53. **Helmholtz, Hermann** (1821-94). Vorläufiger Bericht über die Fortpflanzungsgeschwindigkeit der Nervenreizung. In *Archiv für Anatomie, Physiologie und wissenschaftliche Medicin* (1850): 71-73. Whole volume, 8vo. vi, 70, 632pp. 22 plates. 217 x 132 mm. 19th century boards, paper spine label, light wear at extremities and corners. Very good apart from some minimal foxing.

$750



Vorläufiger Bericht
über
die Fortpflanzungsgeschwindigkeit der Nervenreizung.

Von
Dr. Helmholtz,
Professor der Physiologie in Königsberg.
(Aus dem Monatsbericht der K. Akademie der Wissenschaften. Januar 1850).

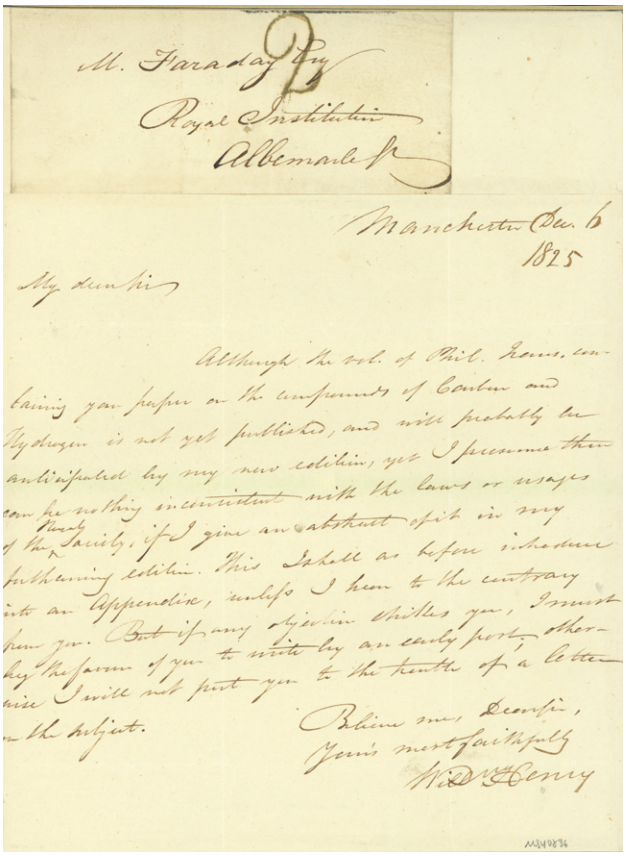
Ich habe gefunden, dass eine messbare Zeit vergeht, während sich der Reiz, welchen ein momentaner elektrischer Strom auf das Hüftgeflecht eines Frosches ausübt, bis zum Eintritt des Schenkelnerven in den Wadenmuskel fortpflanzt. Bei grossen Fröschen, deren Nerven 50 — 60 Millim. lang waren, und welche ich bei 2 — 6° C. aufbewahrt hatte, während die Temperatur des Beobachtungszimmers zwischen 11 und 15° lag, betrug diese Zeitdauer 0,0014 bis 0,0020 einer Sekunde.

Die Reizung des Nerven geschah mittels des Stromes, den eine Drahtspirale bei der Oeffnung ihres eigenen Stromes in einer andern inducirte. Durch eine eigenthümliche mechanische Vorrichtung wurde bewirkt, dass in demselben Augenblicke, wo der Strom in der inducirenden Spirale auf-

First Edition. "Helmholtz succeeded in measuring the velocity of the nervous impulse by applying the knowledge and techniques of ballistics to the problem. Using a pendulum-myograph of his own invention, he measured the duration of an electric current through a galvanometer from the moment the nerve was stimulated to its interruption when the muscle contracted. A more detailed report, "Messungen über den zeitlichen Verlauf der Zukkung animalischer Muskeln und die Forpflanzungsgeschwindigkeit der Reizung in den Nerven," appeared in the same journal volume, [276]-364, with its second part in teh volume for 1852, 199-216" (Garrison-Morton 1265). 40846

Written to Michael Faraday, Regarding Faraday's Discovery of Benzene

54. **Henry, William** (1774-1836). Autograph letter signed to Michael Faraday (1791-1867). Manchester, Dec. 6, 1825. 1 page plus portion of



M. Faraday Esq
Royal Institution
Albemarle St

Manchester Dec. 6
1825

My dear Sir

Although the vol. of Phil. Trans. containing your paper on the compounds of Carbon and Hydrogen is not yet published, and will probably be anticipated by my new edition, yet I presume there can be nothing inconsistent with the laws or usages of the Society, if I give an abstract of it in my forthcoming edition. This I shall as before intended into an Appendix, unless I hear to the contrary from you. But if any objection strikes you, I must beg the favour of you to write by an early post, otherwise I will not print you the results of a letter on the subject.

Believe me Dear Sir,
Yours most faithfully
Wm Henry

address leaf containing Henry's autograph direction to Faraday, the whole mounted on another leaf. Light soiling to address portion, otherwise fine. $1250

From the noted British chemist William Henry, enunciator of "Henry's Law" of the solubility of gases and author of *Elements of Experimental Chemistry* (1801 & 10 subsequent eds.), the most popular and successful English-language chemistry textbook of its day; to Michael Faraday, one of the most influential scientists in history, whose investigations of electricity and magnetism established the basis for the electromagnetic field concept in physics and formed the foundation of electric motor technology. Faraday was also one of the most famous chemists of his time, with most of his major discoveries in chemistry being accomplished in the 1820s. The letter, concerning Faraday's discovery of benzene in 1825, reads as follows:

> My dear Sir, Although the vol. of Phil. Trans. containing your paper on the compounds of Carbon and Hydrogen is not yet published, and will probably be anticipated by my new edition, yet I

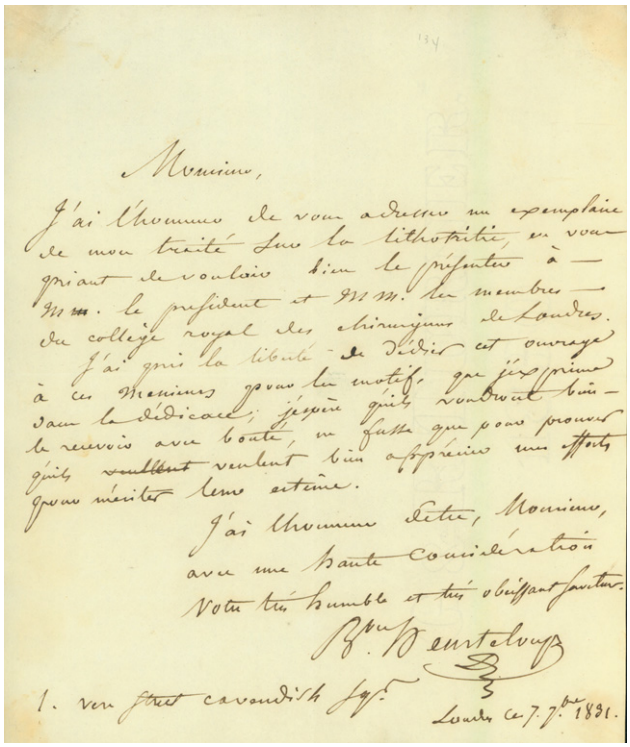
presume there can be nothing inconsistent with the laws or usages of the Royal Society, if I give an abstract of it in my forthcoming edition. This I shall as before introduce into an Appendix, unless I hear to the contrary from you. But if any objection strikes you, I must beg the favour of you to write by an early post, otherwise I will not put you to the trouble of a letter on the subject. Believe me, Dear Sir, Yours most faithfully, Willm. Henry.

Henry is referring here to Faraday's "On new compounds of carbon and hydrogen, and on certain other products obtained during the decomposition of oil by heat" (*Philosophical Transactions* [1825]: 440-66), in which Faraday announced his successful isolation of benzene (C_6H_6), which he named "bi-carburet of hydrogen." It would appear that Henry did indeed get Faraday's permission to abstract the 1825 paper, as an account of Faraday's researches in this area appears in the eleventh edition of Henry's *Elements of Experimental Chemistry* (1829). Williams, *Michael Faraday,* p. 108. 40836

Presenting a Copy of his Book to the Royal Society

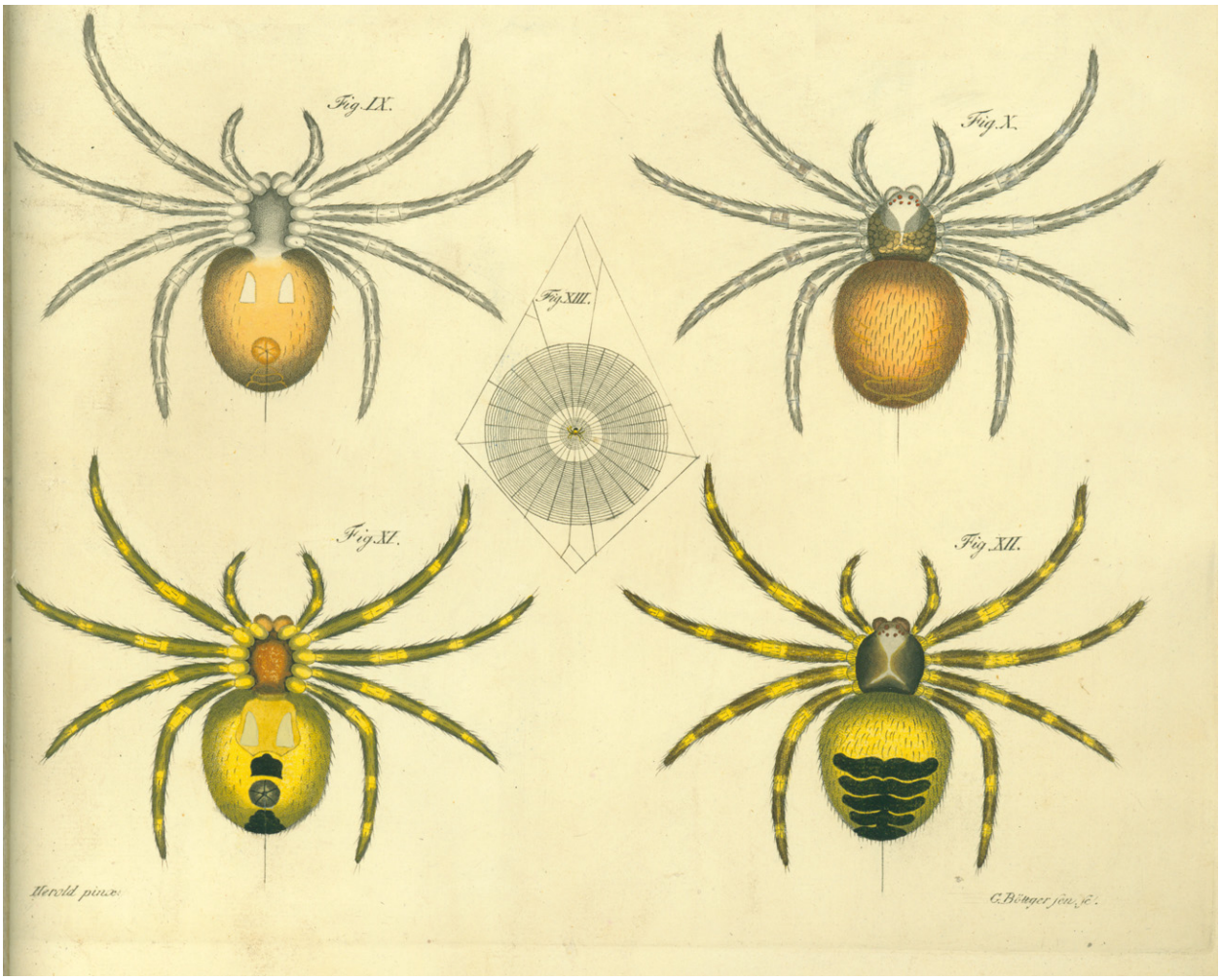
55. **Heurteloup, Charles L. S.,** *Baron* (1793-1864). Autograph letter signed to an unidentified correspondent. London, 7 September 1831. 1 page. 219 x 185 mm. Traces of former mounting present, but very good. $750

From the inventor of the "perce-pierre" lithotrite for crushing stones in the bladder (see Garrison-Morton 4290), presenting a copy of his *Cases of Lithotrity, or Examples of the Stone Cured without Incision* (1831) to the president and members of the Royal College of Surgeons, to whom he had dedicated the work. The operation of lithotrity, in which an instrument is inserted into the bladder through the urethra to pulverize bladder calculi, marks the beginning of minimally invasive surgery. The operation was introduced by Jean Civiale in 1826, but Heurteloup's method was superior. He moved to London in 1829, and was the first to perform lithotrity in Great Britain. Ellis, *History of Surgery,* p. 192. 32469


Monsieur,
J'ai l'honneur de vous adresser un exemplaire de mon traité sur la lithotritie, en vous priant de vouloir bien le présenter à — MM. le président et MM. les membres du collège royal des chirurgiens de Londres. J'ai pris la liberté de dédier cet ouvrage à ces Messieurs pour le motif, que j'exprime dans la dédicace; j'espère qu'ils voudront bien le recevoir avec bonté, ne faisant que pour prouver qu'ils veulent bien apprécier mes efforts pour mériter leur estime.
J'ai l'honneur d'être, Monsieur, avec une haute considération
Votre très humble et très obéissant serviteur
C. Heurteloup
1. von Street Cavendish Sqr.
Londres ce 7 7bre 1831.

Earliest Work on Arthropod Embryology

56. **Herold, Johann Moritz David** (1790-1862). **(1)** Exercitationes de animalium vertebris carentium in ovo formatione. Pars prima . . . [all published]. Folio. x, 63 [i.e., xx, 126]pp. Parallel text in Latin and German, with separate paginations for each. 2 hand-colored engraved plates, each with separate outline key and tissue guard. Marburg: Joh. Christ. Krieger & Comp., 1824. 402 x 255 mm. (uncut). Original printed boards, later cloth backstrip, light wear and spotting. Very good copy. **(2)** Disquisitiones de animalium vertebris carentium in ovo formatione. 2 parts in 1. Folio. [114]pp. Parallel text in Latin and German. 12 hand-colored engraved plates (nos. 1-4, 6-10, 12-14), some printed in colors, each plate with separate outline key and tissue guard. Frankfurt am Main: Johann David Sauerländer, [1835-]1838. 480 x 301 mm. Original printed boards, some wear to extremities and corners. Minor foxing, first outline key loose, but very good. **(3)**

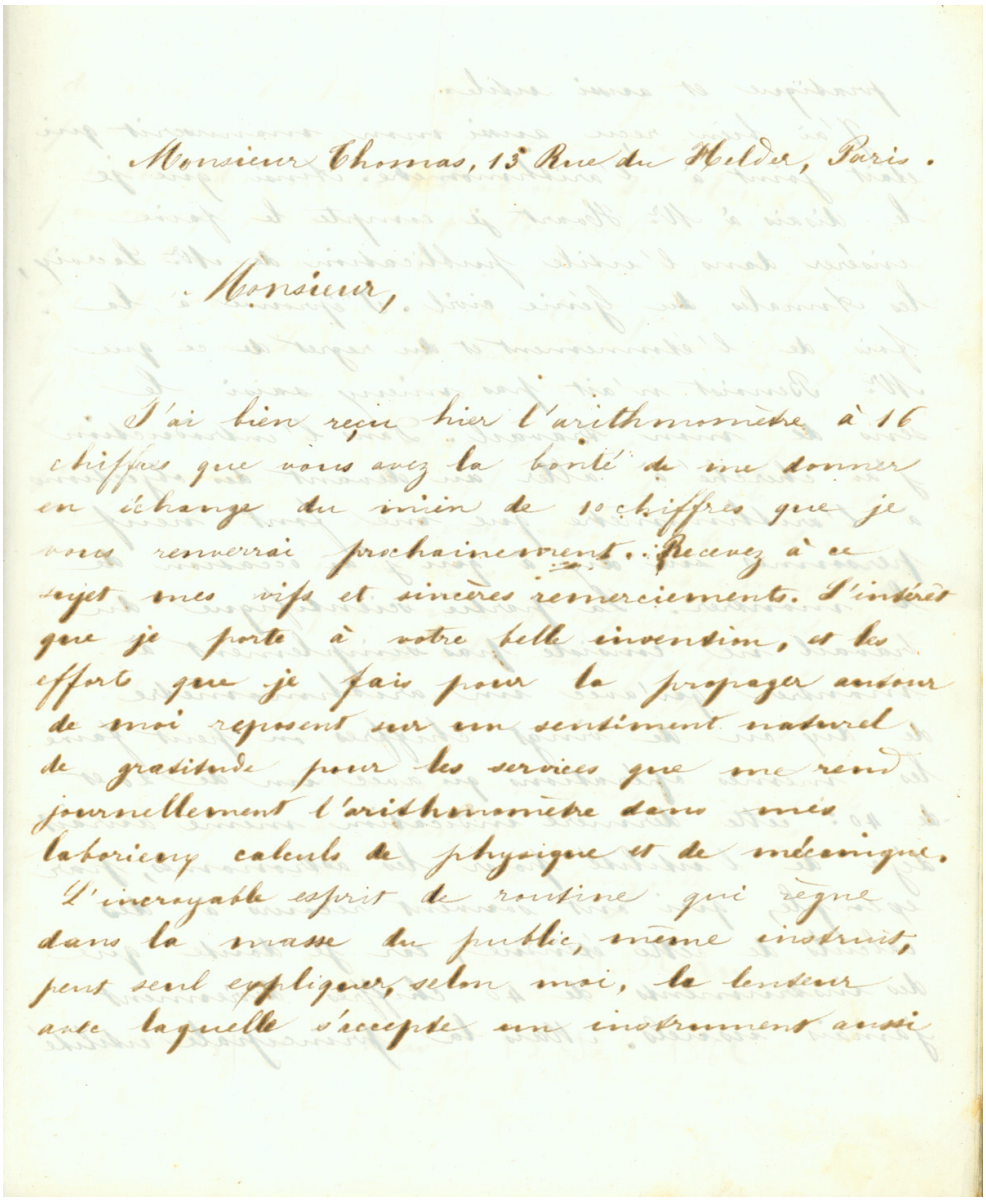


Untersuchungen über die Bildungsgeschichte der wirbellosen Thiere im Ei. [48]pp. 6 hand-colored engraved plates (nos. 5, 11, 15-18), some printed in colors, nos. 5 and 18 with separate outline keys. Berlin: Gutmann'schen Buchhandlung, 1876. 477 x 298 mm. Original printed boards, cloth back-strip, light edgewear, inner hinges cracked. Light toning, first plate a little loose, but very good. Together 3 items. $2500

Rare First Editions of the earliest works on the embryology of arthropods (insects, spiders and related animals). Herold, professor of medicine and director of the zoological collections at Marburg, had studied the development of invertebrate embryos in the egg since 1811. He paid more than 2000 thalers of his own money to publish the *Exercitationes* and the *Disquisitiones*, which are illustrated with beautifully colored plates made from Herold's drawings showing the eggs, embryonic stages, and adult forms of various arachnid and insect species.

The *Exercitationes* (no. **[1]**) describes the embryological development of spiders, and is illustrated with two hand-colored plates (each with outline key) showing the stages of growth, from egg to adult, of the common garden spider (Aranea diadema). The first two parts of the *Disquisitiones* (no. **[2]**) contain 14 hand-colored plates, some also printed in colors. The work describes and illustrates the embryological stages of various orders of insects, including the orthoptera, neuroptera, hymenoptera, hemiptera and lepidoptera; Herold was one of the first to note that newly hatched caterpillars already display male and female sex characteristics.

Sales of the first two parts of the *Disquisitiones* were so small that the publisher refused to issue the third part, which was not published until after Herold's death. This third part (no. **[3]**) deals with the embryological


Monsieur Thomas, 13 Rue du Helder, Paris.

Monsieur,

J'ai bien reçu hier l'arithmomètre à 16 chiffres que vous avez la bonté de me donner en échange du mien de 10 chiffres que je vous renverrai prochainement. Recevez à ce sujet mes vifs et sincères remerciements. L'intérêt que je porte à votre belle invention, et les efforts que je fais pour la propager autour de moi reposent sur un sentiment naturel de gratitude pour les services que me rend journellement l'arithmomètre dans mes laborieux calculs de physique et de mécanique. L'incroyable esprit de routine qui règne dans la masse du public, même instruit, peut seul expliquer, selon moi, la lenteur avec laquelle s'accepte un instrument aussi

development of the blowfly, sphinx moth, chinch bug and firefly; it contains six hand-colored plates (two with outline keys). Nissen 1912 (*Exercitationes*); 1910 (*Disquisitiones*). 40625

Unique Manuscript Archive of his Scientific Thought

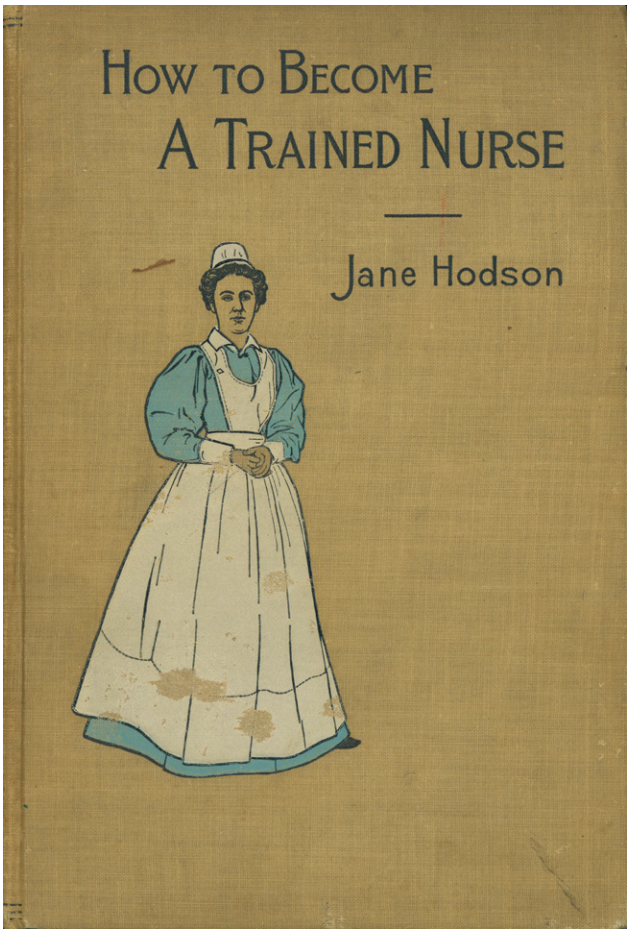
57. **Hirn, Gustave Adolfe** (1815-90). Album containing crush-paper copies of ca. 600 A.Ls.s. and Ls.s. written between 13 Sept. 1862 and 9 July 1865. [Colmar, 1862-65]. 280 x 222 mm. Original cloth, suede backstrip with cloth label, paper label on front cover, worn at edges, corners & spine. One or two small tears, otherwise very good internally. $9500

Hirn, a civil engineer, was one of the first to investigate the phenomena of the steam engine, and he made several fundamental contributions to mechanics and thermodynamics, including his *Exposition analytique et expérimentale de la théorie mécanique de la chaleur* (1862), one of the first systematic treatises on thermodynamics. The album we are offering contains crush-paper copies of ca. 600 letters that Hirn wrote between 1862 and 1865, shortly after the publication

of his *Exposition analytique* (the crush-paper method of letter duplication involved pressing a freshly written letter against special absorbent paper; only one such copy could be made, so that our album is *unique*). The album almost certainly represents *the most complete manuscript archive* of Hirn's scientific thought and activity during this time, since the original letters duplicated here were sent to a number of different recipients, and many have probably not survived. Among the letters are several written to **François Napoléon Marie Moigno** (1804-84), the eminent Jesuit mathematician and physicist; one of most interesting of these is Hirn's letter to Moigno of 16 February 1864, containing a long and detailed discussion, intended for publication, of the thermodynamic principles of **Rudolf Clausius** (1822-88). Clausius's name appears numerous times in Hirn's correspondence, along with those of physicist **Léon Foucault** (1819-68) and chemist **Henri Étienne St. Claire Deville** (1818-81).

Another letter, of 13 December 1862, is to **Charles X. Thomas**, inventor of the first commercially successful calculator; Hirn thanked Thomas (also a native of Colmar) for the receipt of his 16-digit Thomas Arithmometer, which Hirn used daily in his "laborious calculations in physics and mechanics." Hirn was impressed enough with the Thomas de Colmar Arithmometer that he published a paper on it the following year ("Notice sur l'utilité de l'arithmomètre et de l'hydrostat," *Annales du génie civil,* 2nd part, 2 [1863]: 113-17; 152-64), which included "an exposition of advanced techniques which extended the arithmometer's reach beyond the apparent restrictions of the four basic arithmetical rules" (Johnston).

Other letters in the album relate to Hirn's interests in climatology and meterology, or to his business activities as director of the mechanical department of the mill he managed jointly with his brother. It was his connection with this mill that first led Hirn to investigate the mechanics of heat. Time has permitted us to make only a cursory examination of this unique album; a thorough study will reveal other letters of equal or greater interest. *Dictionary of Scientific Biography.* Wheeler Gift for Moigno. Aspray et al., Computing before Computers, p. 50 (Thomas). Johnston, "Making the arithmometer count," http://www.mhs.ox.ac.uk/staff/saj/arithmometer. 34272



Guide to Nursing Schools in North America—First Work of its Kind

58. **Hodson, Jane,** *editor.* How to become a trained nurse: A manual of information in detail. 265pp. 35 plates, including color frontispiece; folding table; advertisements on front and rear endpapers; errata slip. New York: William Abbatt, 1898. 216 x 148 mm. Original pictorial cloth, a little worn, spine a bit darkened. Minor foxing but very good. Ownership signatures on flyleaf.

$950

First Edition, and *rare,* with only microform and internet copies cited in OCLC. Described in the preface as "the first [work] of its kind," *How to Become a Trained Nurse* provided a comprehensive listing of training schools for nurses in the United States and Canada (including "Schools for Colored Women" and "Schools for Men"). The work also includes articles on

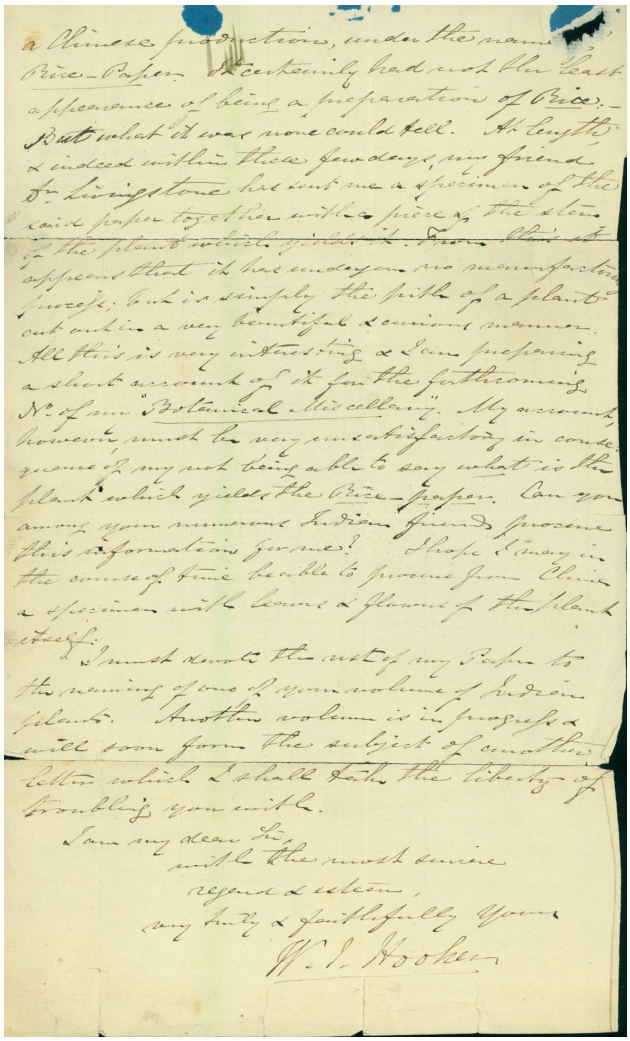
various aspects of professional nursing by some of the pioneers in the field, including Lillian Wald, head of the Henry Street Settlement and founder of visiting nursing in the United States and Canada. Hodson's book, published shortly after the creation of the American Nurses' Association and the National League for Nursing Education, exemplifies the movement towards the professionalization of nursing and its increased acceptance as a suitable career for women. 34375

59. **Hook, Diana** and **Jeremy Norman.** Origins of cyberspace: A library on the history of computing, networking and telecommunications. With contributions by Michael R. Williams. 670pp. 284 illustrations. Printed in two colors. Novato: Historyofscience.com, 2002. Cloth. Limited to 500 copies. $500

Extensively annotated and illustrated bibliography describing 1411 books, technical reports, pamphlets, blueprints, typescripts, manuscripts, photographs and ephemera on the history of computing and computer-related aspects of telecommunications. Covering the period from the 17th century to ca. 1970, the work includes several lengthy essays and a timeline of significant events and publications in computer history. Indexed. 38301

About "Rice Paper"

60. **Hooker, William Jackson** (1785-1865). Autograph letter signed to an unidentified recipient. Glasgow, April 7, 1828. 2pp. 323 x 202 mm. Tears along horizontal creases and in margins repaired, small hole in upper left corner (not affecting text), traces of mounting on verso. Very good. $1500



Letter with excellent scientific content from W. J. Hooker, the first full-time director of the Royal Botanic Gardens at Kew. Hooker devoted himself to the study of botany from an early age, specializing in mosses, liverworts and other cryptogamia. He served as regius professor of botany at the University of Glasgow from 1820 to 1841, when he was appointed to head Kew Gardens. Under Hooker's leadership Kew grew from eleven acres to its present size of nearly 300 acres, and its collections vastly increased, largely due to a network of Hooker's former students who brought in specimens from around the world. Hooker's own herbarium, which contained some 4000 volumes and one million dried plant specimens, was purchased by the British government for the nation after Hooker's death. Hooker was the author of over two dozen works on botany, including *British Jungermanniae* (1816), which established hepaticology (the study of liverworts) as a separate field; he also edited several botanical journals.

