



HISTORY OF SCIENCE AND TECHNOLOGY

Monday September 21, 2015 at 1pm New York

BONHAMS

580 Madison Avenue New York, New York 10022 bonhams.com

PREVIEW

San Francisco (highlights only)

Friday, September 11, 12pm to 5pm Saturday, September 12, 12pm to 5pm Sunday, September 13, 12pm to 5pm

New York

Friday, September 18, 10am to 5pm Saturday, September 19, 12pm to 5pm Sunday, September 20, 12pm to 5pm Monday, September 21, 10am to 1pm

BIDS

+1 (212) 644 9001 +1 (212) 644 9009 fax

To bid via the internet please visit www.bonhams.com/22964

Please note that telephone bids must be submitted no later than 4pm on the day prior to the auction. New bidders must also provide proof of identity and address when submitting bids. Telephone bidding is only available for lots with a low estimate in excess of \$1000.

Please contact client services with any bidding inquiries.

Please see pages 2 to 6 for bidder information including Conditions of Sale, after-sale collection and shipment.

SALE NUMBER: 22964

Lots 1 - 78

CATALOG: \$35

INQUIRIES

Cassandra Hatton, Director History of Science & Technology +1 (212) 461 6531 cassandra.hatton@bonhams.com Automated Results Service +1 (800) 223 2854

ILLUSTRATIONS

Front cover: Lot 2 Inside front cover: Lot 38 First Session page: Lot 3 Second Session page: Lot 4 Third Session page: Lot 39 Fourth Session page: Lot 48 Fifth Session Page: Lot 77 Inside back cover: Lot 73 Back cover: Lot 46

CONDITIONS OF SALE

The following Conditions of Sale, as amended by any published or posted notices or verbal announcements during the sale, constitute the entire terms and conditions on which property listed in the catalog shall be offered for sale or sold by Bonhams & Butterfields Auctioneers Corp. and any consignor of such property for whom we act as agent. If live online bidding is available for the subject auction, additional terms and conditions of sale relating to online bidding will apply; see www.bonhams.com/WebTerms for the supplemental terms. As used herein, "Bonhams," "we" and "us" refer to Bonhams & Butterfields Auctioneers Corp.

- 1. As used herein, the term "bid price" means the price at which a lot is successfully knocked down to the purchaser. The term "purchase price" means the aggregate of (a) the bid price, (b) a PREMIUM retained by us and payable by the purchaser EQUAL TO 25% OF THE FIRST \$100,000 OF THE BID PRICE, 20% OF THE AMOUNT OF THE BID PRICE ABOVE \$100,000 UP TO AND INCLUDING \$2,000,000, AND 12% OF THE AMOUNT OF THE BID PRICE OVER \$2,000,000, and (c) unless the purchaser is exempt by law from the payment thereof, any California, Arizona, Colorado, Connecticut, Florida, Georgia, Illinois, Massachusetts, Nevada, New York, Pennsylvania, Texas, Washington, D.C., Washington state, or other state or local sales tax (or compensating use tax) and other applicable taxes.
- 2. On the fall of the auctioneer's hammer, the highest bidder shall have purchased the offered lot in accordance and subject to compliance with all of the conditions set forth herein and (a) assumes full risk and responsibility therefor, (b) if requested will sign a confirmation of purchase, and (c) will pay the purchase price in full or such part as we may require for all lots purchased. No lot may be transferred. Any person placing a bid as agent on behalf of another (whether or not such person has disclosed that fact or the identity of the principal) may be jointly and severally liable with the principal under any contract resulting from the acceptance of a bid.

Unless otherwise agreed, payment in good funds is due and payable within five (5) business days following the auction sale. Whenever the purchaser pays only a part of the total purchase price for one or more lots purchased, we may apply such payments, in our sole discretion, to the lot or lots we choose. Payment will not be deemed made in full until we have collected good funds for all amounts due.