Hooker's letter, written during his tenure at the University of Glasgow, includes a discussion of the "rice-paper plant" (*Tetrapanax papyriferum [Hook.]Koch*), a subject of lasting interest to him. The pith of this plant, which can be sliced into very thin sheets, was used in China as an alternative to paper, and in the 1820s the Chinese began producing pith-paper paintings and other artifacts for the European market. Hooker had

just received a sample of this "rice paper" from a Dr. Livingstone, who in 1805 brought the first examples of the material to England:

> I am extremely interested at this time about a substance which we have long known as a Chinese production, under the name of Rice-Paper. It certainly has not the least appearance of being a preparation of Rice: But what it was none could tell. At length, & indeed within these few days, my friend Dr. Livingstone has sent me a specimen of the said paper together with a piece of the stem of the plant which yields it. From this it appears that it has undergone no manufacturing process, but is simply the pith of a plant cut out in a very beautiful & curious manner. All this is very interesting & I am preparing a short account of it for the forthcoming No. of my "Botanical Miscellany." My account, however, must be very unsatisfactory in consequence of my not being able to say what is the plant which yields the Rice-paper. Can you among your numerous Indian friends procure this information for me?

Hooker's short account, titled "Some account of the substance commonly known under the name 'Rice Paper,'" appeared in Vol. 1 of the *Botanical Miscellany* (1830). Between 1850 and 1856 Hooker published four more papers on the "rice paper" plant, which he named *Aralia Papyrifera, Hook.,* classifying it as a member of the *Araliaceae* (ginseng) family. His complete scientific description of the plant, based on living specimens he had received in 1852 and 1855, appeared in Vol. 12 of *Curtis's Botanical Magazine* (1856). In 1859 the German botanist Karl Koch gave the plant its present scientific name.

Hooker's letter also discusses the identification of drawings of Indian botanical specimens he had undertaken for his correspondent:

> . . . I have not lost sight of the request you made to me, to name the drawings in your volumes of Indian Plants. This I am proceeding with & shall communicate to you from time to time. I have first taken in hand the volume of Grasses: & having completed that, I am desirous of sending you my notes upon its contents. The simple names are sufficient, where I am certain the plant is a described one, but of some I am doubtful, & indeed they probability is that they are new:-- though that cannot satisfactorily be determined without I had at the same time access to specimens. . . .

"Chinese Botanical Paintings, *Tetrapanax papyriferum (Hook.)Koch,*" Harvard University Herbaria (internet resource). 40863

Dedication Copy, With an Inscribed Photograph of the Author

61. **Hopewell-Smith, Arthur** (1865-1931). Dental microscopy. xxviii, 119pp. 8 lithograph plates after the author's drawings, text illustrations. London: Dental Manufacturing Company; Philadelphia: S. S. White Dental Manufacturing Company, 1895. 248 x 181 mm. Tree calf gilt ca. 1895, rebacked, minor wear. *The Dedication Copy,* with Hopewell-Smith's autograph inscription to dedicatee Charles Sissmore Tomes (1846-1928) on the verso of the front free endpaper: "To Charles Sissmore Tomes Esq. as a mark of appreciation of & admiration for his splendid services to

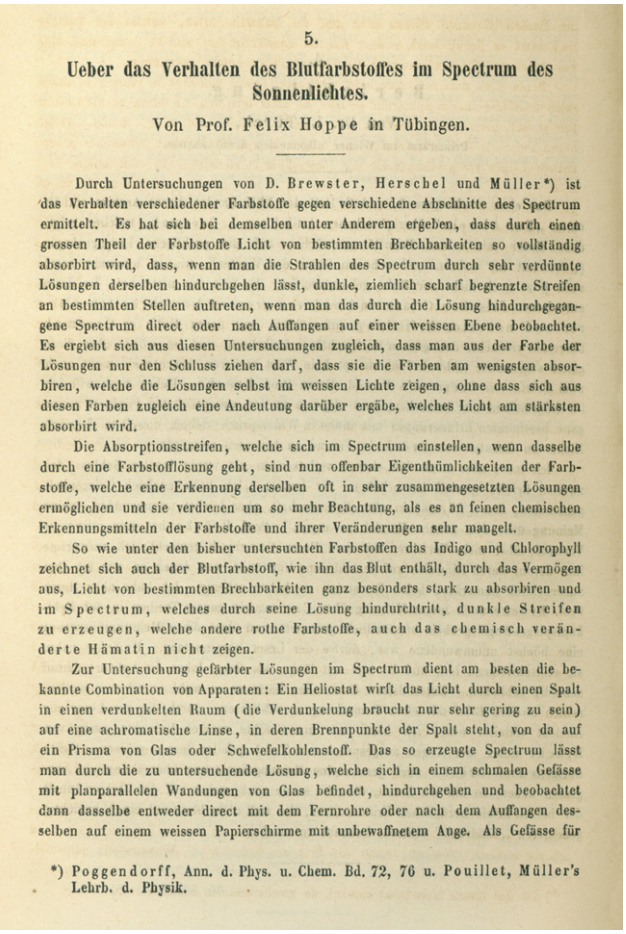
dental science from Arthur Hopewell Smith. Boston June 1895." On the page opposite the inscription is mounted a portrait photograph of Hopewell-Smith (160 x 118 mm.) inscribed in the same hand "Yours sincerely Arthur Hopewell-Smith." $1500

First Edition. Hopewell-Smith was a specialist in dental histology, having served as a lecturer and demonstrator at the Royal Dental Hospital of London before coming to the United States to take the position of professor of dental histology at the University of Pennsylvania. He was known for "the striking excellence of his practical work in preparing sections of dental tissues and in photomicrography" (*British Medical Journal* 1, no. 3665 [1931]: 606). Hopewell-Smith dedicated *Dental Microscopy* to the eminent British dentist Charles Sissmore Tomes, consulting dental surgeon at the Royal Dental Hospital and author of *Manual of Dental Anatomy Human and Comparative* (1882 and later eds.). We are offering the dedication copy of Hopewell-Smith's work, inscribed to Tomes and with a signed portrait photograph of the author. 40504

Hemoglobin

62. **Hoppe-Seyler, Felix** (1825-95). Ueber das Verhalten des Blutfarbstoffes im Spectrum des Sonnenlichtes. In *Archiv für pathologischen Anatomie und Physiologie und für klinische Medicin* 23 (1862): 446-49. Whole volume. iv, 596pp. 7 lithograph plates. 210 x 132 mm. Half cloth c. 1862, some wear at extremities and corners. Light toning, but very good. 19th century bookplate of the Medical Library of the New York State Lunatic Asylum. $950

First Edition, journal issue. Hoppe-Seyler was the first to describe the optical absorption spectrum of purified red blood pigment, which he named hemoglobin. He described hemoglobin's two distinctive absorption bands, and confirmed that hemoglobin contains iron. The present paper introduced the new spectroscope of Bunsen and Kirchhoff into medical chemistry. *Dictionary of Scientific Biography.* Garrison-Morton 870. 40602



5.

Ueber das Verhalten des Blutfarbstoffes im Spectrum des Sonnenlichtes.

Von Prof. Felix Hoppe in Tübingen.

Durch Untersuchungen von D. Brewster, Herschel und Müller*) ist das Verhalten verschiedener Farbstoffe gegen verschiedene Abschnitte des Spectrum ermittelt. Es hat sich bei demselben unter Anderem ergeben, dass durch einen grossen Theil der Farbstoffe Licht von bestimmten Brechbarkeiten so vollständig absorbirt wird, dass, wenn man die Strahlen des Spectrum durch sehr verdünnte Lösungen derselben hindurchgehen lässt, dunkle, ziemlich scharf begrenzte Streifen an bestimmten Stellen auftreten, wenn man das durch die Lösung hindurchgegangene Spectrum direct oder nach Auffangen auf einer weissen Ebene beobachtet. Es ergiebt sich aus diesen Untersuchungen zugleich, dass man aus der Farbe der Lösungen nur den Schluss ziehen darf, dass sie die Farben am wenigsten absorbiren, welche die Lösungen selbst im weissen Lichte zeigen, ohne dass sich aus diesen Farben zugleich eine Andeutung darüber ergäbe, welches Licht am stärksten absorbirt wird.

Die Absorptionsstreifen, welche sich im Spectrum einstellen, wenn dasselbe durch eine Farbstofflösung geht, sind nun offenbar Eigenthümlichkeiten der Farbstoffe, welche eine Erkennung derselben oft in sehr zusammengesetzten Lösungen ermöglichen und sie verdienen um so mehr Beachtung, als es an feinen chemischen Erkennungsmitteln der Farbstoffe und ihrer Veränderungen sehr mangelt.

So wie unter den bisher untersuchten Farbstoffen das Indigo und Chlorophyll zeichnet sich auch der Blutfarbstoff, wie ihn das Blut enthält, durch das Vermögen aus, Licht von bestimmten Brechbarkeiten ganz besonders stark zu absorbiren und im Spectrum, welches durch seine Lösung hindurchtritt, dunkle Streifen zu erzeugen, welche andere rothe Farbstoffe, auch das chemisch veränderte Hämatin nicht zeigen.

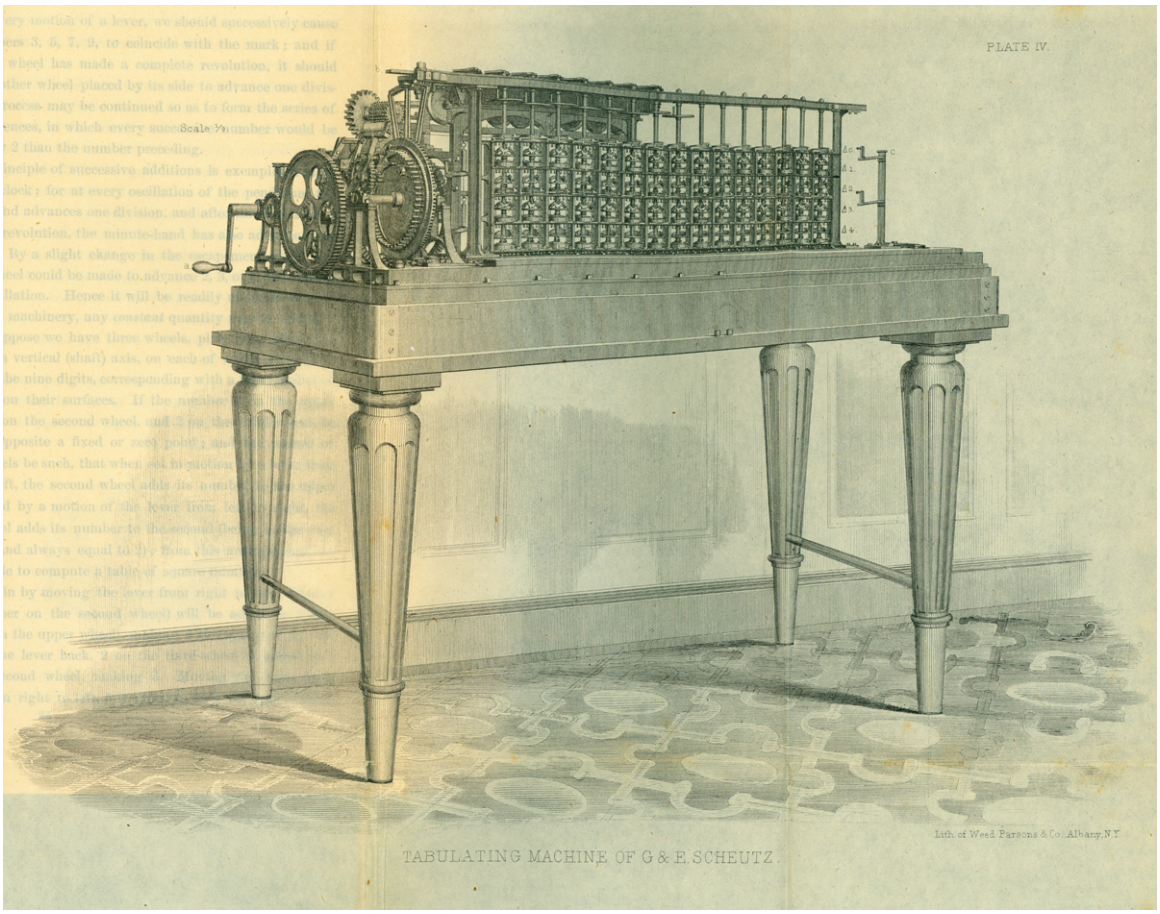
Zur Untersuchung gefärbter Lösungen im Spectrum dient am besten die bekannte Combination von Apparaten: Ein Heliostat wirft das Licht durch einen Spalt in einen verdunkelten Raum (die Verdunkelung braucht nur sehr gering zu sein) auf eine achromatische Linse, in deren Brennpunkte der Spalt steht, von da auf ein Prisma von Glas oder Schwefelkohlenstoff. Das so erzeugte Spectrum lässt man durch die zu untersuchende Lösung, welche sich in einem schmalen Gefässe mit planparallelen Wandungen von Glas befindet, hindurchgehen und beobachtet dann dasselbe entweder direct mit dem Fernrohre oder nach dem Auffangen desselben auf einem weissen Papierschirme mit unbewaffnetem Auge. Als Gefässe für

*) Poggendorff, Ann. d. Phys. u. Chem. Bd. 72, 76 u. Pouillet, Müller's Lehrb. d. Physik.

The Scheutz Machine

63. [**Hough, George Washington** (1836-1909).] The Swedish tabulating machine of G. & E. Scheutz. In *Annals of the Dudley Observatory* 1 (1866): 116-126, plate. Whole volume. lxvii, 126, [2], 126pp. 16 plates. 227 x 142 mm. Morocco spine, cloth boards in antique style. Tabulating machine plate and last leaf repaired, light toning, library stamp and perforations on title, but very good. $3750

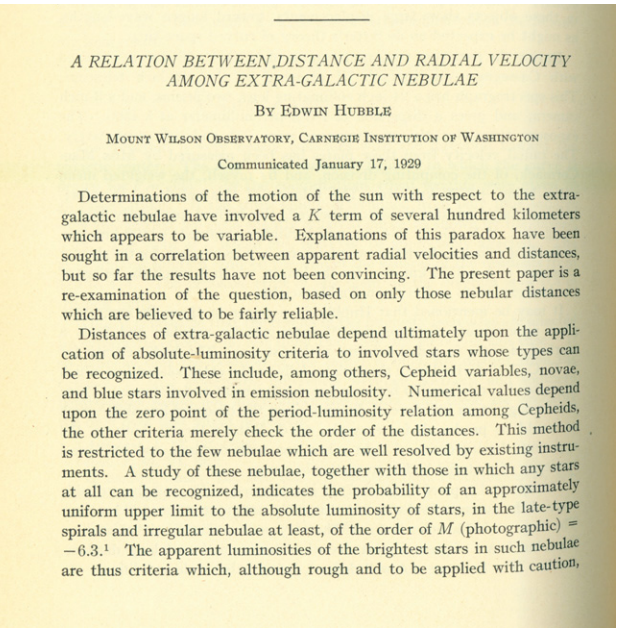
First Edition. A description of the Scheutz Difference Engine no. 2, constructed by the Swedish father-and-son team of Georg and Edvard Scheutz and completed in October 1853. The Scheutzes were the first to construct a working difference engine capable of producing printed mathematical tables. The Scheutz machine, of which three examples were built, was based



upon Charles Babbage's design for his famous Difference Engine no. 1, which Babbage worked on intermittently between 1822 and 1834 before abandoning the project uncompleted.

Georg Scheutz—described by Lindgren as an "auditor, printer, journalist and editor, political commentator, spokesman for technology, translator and inventor"—first learned of Babbage's Difference Engine circa 1830. Although his imagination was immediately fired by the possibilities of such a machine, he was unable to begin designing his own version until 1834, when Dionysius Lardner published his detailed review of Babbage's Difference Engine in the July issue of the *Edinburgh Review.* Drawing on the information in Lardner's article, Scheutz and his teenage son Edvard began working on their own design for a difference engine, which was both simpler and cheaper to produce than Babbage's machine. The first Scheutz difference engine (no. 1), a trial device, was completed in 1843. A decade later, the Scheutzes produced their first operational engine, the Scheutz Difference Engine no. 2. In 1863 the Scheutzes built their third and final difference engine for the Registrar General's Office in London.

The Scheutzes worried that Babbage might view them as competitors, but instead he welcomed their contributions, and assisted them in publicizing their machine. Through Babbage's auspices the Scheutz Difference Engine no. 2 was put on display at the Royal Society in November 1854. It won a gold medal at the Great Exposition in Paris in 1855, and in 1857 the Dudley Observatory in Albany, New York, purchased it for the sum of $5000 for the purpose of calculating astronomical tables, a task for which it was little used. In 1924 the machine was sold to the Felt and Tarrant Company of Chicago, a manufacturer of calculating machines. The machine was later acquired by the Smithsonian Institution. Lindgren, *Glory and Failure: The Difference Engines of Johann Müller, Charles Babbage and Georg and Edvard Scheutz* (1987). Merzbach, *Georg Scheutz and the First Printing Calculator* (1977). *Erwin Tomash Library on the History of Computing* H 171. 40603



A RELATION BETWEEN DISTANCE AND RADIAL VELOCITY AMONG EXTRA-GALACTIC NEBULAE

By Edwin Hubble

Mount Wilson Observatory, Carnegie Institution of Washington

Communicated January 17, 1929

Determinations of the motion of the sun with respect to the extra-galactic nebulae have involved a K term of several hundred kilometers which appears to be variable. Explanations of this paradox have been sought in a correlation between apparent radial velocities and distances, but so far the results have not been convincing. The present paper is a re-examination of the question, based on only those nebular distances which are believed to be fairly reliable.

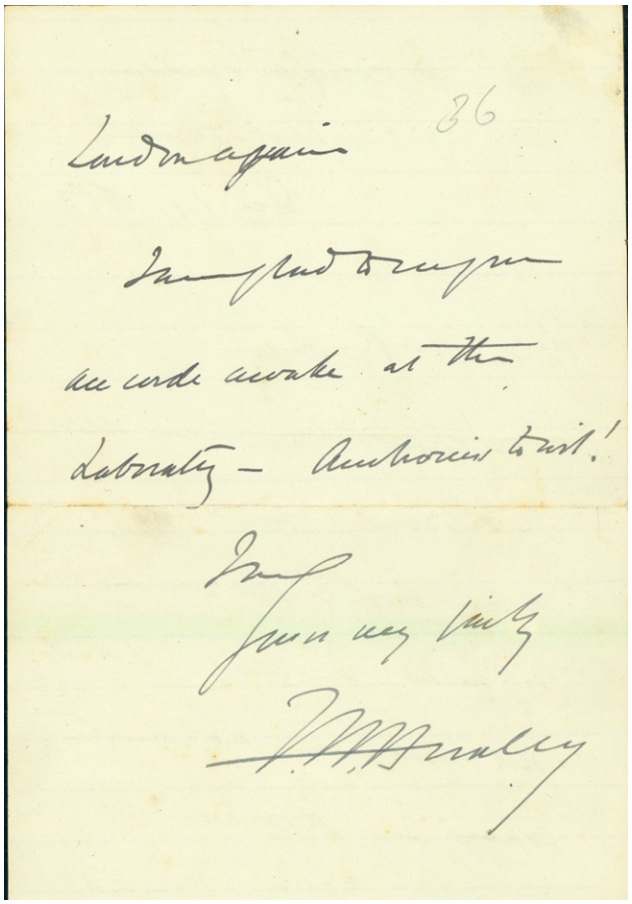
Distances of extra-galactic nebulae depend ultimately upon the application of absolute-luminosity criteria to involved stars whose types can be recognized. These include, among others, Cepheid variables, novae, and blue stars involved in emission nebulosity. Numerical values depend upon the zero point of the period-luminosity relation among Cepheids, the other criteria merely check the order of the distances. This method is restricted to the few nebulae which are well resolved by existing instruments. A study of these nebulae, together with those in which any stars at all can be recognized, indicates the probability of an approximately uniform upper limit to the absolute luminosity of stars, in the late-type spirals and irregular nebulae at least, of the order of M (photographic) = -6.3.[1] The apparent luminosities of the brightest stars in such nebulae are thus criteria which, although rough and to be applied with caution,

The Expanding Universe

64. **Hubble, Edwin** (1889-1953). A relation between distance and radial velocity among extra-galactic nebulae. In *Proceedings of the National Academy of Sciences* 15 (1929): 168-173. Whole volume, 8vo. ix, 924pp. 245 x 168 mm. Morocco spine, marbled paper boards in antique style. Minor toning and finger-soiling, but very good. $4750

First Edition. Hubble's first paper on his discovery of what is now known as Hubble's Law: recession velocity between various galaxies and the earth is proportional to their distance from us, indicating an expanding universe. The recession velocities of these galaxies were inferred from their redshifts, many of which had been measured over a decade earlier by astronomer Vesto Slipher, who related the redshifts to velocity. In combining Slipher's redshift measurements with his own measurements of galaxy distances, Hubble discovered a rough proportionality between the two. By plotting a trend line through the 46 galaxies he studied, he obtained a value for the expansion rate (now called the Hubble constant) of 500km/s/Mpc—a value much higher than the currently accepted 70.1 ± 1.3km/s/Mpc, due to errors in Hubble's distance calculations.

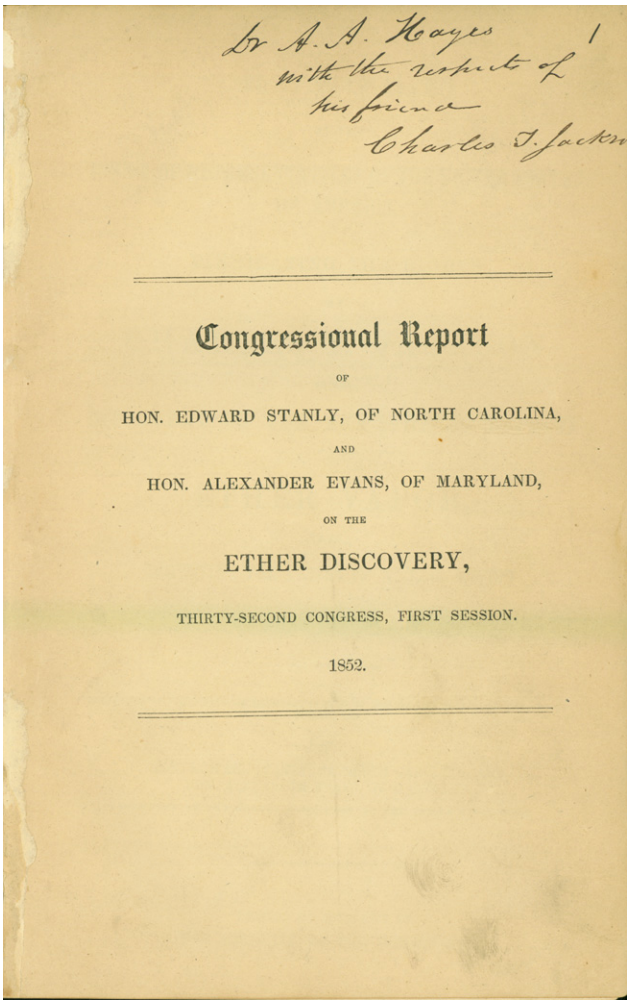
Hubble's discovery provided the first observational support for the "Big Bang" theory proposed in 1927 by Georges Lemaître, and led to wider acceptance of the concept of an expanding universe. "Though only six pages in length, Hubble's first paper on the velocity-distance relation represented a giant step in modern cosmology. . . . In place of a static picture of the cosmos, it seemed to many that the universe must be regarded as expanding, the rate of the mutual recession of its parts increasing with their relative distance" (Christianson, p. 191). Hubble's discovery "made as great a change in man's conception of the universe as the Copernican revolution 400 years before" (*Dictionary of Scientific Biography*). Christianson, *Edwin Hubble: Mariner of the Nebulae,* pp. 188-92. 40601

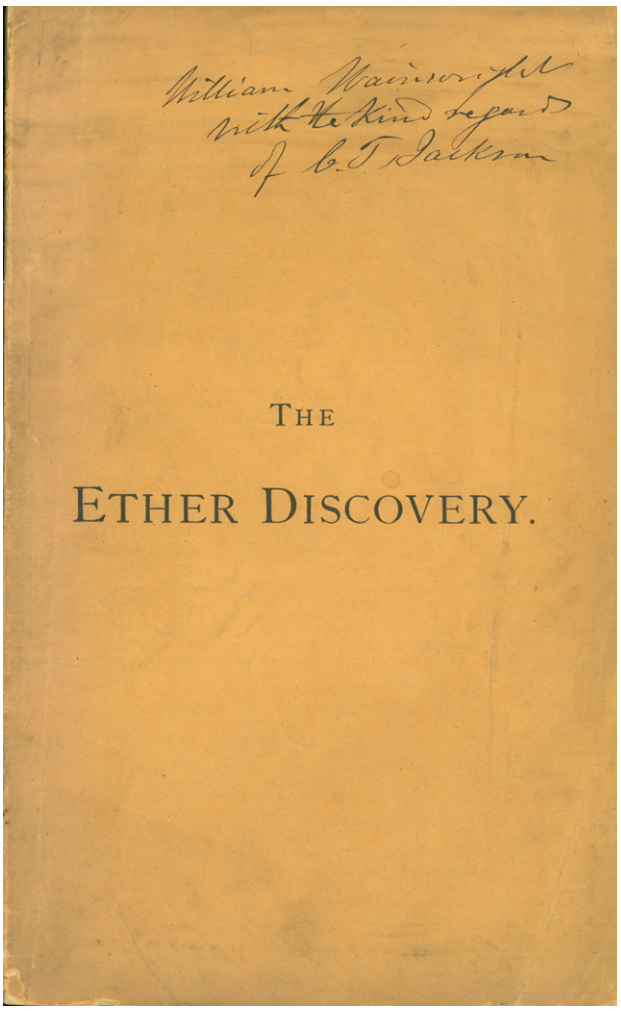


On Oysters

65. **Huxley, Thomas** (1825-95). Autograph letter signed to Mr. Bourne. Eastbourne, Dec. 14, 1889. 2pp. Very good. $750

"I should have been very glad to send you a copy of my Oyster paper—but so far as I recollect I did not have any separate copies. However I will look when I





visit London again." The "Oyster paper" was most likely Huxley's "Oysters and the oyster question" (*English Illustrated* Magazine [1883-84]: 47-55, 112-121), written in Huxley's capacity as Inspector of Fisheries. 40854

Supporting Jackson's Priority in the Ether Controversy—Inscribed by Jackson to his Friend A. A. Hayes

66. **Jackson, Charles Thomas** (1805-80)]. **Stanly, Edward** and **Alexander Evans.** Report to the House of Representatives of the United States of America, vindicating the rights of Charles T. Jackson to the discovery of the anaesthetic effects of ether vapor, and disproving the claims of W. T. G. Morton to that discovery. 57pp. [Boston: Rand, Avery & Frye, 1853.] 221 x 145 mm. Quarter morocco, marbled boards in antique style, original front wrapper preserved. Very good copy, *inscribed by Jackson* on the front wrapper: "Dr. A. A. Hayes with the respects of his friend Charles T. Jackson." $2000

First Edition, issue with front wrapper title reading "Congressional report . . ." The "Ether Controversy," a rancorous dispute between W. T. G. Morton, Charles T. Jackson and Horace Wells over who deserved the credit for discovering inhalation anesthesia, began in 1847 and ended only with Morton's death in 1868. In late November 1851 Morton, who had hoped to make his fortune from ether anesthesia, made his third petition to Congress for a monetary reward for the discovery. Morton's claims to priority were reviewed by a congressional committee headed by William H. Bissell. The Bissell committee issued a report

in favor of Morton, but two dissenting members, Edward Stanly and Alexander Evans, authored the present minority report supporting Jackson's priority. There are two issues of the report, one with the front wrapper title beginning with the words "Congressional Report," and the other reading "The Ether Discovery"; see below. Jackson presented this copy to his friend Augustus A. Hayes, a Boston chemist who developed a method of distilling concentrated chloric ether for use as an anesthetic; see Warren, J. M., *Surgical Operations with Cases and Observations* (1867), p. 618. Wolfe, *Tarnished Idol,* ch. 17. 40867

Variant Issue, Inscribed by Jackson

67. **Jackson, Charles Thomas** (1805-80)]. **Stanly, Edward** and **Alexander Evans.** Another copy, issue with front wrapper reading "The Ether Discovery." 242 x 152 mm. Original printed wrappers, spine chipped. Very good copy, *inscribed by Jackson* on the front wrapper: "William Wainwright with the kind regards of C. T. Jackson." $1500

First Edition, issue with front wrapper title reading "The Ether Discovery." See above. There are two issues of the report, one with the front wrapper title beginning with the words "Congressional Report," and the other reading "The Ether Discovery." Jackson inscribed this copy of the report to a William Wainwright, whom we have not been able to identify. Wolfe, *Tarnished Idol,* ch. 17. 34341

Rare Signed Invitation to the World's First Serious Science Fiction Film, with Promotional Brochure

68. **Lang, Fritz** (1890-1976) and **Thea von Harbou** (1888-1954). **(1)** Frau im Mond. Printed invitation featuring artwork of a lunar scene from the film, **signed and dated in pencil by Lang,** the

director of the film, and also **signed by von Harbou,** the author of the novel on which the film was based. Single sheet, folded to 242 x 158 mm., inside blank. **(2)** Frau im Mond. Promotional brochure featuring scenes from the film with descriptive text. 8pp. Original printed self-wrappers. 301 x 220 mm. Together two items, framed together under UV plexiglass (frame measures approx. 450 x 555 mm.). Berlin, 1929. Both items creased horizontally, but very good otherwise, and very attractively framed. $4500

Rare Signed Invitation and program issued in conjunction with the release of Fritz Lang's silent film *Frau im Mond* (Woman in the Moon), generally recognized as one of the world's first serious science fiction films, and the first to present the basics of rocketry to a mass audience. Among the highlights of the film are the use of a multi-stage rocket and the first "countdown to zero" scene prior to a rocket launch. Rocketry pioneers Hermann Oberth and Willy Ley both served as consultants on the film, which was based on the novel *Die Frau im Mond* (1928) by Thea von Harbou, Lang's then-wife and collaborator. Lang's signature on the invitation is dated "18.XI.29," roughly a month after the film's release in Berlin on October 15, 1929. 40862

The Binary System

69. **Leibniz, Gottfried Wilhelm** (1646-1716). Explication de l'arithmétique binaire, qui se sert des seuls caracteres 0 & 1; avec des remarques sur son utilité, & sur ce qu'elle donne le sens des anciens figues chinoises de Fohy. In *Histoire de l'Académie Royale des Sciences année MDCCIII avec les memoires de mathematique & de physique, pour la même année* (1705): 85-89 (*Mémoires*). [**With**] [**Fontanelle, Bernard le Bouyer**]. Nouvelle arithmétique binaire. In *ibid.*: 58-63 (*Histoire*). Whole volume, 4to. [10], 148 (*Histoire*), 467 (*Mémoires*)pp., plus errata leaf. Engraved frontispiece and 12 plates (some folding). 248 x 184 mm. Full calf in period style, original marbled front wrapper preserved. Old stamps of the Bibliothèque de l'Université de Toulouse and P. Se[…]naire de Grenoble on title, Toulouse library stamp also on plate versos. **Sold**

First Edition of Leibniz's landmark paper on binary (base 2) arithmetic, whose "0's" and "1's" form the basis of electronic computing. Although other mathematicians previous to Leibniz, including Blaise Pascal, had experimented with binary and other non-decimal systems in their writings, Leibniz's paper was the first publication on binary arithmetic to have a significant impact on the scientific community. After its publication, the binary system became a popular subject of study for European mathematicians of the period.

Leibniz's *Explication de l'arithmétique binaire* was his first publication on a topic that had interested him for over two decades (his earliest work on binary arithmetic was an unpublished manuscript entitled "De progressio dyadica" [1679; facsimile ed. 1966] in which he proposed a design for a binary calculating machine). Leibniz saw binary numeration, which reduces all numbers to expressions involving only 0 and 1, as a means of both simplifying calculation and uncovering fundamental principles of number theory. Further, binary arithmetic was for Leibniz an essential key to the discovery of philosophical and theological truths: In a letter to the Duke of Brunswick written on January 2, 1697, Leibniz claimed that binary arithmetic could be seen as an "imago Creationis" (image of the Creation), since "nothing is a better analogy to, or even demonstration of such creation than the origin of numbers as here represented, using only unity and zero or nothing" (quoted in Glaser, p. 31).

In 1701 Leibniz sent an account of his ideas on binary arithmetic to Joachim Bouvet, a member of the Jesuit Mission in China, with whom he had been corresponding since 1697. Bouvet immediately recognized the correspondence between Leibniz's binary notation and the hexagrams of the Yijing (I Ching) or Book of Changes, an ancient Chinese system of philosophy and cosmology based on the dynamic balance of opposites (yin and yang). Bouvet communicated his discovery to Leibniz in a letter written on November 14, 1701, which reached Leibniz on April 1, 1703. In his letter he enclosed a woodcut of the binary arrangement of hexagrams attributed to Fu Xi, the mythical first emperor of China, but in reality derived from the 11th-century *Huangji jingshi shu* (Book of sublime principle which

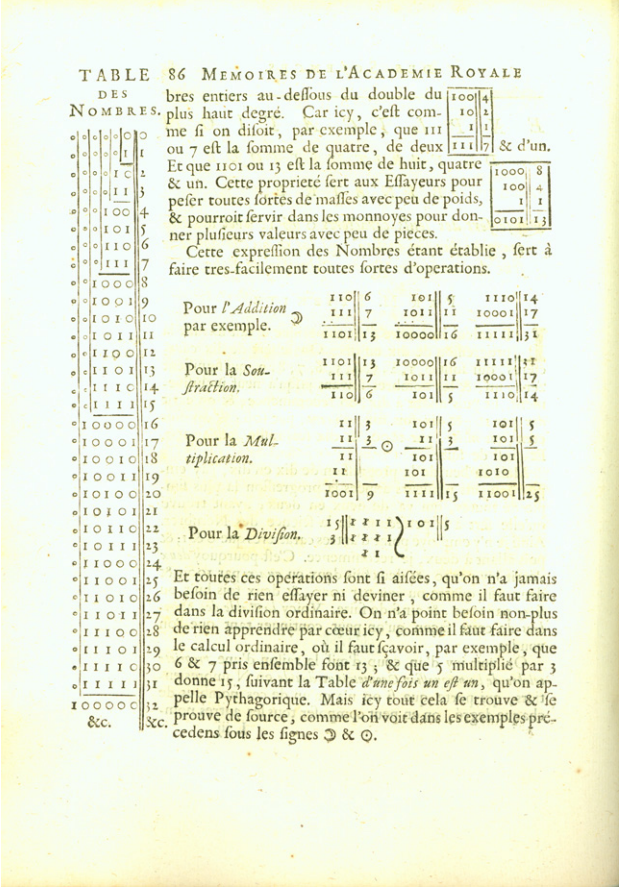


TABLE DES NOMBRES.

86 MEMOIRES DE L'ACADEMIE ROYALE

bres entiers au-deſſous du double du plus haut degré. Car icy, c'eſt comme ſi on diſoit, par exemple, que 111 ou 7 eſt la ſomme de quatre, de deux & d'un. Et que 1101 ou 13 eſt la ſomme de huit, quatre & un. Cette proprieté ſert aux Eſſayeurs pour peſer toutes ſortes de maſſes avec peu de poids, & pourroit ſervir dans les monnoyes pour donner pluſieurs valeurs avec peu de pieces.

Cette expreſſion des Nombres étant établie, ſert à faire tres-facilement toutes ſortes d'operations.

Pour l'*Addition* par exemple.

Pour la *Soustraction.*

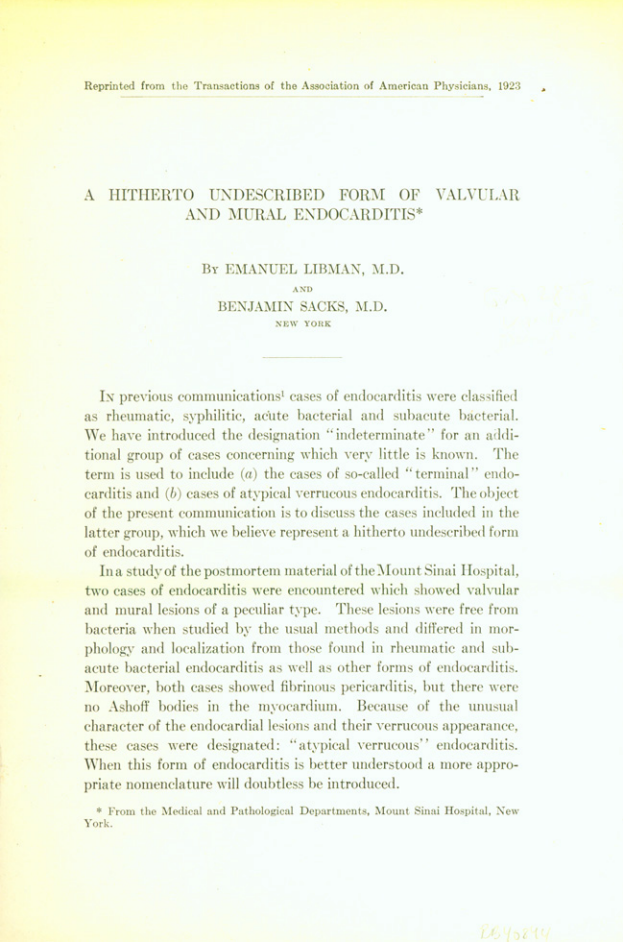
Pour la *Multiplication.*

Pour la *Diviſion.*

Et toutes ces opérations ſont ſi aiſées, qu'on n'a jamais beſoin de rien eſſayer ni deviner, comme il faut faire dans la diviſion ordinaire. On n'a point beſoin non-plus de rien apprendre par cœur icy, comme il faut faire dans le calcul ordinaire, où il faut ſçavoir, par exemple, que 6 & 7 pris enſemble ſont 13; & que 5 multiplié par 3 donne 15, ſuivant la Table *d'une fois un eſt un*, qu'on appelle Pythagorique. Mais icy tout cela ſe trouve & ſe prouve de ſource, comme l'on voit dans les exemples précedens ſous les ſignes ☽ & ☉.

governs all things in the world) by the Chinese scholar Shao Yong (1011-77). Shortly after receiving Bouvet's letter, Leibniz sent his *Explication de l'arithmétique binaire* to be published in the *Mémoires* of the Académie Royale des Sciences; in it, he laid out the principles of binary arithmetic and discussed its remarkable correspondence with the hexagrams of the Yijing.

Bernard le Bouyer Fontanelle, secretary of the Académie, published an anonymous review of Leibniz's *Explication* in the *Histoire de l'Académie Royale des Sciences* for 1703, bound together with the *Mémoires.* "Fontanelle pointed out that ten need not be the base of our arithmetic, and that indeed certain other bases would have advantages over it. . . .He reported that Leibniz had worked with the simplest of all possible bases, base two. . . . Fontanelle reported further that Leibniz had communicated this binary arithmetic in 1702, but had asked that no mention of it be made in the *Histoire* until he could supply an application. This application eventually came forth in the binary interpretation of the Figures of Fohy [Fu Xi]" (Glaser, p. 44). Glaser, *History of Binary and Other Nondecimal*



Reprinted from the Transactions of the Association of American Physicians, 1923

A HITHERTO UNDESCRIBED FORM OF VALVULAR AND MURAL ENDOCARDITIS*

By EMANUEL LIBMAN, M.D.
AND
BENJAMIN SACKS, M.D.
NEW YORK

In previous communications[1] cases of endocarditis were classified as rheumatic, syphilitic, acute bacterial and subacute bacterial. We have introduced the designation "indeterminate" for an additional group of cases concerning which very little is known. The term is used to include (*a*) the cases of so-called "terminal" endocarditis and (*b*) cases of atypical verrucous endocarditis. The object of the present communication is to discuss the cases included in the latter group, which we believe represent a hitherto undescribed form of endocarditis.

In a study of the postmortem material of the Mount Sinai Hospital, two cases of endocarditis were encountered which showed valvular and mural lesions of a peculiar type. These lesions were free from bacteria when studied by the usual methods and differed in morphology and localization from those found in rheumatic and subacute bacterial endocarditis as well as other forms of endocarditis. Moreover, both cases showed fibrinous pericarditis, but there were no Ashoff bodies in the myocardium. Because of the unusual character of the endocardial lesions and their verrucous appearance, these cases were designated: "atypical verrucous" endocarditis. When this form of endocarditis is better understood a more appropriate nomenclature will doubtless be introduced.

* From the Medical and Pathological Departments, Mount Sinai Hospital, New York.

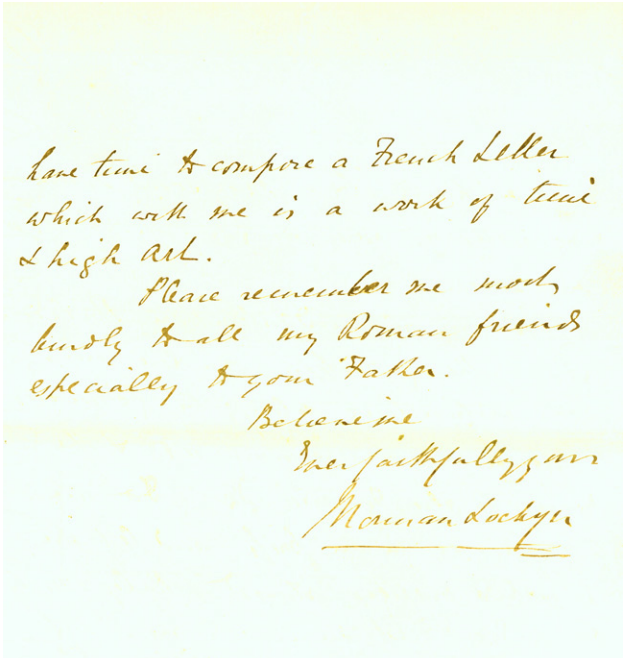
Numeration, pp. 31-44. Ifrah, *The Universal History of Computing*, pp. 87-92. Ryan, "Leibniz's binary system and Shao Yong's Yijing," *Philosophy East and West* 46 (1996) [internet source]. Lodder, "Binary arithmetic: From Leibniz to Von Neumann" [internet source]. 40859

Libman-Sacks Disease

70. **Libman, Emanuel** (1872-1946) and **Benjamin Sacks** (1896-1971). A hitherto undescribed form of valvular and mural endocarditis. Offprint from *Transactions of the Association of American Physicians* 38 (1923). 14pp. 230 x 153 mm. Without wrappers as issued. Fine copy. $750

First Edition, Offprint Issue of Libman and Sacks's first paper on Libman-Sacks endocarditis, a form of nonbacterial endocarditis that is one of the most common cardiac symptoms of lupus. The follow-

ing year Libman and Sacks published an expanded account of the disease (largely based on the present paper) in *Archives of Internal Medicine* (see Garrison-Morton 2855). 40844


have time & compose a French Letter
which with me is a work of time
& high Art.
Please remember me most
kindly to all my Roman friends
especially to your Father.
Believe me
Ever faithfully yours
Norman Lockyer

From the Co-Discoverer of Helium

71. **Lockyer, J. Norman** (1836-1920). Autograph letter signed to Volpicelli. [London,] January 24, [1876]. 3pp. 228 x 187 mm. Fine. Docketed by recipient. $375

From Norman Lockyer, co-discoverer of the element helium and founder of the scientific journal *Nature*, to the son of Italian physicist Paolo Volpicelli (1804-79). Lockyer had recently been appointed to Britain's Science and Art Department, a government body headquartered in South Kensington and dedicated to the promotion of education in art, science, technology and design. His letter to Volpicelli concerns a planned exhibition of scientific apparatus:

> I am sure you will forgive me for so long a silence as you can form an idea of the tremendous pressure upon us all here in connection with the Scientific Collection. . . .
>
> We are alarmed about the Italian part of the Collection as there has been such a long delay; the German and French are overwhelming us & the success is already assured. Do use your power in the press and let me know how matters stand. Italy which should stand first seems as if she is not going to be represented at all. Stir up Blaserna and Respighi to whom I shall write as soon as I have time to compose a French letter which with me is a work of time & high art.

The two names mentioned here refer to Italian physicists Pietro Blaserna (1836-1918) and Lorenzo Respighi (1824-89). Lockyer's letter also refers to papers by physicist Paolo Volpicelli, the father of his correspondent, which apparently were to be translated in *Nature*:

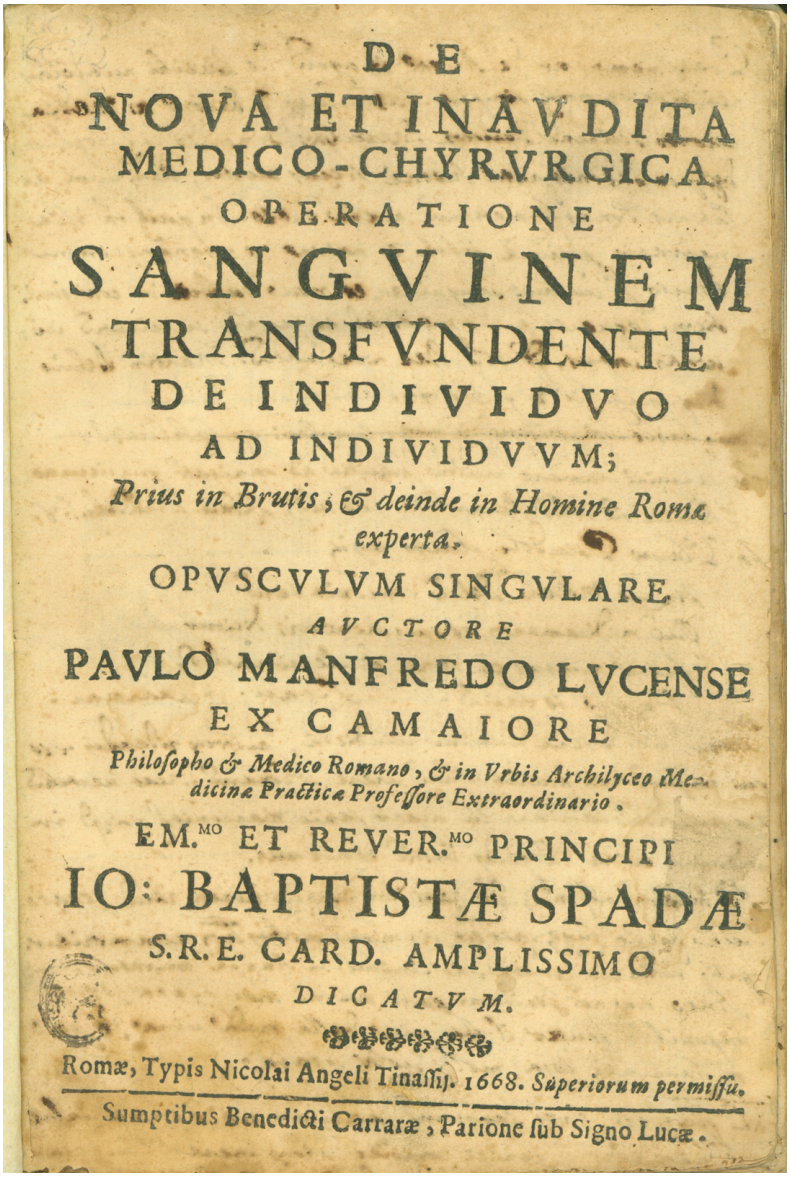
> One of your Father's papers has been translated & the other is in hand. The latter has to be delayed as we have a steel engraving of Wheatstone [Charles Wheatstone (1802-75), one of the inventors of the telegraph] to accompany it.

32457

First Work on Blood Transfusion by an Italian Author

72. **Manfredi, Paolo** (d. 1716). De nova et inaudita medico-chyrurgica operatione sanguinem tranfundente de individuo ad individuum . . . 4to in 8's. 32pp. *2 engraved plates in facsimile.* Rome: typis Nicolai Angeli Tinassii, 1668. 209 x 137 mm. Modern wrappers. Some toning and spotting, lower margins a bit frayed, old stamp on title. Copious notes in Latin in an early hand, discussing classical and contemporary references to human blood, on the blank verso of the title and on the first leaf of text. Very good copy. Boxed. $4750

First Edition in Latin of the first work on transfusion by an Italian. An Italian edition was issued in Rome by a different publisher in the same year. The title of this extremely rare pamphlet may be translated as *On the New and Unheard of Medical-Surgical Operation Transfusing Blood from Individual to Individual, First in Animals and then in Man*. It provides a sense of the sensational aspect of the new procedure of transfusion.

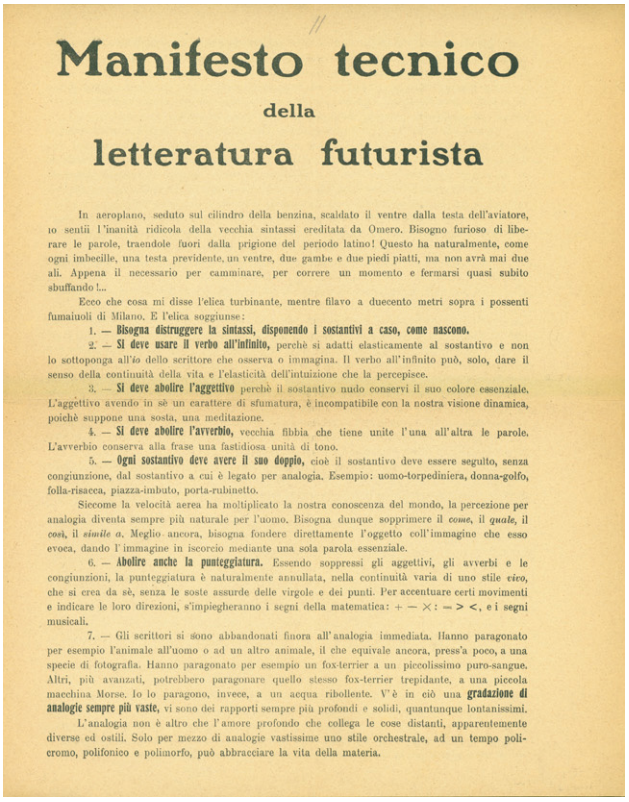

DE
NOVA ET INAVDITA
MEDICO-CHYRVRGICA
OPERATIONE
SANGVINEM
TRANSFVNDENTE
DE INDIVIDVO
AD INDIVIDVVM;
Prius in Brutis, & deinde in Homine Roma experta.
OPVSCVLVM SINGVLARE
AVCTORE
PAVLO MANFREDO LVCENSE
EX CAMAIORE
Philoſopho & Medico Romano, & in Vrbis Archilyceo Medicinæ Practicæ Profeſſore Extraordinario.
EM.MO ET REVER.MO PRINCIPI
IO: BAPTISTÆ SPADÆ
S.R.E. CARD. AMPLISSIMO
DICATVM.
Romæ, Typis Nicolai Angeli Tinaſſij. 1668. *Superiorum permiſſu.*
Sumptibus Benedicti Carraræ, Parione ſub Signo Lucæ.

Manfredi's experiments with transfusion followed closely on those of Lower (1665, 1667) and Denis (1667), both of whom attempted transfusions between animals and between animals and humans; see G-M 2021, 2013, 2014. Manfredi was able to perform the operation in both animals and humans with some success, as described in the present work. He included a description of his method, which involved the introduction of a cannula into an isolated and denuded vein.

Extremely rare. This is the only copy we have seen on the market in forty years of trading. OCLC cites only 5 copies (Yale [2], NLM, U. Minn. and Wellcome). Peumery, *Les origines de la transfusion sanguine*, pp. 42-44. 38024

Futurist Typography

73. **Marinetti, Filippo Tommaso** (1876-1944). **(1)** Manifesto tecnico della letteratura futurista. [4]pp. Milan: Direzione del Movimento Futurista, 11 maggio 1912. 291 x 232 mm. Unbound as issued. **(2)** Supplemento al Manifesto tecnico della letteratura futurista. [4]pp. Milan: Direzione del Movimento Futurista, 11 agosto



Manifesto tecnico

della

letteratura futurista

In aeroplano, seduto sul cilindro della benzina, scaldato il ventre dalla testa dell'aviatore, io sentii l'inanità ridicola della vecchia sintassi ereditata da Omero. Bisogno furioso di liberare le parole, traendole fuori dalla prigione del periodo latino! Questo ha naturalmente, come ogni imbecille, una testa previdente, un ventre, due gambe e due piedi piatti, ma non avrà mai due ali. Appena il necessario per camminare, per correre un momento e fermarsi quasi subito sbuffando!...

Ecco che cosa mi disse l'elica turbinante, mentre filavo a duecento metri sopra i possenti fumaiuoli di Milano. E l'elica soggiunse:

1. — **Bisogna distruggere la sintassi, disponendo i sostantivi a caso, come nascono.**

2. — **Si deve usare il verbo all'infinito,** perchè si adatti elasticamente al sostantivo e non lo sottoponga all'*io* dello scrittore che osserva o immagina. Il verbo all'infinito può, solo, dare il senso della continuità della vita e l'elasticità dell'intuizione che la percepisce.

3. — **Si deve abolire l'aggettivo** perchè il sostantivo nudo conservi il suo colore essenziale. L'aggettivo avendo in sè un carattere di sfumatura, è incompatibile con la nostra visione dinamica, poichè suppone una sosta, una meditazione.

4. — **Si deve abolire l'avverbio,** vecchia fibbia che tiene unite l'una all'altra le parole. L'avverbio conserva alla frase una fastidiosa unità di tono.

5. — **Ogni sostantivo deve avere il suo doppio,** cioè il sostantivo deve essere seguito, senza congiunzione, dal sostantivo a cui è legato per analogia. Esempio: uomo-torpediniera, donna-golfo, folla-risacca, piazza-imbuto, porta-rubinetto.

Siccome la velocità aerea ha moltiplicato la nostra conoscenza del mondo, la percezione per analogia diventa sempre più naturale per l'uomo. Bisogna dunque sopprimere il *come*, il *quale*, il *così*, il *simile a*. Meglio ancora, bisogna fondere direttamente l'oggetto coll'immagine che esso evoca, dando l'immagine in iscorcio mediante una sola parola essenziale.

6. — **Abolire anche la punteggiatura.** Essendo soppressi gli aggettivi, gli avverbi e le congiunzioni, la punteggiatura è naturalmente annullata, nella continuità varia di uno stile *vivo*, che si crea da sè, senza le soste assurde delle virgole e dei punti. Per accentuare certi movimenti e indicare le loro direzioni, s'impiegheranno i segni della matematica: + − × : = > <, e i segni musicali.

7. — Gli scrittori si sono abbandonati finora all'analogia immediata. Hanno paragonato per esempio l'animale all'uomo o ad un altro animale, il che equivale ancora, press'a poco, a una specie di fotografia. Hanno paragonato per esempio un fox-terrier a un piccolissimo puro-sangue. Altri, più avanzati, potrebbero paragonare quello stesso fox-terrier trepidante, a una piccola macchina Morse. Io lo paragono, invece, a un acqua ribollente. V'è in ciò una **gradazione di analogie sempre più vaste,** vi sono dei rapporti sempre più profondi e solidi, quantunque lontanissimi.

L'analogia non è altro che l'amore profondo che collega le cose distanti, apparentemente diverse ed ostili. Solo per mezzo di analogie vastissime uno stile orchestrale, ad un tempo policromo, polifonico e polimorfo, può abbracciare la vita della materia.

1912. 291 x 232 mm. Unbound as issued. Together 2 items. Both items creased horizontally and vertically from being folded in quarters, front margin of **(1)** a little frayed, light toning, but very good. $650

(1) Original Edition of the Futurist manifesto that set the tone and approach for Futurist typography, the most influential innovation of the Futurist movement; with **(2) Original Edition** of the supplement to the manifesto containing Marinetti's poem "Battaglia peso + odore," an early example of the new format. Marinetti and the German, Russian and other typographer / poets who followed his lead sought to destroy, as Marinetti later put it, "the monastic harmony, symmetry, equilibrious seriality of the page" which had dominated Western printing, because traditional typography could not express the simultaneous, fragmented, dynamic forces dominating life and thought. R. Cohen, "Italian Futurist typography" and A. Cohen, "Marinetti & Futurism," *Print Collectors' Newsletter* 8, no. 6 (1978): 166-71. See *Printing and the Mind of Man* 400. 40869

The Metric System, Ex Libris François Arago, Hero of the Project

74. **Méchain, [Pierre F. A.]** (1744-1804) & **Delambre, [Jean B. J.]** (1749-1822). Base du système mètrique décimal. 3 vols. **With: Biot, [Jean Baptiste]** (1774-1862) & **Arago, [François]** (1786-1853). Recueil d'observations géodésiques, astronomiques et physiques. Together, 4 vols., 4to. c. 2500pp. 30 mostly folding engraved plates. Full period-style calf, elaborately gilt. Minor spotting. From the library of **François Arago,** with his signature on the title and his annotations on some of the folding plates. Bookplate of chemist Jean Augustin Barral (1819-84), who prepared the collected works of Arago, on the titles of all four volumes. Unobtrusive perforated stamp of the Franklin Institute Library on titles of vols. 1-3 & on 2 or 3 other leaves, ink stamp of the library on title of vol. 1 & a few other leaves. Very good set. Paris: Baudouin, 1806-10; veuve Courcier, 1821. $42,500

First Edition of the complete series establishing the metric system, *from the library of François Arago*, who was responsible for completing the project, and who endured heroic hardships and adventures to preserve the data. *Printing and the Mind of Man* 260.

In 1788 the French Academy of Sciences, at the suggestion of Talleyrand, proposed the establishment of a new universal decimal system of measurement founded upon some "natural and invariable base" to replace Europe's diverse regional systems. This project was approved by the National Assembly in 1790 and a basic unit or "meter" of measurement proposed, which was to be one ten-millionth of the distance between the terrestrial pole and the Equator. In 1792 Méchain and Delambre were appointed to make the necessary geodetic measurements of the meridian passing through Dunkirk and Barcelona, from which the meter would be derived. The project was hampered by France's political revolution, by the death of Méchain in 1804, and by the tedious calculations involved in converting one system to another; it was not until 1810 that Delambre was able to complete the final volume of the *Base du système mètrique décimal*.

Méchain and Delambre had determined the length of the meter by taking measurements over a meridian arc of 10 degrees. After Méchain's death in 1804, the Bureau of Longitudes proposed that the meter's length be redetermined more accurately by extending measurement of the arc of the meridian south to the Balearic Islands of Mallorca, Menorca and Ibiza. François Arago and Jean Baptiste Biot were assigned to this task. Arago was twenty years old at the start of this project. In 1806 he and Biot journeyed to Spain and began triangulating the Spanish coast. Their work was disrupted by the political unrest that developed after Napoleon's invasion of Spain in 1807. Biot returned to Paris after they had determined the latitude of Formentera, the southernmost point to which they were to carry the survey. Arago continued the work until 1808, his purpose being to measure a meridian arc in order to determine the exact length of a meter.

After Biot's departure, the political ferment caused by the entrance of the French into Spain extended to the Balearic Islands, and the population took Arago's movements and his lighting of fires on the top of Mola de l'Esclop for the activities of a spy for the invading army. Their reaction was such that he was obliged to give himself up for imprisonment in the fortress of Bellver in June 1808. On July 28 Arago escaped from the island in a fishing boat, and after an adventurous voyage he reached Algiers on August 3. From there he obtained a passage in a vessel bound for Marseille, but on August 16, just as the vessel was nearing Marseille, it fell into the hands of a Spanish corsair. With the rest

the crew, Arago was taken to Roses in Catalonia, and imprisoned first in a windmill, and afterwards in a fortress, until the town fell into the hands of the French, and the prisoners were transferred to Palamós.