Payment for purchases may be made in or by (a) cash, (b) cashier's check or money order, (c) personal check with approved credit drawn on a U.S. bank, (d) wire transfer or other immediate bank transfer, or (e) Visa, MasterCard, American Express or Discover credit, charge or debit card. A processing fee will be assessed on any returned checks. Please note that the amount of cash notes and cash equivalents that can be accepted from a given purchaser may be limited.

The purchaser grants us a security interest in the property, and we may retain as collateral security for the purchaser's obligations to us, any property and all monies held or received by us for the account of the purchaser, in our possession. We retain all rights of a secured party under the California Commercial Code. If the foregoing conditions or any other applicable conditions herein are not complied with, in addition to other remedies available to us and the consignor by law, including without limitation, the right to hold the purchaser liable for the purchase price, we at our option may either (a) cancel the sale, retaining as liquidated damages all payments made by the purchaser or (b) resell the property, either publicly or privately, and in such event the purchaser shall be liable for

- the payment of any deficiency plus all costs and expenses of both sales, our commission at our standard rates, all other charges due hereunder, attorneys' fees, expenses and incidental damages. In addition, where two or more amounts are owed in respect of different transactions by the purchaser to us, to Bonhams 1793 Limited and/or to any of our other affiliates, subsidiaries or parent companies worldwide within the Bonhams Group, we reserve the right to apply any monies paid in respect of a transaction to discharge any amount owed by the purchaser. If all fees, commissions, premiums, bid price and other sums due to us from the purchaser are not paid promptly as provided in these Conditions of Sale, we reserve the right to impose a finance charge equal to 1.5% per month on all amounts due to us beginning on the 31st day following the sale until payment is received, in addition to other remedies available to us by law.
- 3. We reserve the right to withdraw any property and to divide and combine lots at any time before such property's auction. Unless otherwise announced by the auctioneer at the time of sale, all bids are per lot as numbered in the catalog and no lots shall be divided or combined for sale.
- 4. We reserve the right to reject a bid from any bidder, to split any bidding increment, and to advance the bidding in any manner the auctioneer may decide. In the event of any dispute between bidders, or in the event the auctioneer doubts the validity of any bid, the auctioneer shall have sole and final discretion either to determine the successful bidder or to re-offer and resell the article in dispute. If any dispute arises after the sale, our sales records shall be conclusive in all respects.
- 5. If we are prevented by fire, theft or any other reason whatsoever from delivering any property to the purchaser or a sale otherwise cannot be completed, our liability shall be limited to the sum actually paid therefor by the purchaser and shall in no event include any compensatory, incidental or consequential damages.
- 6. If a lot is offered subject to a reserve, we may implement such reserve by bidding on behalf of the consignor, whether by opening bidding or continuing bidding in response to other bidders until reaching the reserve. If we have an interest in an offered lot and the proceeds therefrom other than our commissions, we may bid therefor to protect such interest. CONSIGNORS ARE NOT ALLOWED TO BID ON THEIR OWN ITEMS.
- 7. All statements contained in the catalog or in any bill of sale, condition report, invoice or elsewhere as to authorship, period, culture, source, origin, measurement, quality, rarity, provenance, importance, exhibition and literature of historical relevance, or physical condition ARE QUALIFIED STATEMENTS OF OPINION AND NOT REPRESENTATIONS OR WARRANTIES. No employee or agent of Bonhams is authorized to make on our behalf or on that of the consignor any representation or warranty, oral or written, with respect to any property.
- 8. All purchased property shall be removed from the premises at which the sale is conducted by the date(s) and time(s) set forth in the "Buyer's Guide" portion of the catalog. If not so removed, daily storage fees will be payable to us by the purchaser as set forth therein. We reserve the right to transfer property not so removed to an offsite warehouse at the purchaser's risk and expense, as set forth in more detail in the "Buyer's Guide." Accounts must be settled in full before property will be released. Packing and handling of purchased lots are the responsibility of the purchaser. Bonhams can provide packing and shipping services for certain items as noted in the "Buyer's Guide" section of the catalog.