After three months of imprisonment, Arago and the others were released on the demand of the dey (ruler) of Algiers, and again set sail for Marseille on the November 28, but when within sight of their port they were driven back by a northerly wind to Bougie on the coast of Africa. Transport to Algiers by sea from this place would have required a delay of three months. Arago, therefore, set out over land, on what had to be a strenuous journey, guided by a Muslim imam, and reached Algiers on Christmas Day. After six months in Algiers, on June 21, 1809, Arago set sail for Marseille, where he had to undergo a monotonous and inhospitable quarantine in the lazaretto before his difficulties were over, roughly one year after he had first been imprisoned. The first letter he received, while in the lazaretto, was from Alexander von Humboldt--the origin of a scientific relationship which lasted over forty years.

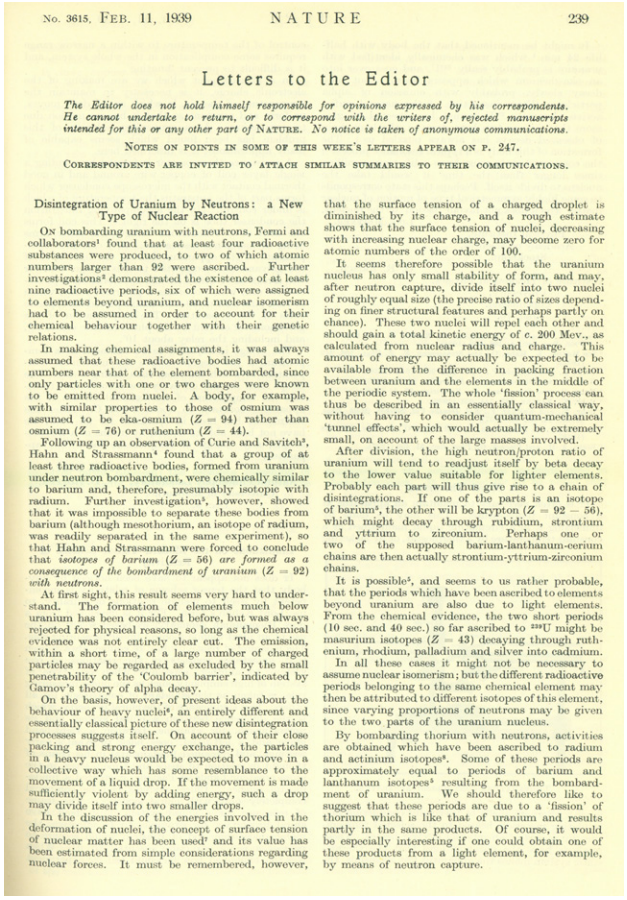
In spite of the successive imprisonments, voyages, and other hardships he endured, Arago had succeeded in preserving the records of his survey; and his first act on his return home was to deposit them in the Bureau des Longitudes in Paris. As a reward for his heroic conduct in the cause of science, he was elected a member of the Académie des sciences at the remarkably early age of twenty-three, and before the close of 1809 he was chosen by the council of the Ėcole Polytechnique to succeed Gaspard Monge in the chair of analytic geometry. At the same time he was named by the emperor one of the astronomers of the Obsérvatoire royale, which remained his residence till his death, and in this capacity he delivered his remarkably successful series of popular lectures on astronomy from 1812 to 1845. Most of his later scientific contributions were in physics, particularly optics and magnetism: he discovered the phenomena of rotary magnetism (the greater sensitivity for light in the periphery of the eye) and rotary polarization, invented the first polariscope, and performed important experiments supporting the undulatory theory of light. In his capacity as secretary of the Académie des Sciences, he championed the photographic process invented by Louis Daguerre, announcing its discovery to the Académie in 1839, and using his influence to obtain publicity and funding for its inventor.

Arago's results, together with geodetic data obtained in France, England and Scotland, were published in the *Recueil d'observations géodésiques*, issued as a supplement to Méchain and Delambre's work 11 years after he carried the data back to France, in 1821. Political opposition to the new system of measurement may have contributed to the unusually long delay in publication. As a tribute to Arago's contribution, in 1994 the Arago Association and the city of Paris commissioned a Dutch conceptual artist, Jan Dibbets, to create a memorial to Arago. Dibbets came up with the idea of setting 135 bronze medallions (although only 121 are documented in the official guide to the medallions) into the ground along the Paris Meridian between the northern and southern limits of Paris: a total distance of 9.2 kilometres/5.7 miles. Each medallion is 12 cm. in diameter and marked with the name ARAGO plus N and S pointers. One of these was shown in the film *The Da Vinci Code*. *Dictionary of Scientific Biography* under Biot. Daumas, *Arago: La jeunesse de la science,* ch. IV. Norman 1481. Alder, *The Measure of the World* (2003). 40311

Nuclear Fission

75. **Meitner, Lise** (1878-1968) and **Frisch, Otto** (1904-79). Disintegration of uranium by neutrons: A new type of nuclear reaction. In *Nature* 143, no. 3615 (Feb. 11, 1939): 239-40. Whole number. 217-258pp. Illustrated. Bound in quarter calf gilt, cloth boards, original wrappers not preserved. Fine. $1750

First Edition. PMM 422b. In 1938 Hahn and Strassmann, who were bombarding uranium with neutrons in the expectation of producing "transuranium" elements, discovered barium isotopes among the decay products produced by the bombarded nuclei. At a loss to interpret this, the two men communicated their result by letter to Hahn's former co-worker Lise Meitner, who had earlier fled to Stockholm to escape Nazi persecution. Meitner, at the suggestion of her nephew Otto Frisch, theorized that the uranium nucleus breaks up into two smaller nuclei through the mutual repulsion of the many protons in the uranium nucleus, which makes it behave like a droplet of water in which the surface tension has been reduced. By taking the difference between the mass of the original nucleus and



No. 3615, FEB. 11, 1939 NATURE 239

Letters to the Editor

The Editor does not hold himself responsible for opinions expressed by his correspondents. He cannot undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.*

NOTES ON POINTS IN SOME OF THIS WEEK'S LETTERS APPEAR ON P. 247.

CORRESPONDENTS ARE INVITED TO ATTACH SIMILAR SUMMARIES TO THEIR COMMUNICATIONS.

Disintegration of Uranium by Neutrons: a New Type of Nuclear Reaction

On bombarding uranium with neutrons, Fermi and collaborators[1] found that at least four radioactive substances were produced, to two of which atomic numbers larger than 92 were ascribed. Further investigations[2] demonstrated the existence of at least nine radioactive periods, six of which were assigned to elements beyond uranium, and nuclear isomerism had to be assumed in order to account for their chemical behaviour together with their genetic relations.

In making chemical assignments, it was always assumed that these radioactive bodies had atomic numbers near that of the element bombarded, since only particles with one or two charges were known to be emitted from nuclei. A body, for example, with similar properties to those of osmium was assumed to be eka-osmium ($Z = 94$) rather than osmium ($Z = 76$) or ruthenium ($Z = 44$).

Following up an observation of Curie and Savitch[3], Hahn and Strassmann[4] found that a group of at least three radioactive bodies, formed from uranium under neutron bombardment, were chemically similar to barium and, therefore, presumably isotopic with radium. Further investigation[5], however, showed that it was impossible to separate these bodies from barium (although mesothorium, an isotope of radium, was readily separated in the same experiment), so that Hahn and Strassmann were forced to conclude that *isotopes of barium* ($Z = 56$) *are formed as a consequence of the bombardment of uranium* ($Z = 92$) *with neutrons.*

At first sight, this result seems very hard to understand. The formation of elements much below uranium has been considered before, but was always rejected for physical reasons, so long as the chemical evidence was not entirely clear cut. The emission, within a short time, of a large number of charged particles may be regarded as excluded by the small penetrability of the 'Coulomb barrier', indicated by Gamov's theory of alpha decay.

On the basis, however, of present ideas about the behaviour of heavy nuclei[6], an entirely different and essentially classical picture of these new disintegration processes suggests itself. On account of their close packing and strong energy exchange, the particles in a heavy nucleus would be expected to move in a collective way which has some resemblance to the movement of a liquid drop. If the movement is made sufficiently violent by adding energy, such a drop may divide itself into two smaller drops.

In the discussion of the energies involved in the deformation of nuclei, the concept of surface tension of nuclear matter has been used[7] and its value has been estimated from simple considerations regarding nuclear forces. It must be remembered, however, that the surface tension of a charged droplet is diminished by its charge, and a rough estimate shows that the surface tension of nuclei, decreasing with increasing nuclear charge, may become zero for atomic numbers of the order of 100.

It seems therefore possible that the uranium nucleus has only small stability of form, and may, after neutron capture, divide itself into two nuclei of roughly equal size (the precise ratio of sizes depending on finer structural features and perhaps partly on chance). These two nuclei will repel each other and should gain a total kinetic energy of *c.* 200 Mev., as calculated from nuclear radius and charge. This amount of energy may actually be expected to be available from the difference in packing fraction between uranium and the elements in the middle of the periodic system. The whole 'fission' process can thus be described in an essentially classical way, without having to consider quantum-mechanical 'tunnel effects', which would actually be extremely small, on account of the large masses involved.

After division, the high neutron/proton ratio of uranium will tend to readjust itself by beta decay to the lower value suitable for lighter elements. Probably each part will thus give rise to a chain of disintegrations. If one of the parts is an isotope of barium[5], the other will be krypton ($Z = 92 - 56$), which might decay through rubidium, strontium and yttrium to zirconium. Perhaps one or two of the supposed barium-lanthanum-cerium chains are then actually strontium-yttrium-zirconium chains.

It is possible[5], and seems to us rather probable, that the periods which have been ascribed to elements beyond uranium are also due to light elements. From the chemical evidence, the two short periods (10 sec. and 40 sec.) so far ascribed to ^{239}U might be masurium isotopes ($Z = 43$) decaying through ruthenium, rhodium, palladium and silver into cadmium.

In all these cases it might not be necessary to assume nuclear isomerism; but the different radioactive periods belonging to the same chemical element may then be attributed to different isotopes of this element, since varying proportions of neutrons may be given to the two parts of the uranium nucleus.

By bombarding thorium with neutrons, activities are obtained which have been ascribed to radium and actinium isotopes[8]. Some of these periods are approximately equal to periods of barium and lanthanum isotopes[5] resulting from the bombardment of uranium. We should therefore like to suggest that these periods are due to a 'fission' of thorium which is like that of uranium and results partly in the same products. Of course, it would be especially interesting if one could obtain one of these products from a light element, for example, by means of neutron capture.

the slightly smaller total mass of the two fragment nuclei, and using Einstein's mass-energy equivalence, Meitner calculated the large amount of energy (equal to 200 million electron volts) that would be released during the splitting process, which she and Frisch named "fission."

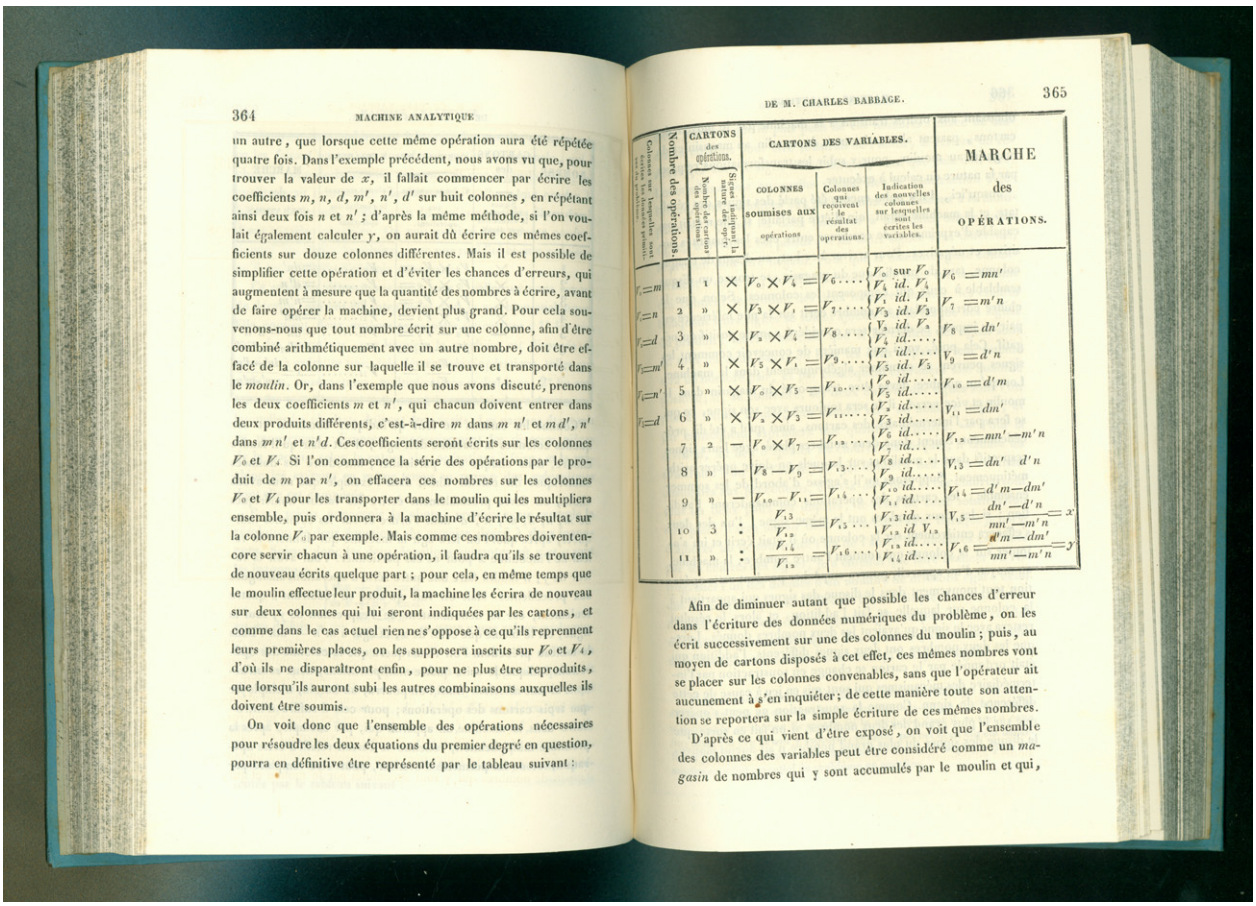
Meitner and Frisch made their epochal discovery in the first days of January 1939. To speed publication, they decided to submit a note, rather than a full article, to *Nature*; however, they delayed doing so until Frisch could perform further experiments to confirm their initial data. On January 16 Frisch submitted "Disintegration of uranium by neutrons" to *Nature*; its publication on February 11 marked the first announcement of the discovery of fission. Frisch also submitted a longer paper, "Physical evidence for the division of heavy nuclei under neutron bombardment," which was published in *Nature* on February 18. The two Meitner and Frisch papers, together with papers by Fermi (PMM 422a), von Halban *et al.* (PMM 422d) and H. D. Smyth (PMM 422e) were selected for inclusion in the *Printing and the Mind of Man* exhibition and catalogue under its entry for "The Atom Bomb." Pais, *Niels Bohr's Times,* pp. 452-56. Norman 1487. *Dictionary of Scientific Biography*. 40600

The First Computer Programs Ever Published

76. **Menabrea, Luigi Federico** (1809–96). Notions sur la machine analytique de M. Charles Babbage. In *Bibliothèque universelle de Genève,* nouvelle série 41 (1842): 352–76. Whole volume, 8vo. 424pp. Folding table, plate. 210 x 137 mm. Blue boards, leather spine label, upper extremity of spine a bit worn, circa 1842. Fine copy. 19th cent. library stamps and markings on title and front free endpaper. Preserved in a quarter morocco folding box. $25,000

First Edition of the first computer programs ever published, though the word program did not exist during Babbage's era. Menabrea's paper is also the first published account of Babbage's Analytical Engine and the first account of its logical design. As is well known, Babbage's conception and design of his Analytical Engine—the first general purpose programmable digital computer—were so far ahead of the imagination of his mathematical and scientific colleagues that few expressed much curiosity regarding it. The only presentation that Babbage made concerning the design and operation of the Analytical Engine was to a group of Italian scientists.

In 1840 Babbage traveled to Torino to make a presentation on the Analytical Engine. Babbage's talk, complete with charts, drawings, models, and mechanical notations, emphasized the Engine's signal feature: its ability to guide its own operations-- what we call conditional branching. In attendance at Babbage's lecture was the young Italian mathematician Luigi Federico Menabrea (later prime minister of Italy), who prepared from his notes an account of the principles of the Analytical Engine. Reflecting a lack of urgency regarding radical innovation unimaginable to us today, Menabrea did not get around to publishing his paper until two years after Babbage made his presentation, and when he did so he published it in French in a Swiss



364 MACHINE ANALYTIQUE

un autre, que lorsque cette même opération aura été répétée quatre fois. Dans l'exemple précédent, nous avons vu que, pour trouver la valeur de x, il fallait commencer par écrire les coefficients m, n, d, m', n', d' sur huit colonnes, en répétant ainsi deux fois n et n'; d'après la même méthode, si l'on voulait également calculer y, on aurait dû écrire ces mêmes coefficients sur douze colonnes différentes. Mais il est possible de simplifier cette opération et d'éviter les chances d'erreurs, qui augmentent à mesure que la quantité des nombres à écrire, avant de faire opérer la machine, devient plus grand. Pour cela souvenons-nous que tout nombre écrit sur une colonne, afin d'être combiné arithmétiquement avec un autre nombre, doit être effacé de la colonne sur laquelle il se trouve et transporté dans le *moulin*. Or, dans l'exemple que nous avons discuté, prenons les deux coefficients m et n', qui chacun doivent entrer dans deux produits différents, c'est-à-dire m dans $m\,n'$ et $m\,d'$, n' dans $m\,n'$ et $n'd$. Ces coefficients seront écrits sur les colonnes V_0 et V_4. Si l'on commence la série des opérations par le produit de m par n', on effacera ces nombres sur les colonnes V_0 et V_4 pour les transporter dans le moulin qui les multipliera ensemble, puis ordonnera à la machine d'écrire le résultat sur la colonne V_0 par exemple. Mais comme ces nombres doivent encore servir chacun à une opération, il faudra qu'ils se trouvent de nouveau écrits quelque part; pour cela, en même temps que le moulin effectue leur produit, la machine les écrira de nouveau sur deux colonnes qui lui seront indiquées par les cartons, et comme dans le cas actuel rien ne s'oppose à ce qu'ils reprennent leurs premières places, on les supposera inscrits sur V_0 et V_4, d'où ils ne disparaîtront enfin, pour ne plus être reproduits, que lorsqu'ils auront subi les autres combinaisons auxquelles ils doivent être soumis.

On voit donc que l'ensemble des opérations nécessaires pour résoudre les deux équations du premier degré en question, pourra en définitive être représenté par le tableau suivant :

DE M. CHARLES BABBAGE. 365

Colonnes sur lesquelles sont écrites les données	Nombre des opérations.	CARTONS des opérations. Nombre des cartons des opérations	Signes indiquant la nature des opér.	CARTONS DES VARIABLES. COLONNES soumises aux opérations	Colonnes qui reçoivent le résultat des opérations.	Indication des nouvelles colonnes sur lesquelles sont écrites les variables.	MARCHE des OPÉRATIONS.
$V_1 = m$	1	1	×	$V_0 \times V_4 =$	V_6	V_0 sur V_0	$V_6 = mn'$
$V_2 = n$	2	»	×	$V_3 \times V_1 =$	V_7	V_4 id. V_4	$V_7 = m'n$
$V_3 = d$	3	»	×	$V_2 \times V_4 =$	V_8	V_1 id. V_1	$V_8 = dn'$
$V_4 = n'$	4	»	×	$V_5 \times V_1 =$	V_9	V_3 id. V_3	$V_9 = d'n$
$V_5 = m'$	5	»	×	$V_0 \times V_5 =$	V_{10}	V_5 id. V_5	$V_{10} = d'm$
$V_6 = d'$	6	»	×	$V_2 \times V_5 =$	V_{11}	V_0 id. V_0	$V_{11} = dm'$
	7	2	—	$V_6 \times V_7 =$	V_{12}	V_2 id. V_2	$V_{12} = mn' - m'n$
	8	»	—	$V_8 - V_9 =$	V_{13}	V_6 id. V_6	$V_{13} = dn' \quad d'n$
	9	»	—	$V_{10} - V_{11} =$	V_{14}	V_7 id. V_7	$V_{14} = d'm - dm'$
	10	3	:	$\frac{V_{13}}{V_{12}} =$	V_{15}	V_8 id. V_8	$V_{15} = \frac{dn' - d'n}{mn' - m'n} = x$
	11	»	:	$\frac{V_{14}}{V_{12}} =$	V_{16}	V_9 id. V_9	$V_{16} = \frac{d'm - dm'}{mn' - m'n} = y$

Afin de diminuer autant que possible les chances d'erreur dans l'écriture des données numériques du problème, on les écrit successivement sur une des colonnes du moulin; puis, au moyen de cartons disposés à cet effet, ces mêmes nombres vont se placer sur les colonnes convenables, sans que l'opérateur ait aucunement à s'en inquiéter; de cette manière toute son attention se reportera sur la simple écriture de ces mêmes nombres.

D'après ce qui vient d'être exposé, on voit que l'ensemble des colonnes des variables peut être considéré comme un *magasin* de nombres qui y sont accumulés par le moulin et qui,

journal. Shortly after Menabrea's paper appeared Babbage was refused government funding for construction of the machine.

> In keeping with the more general nature and immaterial status of the Analytical Engine, Menabrea's account dealt little with mechanical details. Instead he described the functional organization and mathematical operation of this more flexible and powerful invention. To illustrate its capabilities, he presented several charts or tables of the steps through which the machine would be directed to go in performing calculations and finding numerical solutions to algebraic equations. These steps were the instructions the engine's operator would punch in coded form on cards to be fed into the machine; hence, the charts constituted the **first computer programs** [emphasis ours]. Menabrea's charts were taken from those Babbage brought to Torino to illustrate his talks there (Stein, *Ada: A Life and Legacy,* p. 92).

Menabrea's 23-page paper was translated into English the following year by Lord Byron's daughter, Augusta Ada, Countess of Lovelace, who, in collaboration with Babbage, added a series of lengthy notes enlarging on the intended design and operation of Babbage's machine (see following entry). Menabrea's paper and Ada Lovelace's translation represent the only detailed publications on the Analytical Engine before Babbage's account in his autobiography (1864). Menabrea himself wrote only two other very brief articles about the Analytical Engine in 1855, primarily concerning his gratification that Countess Lovelace had translated his paper. No offprints of Menabrea's paper are recorded, and this volume is extremely rare on the market. This is the second copy we have handled in more than forty years of trading. The previous copy was rebound. See Randell 1982a, 494. *Origins of Cyberspace* 60. 40364

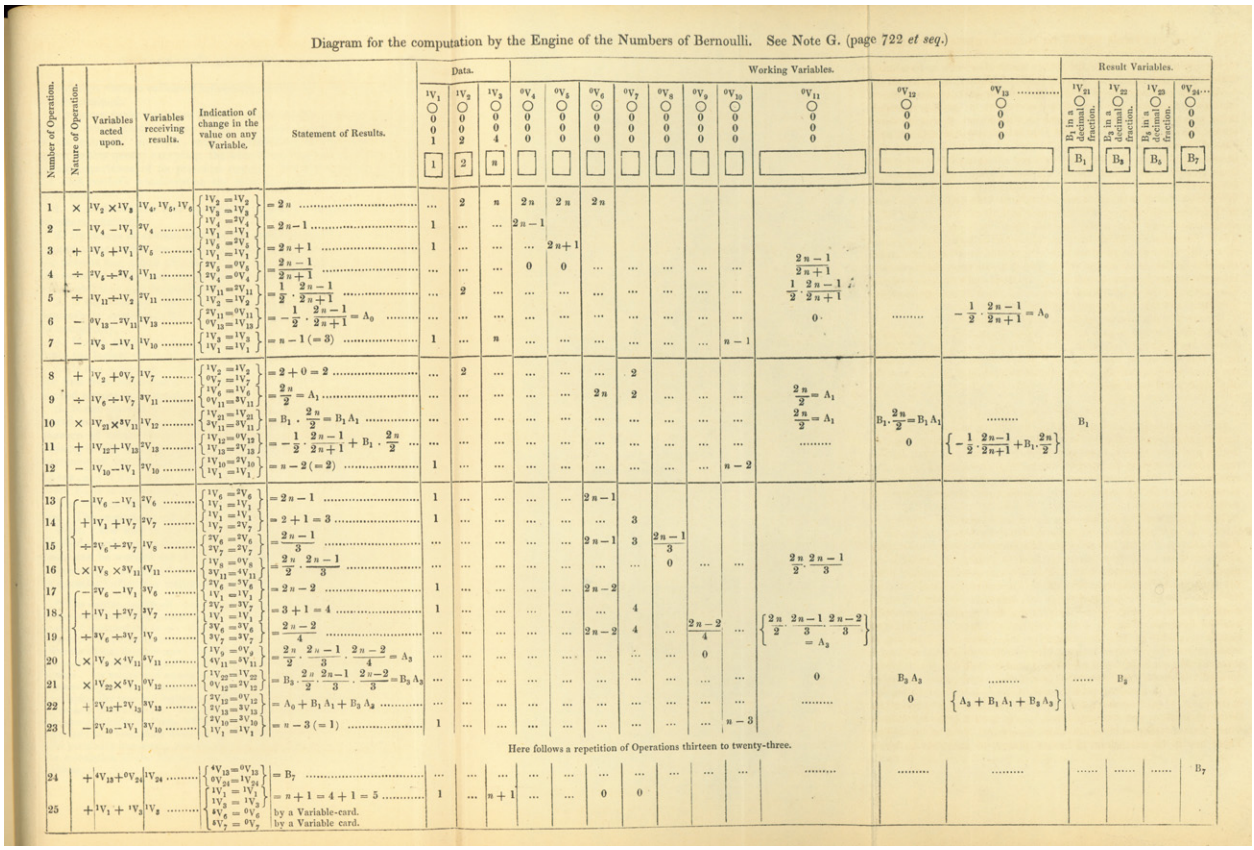


Diagram for the computation by the Engine of the Numbers of Bernoulli. See Note G. (page 722 *et seq.*)

"The Most Important Paper in the History of Digital Computing before Modern Times"

77. **Menabrea, Luigi Federico** (1809–96). Sketch of the Analytical Engine invented by Charles Babbage . . . with notes by the translator [**Augusta Ada King**, *Countess of Lovelace* (1815–52)]. In *Scientific Memoirs, Selected from the Transactions of Foreign Academies of Science and Learned Societies* 3 (1843): 666-731, plus folding chart. Whole volume, 8vo. [6], 734pp., 10 plates. 214 x 135 mm. 19th cent. half calf, cloth boards, rebacked, endpapers renewed. Light toning, otherwise fine. Library shelf-mark on title. $35,000

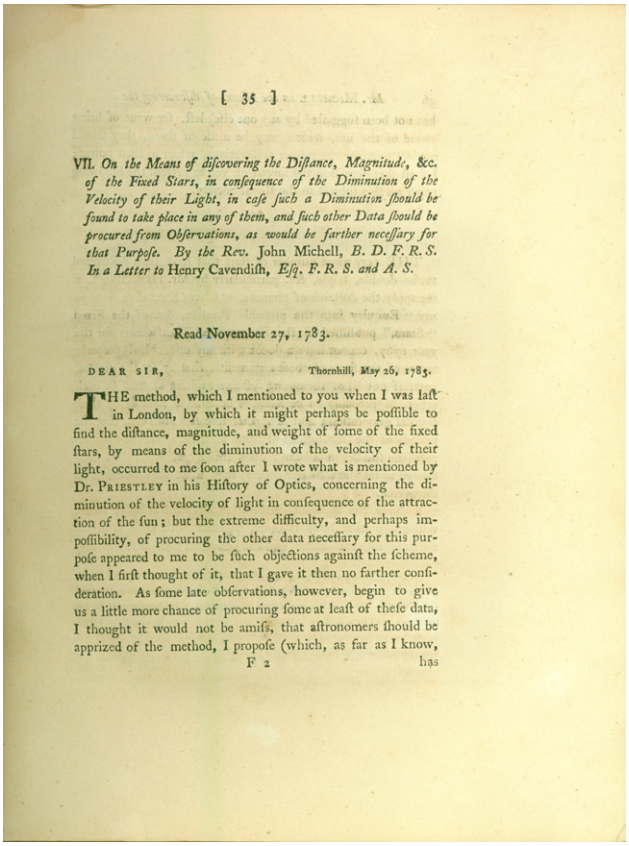
First Edition in English of the above. Menabrea's paper was translated into English by Babbage's close friend Ada, Countess of Lovelace, daughter of the poet Byron and a talented mathematician in her own right. At Babbage's suggestion, Lady Lovelace added seven explanatory notes to her translation, which run about three times the length of the original. Her annotated translation has been called "**the most important paper in the history of digital computing before modern times**" (Bromley, "Introduction" in Babbage, Henry Prevost, *Babbage's Calculating Engines*, xv). As Babbage never published a detailed description of the Analytical Engine, Ada's translation of Menabrea's paper, with its lengthy explanatory notes, represents the most complete contemporary account in English of this much-misunderstood machine.

Babbage supplied Ada with algorithms for the solution of various problems, which she illustrated in her notes in the form of charts detailing the stepwise sequence of events as the machine progressed through a string of instructions input from punched cards (Swade, *The Cogwheel Brain*, 165). This was the first published example of a computer "program," though neither Ada nor Babbage used this term. She also expanded upon Babbage's general views of the Analytical Engine as a symbol-manipulating device rather than a mere processor of numbers, suggesting that it

might act upon other things besides *number*, were objects found whose mutual fundamental relations could be expressed by those of the abstract science of operations. . . . Supposing, for instance, that the fundamental relations of pitched sounds in the science of harmony and of musical composition were susceptible of such expression and adaptations, the engine might compose elaborate and scientific pieces of music of any degree of complexity or extent (p. 694) . . . Many persons who are not conversant with mathematical studies, imagine that because the business of the engine is to give its results in *numerical notation,* the *nature of its processes* must consequently be *arithmetical* and *numerical*, rather than *algebraical* and *analytical.* This is an error. The engine can arrange and combine its numerical quantities exactly as if they were *letters* or any other *general* symbols; and in fact it might bring out its results in algebraical *notation*, were provisions made accordingly (p. 713).