- 9. The copyright in the text of the catalog and the photographs, digital images and illustrations of lots in the catalog belong to Bonhams or its licensors. You will not reproduce or permit anyone else to reproduce such text, photographs, digital images or illustrations without our prior written consent.
- 10. These Conditions of Sale shall bind the successors and assigns of all bidders and purchasers and inure to the benefit of our successors and assigns. No waiver, amendment or modification of the terms hereof (other than posted notices or oral announcements during the sale) shall bind us unless specifically stated in writing and signed by us. If any part of these Conditions of Sale is for any reason invalid or unenforceable, the rest shall remain valid and enforceable.
- 11. These Conditions of Sale and the purchaser's and our respective rights and obligations hereunder are governed by the laws of the State of California. By bidding at an auction, each purchaser and bidder agrees to be bound by these Conditions of Sale. Any dispute, controversy or claim arising out of or relating to this agreement, or the breach, termination or validity thereof, brought by or against Bonhams (but not including claims brought against the consignor by the purchaser of lots consigned hereunder) shall be resolved by the procedures set forth below.

MEDIATION AND ARBITRATION PROCEDURES

- (a) Within 30 days of written notice that there is a dispute, the parties or their authorized and empowered representatives shall meet by telephone and/or in person to mediate their differences. If the parties agree, a mutually acceptable mediator shall be selected and the parties will equally share such mediator's fees. The mediator shall be a retired judge or an attorney familiar with commercial law and trained in or qualified by experience in handling mediations. Any communications made during the mediation process shall not be admissible in any subsequent arbitration, mediation or judicial proceeding. All proceedings and any resolutions thereof shall be confidential, and the terms governing arbitration set forth in paragraph (c) below shall govern.
- (b) If mediation does not resolve all disputes between the parties, or in any event no longer than 60 days after receipt of the written notice of dispute referred to above, the parties shall submit the dispute for binding arbitration before a single neutral arbitrator. Such arbitrator shall be a retired judge or an attorney familiar with commercial law and trained in or qualified by experience in handling arbitrations. Such arbitrator shall make all appropriate disclosures required by law. The arbitrator shall be drawn from a panel of a national arbitration service agreed to by the parties, and shall be selected as follows: (i) If the national arbitration service has specific rules or procedures, those rules or procedures shall be followed; (ii) If the national arbitration service does not have rules or procedures for the selection of an arbitrator, the arbitrator shall be an individual jointly agreed to by the parties. If the parties cannot agree on a national arbitration service, the arbitration shall be conducted by the American Arbitration Association, and the arbitrator shall be selected in accordance with the Rules of the American Arbitration Association. The arbitrator's award shall be in writing and shall set forth findings of fact and legal conclusions.
- (c) Unless otherwise agreed to by the parties or provided by the published rules of the national arbitration service:
- (i) the arbitration shall occur within 60 days following the selection of the arbitrator;

CONDITIONS OF SALE - CONTINUED

(ii) the arbitration shall be conducted in the designated location, as follows: (A) in any case in which the subject auction by Bonhams took place or was scheduled to take place in the State of New York or Connecticut or the Commonwealth of Massachusetts, the arbitration shall take place in New York City, New York; (B) in all other cases, the arbitration shall take place in the city of San Francisco, California; and

- (iii) discovery and the procedure for the arbitration shall be as follows:
- (A) All arbitration proceedings shall be confidential;
- (B) The parties shall submit written briefs to the arbitrator no later than 15 days before the arbitration commences;
- (C) Discovery, if any, shall be limited as follows: (I) Requests for no more than 10 categories of documents, to be provided to the requesting party within 14 days of written request therefor; (II) No more than two (2) depositions per party, provided however, the deposition(s) are to be completed within one (1) day; (III) Compliance with the above shall be enforced by the arbitrator in accordance with California law:
- (D) Each party shall have no longer than eight (8) hours to present its position. The entire hearing before the arbitrator shall not take longer than three (3) consecutive days;
- (E) The award shall be made in writing no more than 30 days following the end of the proceeding. Judgment upon the award rendered by the arbitrator may be entered by any court having jurisdiction thereof.

To the fullest extent permitted by law, and except as required by applicable arbitration rules, each party shall bear its own attorneys' fees and costs in connection with the proceedings and shall share equally the fees and expenses of the arbitrator.