Much has been written concerning what mathematical abilities Ada may have possessed. Study of the published correspondence between her and Babbage (see Toole 1992) is not especially flattering either to her personality or mathematical talents: it shows that while Ada was personally enamored of her own mathematical prowess, she was in reality no more than a talented novice who at times required Babbage's coaching. Their genuine friendship aside, Babbage's motives for encouraging Ada's involvement in his work are not hard to discern. As Lord Byron's only legitimate daughter, Ada was an extraordinary celebrity, and as the wife of a prominent aristocrat she was in a position to act as patron to Babbage and his engines (though she never in fact did so).

Ada Lovelace's translation of Menabrea's paper was published in the *Scientific Memoirs,* a journal edited by the printer and naturalist Richard Taylor (1781-1858), and devoted entirely to the publication of English translations of important scientific papers. DSB. *Origins of Cyberspace* 61. Randell, *Origins of Digital Computers* (3rd ed.), p. 489. 40255



[35]

VII. *On the Means of diſcovering the Diſtance, Magnitude, &c. of the Fixed Stars, in conſequence of the Diminution of the Velocity of their Light, in caſe ſuch a Diminution ſhould be found to take place in any of them, and ſuch other Data ſhould be procured from Obſervations, as would be farther neceſſary for that Purpoſe. By the Rev.* John Michell, *B. D. F. R. S. In a Letter to* Henry Cavendiſh, *Eſq. F. R. S. and A. S.*

Read November 27, 1783.

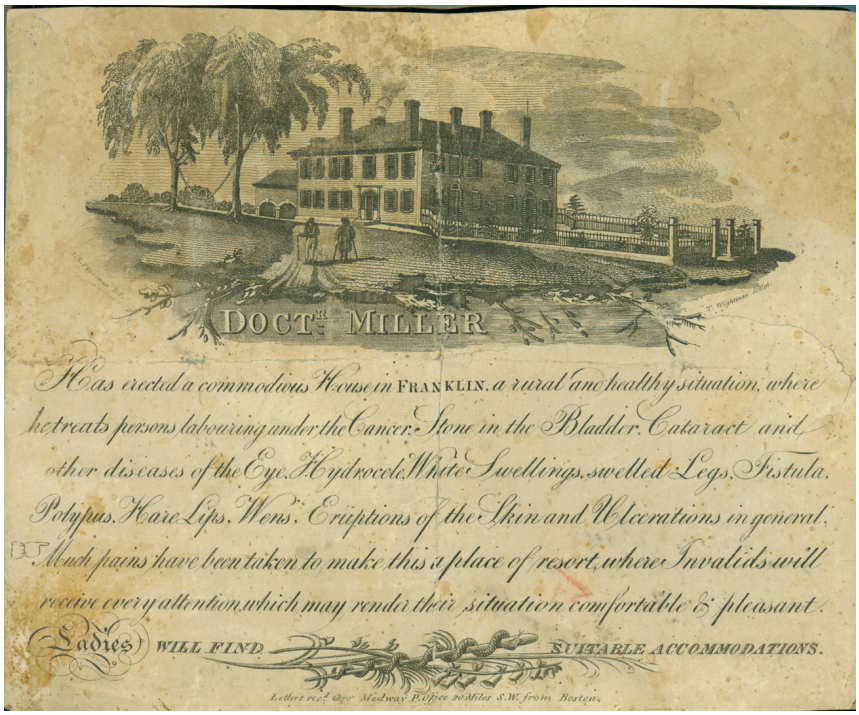
DEAR SIR, Thornhill, May 26, 1783.

THE method, which I mentioned to you when I was laſt in London, by which it might perhaps be poſſible to find the diſtance, magnitude, and weight of ſome of the fixed ſtars, by means of the diminution of the velocity of their light, occurred to me ſoon after I wrote what is mentioned by Dr. PRIESTLEY in his Hiſtory of Optics, concerning the diminution of the velocity of light in conſequence of the attraction of the ſun; but the extreme difficulty, and perhaps impoſſibility, of procuring the other data neceſſary for this purpoſe appeared to me to be ſuch objections againſt the ſcheme, when I firſt thought of it, that I gave it then no farther conſideration. As ſome late obſervations, however, begin to give us a little more chance of procuring ſome at leaſt of theſe data, I thought it would not be amiſs, that aſtronomers ſhould be apprized of the method, I propoſe (which, as far as I know,

F 2 has

First Paper on "Black Holes," Plus Discovery of the Compound Nature of Water

78. **Michell, John** (1724[?]-93). On the means of discovering the distance, magnitude, &c. of the fixed stars, in consequence of the diminution of the velocity of their light . . . In *Philosophical Transactions* 74 (1784): 35-57; 1 plate. **[With:] (1) Cavendish, Henry** (1731-1810). Experiments on air. *Ibid.*: 119-153. **(2) Kirwan, Richard** (1733-1812). Remarks on Mr. Cavendish's *Experiments on Air. Ibid.*: 154-169. **(3) Cavendish.** Answer to Kr. Kirwan's *Remarks upon the Experiments on Air. Ibid.*: 170-177. **(4) Kirwan.** Reply to Mr. Cavendish's *Answer. Ibid.*: 178-180. Whole volume, 4to. vii, [1], 521pp. 21 plates. London: Lockyer Davis, and Peter Elmsly, 1784. 270 x 208 mm. Quarter calf, marbled boards ca. 1784, rebacked, some wear & rubbing. Light ton-



ing and foxing, edges of 1 or 2 plates a little frayed. Ownership stamp of Joshua Russell. $3750

First Editions. Michell's paper, rediscovered in the 1970s, represents the first discussion of the idea of a "black hole," a region of space-time where the gravitational field is so strong that nothing, not even light, can escape it. Working with Newton's corpuscular theory of light and the Newtonian concept of escape velocity as the minimum velocity needed to escape from a body's surface to infinity, Michell postulated the existence of a body so massive that the escape velocity at its surface would equal the speed of light. Such bodies, or "dark stars," would of course be invisible, but could be identified by the motions of other bodies affected by its gravitational field. Speculation about dark stars ended in the early 1800s with the rise of the wave theory of light, but revived after the publication of Einstein's General Theory of Relativity (1915), which predicted the effect of gravity on light and allowed a modern scientific proof of Michell's 1784 hypothesis.

Cavendish's 1784 paper describes his experimental proof of the compound nature of water, thus destroying the elemental status of "water" in the Aristotelian system. Cavendish was the first to demonstrate experimentally that hydrogen ("inflammable air") and oxygen ("dephlogisticated air"), when mixed in the proper proportions and fired, produce their own weight in water. His work was inspired by Joseph Priestley's 1781 account of experiments performed by himself and John Warltire, in which electrically fired mixtures of common air and inflammable air in a closed vessel had produced a dew on the sides of the vessel while reducing the volume of common air by a fifth; Warltire also noted a loss in weight which he attributed to the escape of ponderable heat, but Cavendish was unable to duplicate this result. A believer in the phlogiston theory, Cavendish was unwilling to interpret water as a compound, instead concluding that water pre-existed in both inflammable and dephlogisticated airs, and was released when they combined. Cavendish's 1784 paper contains the main results of his experiments; a short supplement published in *Philosophical Transactions* the following year (not present here) investigates the nature of the acid produced by an excess of oxygen in the ignited gas mixture. Norman 420. 40518

Probably Unique Nineteenth-Century American Medical Broadside Advertisement

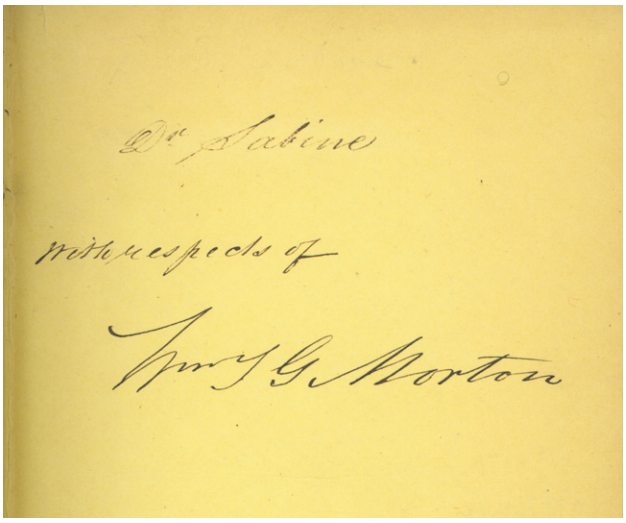
79. **Miller, Dr.** Doctr. Miller has erected a commodious house in Franklin . . . Engraved advertising circular, illustrated with an engraving of

Miller's sanatorium by Thomas Wightman (fl. 1811) after I. R. [i.e., John Ritto] Penniman (1782-1841). N.p., n.d. [before 1884]. 173 x 210 mm. Laminated on paper, some marginal spotting, moderate toning. $1250

Probably Unique American Medical Broadside advertising Dr. Miller's sanatorium, located in Franklin, Mass., about 20 miles southwest of Boston. According to the advertisement, Dr. Miller's establishment treated "persons labouring under the Cancer, Stone in the Bladder, Cataract and other diseases of the Eye, Hydrocele, White Swellings, swelled Legs, Fistula, Polypus, Hare Lips, Wens, Eruptions of the Skin and Ulcerations in general." The advertisement further states that "much pains have been taken to make this a place of resort, where Invalids will receive every attention, which may render their situation comfortable & pleasant. Ladies will find suitable accommodations." The illustration of Miller's sanatorium that heads the circular was drawn by John Ritto Penniman, described as "perhaps the most skilled, inventive and versatile ornamental artist and draftsman of his time in America" (*Antiques Magazine*, July 1981). Penniman was also one of American's first lithographers, credited for making the first drawing on stone ever done in the United States (Zellman, *300 Years of American Art*, p. 94). An inscription on the back of the circular, partially obscured by the lamination, is dated Feb. 2, 1884. Benezit. 38080

Inscribed by William T. G. Morton

80. [**Morton, William T. G.** (1819-68).] **Rice, Nathan Payson** (1829-). Trials of a public benefactor, as illustrated in the discovery of etherization. [2], xx, [13], 14-460pp. Engraved frontispiece, 3 plates. New York: Pudney & Russell, 1859. 185 x 124 mm. Original blind-stamped brown cloth, gilt-lettered spine, front hinge slightly cracked, extremities and corners slightly worn, but very good. *Presentation copy,* inscribed by Morton on the front free endpaper: "Dr. Sabine with respects of Wm. T. G. Morton." $7500



First Published Edition. The first—and until recently the only—full-length biography of William T. G. Morton, the Boston dentist who in 1846 demonstrated to the medical profession the efficacy of sulfuric ether as a general surgical anesthetic. Morton was not himself responsible for the discovery of ether's anesthetic properties, which he had learned of from Charles T. Jackson, but he lost no time in attempting to profit from ether anesthesia, first by patenting it (in conjunction with Jackson), and then, when the patent proved ineffective, by playing up his role in the discovery and petitioning Congress and other institutions for large cash awards. Morton's relentless opportunism provoked what is now known as the "ether controversy," a long-running battle between Morton, Jackson and others over who deserved credit for the discovery of surgical anesthesia.

As part of his ongoing campaign to promote his claim to priority, Morton hired Nathan Rice, a young physician, to "write for him [Morton] a sketch of his life & history of the discovery of etherization he to furnish all of the materials & be responsible for all the statements personal and otherwise" (quoted in Wolfe, p. 407). Completed in three months, *Trials of a Public Benefactor* unsurprisingly presented Morton as the hero of the anesthesia story. The book was first issued in October 1858 in an unillustrated advance "press copy" edition with title-page dated 1858. The published edition, with the date changed to 1859 and quotations from Shakespeare and Burns added to the title, appeared a few months later. Morton's questionable dealings with

both Rice and the publishers over the work's production and publication are detailed in Wolfe, pp. 407-11.

Trials of a Public Benefactor, with its self-serving rendition of Morton's role in the discovery of ether anesthesia, is a key document in the history of the ether controversy. "As the account most readily available, this has been the principal document that historians and researchers have depended upon for what they believed were the facts of the matter. . . . Overreliance on the Rice version, to the exclusion of looking beyond it, has largely been responsible for legitimizing the claim of William T. G. Morton while at the same time abrogating the claims of his principal rivals, Horace Wells and Charles T. Jackson, or, at least, diminishing the critical roles they played in Morton's ultimate success" (Wolfe, p. 62). The copy we are offering was presented by Morton to "Dr. Sabine"—possibly Massachusetts physician H. L. Sabin, author of "Administration of chloroform in convulsions in infants" (*Boston Medical & Surgical Journal* 38 [1848]: 199). Wolfe, *Tarnished Idol*, pp. 62; 407-11. Fulton & Stanton IV.66. 40599

81. **Norman, Jeremy M.,** *ed.* From Gutenberg to the Internet: A sourcebook on the history of information technology. xvi, 899pp. Illustrated. Pictorial boards, laminated. $89.50

Presents 63 original readings from the history of computing, networking and telecommunications, arranged thematically by chapters. Most of the readings record basic discoveries from the 1830s through the 1960s that laid the foundation of the world of digital information. With an illustrated historical introduction, timeline and introductory notes. 38950

82. **Norman, Jeremy M.,** *ed.* Morton's medical bibliography (Garrison & Morton). xxiv, 1243pp. Aldershot: Scolar Press, 1991. Boards, dust-jacket. Fine. $245

Fifth and Best Edition of this indispensable reference work. 40831

In the Original Parts

83. **Owen, Richard** (1804-92). The principal forms of the skeleton. Parts 1-4 (complete). 161-304pp. Text illustrations. London: W. S. Orr & Co., [1854]. 204 x 140 mm. Original printed wrappers, a little chipped, spine of part 4 worn away. Very good set. $900

First Edition, in the Rare Original Parts. Published as part of William S. Orr's *Circle of the Sciences,*

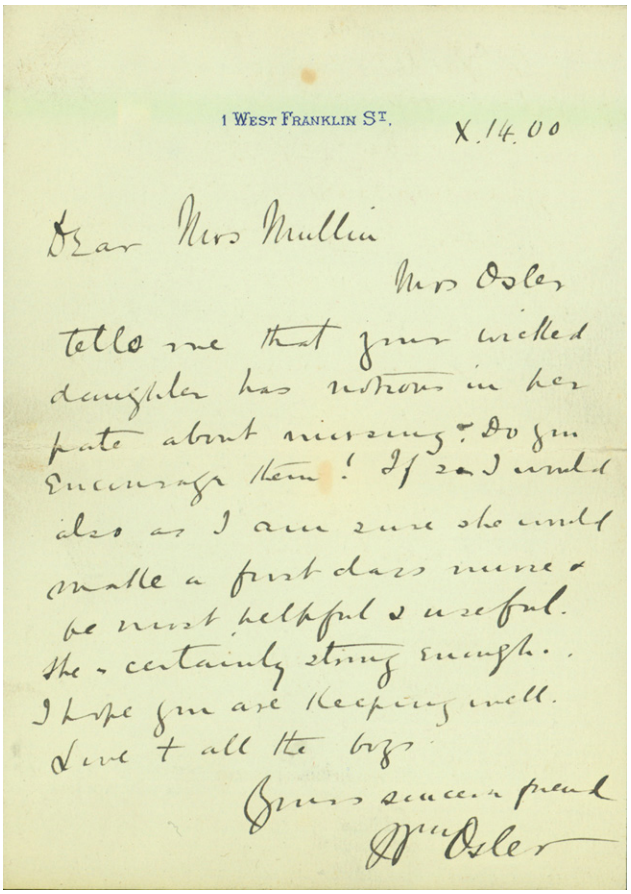
Owen's *Principal Forms of the Skeleton* was a popular rendition of his *On the Archetype and Homologies of the Vertebrate Skeleton* (1849), the work in which he laid out his system of comparative osteology and developed his concept of the vertebrate archetype. "The vertebrate archetype (from the Greek *arkhe,* 'original,' and *tupos,* 'imprinted image') is one of the most fascinating constructs of what has been called the 'morphological period' in the history of biology (approximately 1800-1860). It represented the fullest expression of a belief in the fundamental relatedness, if not of all organisms, at least of all animals with endoskeletons. Moreover, as Darwin scholars have long recognized, the vertebrate archetype provided a direct stepping-stone to the notion of evolutionary ancestors" (Rupke, "Richard Owen's vertebrate archetype," 231). *The Principal Forms of the Skeleton* was issued in both parts and in book form, and went through at least a dozen English and American editions. Rupke, "Richard Owen's vertebrate archetype," *Isis* 84 (1993): 231-251; *Richard Owen, Victorian Naturalist* (1994), pp. 161-170. 40856

"Your Wicked Daughter has Notions in her Pate about Nursing"

84. **Osler, William** (1849-1919). Autograph letter signed to Mrs. [John A.] Mullin, with stamped cover. [Baltimore], October 14, 1900. 1 page, on Osler's 1 West Franklin St. stationery. 160 x 115 mm. Light soiling, a few spots on cover, but very good. Docketed by recipient. $3750

A charming and humorous letter from Osler to the widow of his old friend Dr. John A. Mullin (1835-99) of Hamilton, Ontario. Osler had become acquainted with the Mullins in the 1870s, around the time he began teaching at McGill University. Osler credited Dr. Mullin with being the first to observe "Osler's nodes," the cutaneous nodes in subacute bacterial endocarditis; Mullin had apparently demonstrated the nodes to Osler at the Hamilton City Hospital (Buchanan, pp. 163-64). Osler's affectionate relationship with Mrs. Mullin is apparent in the present letter:

> Dear Mrs. Mullin, Mrs. Osler tells me that your wicked daughter has notions in her pate about nursing. Do you encourage them? If so I would also as I am sure she would make a first class nurse & be most helpful & useful. She is certainly strong enough. I hope you are keeping well. Love to all the boys. You sincere friend, Wm. Osler.


1 West Franklin St. X.14.00

Dear Mrs Mullin

Mrs Osler tells me that your wicked daughter has notions in her pate about nursing? Do you encourage them! If so I would also as I am sure she would make a first class nurse & be most helpful & useful. She is certainly strong enough. I hope you are keeping well. Love to all the boys.

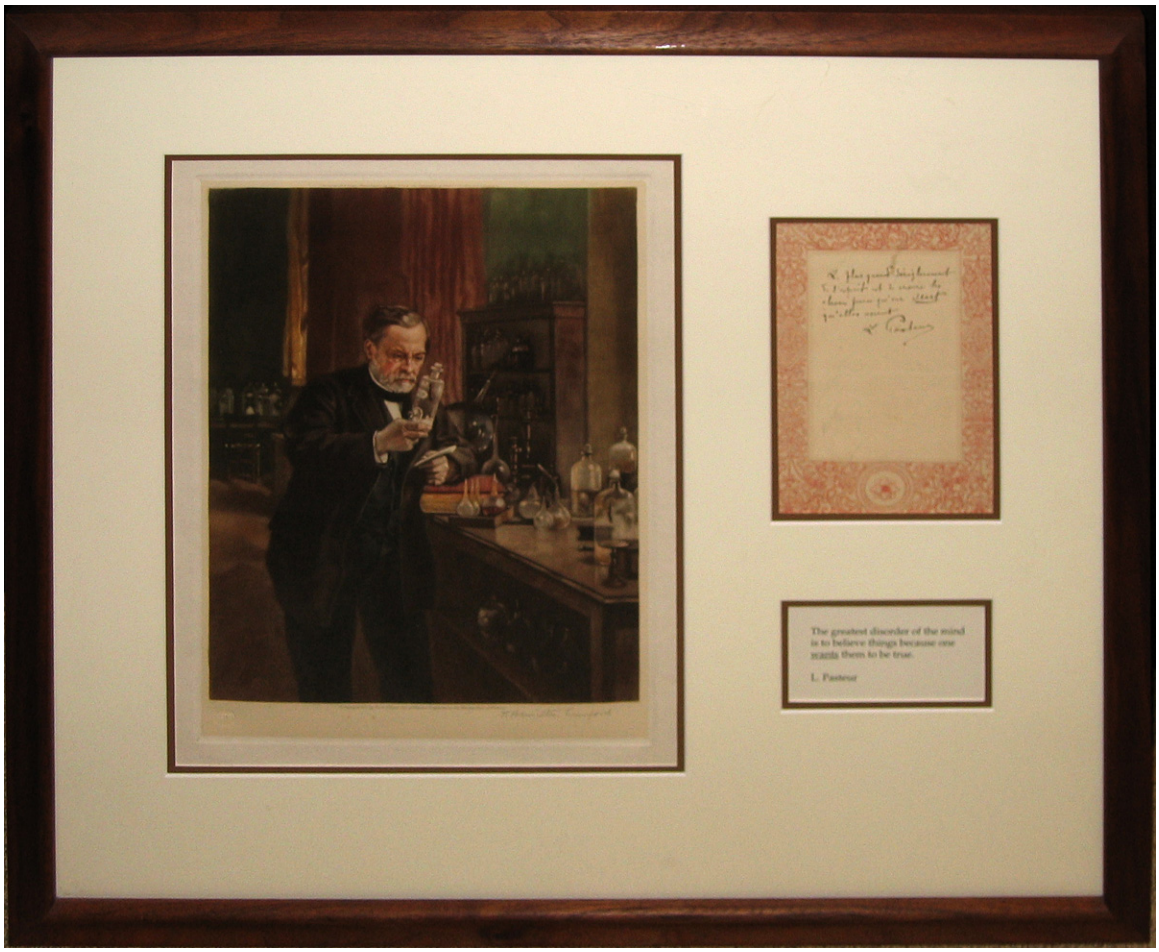
Yours sincere friend

Wm Osler

Osler's letter is also of interest in that it demonstrates his approval of nursing as a career for women, an opinion that he expressed more fully in his *Medicine and Nursing* (1919). Buchanan, "Sir William Osler (1849-1919): The Early Years," *Proceedings of the Royal College of Physicians of Edinburgh* 31 (2001): 155-168. Cushing, *Life of Sir William Osler,* pp. 121, 487. 40797

Pasteur Autograph and Portrait

85. **Pasteur, Louis** (1822-95). Signed autograph inscription in French (4 lines plus signature). N.p., n.d. Approx. 173 x 118 mm. Translation included. With: Lawford, T. Hamilton. Hand-colored mezzotint portrait of Pasteur, signed by the engraver in pencil, after the painting



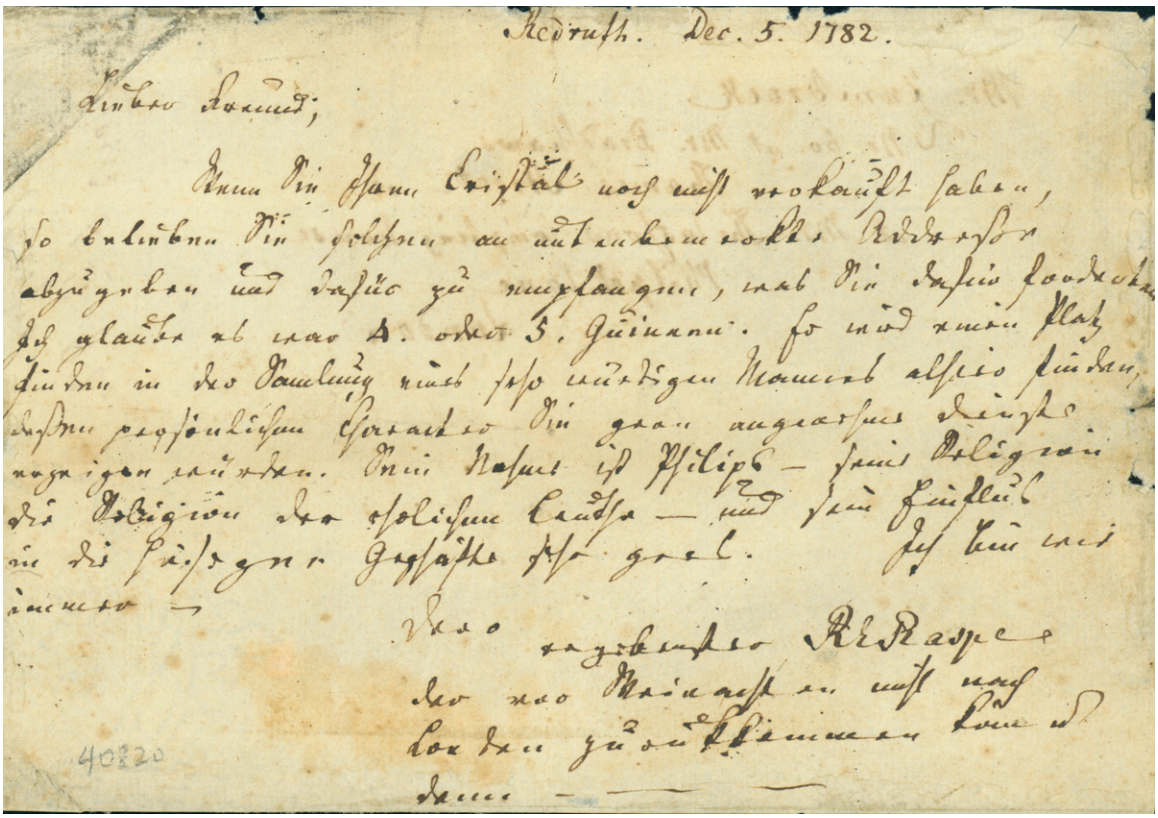
by Albert Edelfelt (1854-1905). Printed on proof paper (323 x 238 mm.) and mounted on larger sheet. Bristol, England: Frost and Reed, 1934. The two items matted and framed together to archival standards under UV-free plexiglass; frame measures 343 x 616 mm. $5000

Pasteur's inscription reads: "Le plus grand dérèglement de l'esprit est de croire les choses parce qu'on veut qu'elles soient" (The greatest disorder of the mind is to believe things because one wants them to be true). The inscription, written on stationery with a red filigree border, is framed with Lawford's superb hand-colored portrait of Pasteur in his laboratory, after the painting by the 19th-century Finnish artist Albert Edelfelt, whose works "possess great qualities of light and a design alive with feeling" Edelfelt's painting is the most famous portrait of Pasteur. It is preserved in the Louvre. (Benezit). 38161

Quetelet on the Telegraph

86. **Quetelet, Lambert Adolphe Jacques** (1796-1874). Autograph letter signed to Charles Vincent Walker (1812-82). Brussels, July 14, 1850. 2pp. 207 x 132 mm. Pin-holes in upper margin, small inkstain in lower corner. Provenance: Latimer Clark. $950

From Quetelet, one of the first to apply statistical methods to the social sciences, discussing the construction of telegraph lines in Belgium, and some packages of books on electricity and other subjects that he was sending to Charles Wheatstone and Michael Faraday. Quetelet, an astronomer at the Brussels Royal Observatory, published several memoirs on atmospheric electricity, terrestrial magnetism, meteorology, and related subjects. His correspondent, Charles V. Walker, had been involved in telegraphy since the 1840s; in 1848 he sent the first submarine telegraph message from a ship connected by two miles of cable to London Bridge, and



in 1876 he served as president of the Society of Telegraph Engineers and Electricians. *Origins of Cyberspace* 182. 40742

From Scholar / Scientist / Scoundrel Raspe, Author of "Baron Munchausen"

87. **Raspe, Rudolf Erich** (1736-94). Autograph letter signed, in German, to [Henry William] Zumbrock. Redruth [Cornwall], December 5, 1782. 1 page, address on verso. 124 x 180 mm. Minor soiling and spotting, traces of former mounting, but very good. Translation included.

$2750

Rare autograph letter from R. E. Raspe, author of the famous *Adventures of Baron Munchausen* (1785) and equal parts scholar, scientist and scoundrel. We can find no records in the databases of any Raspe autographs sold in the past 25 years.

A native of Hanover, Raspe enjoyed a successful career as a librarian and author before being appointed curator, in 1767, of the collection of rare antique gems and medals owned by Frederick II, Landgrave of Hesse-Kassel. In 1775 it was discovered that Raspe had been stealing from the Landgrave's collection and he was forced to flee Germany. He wound up in England, where he supported himself (barely) by writing on mineralogy and other scientific subjects, and working as a mining expert in Cornwall. Raspe's *Adventures of Baron Munchausen*, originally intended as a work of political satire, was issued anonymously in 1785. In the same year he began cataloguing the collection of copies of antique and modern gems assembled by James Tassie, a task that culminated in the monumental *Descriptive Catalogue of the Collection of Pastes and Impressions from Ancient and Modern Gems* (1791). After finishing this scholarly task Raspe returned to his criminal ways, attempting to swindle a Scottish landowner by "salting" one of his mines. He then moved to Ireland, where he managed a copper mine in Killarney before dying of typhoid fever in 1794.

Raspe's letter, written while he was working in Cornwall, deals with the sale of a mineralogical specimen. It can be translated as follows:

> Dear Friend, If you have not already sold your crystal, then please deliver it to the address indi-

cated below and receive for it what you were asking. I believe it was 4 or 5 guineas. It will find a place in the collection of a very worthy local man, of whose personal character you would surely be envious. His name is Philips — his religion the religion of honorable people — and his influence in local dealings very great. I am as always—yours humbly R E Raspe who cannot return to London before Christmas because—

The intriguingly unfinished postscript probably hints at Raspe's financial difficulties—he was arrested for debt in 1780. His correspondent was Henry Zumbrock, a young German bookkeeper who also worked as an agent in London for clients buying and selling materials. 40820

Portrait of Noted 19th-Century Microscopist

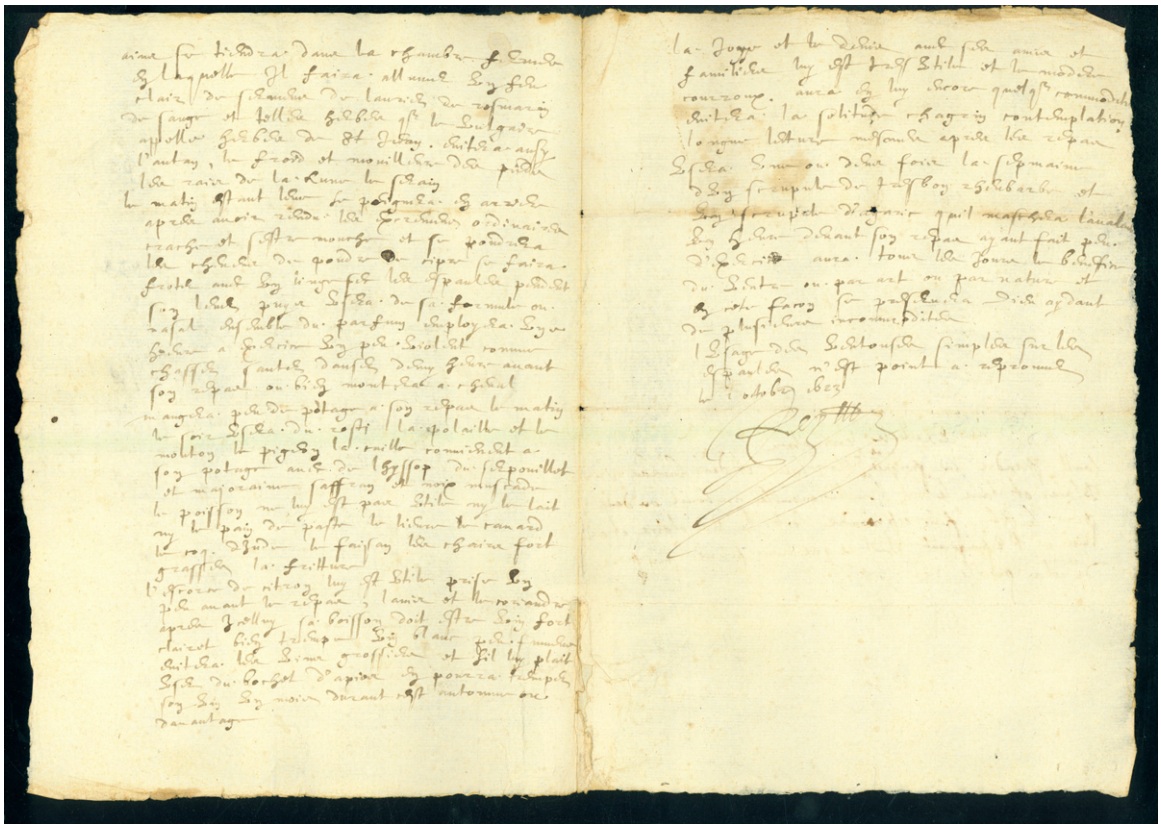
88. **Reade, Joseph Bancroft** (1801-70). Portrait photograph from *Photographic Portraits of Living Celebrities* (London, 1856-60). 305 x 254 mm. Light browning at edges. $950

Portrait of British scientist Joseph Bancroft Reade from Maull and Polyblank's *Photographic Portraits of Living Celebrities* (1856-60). Reade made important contributions to microscopy: In 1836 he discovered the method of using a pair of convex lenses to focus light on a subject without overheating it, and in 1861 he invented "Reade's kettledrum," a hemispherical condenser for the microscope. He also performed pioneering researches in photography, discovering that treating paper with gallic acid prior to silver nitrate greatly increases its photographic sensitivity. 40511

One of the Rarest Autographs in the History of Science

89. **Rey, Jean** (ca. 1583- ca. 1645). Pour Monsieur le baron de Fourquevaux. Autograph document signed, in Latin and French. N.p., 1 October 1623. 2-1/2 pages. 261 x 187 mm. Lower part of center fold reinforced, minor soiling, but fine otherwise. 18th century inscription in French on the last page. **[With:] McKie, Douglas,** *ed.* The *Essays* of Jean Rey, a facsimile reprint of the original edition of 1630 with an introduction . . . xliv, 143, [1], xlv-lxxxiii pp. Illustrated. London: Edward Arnold, 1951. 184 x 122 mm. Quarter cloth, printed dust-jacket (a little worn). $15,000

The Only Autograph in Private Hands from the hand of French physician and chemist Jean Rey, author of *Essays de Jean Rey . . . Sur la recherche de la cause pour laquelle l'estain & le plomb augmentent de poids quand on les calcine* (1630). This extraordinarily rare book, of which only seven copies are known, was Rey's only publication; it anticipated by more than one hundred years Lavoisier's discovery that the calcination of metals involves combination with air—a discovery fundamental to the overthrow of the phlogiston theory and the foundation of modern chemistry. Lavoisier published his discovery in 1774; the following year, chemist Pierre Bayen alerted Lavoisier to the existence of Rey's *Essays.* Lavoisier was so impressed with "the apparent modernity of Rey's ideas" (McKie, p. xl) that he at first believed Rey's work to be a forgery; he later spoke of



the work with admiration. In 1777 a second edition of Rey's *Essays,* edited by Nicolas Gobet, was published in Paris; this edition—the earliest obtainable—has also become rare (see Duveen, *Bibliotheca alchemica et chemica,* p. 505 and Neville, *Historical Chemical Library,* II, p. 372).

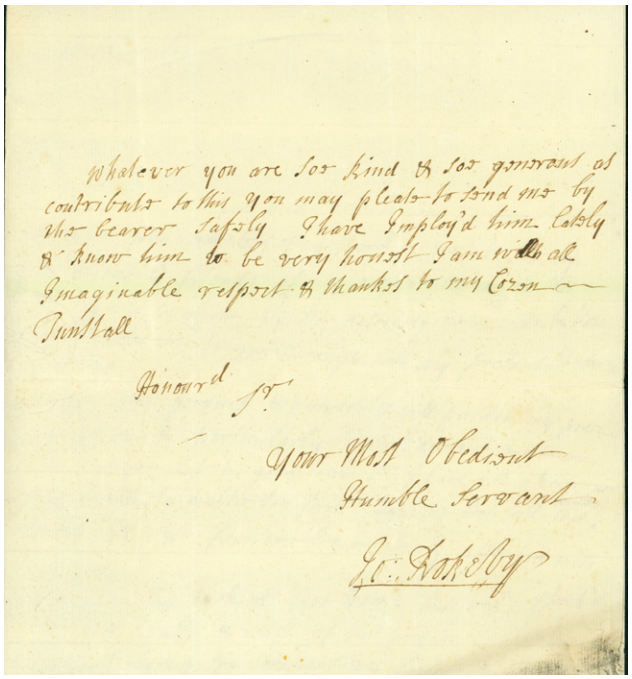
Douglas McKie, in the historical introduction to his facsimile edition of Rey's *Essays* (1951), relates what little is known of Rey's life, describing in detail the scant documentary evidence that remains, and reproducing examples of Rey's handwriting. The University of Montpellier, where Rey studied medicine from 1605 to 1609, preserves a signed 6-line inscription in Latin written by Rey when he matriculated at the University (1605), as well as four other documents bearing Rey's signature: two *consilia* (1608 and 1609), Rey's *licence en medicine* (1609) and a document Rey signed upon receiving his doctorate (1609). Apart from these, the only other signed autograph document of Rey's is the one we are offering here,

> containing his signed prescriptions and dietary for a distinguished patient living near Toulouse, Baron de Fourquevaux, whose father had been Governor of Narbonne and ambassador of several French Kings, and had escorted to Scotland Marie de Guise, bride of James V and mother of Mary Stewart . . . After 1623 we have no further record of Rey until the appearance of his *Essays,* dated from Le Bugue, *lieu de ma naissance,* on 1 January 1630 (McKie, p. xix).

It is hard to imagine any autograph in the history of science that would be rarer than this! Our 2-1/2 page autograph document was at one time owned by Dr. Pierre Lemay, who published a study of Rey in the *Bullétin de la Société française d'histoire de la médecine* 32 (1938): 148; see McKie, p. xix (n). *Dictionary of Scientific Biography.* Partington, *History of Chemistry,* II, pp. 631-36. 40656

Essential Reference on Anatomical Illustration

90. **Roberts, K. B. & J. D. W. Tomlinson.** The fabric of the body: European traditions of anatomical illustration. xx, 638pp. Illustrated. Oxford: Oxford University Press, 1992. 270 x 220


Whatever you are soe kind & soe gonorant as
contribute to this you may please to send me by
the bearer safely I have Employ'd him lately
& know him to be very honest I am with all
Imaginable respect & thanks to my Cozen
Tunstall

Honourd Sr

Your Most Obedient
Humble Servant
Jo: Rokeby

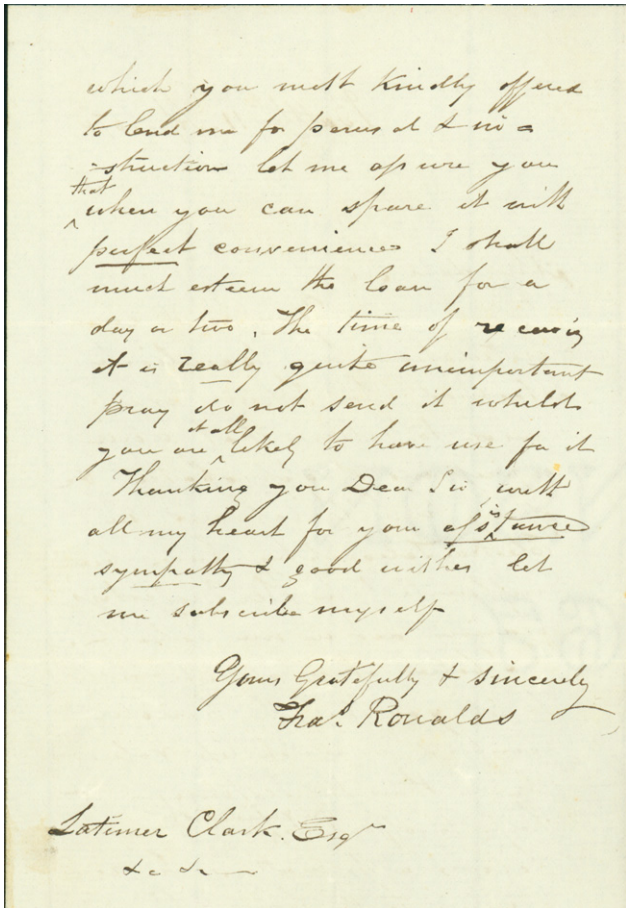
mm. Cloth, slipcase. Fine. Burndy Library bookplate; Huntington Library release stamp. $375

First Edition of this essential reference on the history of anatomical illustration. 40808

From One of Henry VIII's Attorneys

91. **Rokeby, John** (d. 1573). Autograph letter signed to "my cozen Tunstall," most likely Bishop Cuthbert Tunstall (1474-1559). 1 – 1/2pp. N.p., n.d. 223 x 184 mm. Fine apart from light soiling. $1750

From ecclesiastical lawyer John Rokeby, who acted as one of Henry VIII's counsel in his divorce from Katharine of Aragon and later served as a member of the Council of the North, a regional administrative body originally established by Richard III and later reinstated by Henry VIII in 1530 as a means of exerting control over England's pro-Catholic northern counties. His correspondent was most likely Bishop Cuthbert Tunstall, who served as president of the Council in 1530 and 1537; Tunstall is best known today as the author of *De arte supputandi libri quattuor* (1522), the first book published in England devoted exclusively to mathematics.


which you must kindly offend
to lend me for some short time a
sheetion let me assure you
that when you can spare it with
perfect convenience I shall
must esteem the loan for a
day a two, The time of recovig
it is really quite unimportant
pray do not send it whilst
you are likely to have use for it
Thanking you Dear Sir with
all my heart for your assistance
sympathy & good wishes let
me subscribe myself

Your Gratefully & Sincerely
Fra. Ronalds

Latimer Clark. Esqr
&c &c

In his letter Rokeby asks Tunstall for a "contribution to enable me to go through with my presant Undertaking . . . I began this Method last yeare but was check'd by ill health & want of the proper Instrument Lond. being too expensive for me & some necessary Cloaths awanting however am now determin'd to goe by sea as soon as possablely I can . . ." Rokeby and Tunstall may have been related, as they were both from the same part of England and Rokeby addressed Tunstall as "cozen." 40853

From the Inventor of the First Working Electric Telegraph

92. **Ronalds, Francis** (1788-1873). A.L.s. to Latimer Clark. Battle, April 11, 1870. 2pp. 181 x 114 mm. Provenance: Latimer Clark. $950

Ronalds invented the first working electric telegraph in 1816. His device involved two synchronized clocks whose dials were marked with the letters of the alpha-

bet; instead of hands, each clock had a rotating disk with a notch cut into it so that only one letter on the clock face was visible at a time (Standage 1998, 19). Ronalds placed one clock at each end of eight miles of insulated wire that he had laid down in his garden, and used electrical impulses to transmit signals between them. He wrote to Lord Melville of the British Admiralty offering to demonstrate his telegraph, but was rejected: John Barrow, secretary to the admiralty, wrote back to Ronalds saying that "telegraphs of any kind are now [after the conclusion of the Napoleonic wars] totally unnecessary, and that no other than the one now in use [a semaphore telegraph] will be adopted" (quoted in DNB). Ronalds did not pursue his telegraphy venture any further, but left a record of it in his Descriptions of an Electric Telegraph and of Some Other Electrical Apparatus (1823; reprinted in 1871 at the suggestion of Latimer Clark). It was left to Charles Wheatstone and William Fothergill Cooke, both of whom knew of Ronalds's experiments, to develop the first telegraph adopted for public use in Britain in 1845.

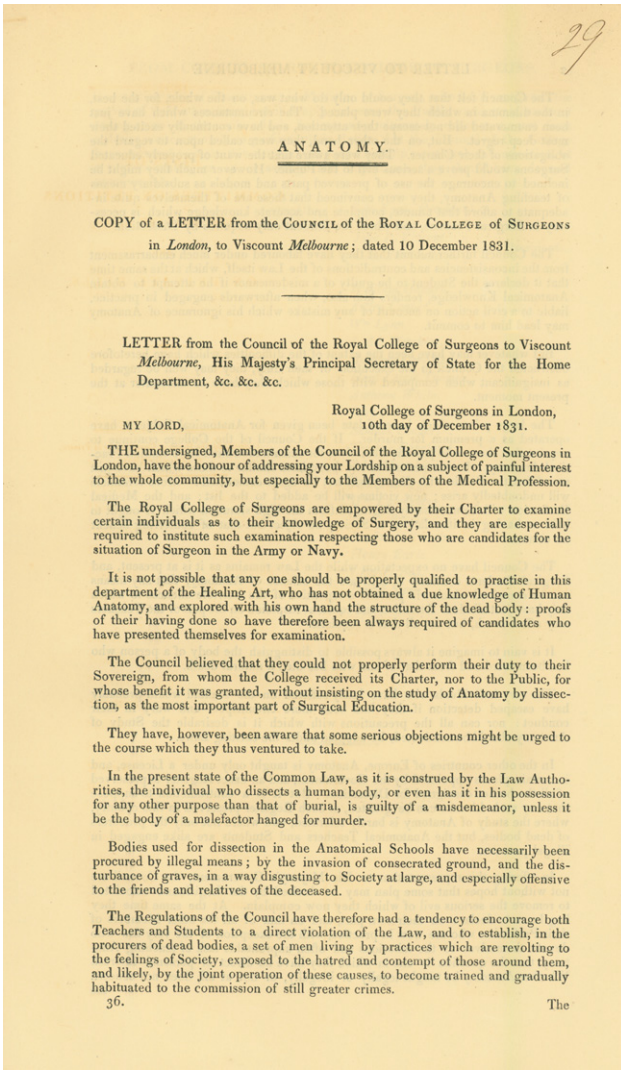
In 1871, in response to a petition submitted the previous year to Prime Minister William Gladstone, Ronalds received a knighthood for his contribution to telegraphy. His letter to Clark expresses his gratitude for this honor and for Clark's part in it:

> Your kind congratulations are peculiarly esteemed; for I have every reason to believe that your expressions of approbation &c. of my humble labours in Electro-Telegraphy have been influential in Her Majesty's gracious act in my behalf.
>
> I believe it is almost needless to tell you that the honour conferred is much less valued by me than the testimony it helps to afford to the validity of my early labours in the matter. . . . "

Origins of Cyberspace 187. 40745

"Resurrection Men"

93. **Royal College of Surgeons.** Anatomy. Copy of a letter from the Council of the Royal College of Surgeons in London, to Viscount Melbourne; dated 10 December 1831. Folio. 3pp. [London:] House of Commons, 17 December



29

ANATOMY.

COPY of a LETTER from the COUNCIL of the ROYAL COLLEGE of SURGEONS in *London*, to Viscount *Melbourne*; dated 10 December 1831.

LETTER from the Council of the Royal College of Surgeons to Viscount *Melbourne*, His Majesty's Principal Secretary of State for the Home Department, &c. &c. &c.

Royal College of Surgeons in London,
MY LORD, 10th day of December 1831.

THE undersigned, Members of the Council of the Royal College of Surgeons in London, have the honour of addressing your Lordship on a subject of painful interest to the whole community, but especially to the Members of the Medical Profession.

The Royal College of Surgeons are empowered by their Charter to examine certain individuals as to their knowledge of Surgery, and they are especially required to institute such examination respecting those who are candidates for the situation of Surgeon in the Army or Navy.

It is not possible that any one should be properly qualified to practise in this department of the Healing Art, who has not obtained a due knowledge of Human Anatomy, and explored with his own hand the structure of the dead body: proofs of their having done so have therefore been always required of candidates who have presented themselves for examination.

The Council believed that they could not properly perform their duty to their Sovereign, from whom the College received its Charter, nor to the Public, for whose benefit it was granted, without insisting on the study of Anatomy by dissection, as the most important part of Surgical Education.

They have, however, been aware that some serious objections might be urged to the course which they thus ventured to take.

In the present state of the Common Law, as it is construed by the Law Authorities, the individual who dissects a human body, or even has it in his possession for any other purpose than that of burial, is guilty of a misdemeanor, unless it be the body of a malefactor hanged for murder.

Bodies used for dissection in the Anatomical Schools have necessarily been procured by illegal means; by the invasion of consecrated ground, and the disturbance of graves, in a way disgusting to Society at large, and especially offensive to the friends and relatives of the deceased.

The Regulations of the Council have therefore had a tendency to encourage both Teachers and Students to a direct violation of the Law, and to establish, in the procurers of dead bodies, a set of men living by practices which are revolting to the feelings of Society, exposed to the hatred and contempt of those around them, and likely, by the joint operation of these causes, to become trained and gradually habituated to the commission of still greater crimes.

36. The

1831. 333 x 208 mm. Disbound, gutter margin a little frayed. Light toning but very good. $950

First Edition. On December 5, 1831, the notorious London "resurrection men" John Bishop and Thomas Williams were executed for the murder of an itinerant fourteen-year-old (known only as the "Italian Boy"), whose corpse they had then attempted to sell to the anatomical demonstrator at King's College. Five days later, the Council of the Royal College of Surgeons—whose members included such luminaries as Astley Cooper, William Lawrence, Benjamin Collins Brodie, Charles Bell and Benjamin Travers—sent the present letter to Viscount Melbourne, the British Home Secretary, urging reform of the antiquated British laws governing procurement and possession of cadavers for dissection in medical schools. The work is

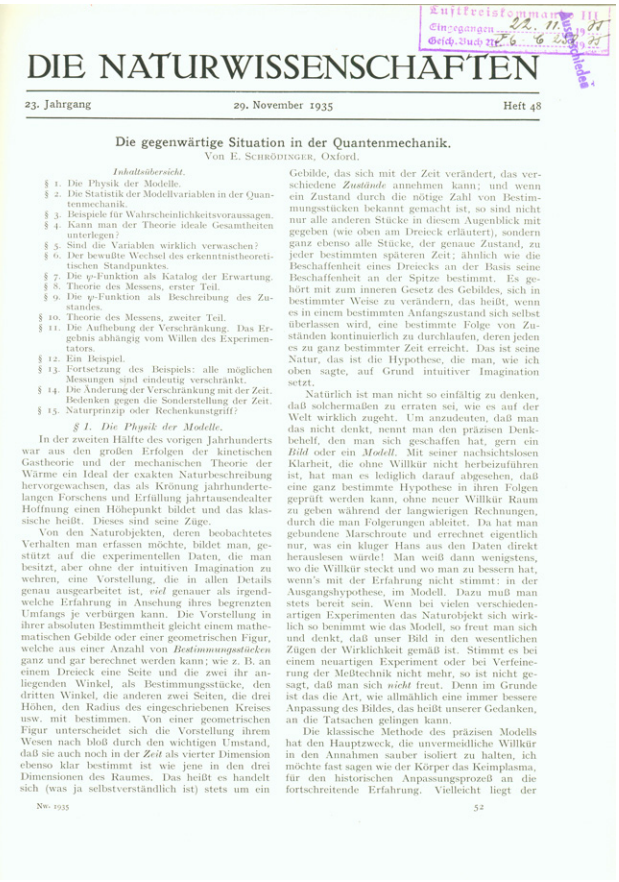
very rare on the market—this is the first copy we have handled in more than 40 years of trading.

Since the mid-eighteenth century, obtaining cadavers for teaching purposes had been regulated in Britain by the Murder Act of 1752, which stipulated that only the corpses of executed criminals could be used for dissection. By the beginning of the nineteenth century, however, improvements in medical science, coupled with a substantial drop in the number of executions, caused the demand for cadavers to far outstrip the legal supply. This situation was ripe for exploitation by "resurrection men," criminals who robbed the graves of the newly deceased and sold their corpses to teachers of anatomy, who of necessity turned a blind eye to the illegality of these transactions. Some grave-robbers even resorted to murder, including the infamous William Burke, who in 1828 was tried and executed in Edinburgh for the murders of over a dozen victims whose corpses he and his partner Hare sold to an anatomical demonstrator connected to Edinburgh University.

Calls for reform of the 1752 Murder Act began to arise as early as 1810, and in 1828, the year of Burke's execution, Parliament appointed a select committee to "enquire into the manner of obtaining subjects for dissection by schools of Anatomy and the State of law affecting persons employed in obtaining and dissecting bodies." The horrific nature of the crimes committed by Burke, Bishop and Williams aroused public sentiment in favor of reform, a sentiment echoed in the present letter from the RCS Council, which spells out in detail the untenable position of students and teachers of anatomy under the then-current law. In 1832 Parliament passed the Anatomy Act, granting licenses to teachers of anatomy and giving physicians, surgeons and medical students legal access to corpses unclaimed after death. Wise, *The Italian Boy: A Tale of Murder and Body Snatching in 1830s London* (2004). 40747

Schrödinger's Cat

94. **Schrödinger, Erwin** (1887-1961). Die gegenwärtige Situation in der Quantenmechanik. In *Die Naturwissenschaften* 23 (1935): 807-12; 823-28; 844-49. Whole volume. xix, [1], 870, 12pp. Berlin: Julius Springer, 1935. 264 x 192 mm. Quarter cloth ca. 1935, hand-lettered paper spine label, light wear to corners. Library stamps



DIE NATURWISSENSCHAFTEN

23. Jahrgang — 29. November 1935 — Heft 48

Die gegenwärtige Situation in der Quantenmechanik.

Von E. Schrödinger, Oxford.

Inhaltsübersicht.

§ 1. Die Physik der Modelle.

In der zweiten Hälfte des vorigen Jahrhunderts war aus den großen Erfolgen der kinetischen Gastheorie und der mechanischen Theorie der Wärme ein Ideal der exakten Naturbeschreibung hervorgewachsen, das als Krönung jahrhundertelangen Forschens und Erfüllung jahrtausendealter Hoffnung einen Höhepunkt bildet und das klassische heißt. Dieses sind seine Züge.

Von den Naturobjekten, deren beobachtetes Verhalten man erfassen möchte, bildet man, gestützt auf die experimentellen Daten, die man besitzt, aber ohne der intuitiven Imagination zu wehren, eine Vorstellung, die in allen Details genau ausgearbeitet ist, *viel* genauer als irgendwelche Erfahrung in Ansehung ihres begrenzten Umfangs je verbürgen kann. Die Vorstellung in ihrer absoluten Bestimmtheit gleicht einem mathematischen Gebilde oder einer geometrischen Figur, welche aus einer Anzahl von *Bestimmungsstücken* ganz und gar berechnet werden kann; wie z. B. an einem Dreieck eine Seite und die zwei ihr anliegenden Winkel, als Bestimmungsstücke, den dritten Winkel, die anderen zwei Seiten, die drei Höhen, den Radius des eingeschriebenen Kreises usw. mit bestimmen. Von einer geometrischen Figur unterscheidet sich die Vorstellung ihrem Wesen nach bloß durch den wichtigen Umstand, daß sie auch noch in der *Zeit* als vierter Dimension ebenso klar bestimmt ist wie jene in den drei Dimensionen des Raumes. Das heißt es handelt sich (was ja selbstverständlich ist) stets um ein Gebilde, das sich mit der Zeit verändert, das verschiedene *Zustände* annehmen kann; und wenn ein Zustand durch die nötige Zahl von Bestimmungsstücken bekannt gemacht ist, so sind nicht nur alle anderen Stücke in diesem Augenblick mit gegeben (wie oben am Dreieck erläutert), sondern ganz ebenso alle Stücke, der genaue Zustand, zu jeder bestimmten späteren Zeit; ähnlich wie die Beschaffenheit eines Dreiecks an der Basis seine Beschaffenheit an der Spitze bestimmt. Es gehört mit zum inneren Gesetz des Gebildes, sich in bestimmter Weise zu verändern, das heißt, wenn es in einem bestimmten Anfangszustand sich selbst überlassen wird, eine bestimmte Folge von Zuständen kontinuierlich zu durchlaufen, deren jeden es zu ganz bestimmter Zeit erreicht. Das ist seine Natur, das ist die Hypothese, die man, wie ich oben sagte, auf Grund intuitiver Imagination setzt.

Natürlich ist man nicht so einfältig zu denken, daß solchermaßen zu erraten sei, wie es auf der Welt wirklich zugeht. Um anzudeuten, daß man das nicht denkt, nennt man den präzisen Denkbehelf, den man sich geschaffen hat, gern ein *Bild* oder ein *Modell*. Mit seiner nachsichtslosen Klarheit, die ohne Willkür nicht herbeizuführen ist, hat man es lediglich darauf abgesehen, daß eine ganz bestimmte Hypothese in ihren Folgen geprüft werden kann, ohne neuer Willkür Raum zu geben während der langwierigen Rechnungen, durch die man Folgerungen ableitet. Da hat man gebundene Marschroute und errechnet eigentlich nur, was ein kluger Hans aus den Daten direkt herauslesen würde! Man weiß dann wenigstens, wo die Willkür steckt und wo man zu bessern hat, wenn's mit der Erfahrung nicht stimmt: in der Ausgangshypothese, im Modell. Dazu muß man stets bereit sein. Wenn bei vielen verschiedenartigen Experimenten das Naturobjekt sich wirklich so benimmt wie das Modell, so freut man sich und denkt, daß unser Bild in den wesentlichen Zügen der Wirklichkeit gemäß ist. Stimmt es bei einem neuartigen Experiment oder bei Verfeinerung der Meßtechnik nicht mehr, so ist nicht gesagt, daß man sich *nicht* freut. Denn im Grunde ist das die Art, wie allmählich eine immer bessere Anpassung des Bildes, das heißt unserer Gedanken, an die Tatsachen gelingen kann.

Die klassische Methode des präzisen Modells hat den Hauptzweck, die unvermeidliche Willkür in den Annahmen sauber isoliert zu halten, ich möchte fast sagen wie der Körper das Keimplasma, für den historischen Anpassungsprozeß an die fortschreitende Erfahrung. Vielleicht liegt der

on general title and on first leaves of some numbers. $2500

First Edition, journal issue. Schrödinger's paper contains the famous thought experiment now known as "Schrödinger's Cat," illustrating a fundamental problem in the "Copenhagen interpretation" of quantum mechanics put forth by Niels Bohr and Werner Heisenberg. In this interpretation, a quantum superposition—the combination of all possible states of a system, such as the possible positions of a subatomic particle—collapses into a definite state only at the exact moment of quantum measurement; prior to measurement, all states exist within a certain range of probability. Einstein had published a rebuttal to the Copenhagen interpretation in his famous "EPR" paper of 1935, in which he argued that the quantum-mechanical description of physical reality, as it stood, was incomplete. Inspired by Einstein's line of reasoning, Schrödinger continued the discussion in his "Die gegenwärtige Situation in der Quantenmechanik," pointing out the absurdity of applying quantum

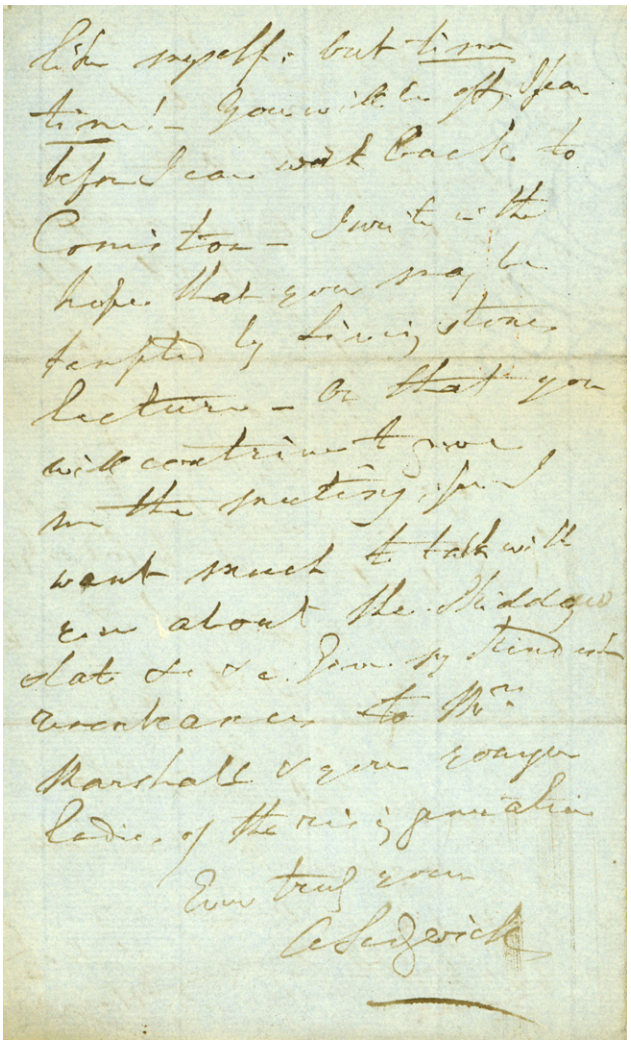
mechanics to visible and tangible objects. In the fifth section of his paper (p. 812), he set forth the "quite burlesque" case of a cat

> penned up in a steel chamber, along with the following diabolical apparatus (which must be secured against direct interference by the cat): in a Geiger counter there is a tiny bit of radioactive substance, *so* small, that *perhaps* in the course of the hour one of the atoms decays, but also, with equal probability, perhaps none; if it happens, the counter tube discharges and through a relay releases a hammer which shatters a small flask of hydrocyanic acid. If one has left this entire system to itself for an hour, one would say that the cat still lives *if* meanwhile no atom has decayed. The psi-function of the entire system would express this by having in it the living and dead cat (pardon the expression) mixed or smeared out in equal parts.
>
> It is typical of these cases that an indeterminacy originally restricted to the atomic domain becomes transformed into macroscopic indeterminacy, which can then be *resolved* by direct observation. That prevents us from so naively accepting as valid a "blurred model" for representing reality. In itself it would not embody anything unclear or contradictory. There is a difference between a shaky or out-of-focus photograph and a snapshot of clouds and fog banks (Schrödinger, "The present situation in quantum mechanics," translated by John D. Trimmer [*Proceedings of the American Philosophical Society* 124 (1980): 323-38]).

This conclusion sets forth what has been called the principle of state distinction: "states of a macroscopic system which could be told apart by a macroscopic observation are distinct from each other whether observed or not" (Moore, p. 308). Schrödinger's paper represents "his definitive statement about the theory that he and Heisenberg had discovered" (Moore, p. 307). Moore, *Schrödinger: Life and Thought,* pp. 306-9. 40521

From One of the Founders of Modern Geology

95. **Sedgwick, Adam** (1785-1873). Two autograph letters signed to [James] Marshall. Dent



[Yorkshire], Oct. 7, 1857; Trinity College [Cambridge], Oct. 31, 1857. 8pp. total. 186 x 113 mm. Light soiling along folds, but very good. $950

Letters with excellent scientific content from one of the founders of modern geology. Sedgwick was responsible for defining the Devonian and Cambrian ages in the geological time scale, and his immensely popular lecture courses on geology, delivered annually at Cambridge between 1819 and 1870, had an enormous influence on succeeding generations of English geologists. One of his students was Charles Darwin, who began attending Sedgwick's lectures in January 1831 and accompanied Sedgwick on a geological field tour of Wales the following summer. The two men remained friends until Sedgwick's death, even though Sedgwick was never able to accept Darwin's theory of evolution by natural selection.

In his Oct. 7 letter to Marshall, Sedgwick discusses his current geological researches:

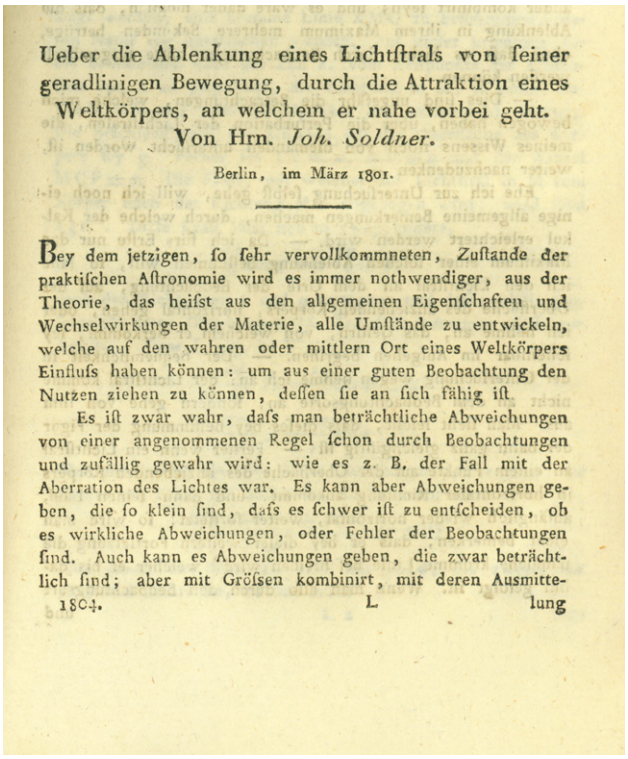
> I mean D.V. to work my way to Ulverston; & on Saturday or possibly Monday to transfer my head quarters to Broughton. I want to connect our work in all quarries on the east side of the road, with the great open quarries in the Ireleth country; which we failed to do. The beds in the great open quarries strike very differently from those you & I saw; yet the strike of the cleavage (?) is unchanged in direction & from end to end almost perpendicular—I think it highly probable that the beds between the Ireleth slate & the Ulverston estuary are nearly all from the flag or flag & grit—And I suspect that some hard gritty ridges I remember to have seen in a part of Cartmell Fell, are but a repetition (by enormous fault) of the Coniston grits. . . .

Sedgwick also notes his intention to "hear Dr. Livingstone's evening lecture"; this is a reference to famous explorer David Livingstone (1813-73).

In his Oct. 31 letter, Sedgwick touches on his precarious health—"On Monday I ought to have begun my course of lectures but on that day I had a severe relapse of vertigo & was obliged to put off my lectures until Friday (yesterday)"—and continues his discussion of his work:

> All the rocks from the Ireleth country to the ~~Coniston~~ Ulverston sands are Coniston flag—But in our final traverse we found the hard Coniston grits in the hills S. W. of Penny Bridge—just where they ought to be—I think there is an enormous break down the valley meeting the complicated faults (which come down from the hill a little North of Seathwaite) at an angle.—In short the country from Ireleth Moor inclusive, to the Sand of Ulverston, has had a shove southwards of about five miles!

The recipient of these letters, James Marshall, was an amateur geologist and Fellow of the Geological Society. A friend of both Sedgwick and John Herschel, Marshall was "a keen advocate of scientific education" (Briggs, *Victorian Cities* [1993], p. 161). Olroyd, *Earth, Water, Ice and Fire* (2002), p. 20. *Dictionary of Scientific Biography.* 40858



Ueber die Ablenkung eines Lichtſtrals von ſeiner geradlinigen Bewegung, durch die Attraktion eines Weltkörpers, an welchem er nahe vorbei geht.

Von Hrn. *Joh. Soldner.*

Berlin, im März 1801.

Bey dem jetzigen, ſo ſehr vervollkommneten, Zuſtande der praktiſchen Aſtronomie wird es immer nothwendiger, aus der Theorie, das heiſst aus den allgemeinen Eigenſchaften und Wechselwirkungen der Materie, alle Umſtände zu entwickeln, welche auf den wahren oder mittlern Ort eines Weltkörpers Einfluſs haben können: um aus einer guten Beobachtung den Nutzen ziehen zu können, deſſen ſie an ſich fähig iſt.

Es iſt zwar wahr, daſs man beträchtliche Abweichungen von einer angenommenen Regel ſchon durch Beobachtungen und zufällig gewahr wird: wie es z. B. der Fall mit der Aberration des Lichtes war. Es kann aber Abweichungen geben, die ſo klein ſind, daſs es ſchwer iſt zu entſcheiden, ob es wirkliche Abweichungen, oder Fehler der Beobachtungen ſind. Auch kann es Abweichungen geben, die zwar beträchtlich ſind; aber mit Gröſsen kombinirt, mit deren Ausmittelung

1804. L

Earliest Work on Gravitational Bending of Light

96. **Soldner, Johann Georg von** (1776-1833). Ueber die Ablenkung eines Lichtstrals von seiner geradlinigen Bewegung, durch die Attraktion eines Weltkörpers . . . In *Astronomisches Jahrbuch für das Jahr 1804* (1801): 161-172. Whole volume, 8vo. [4], 268pp. 2 folding plates. Berlin: bey dem Verfasser, und in Commission bey G. A. Lange, 1801. 200 x 115 mm. Half sheep, marbled boards ca. 1801, minor worming in front cover, lightly rubbed but sound. Fine copy. Small ownership stamp on title, occasional marginal annotations.

$3750

First Edition. Soldner's paper represents "the earliest work on the deflection of light in the gravitation field of the sun . . . On the assumptions that light has weight, and that it is deflected according to Newton's law of gravitation, [Soldner] computed the bending of a ray passing the limb of the sun." (Wylie, "The path of light in a gravitational field," *Am. Math. Monthly* 32 [1925]: 404). Soldner's calculations "are based on

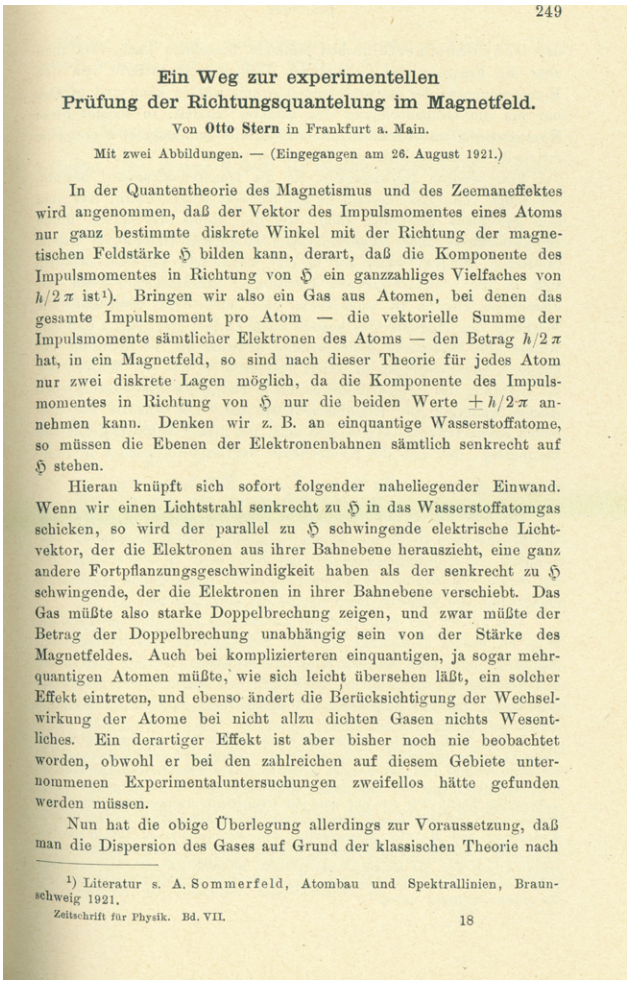
Newton's emission theory, according to which light consists of particles. On this picture the scattering of light by the sun becomes an exercise in Newtonian scattering theory. . . . Soldner made the scattering calculation, put in numbers, and found ? [the value of the deflection]= 0."84" (Pais, p. 200)—a result remarkably close to the actual value of 0."87. In 1911 Einstein, in his paper "Ueber den Einfluss der Schwerkraft auf die Ausbreitung des Lichtes" (*Ann. Phys.* 35: 898-908), used a different method but the same basic assumptions to come up with a similar value for this "Newtonian deflection." The gravitational bending of light by the sun was one of three tests Einstein posed in 1916 to confirm the general theory of relativity; in 1919, Sir Arthur Eddington and his collaborators became the first to observe and record this phenomenon. Pais, *Subtle is the Lord,* pp. 198-200. 40861

Stern-Gerlach Experiment

97. **Stern, Otto** (1888-1969) et al. **(1)** Ein Weg zur experimentellen Prüfung der Richtungsquantelung im Magnetfeld. In *Zeitschr. f. Physik* 7 (1921): 249-253. **(2)** (with **Walter Gerlach** [1889-1979]). Der experimentelle Nachweis des magnetischen Moments des Silberatoms. In *ibid.* 8 (1921): 110-111. Together 2 whole volumes. [iii]-vi, 414; iv, 419pp. Braunschweig: Fried. Vieweg & Sohn; Berlin: Julius Springer, 1921-22. 224 x 149 mm. Vol. 7 in half morocco, cloth boards, a little rubbed; Vol. 8 in half cloth, marbled boards. Library stamps on titles. $950

First Editions. Stern, whom Emilio Segrè considered "one of the major physicists of the century" (p. 138), developed Dunoyer's molecular beam method and used it to devise what is now known as the Stern-Gerlach experiment, which demonstrates the reality of space-quantization of atoms. This experiment had an enormous impact on modern physics, and has become a paradigm of quantum measurement.

Spatial quantization had been introduced as a theoretical concept by Sommerfeld in 1916, but no one before Stern had ever demonstrated its existence, and some quantum physicists even considered it to be nothing more than a mathematical tool. In his 1921 paper, Stern proposed an empirical test: "If an electron in an



249

Ein Weg zur experimentellen Prüfung der Richtungsquantelung im Magnetfeld.

Von **Otto Stern** in Frankfurt a. Main.

Mit zwei Abbildungen. — (Eingegangen am 26. August 1921.)

In der Quantentheorie des Magnetismus und des Zeemaneffektes wird angenommen, daß der Vektor des Impulsmomentes eines Atoms nur ganz bestimmte diskrete Winkel mit der Richtung der magnetischen Feldstärke $\mathfrak{H}$ bilden kann, derart, daß die Komponente des Impulsmomentes in Richtung von $\mathfrak{H}$ ein ganzzahliges Vielfaches von $h/2\pi$ ist[1]). Bringen wir also ein Gas aus Atomen, bei denen das gesamte Impulsmoment pro Atom — die vektorielle Summe der Impulsmomente sämtlicher Elektronen des Atoms — den Betrag $h/2\pi$ hat, in ein Magnetfeld, so sind nach dieser Theorie für jedes Atom nur zwei diskrete Lagen möglich, da die Komponente des Impulsmomentes in Richtung von $\mathfrak{H}$ nur die beiden Werte $+h/2\pi$ annehmen kann. Denken wir z. B. an einquantige Wasserstoffatome, so müssen die Ebenen der Elektronenbahnen sämtlich senkrecht auf $\mathfrak{H}$ stehen.

Hieran knüpft sich sofort folgender naheliegender Einwand. Wenn wir einen Lichtstrahl senkrecht zu $\mathfrak{H}$ in das Wasserstoffatomgas schicken, so wird der parallel zu $\mathfrak{H}$ schwingende elektrische Lichtvektor, der die Elektronen aus ihrer Bahnebene herauszieht, eine ganz andere Fortpflanzungsgeschwindigkeit haben als der senkrecht zu $\mathfrak{H}$ schwingende, der die Elektronen in ihrer Bahnebene verschiebt. Das Gas müßte also starke Doppelbrechung zeigen, und zwar müßte der Betrag der Doppelbrechung unabhängig sein von der Stärke des Magnetfeldes. Auch bei komplizierteren einquantigen, ja sogar mehrquantigen Atomen müßte, wie sich leicht übersehen läßt, ein solcher Effekt eintreten, und ebenso ändert die Berücksichtigung der Wechselwirkung der Atome bei nicht allzu dichten Gasen nichts Wesentliches. Ein derartiger Effekt ist aber bisher noch nie beobachtet worden, obwohl er bei den zahlreichen auf diesem Gebiete unternommenen Experimentaluntersuchungen zweifellos hätte gefunden werden müssen.

Nun hat die obige Überlegung allerdings zur Voraussetzung, daß man die Dispersion des Gases auf Grund der klassischen Theorie nach

[1]) Literatur s. A. Sommerfeld, Atombau und Spektrallinien, Braunschweig 1921.

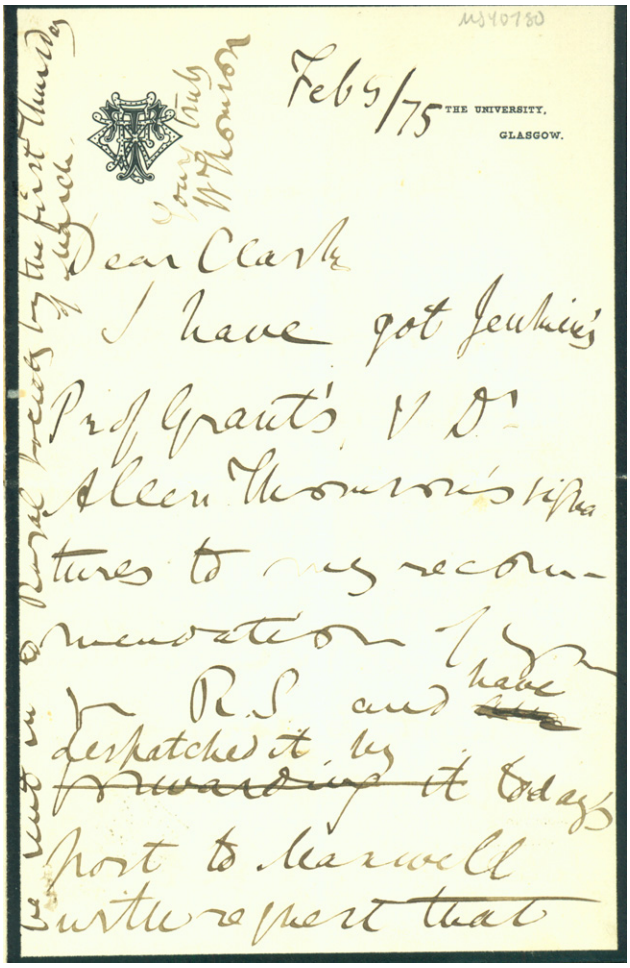
atom carried a magnetic moment of about 1 Bohr magneton (= $eh/4\pi m_e$), an atomic beam of silver atoms should split in passing through a magnetic field of strong inhomogeneity" (*Twentieth Century Physics*, p. 164). In the 1922 paper, written jointly with Walther Gerlach, Stern described the initial results of their experimental work. In three later papers (not included here) Stern and Gerlach continued their investigations, which provided direct experimental proof of directional [space-] quantization in a magnetic field. 40522

Portrait of Mineralogist to Queen Victoria

98. **Tennant, James** (1808-81). Photograph portrait by Maull & Polyblank. Albumin print mounted on paper, subject identified beneath the photograph in a 19th century hand. [London,

1856-60.] 191 x 148 mm. (image); 283 x 230 (mount). Fine apart from one or two small stains on the mount. $1250

Fine photographic portrait of geologist, mineralogist, and mineral dealer James Tennant, from Maull & Polyblank's *Photographic Portraits of Living Celebrities* (London, 1856-60). At the age of 16 Tennant was apprenticed to a dealer in minerals, taking over the business on his master's death. "In 1838, on [Michael] Faraday's recommendation, Tennant was appointed teacher of geological mineralogy at King's College, the title being afterwards changed to professor. In 1853 the professorship of geology was added . . . He was also from 1850 to 1867 lecturer on geology and mineralogy at Woolwich. He had an excellent practical knowledge of minerals, and, when diamonds were first found in South Africa, maintained the genuineness of the discovery, which at first was doubted. He was an earnest advocate of technical education, giving liberally from his own purse to help on the cause, and persuading the Turners' Company, of which he was master in 1874, to offer prizes for excellence in their craft. . . . When the koh-i-nor [diamond] was recut Tennant superintended the work, becoming mineralogist to Queen Victoria in



1840, and he had the oversight of Miss (afterwards Baroness) Burdett-Coutts's collection of minerals. He was elected a fellow of the Geological Society in 1838, and president of the Geological Association (1862-3)" (*Dictionary of National Biography*).

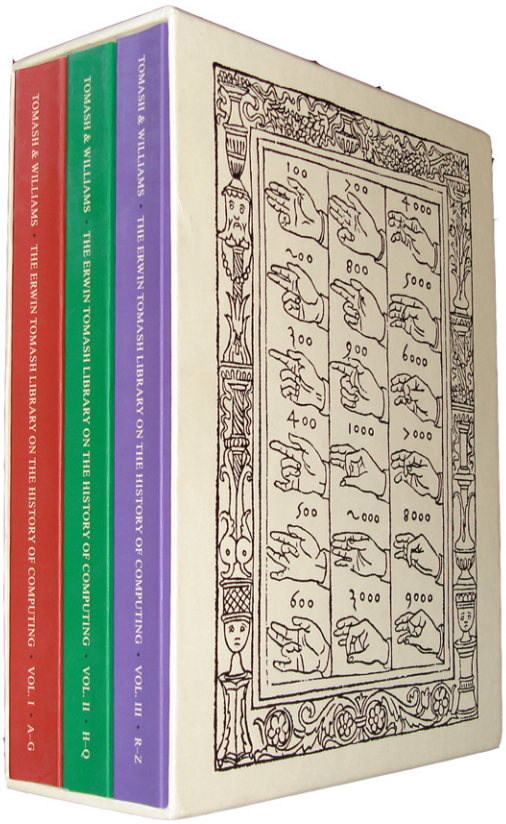
Tennant is shown seated at a table on which are displayed a number of objects representing his interests, including a nautilus shell, several crystals and a model of a crystal structure. In his hands is a lathe, representative of his involvement with the Turners' Company. 40529

Getting into the Royal Society

99. **Thomson, William, first Baron Kelvin** (1824-1906). Autograph letter signed to Latimer Clark. Glasgow, February 5, 1875. 4pp. 177 x 112 mm. Traces of mounting present. Provenance: Latimer Clark. $1500

The Scottish physicist William Thomson (later Lord Kelvin) became involved in Cyrus Field's Atlantic cable enterprise in late 1856 or early 1857, when he was named to the board of directors of the Atlantic Telegraph Company. Thomson, who "saw telegraphy as an integral part of mathematical physics" (Smith and Wise 1989, 666), took a scientific approach to the design and construction of long-distance submarine cables and signaling equipment, applying theoretical principles he had learned through his studies of electrical phenomena. Thomson's recommendations were opposed by the Atlantic Telegraph Company's supervising electrician, E. O. Wildman Whitehouse, a self-taught engineer whom Field had put in charge of designing and manufacturing the cable. Whitehouse had little use for theory, which he believed had no place in the practical world of commercial enterprise; however, his disdain for theoretical knowledge proved disastrous, for his designs were fundamentally unsound, and the first complete Atlantic cable, laid in 1858, failed only weeks after it had been installed. The superiority of Thomson's scientific approach to submarine telegraphy was brought out in a subsequent government investigation, and later undersea cables were constructed to Thomson's recommendations.

Thomson's letter to Clark is concerned with his attempt to get Clark into the Royal Society, for which he had solicited the support of no fewer than seven Royal Society members including British engineer Fleeming Jenkin (1833-85), who served with Thomson and Clark on the important Committee on Standards of Electrical Resistance of the British Association for the Advancement of Science; Allen Thomson (1809-84), "the first of the great biological teachers of the nineteenth century" (DNB); Scottish astronomer Robert Grant (1814-92); Astronomer Royal George Biddell Airy (1801-92), with whom Clark had worked to develop a country-wide telegraphic system for reporting Greenwich Mean Time; electrical engineer Charles Walker (1812-82), sender of the first submarine telegraph message; and Thomson's close friend George Gabriel Stokes (1819-1903), Lucasian professor of physics at Cambridge, whose discovery of the nature of fluorescence had important ramifications for spectroscopy. Also mentioned as helping in this project is James Clerk Maxwell (1831-79). Thomson's attempt apparently failed, as Clark was not elected to the Royal Society until 1889. *Origins of Cyberspace* 205. 40780



The Most Comprehensive Reference Work on the Historical Literature of Computing

100. **Tomash, Erwin & Michael R. Williams.** The Erwin Tomash library on the history of computing. An annotated and illustrated catalog. 3 vols. 1572 pages, with approximately 4000 illustrations. Privately printed, 2009. 277 x 214 mm. Soft covers, in slipcase. $600

This extensively annotated catalogue with approximately 4000 illustrations describes the library formed by computing pioneer Erwin Tomash of over 3000 books and manuscripts on the history of mathematics and computation issued between 1180 and 1955. It is the most comprehensive reference work ever published on the historical literature of computing from its beginnings to the early years of electronic computers.

In his introduction, Tomash writes: "The collection as a whole documents the roots of the history of

computing. Included in its scope are books on all forms of reckoning, including finger reckoning, and on other aids to calculation such as the slide rule and the abacus. . . . I included early aids to measurement (instruments), not to mention the very basis of calculation (arithmetic), planetary calculations (astronomy), volumetric computation (gauging), calendric calculation (computus), land measurement (surveying), position reckoning (navigation), calculations associated with erecting sundials (dialing), and, of course, the slide rule, the sector, and mathematical tables. In this admittedly broad view, the modern computer is the natural outgrowth of the continuing search for better, more accurate 'scientific instruments' and of an associated need for 'aids to calculation' to analyze the date arising from measurements made with these instruments." 40512

On the Fabric of the Human Body—Complete Translation in English

101. **Vesalius, Andreas** (1514-64). On the fabric of the human body. A translation of *De humani corporis fabrica libri septem.* Translated by William Frank Richardson and John Burd Carman. 5 volumes. San Francisco and Novato: Norman Publishing, 1998-2009. Cloth, pictorial dust-jackets. All volumes printed on 80-pound Mohawk Superfine acid-free paper. $275 per volume

Vesalius's *De humani corporis fabrica* (1543) is one of the world's most famous books, and probably the greatest book in the history of anatomy. This award-winning translation by Richardson and Carman is now complete, and available in five volumes:

Vol. I: *Book I, The Bones and Cartilages*

Vol. II: *Book II, The Ligaments and Muscles*

Vol. III: *Book III, The Veins and Arteries; Book IV, The Nerves*

Vol. IV: *Book V, The Organs of Nutrition and Generation*

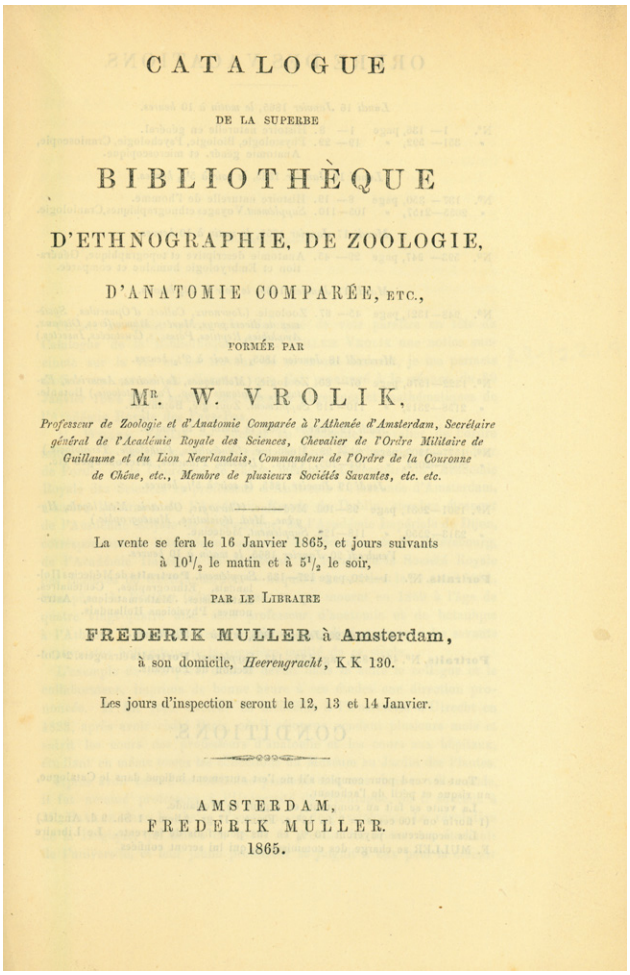
Vol. V: *Book VI, The Heart and Associated Organs; Book VII, The Brain*

All of Vesalius's famous woodcut anatomical illustrations are reproduced, and each volume contains historical introductions and extensive notes. The last volume

concludes with a series of indexes to the fifth volume and the complete set, which will greatly add to the usefulness of the translation. These include Dr. Richardson's translation of Vesalius's original index to the *Fabrica*, which represents Vesalius's outline of key discoveries and ideas in the *Fabrica*, and a set of cumulative indexes to all five volumes of *On the Fabric of the Human Body*.

Important Scientific Library

102. [**Vrolik, Willem** (1801-63).] Catalogue de la superbe bibliothèque d'ethnographie, de zoologie, d'anatomie comparée, etc. . . . 8vo. xii, 105pp. (last page printed on inside back wrapper). Amsterdam: Frederik Muller, 1865. 220 x 151 mm. Modern quarter morocco, marbled boards in period style, original printed wrappers bound in. Wrappers a bit soiled, otherwise very good. Ownership inscription of Dr. G. J. Fisher on front



CATALOGUE

DE LA SUPERBE

BIBLIOTHÈQUE

D'ETHNOGRAPHIE, DE ZOOLOGIE,

D'ANATOMIE COMPARÉE, ETC.,

FORMÉE PAR

Mr. W. VROLIK,

Professeur de Zoologie et d'Anatomie Comparée à l'Athenée d'Amsterdam, Secrétaire général de l'Académie Royale des Sciences, Chevalier de l'Ordre Militaire de Guillaume et du Lion Neerlandais, Commandeur de l'Ordre de la Couronne de Chêne, etc., Membre de plusieurs Sociétés Savantes, etc. etc.

La vente se fera le 16 Janvier 1865, et jours suivants
à $10^1/_2$ le matin et à $5^1/_2$ le soir,

PAR LE LIBRAIRE

FREDERIK MULLER à Amsterdam,

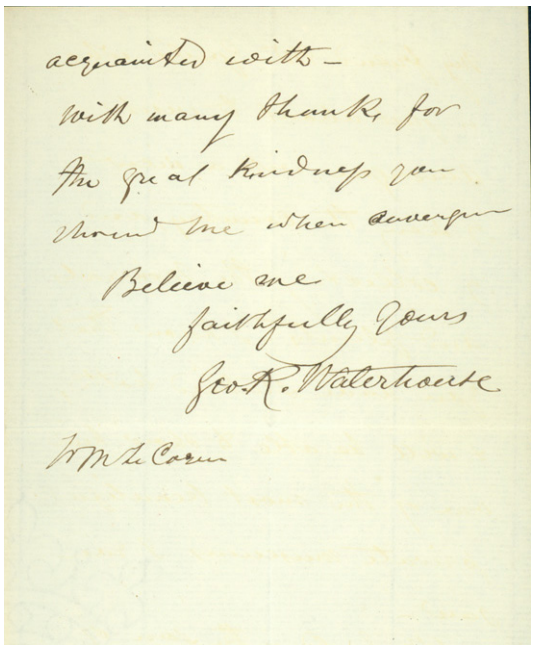
à son domicile, *Heerengracht*, K K 130.

Les jours d'inspection seront le 12, 13 et 14 Janvier.

AMSTERDAM,
FREDERIK MULLER.
1865.

wrapper; a few marginal notes probably his. $1500

First Edition. The Dutch physician Vrolik made significant contributions to comparative anatomy and to pathology, publishing anatomical studies of the chimpanzee, the manatee and other animals, and issuing several works on teratology, embryology and pathological anatomy, including the magnificent folio *Tabulae ad illustrandam embryogenesin hominis et mammalium* (1849). His library, consisting of over 2000 volumes on zoology, comparative anatomy, ethnography and related subjects, was sold at auction two years after his death; it included important works by Cuvier, Gould, Owen, Darwin, Humboldt, etc. An interesting association copy from the library of Dr. G. J. Fisher of Sing Sing, NY, founder of the Brooklyn Academy of Medicine; Dr. Fisher made important contributions to the literature of teratology himself. For Vrolik, see Hirsch. 40838



acquainted with –
with many thanks for
the great kindness you
showed me when amongst
Believe me
faithfully Yours
Geo. R. Waterhouse

W. M. le Conte

From One of the Editors of Darwin's "Zoology of the Voyage of the Beagle"

103. **Waterhouse, George Robert** (1810-88). Autograph letter signed to Henri Lecoq (1802-71). [London] British Museum, August 26, 1852. 2 – 1/2 pages. 183 x 115 mm. Light soiling along folds, but fine otherwise. $1750

From British naturalist George Waterhouse, curator of the Zoological Society of London's museum and compiler of Part II (Mammalia) of Darwin's *Zoology of the Voyage of the Beagle* (1838), to French botanist and geologist Henri Lecoq, professor of botany and mineralogy at the University of Clermont-Ferrand and author of several scientific treatises, including *Principes élémentaires de botanique* (1828) and *Étude de la géographie botanique de l'Europe* (1854). Darwin referred to the latter work, and to Lecoq's views on species modification, in the preface to the third edition of *On the Origin of Species* (1861): "A well-known French botanist, M. Lecoq, writes in 1854 (*Etudes sur géograph. bot.,* tom. I, p. 250), 'On voit que nos recherches sur la fixité ou la variation de l'espèce, nous conduisent directement aux idées émises par deux homes justement célèbres, Geoffroy Saint-Hilaire et Goethe.' Some other passages scattered through M. Lecoq's last work, make it a little doubtful how far he extends his views on the modification of species."

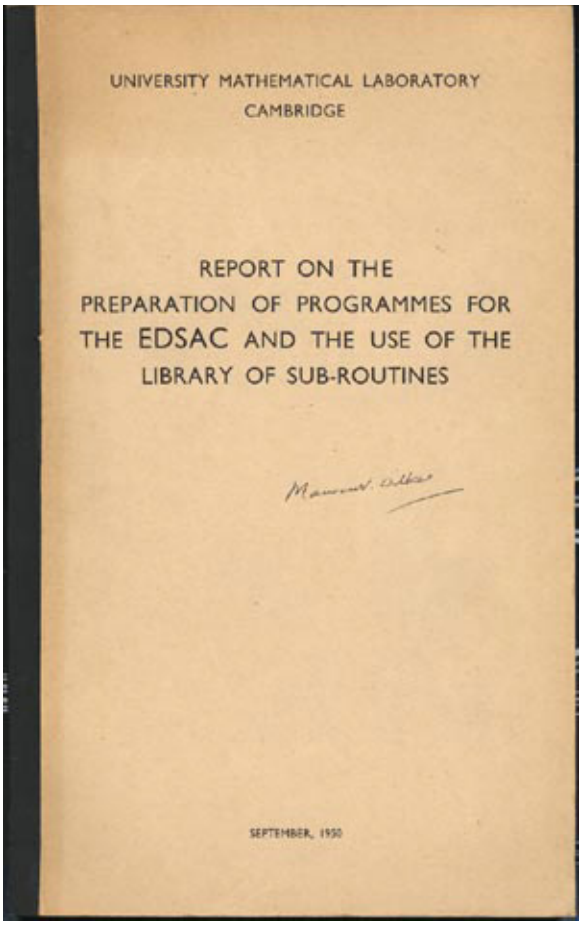
In his letter to Lecoq Waterhouse introduces the young geologist Charles Gould (1834-93), son of the famous ornithologist John Gould (1804-81); like Waterhouse, the elder Gould had also worked on the *Zoology of the Voyage of the Beagle*, preparing Part III (Birds), published between 1838 and 1841. Charles Gould was the first geological surveyor of Tasmania, holding this post from 1859 to 1869. Charles graduated from the University of London in 1853, so he was still a student at the time Waterhouse wrote this letter. The letter reads as follows:

> Some few years back I visited Clermont on my way to Neschers to see M. Croizet, and upon that occasion I received much information from you about Auvergne, and especially about the mineral products of the neighbourhood of Clermont.
>
> May I upon the strength of this short acquaintance venture to introduce to you my friend Mr. Gould who is just about to visit Auvergne with a view of seeing the country, and of collecting the minerals and plants—I know that you have studied both, & will be able to show him one of the most beautiful private museums I ever saw.
>
> Mr. Gould is the son of the great ornithologist of that name whose splendid works you are no doubt acquainted with.

In the second paragraph Waterhouse refers to Lecoq's extensive collections of natural history specimens, which he left to the city of Clermont-Ferrand on his death. These collections provided the foundation of the Muséum Henri Lecoq, the most important natural history museum in the Auvergne region. 40702

First Report on Programming a Stored-Program Computer

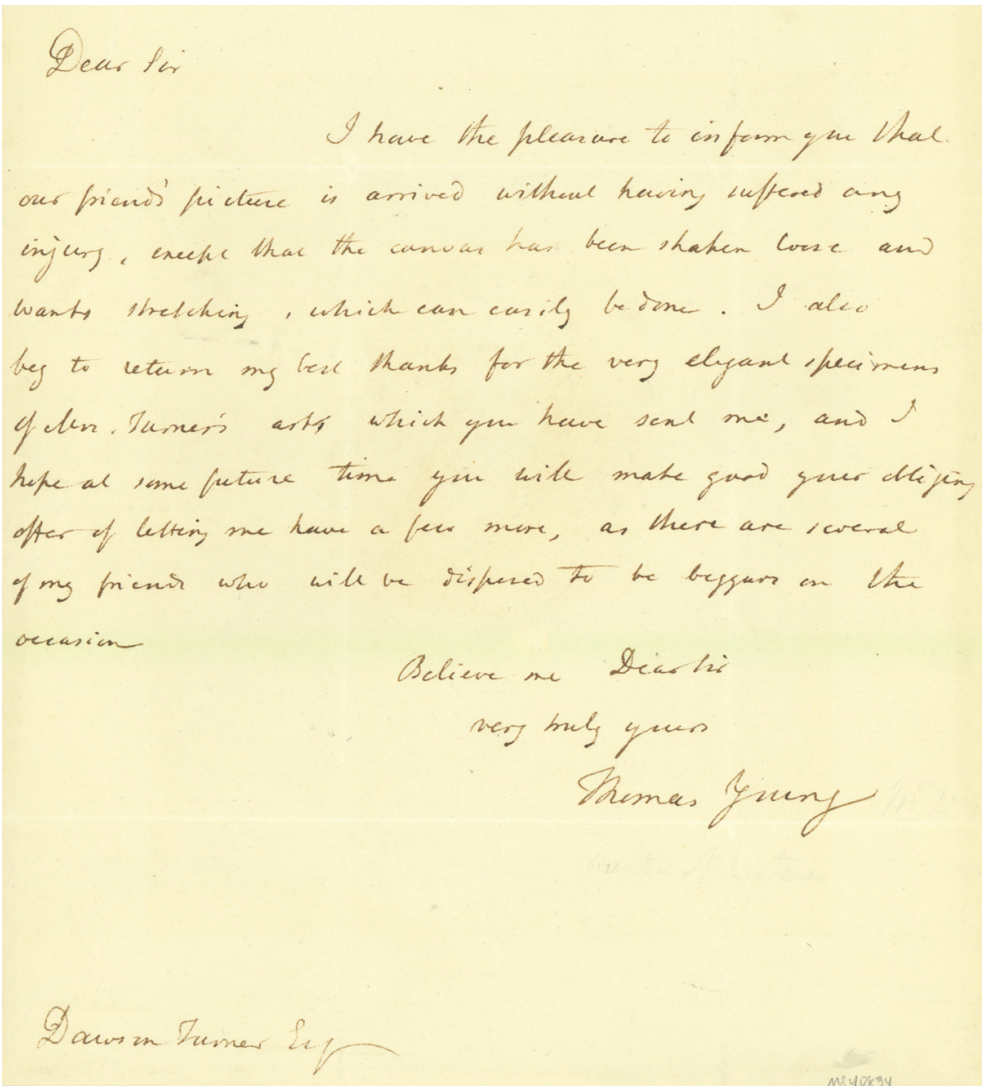
104. **Wilkes, Maurice** (1913-) *et al.* Report on the preparation of programmes for the EDSAC and the use of the library of subroutines. N.p., 1950. Dittoed document in two colors. Original tan printed wrappers, cloth spine. Signed by Wilkes on the front wrapper. Boxed. [3], 40 [2], 26, 39, xi ff. Laid in are a single dittoed errata sheet



and a two-sheet dittoed and stapled document titled "University Mathematical Laboratory, Cambridge. Applications of the EDSAC, to 1st September 1950," describing supplementary material. 323 x 201 mm. Provenance: Andrew D. Booth. Occasional insignificant spotting. $25,000

The first report on how to program an operational stored-program computer. The dittoed report was prepared by Wilkes and a fifteen-man team of researchers at Cambridge's University Mathematical Laboratory, and distributed to no more than one hundred people—"everyone we thought would be interested, both in the United Kingdom and abroad" (Wilkes 1985, 149). The material in this report was published the following year with very few changes in Wilkes, Wheeler, and Gill's *Preparation of Programs for an Electronic Digital Computer* (1951).

When *Origins of Cyberspace* was written this report was not cited in OCLC or NUC, and RLIN noted only the Harvard Library copy. The copy we are offering is from



Dear Sir

I have the pleasure to inform you that our friend's picture is arrived without having suffered any injury, except that the canvas has been shaken loose and wants stretching, which can easily be done. I also beg to return my best thanks for the very elegant specimens of Gen. Turner's arts which you have sent me, and I hope at some future time you will make good your obliging offer of letting me have a few more, as there are several of my friends who will be disposed to be beggars on the occasion

Believe me Dear Sir
very truly yours
Thomas Young

Dawson Turner Esq

the library of computer pioneer Andrew D. Booth, director of the Birkbeck College Computation Laboratory in the 1940s and 1950s. While at Birkbeck College Booth developed several all-purpose digital computers, including the Automatic Relay Calculator (ARC), the Simple Electronic Computer (SEC), the APE(X)C, and the MAC, and also developed large-scale magnetic-drum memory systems for long-term data storage. *Origins of Cyberspace* 1027. 39248

From the Author of the Wave Theory of Light

105. **Young, Thomas** (1773-1829). Autograph letter signed to Dawson Turner (1775-1858). [London] Welbeck Street, 7 December 1819. 1 page. 215 x 180 mm. Mounted. Fine. $1500

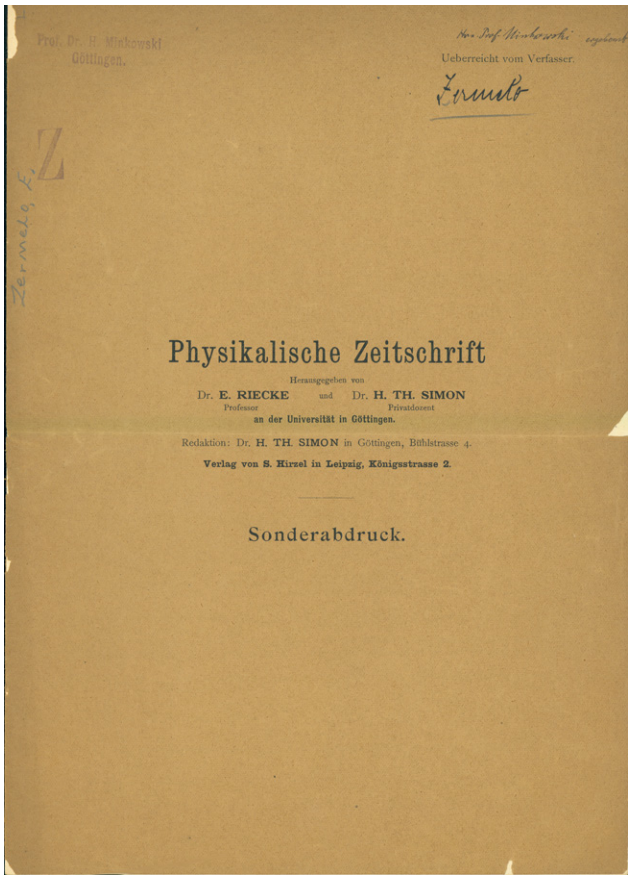
From British scientist Thomas Young, the founder of physiological optics and author of the wave theory of lights (see Garrison-Morton 1486-88, *Printing and the Mind of Man* 259, Dibner 152), to botanist and antiquary Dawson Turner, author of *The Botanist's Guide through England and Wales* (1805), the four-volume illustrated *Fuci, sive, Plantarum fucorum generi a botanicis ascriptarum icones descriptiones et historia* (1808-19), *Account of a Tour in Normandy* (1820), *Guide . . . towards the Verification of Manuscripts by Reference to Engraved Facsimiles* (1848) and several other works. Young's letter reads as follows:

> Dear Sir, I have the pleasure to inform you that our friend's picture is arrived without having suf-

fered any injury, except that the canvas has been shaken loose and wants stretching, which can easily be done. I also beg to return my best thanks for the very elegant specimens of Mrs. Turner's arts which you have sent me, and I hope at some future time you will make good your obliging offer of letting me have a few more, as there are several of my friends who will be disposed to be beggars on the occasion. Believe me Dear Sir very truly yours Thomas Young.

"The very elegant specimens of Mrs. Turner's arts" that Young had received were most likely drawings or prints. Mary Turner was a skilled artist who had studied under both John Crome and John Sell Cotman; together with her equally talented daughters, she produced an enormous number of drawings, paintings, etchings and lithographs, which Turner used both in his own publications and as additional illustrations for the 8000 volumes in his library.

Young wrote this letter from his Welbeck Street address in London, where he had lived and practiced medicine since 1799. Autograph letters from Thomas Young are *rare*—this is the first we have handled in our nearly forty years in business. 40834



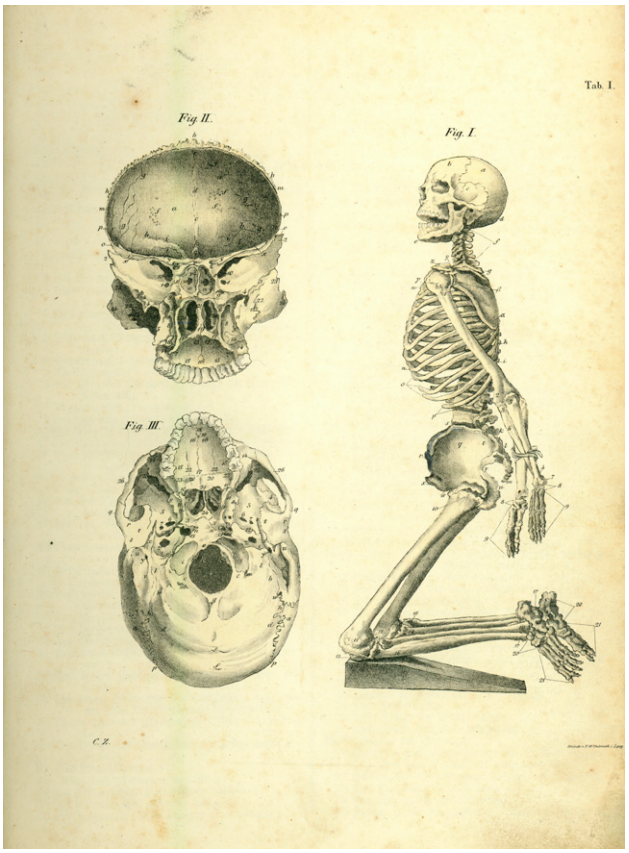
Presented to Minkowski

106. **Zermelo, Ernst** (1871-1953). Über die Anwendung der Wahrscheinlichkeitsrechnung auf dynamische Systeme. Offprint from *Phys. Zeit.* 1 (1900). 4pp. 281 x 200 mm. Original printed wrappers, creased horizontally, a few minor chips. *Inscribed to Hermann Minkowski* (1864-1909) on the front wrapper: "Hrn. Prof. Minkowski ergebenst." Minkowski's ownership stamp on front wrapper. From the library of *Theodore von Karman* (1881-1963), with his characteristic catalogue stamp and docketing. $750

First Separate Edition. Zermelo, like David Hilbert, was a mathematician with a strong interest in physics. In the early part of his career Zermelo wrote several papers on kinetic theory and statistical mechanics, including the present paper on the application of probability theory to dynamic systems; his work in this area led to "a penetrating discussion with Boltzmann on the explanation of irreversible processes" (DSB). He also translated into German two important works in physics, Glazebrook's *Light* (1897) and Gibbs' *Elementary Principles of Statistical Mechanics* (1905). Einstein first learned of Gibbs' work by reading Zermelo's German translation. Zermelo presented this copy of his paper to Hermann Minkowski, originator of the concept of the space-time continuum; it later passed into the library of Theodore von Karman, founder of modern aviation and space travel. (Zermelo and von Karman were at Göttingen together; once, after hearing a talk given by von Karman on applied mathematics, Zermelo told him that "of all the applied idiots I think you are the only one with the possibility of being educated.") DSB. Von Karman, *The Wind and Beyond,* p. 50. 36965

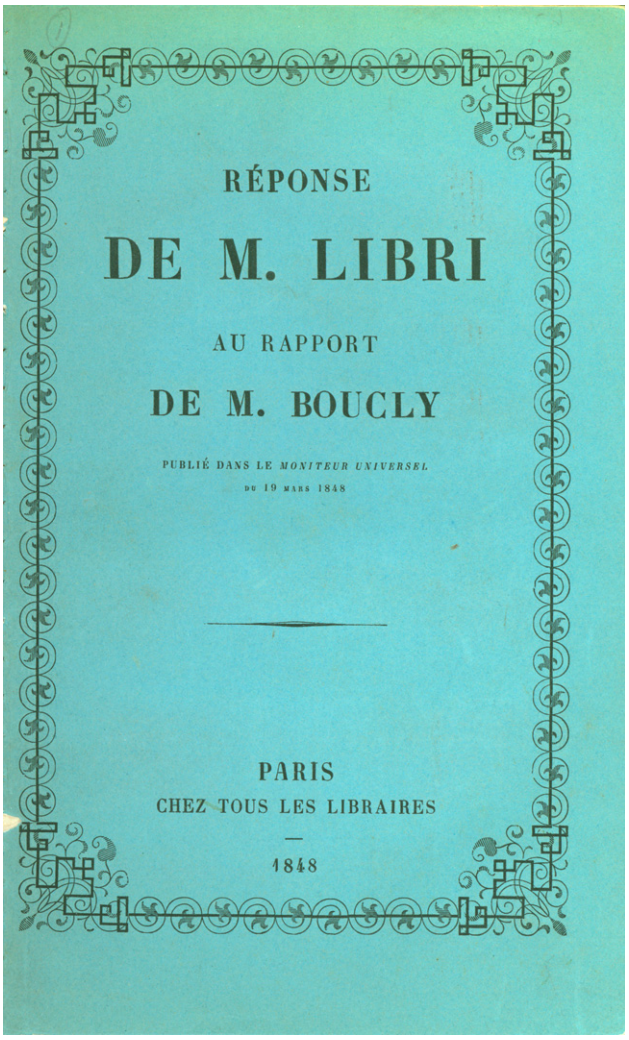
Rare Anatomical Fascicules

107. **Zimmermann, Johann Carl E.** Anatomische Darstellungen zum Privat-Studium. Small



folio. 20 fascicules bound in one volume. Variously paginated. 78 plates, some with hand coloring. Leipzig: Fischer, n.d. [1828-35]. 290 x 200 mm. 19th century half sheep, hinges cracked, light wear. Minor foxing and toning, but very good. 19th century ownership signature ("F. A. Hofmann") on verso of front free endpaper. $2750

First Edition of these anatomical fascicules, published for the benefit of impecunious students to provide them an inexpensive way to gain "a more detailed knowledge of the human body and its parts." *Rare*—OCLC cites only four copies, three of them held outside the United States (the fourth is at the National Library of Medicine). 31818



The Libri Affair: A Collection of Books and Pamphlets on History's Most Notorious Book Thief

108. **Libri, Guglielmo** (1803-69). Collection of 19 books and pamphlets on the "Libri Affair," as described below. V.p., 1848-80. Various sizes. Most items in modern wrappers; see below for detailed condition statements. $7500

Like many of the greatest villains, Count Guglielmo Libri Carucci dalla Sommaja (1803-69), more generally known as Guglielmo Libri, combined brilliance and creativity with deep criminality. An outstanding mathematician, pioneering historian of science, political reformer, paleographer and overall savant, Libri applied his expert knowledge of rare

books and manuscripts to the production of legitimate scholarly works; however, in a time when security was very lax or virtually non-existent in French and Italian libraries, he also used his knowledge to commit book thefts and book crimes on a virtually unimaginable scale. Libri collected a library that may have exceeded 40,000 volumes, many of which he stole from French and Italian institutions. He was also an active antiquarian bookseller who sold primarily at numerous auctions both pseudonymously or under his own name. Nicolas Barker wrote of Libri that "no single person did more to change the face of bibliophily in the nineteenth century."[1]

For his thefts in France Libri was indicted in 1848, eventually convicted in absentia in 1850, and sentenced to ten years in prison, which included hard labor. Before his conviction in France he was able to escape to England, which did not recognize French courts, with much of his enormous library. From London Libri waged his own propaganda and disinformation war, publishing numerous lengthy books and pamphlets in his defense, both in London and Paris. Much of his disinformation consisted of focusing attention on the scandalous or non-existent state of security in French and other European libraries, many of which had not been catalogued for decades or centuries, or had only been very inadequately catalogued. The result of these security lapses, Libri showed, was the wide circulation in the book trade of thousands of books and manuscripts stolen from institutional collections. Another issue that Libri took up was the lack of adequate descriptions of library-owned copies of rare books, which caused institutional copies to be confused with copies circulating in the trade. Of course Libri also cleverly exploited these security lapses while committing his crimes.

Remarkably, most of the pamphlets published throughout the Libri Affair defended Libri, creating an environment so confused and heated with accusations on both sides that Libri was able to go about his business in England with impunity, selling huge numbers of rare books and manuscripts at public auction to some of the greatest collectors in the world. All of the 19 items listed below concern the accusations against him and their defense. They include some of the numerous and very lengthy documents that Libri published in his own defense and writings by his supporters. Even after his conviction his friends in France appealed his case until 1861. Only after Libri's death did the French paleographer Leopold Delisle prove Libri's thefts incontrovertibly. In the 1880s large numbers of books and manuscripts that Libri stole were sold back to the Bibliothèque nationale de France and to the Bibliotheca Medicea Laurenziana in Florence.

In spite of the cloud over title to much of his library, Libri held a series of four famous auction sales at Sotheby's between 1859 and 1864 with catalogue descriptions only he could have written, and his library was widely dispersed. These sales

> ". . . could fairly be said to have changed and enlarged the pattern of book-collecting in the English-speaking world. The first, of no less than 1190 manuscripts, added an important dimension to the Bibliotheca Lindesiana and had a significant impact on the veteran Sir Thomas Phillipps; the last, the 'Reserved Portion', added pre-Columbian gold, the Becket *chasse*, old master drawings and jeweled bindings to the staple of manuscripts. But the objects were less important than the cataloguing, in which the full range of Libri's scholarship and salesmanship, both far ahead of their time, were deployed. These are the monuments by which Libri's extraordinary book-learning should be judged." [2]

The Libri Affair may be the most extensive and long-lasting controversy in the history of book collecting, bookselling, and book theft, involving more people and evidence and more important items stolen than any other. Most of the pamphlets in this collection were issued in small numbers, and are very difficult to obtain.

The collection of 19 items as listed below: $7500.

1. **Libri.** Réponse de M. Libri au rapport de M. Boucly. 115pp. Paris: Chez tous les libraries, 1848. Original printed wrappers (spine lacking). 211 x 167 mm. Traces of stab sewing.
2. **Libri.** Réponse de M. Libri au rapport de M. Boucly. xii, 86, [1, errata]pp. London: Rivington; Barthes & Lowell [etc.], 1848. 214 x 132 mm.

1. [Barker, Nicolas]. "Libri", *The Book Collector* XLVI, no. 1, 9.

2. Barker, *op. cit.*, 22. The primary reference for Libri is Ruji & Mostert, *The Life and Times of Guglielmo Libri (1802-1869),* Hilversum, 1995.

19th cent. paste paper boards, spine a bit faded and worn; original printed wrappers bound in.

3. **Libri.** Lettre a M. de Falloux . . . contenant le récit d'une odieuse persécution et le jugement porté sur cette persécution par les hommes les plus compétents et les plus considérables de l'Europe . . . xvi, 327pp. Paris: Paulin, 1849. 214 x 133 mm. 19th cent. quarter calf, mottled boards. Minor foxing, library stamp on title.
4. **Lacroix, Paul.** Cent et une lettres bibliographiques. [1st series, 3rd livraison]. 73-116pp. 1849. 208 x 134 mm. Modern wrappers.
5. **Brunet, Gustave.** Lettre au bibliophile Jacob au sujet de l'étrange accusation intentée contre M. Libri . . . 32pp. Paris: Paulin, 1849. 211 x 135 mm. Original printed wrappers, stab-sewn.
6. **Jubinal, Achille.** Lettre à M. Paul Lacroix (bibliophile Jacob), member de la Commission des Monuments Historiques . . . 14pp. Paris: Paulin, 1849. 208 x 134 mm. Modern wrappers.
7. **Libri.** Lettre de M. Libri à M. le Président de l'Institute de France. 72pp. London: Barthès & Lowell, 1850. 208 x 134 mm. Modern wrappers.
8. **Libri.** Lettre de M. Libri à M. Barthélemy Saint-Hilaire, administrateur du Collège de France. 31pp. London: Barthès & Lowell, 1850. 208 x 134 mm. Modern wrappers.
9. **Lamporecchi, Ranieri.** Mémoire sur la persécution qu'on fait souffrir en France à M. Libri. Second edition. 82pp. London: Barthes & Lowell, 1850. 208 x 134 mm. Modern wrappers.
10. **Jubinal, Achille.** Une lettre inédit de Montaigne . . . précédée d'un avertissement et suivie de l'indication détaillée d'un grand nombre de soustractions et mutilations qu'a subies depuis un certain nombre d'années des manuscrits de la Bibliothèque Nationale. 116pp. 2 folding plates. Paris: Didron, 1850. 208 x 134 mm. Modern wrappers.
11. **Lepelle de Bois-Gallais, Fr.** Encore une lettre inédite de Montaigne, accompagné d'une lettre à M. Jubinal, relative aux livres imprimés et manuscrits, aux autographes et aux divers fragmens précieux qui ont été soustraits à différentes époques de la Bibliothèque Nationale de Paris, et qui se trouvent en Angleterre. 32pp. Folding plate. London: Barthès & Lowell, 1851. 208 x 134 mm. Modern wrappers.
12. **Jubinal, Achille.** Un nouvel épisode de l'affaire Libri . . . 8pp. Paris: la librairie archéologique de Didron, 1851. 208 x 134 mm. Modern wrappers.
13. **[De Morgan, Augustus.]** The case of M. Libri. Reprinted from "Bentley's Miscellany" for July 1, 1852. 12pp. London: Richard Bentley, 1852. 208 x 134 mm. Modern wrappers.
14. **Celliez, Henry.** Mémoire sur les irrégularités de la procédure criminelle suivie contre M. Libri . . . iv, 92, 16pp. Paris: Ad. R. Lainé & J. Havard, 1861. 208 x 134 mm. Modern wrappers.
15. **Celliez, Henry.** M. Libri n'est pas contumax. [2], 14pp. Paris: Ad. R. Lainé & J. Havard, 1861. 208 x 134 mm. Modern wrappers.
16. Pétition addressée au Sénat sur l'affaire de M. Libri . . . 8pp. Paris: Ch. Lahure, 1861. 208 x 134 mm. Modern wrappers.
17. A petition addressed to the Senate in the case of M. Libri . . . 8pp. London: W. Jeffs, 1861. 208 x 134 mm. Modern wrappers.
18. Catalogue of the magnificent collection of precious manuscripts and objects of art and vertu, of M. Guglielmo Libri . . . which will be sold at auction, by Messrs. Sotheby, Wilkinson, & Hodge . . . on Wednesday, June 1, 1864 . . . [London:] Sotheby, Wilkinson & Hodge, 1864. [4], 44pp. 15 lithograph plates. 234 x 196 mm. Disbound.
19. **Stiattesi, Andrea.** Commentario storico-scientifico sulla vita e le opere del Conte Guglielmo Libri . . . Second edition. [6], 134pp. Florence: G. B. Campolmi, 1880. 212 x 135 mm. Original printed wrappers, stab-sewn, portion of back wrapper lacking.