LIMITED RIGHT OF RESCISSION

If within one (1) year from the date of sale, the original purchaser (a) gives written notice to us alleging that the identification of Authorship (as defined below) of such lot as set forth in the BOLD TYPE heading of the catalog description of such lot (as amended by any saleroom notices or verbal announcements during the sale) is not substantially correct based on a fair reading of the catalog (including the terms of any glossary contained therein), and (b) within 10 days after such notice returns the lot to us in the same condition as at the time of sale, and (c) establishes the allegation in the notice to our satisfaction (including by providing one or more written opinions by recognized experts in the field, as we may reasonably require), then the sale of such lot will be rescinded and, unless we have already paid to the consignor monies owed him in connection with the sale, the original purchase price will be refunded.

If, prior to receiving such notice from the original purchaser alleging such defect, we have paid the consignor monies owed him in connection with the sale, we shall pay the original purchaser the amount of our commissions, any other sale proceeds to which we are entitled and applicable taxes received from the purchaser on the sale and make demand on the consignor to pay the balance of the original purchase price to the original purchaser. Should the consignor fail to pay such amount promptly, we may disclose the identity of the consignor and assign to the original purchaser our rights against the consignor with respect to the lot the sale of which is sought to be rescinded. Upon such disclosure and assignment, any liability of Bonhams as consignor's agent with respect to said lot shall automatically terminate.

The foregoing limited right of rescission is available to the original purchaser only and may not be assigned to or relied upon by any subsequent transferee of the property sold. The purchaser hereby accepts the benefit of the consignor's warranty of title and other representations and warranties made by the consignor for the purchaser's benefit. Nothing in this section shall be construed as an admission by us of any representation of fact, express or implied, obligation or responsibility with respect to any lot. THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY AGAINST BONHAMS FOR ANY

REASON WHATSOEVER IS THE LIMITED RIGHT OF RESCISSION DESCRIBED IN THIS SECTION.

"Authorship" means only the identity of the creator, the

period, culture and source or origin of the lot, as the case may be, as set forth in the BOLD TYPE heading of the print catalog entry. The right of rescission does not extend to: (a) works of art executed before 1870 (unless these works are determined to be counterfeits created since 1870), as this is a matter of current scholarly opinion which can change; (b) titles, descriptions, or other identification of offered lots, which information normally appears in lower case type below the BOLD TYPE heading identifying the Authorship; (c) Authorship of any lot where it was specifically mentioned that there exists a conflict of specialist or scholarly opinion regarding the Authorship of the lot at the time of sale; (d) Authorship of any lot which as of the date of sale was in accordance with the then generally-accepted opinion of scholars and specialists regarding the same; or (e) the identification of periods or dates of creation in catalog descriptions which may be proven inaccurate by means of scientific processes that are not generally accepted for use until after publication of the catalog in which the property is offered or that were unreasonably expensive or impractical to use at the time of such publication.

LIMITATION OF LIABILITY

EXCEPT AS EXPRESSLY PROVIDED ABOVE. ALL PROPERTY IS SOLD "AS IS." NEITHER BONHAMS NOR THE CONSIGNOR MAKES ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, AS TO THE MERCHANTABILITY, FITNESS OR CONDITION OF THE PROPERTY OR AS TO THE CORRECTNESS OF DESCRIPTION, GENUINENESS, ATTRIBUTION, PROVENANCE OR PERIOD OF THE PROPERTY OR AS TO WHETHER THE PURCHASER ACQUIRES ANY COPYRIGHTS OR OTHER INTELLECTUAL PROPERTY RIGHTS IN LOTS SOLD OR AS TO WHETHER A WORK OF ART IS SUBJECT TO THE ARTIST'S MORAL RIGHTS OR OTHER RESIDUAL RIGHTS OF THE ARTIST. THE PURCHASER EXPRESSLY ACKNOWLEDGES AND AGREES THAT IN NO EVENT SHALL BONHAMS BE LIABLE FOR ANY DAMAGES INCLUDING, WITHOUT LIMITATION, ANY COMPENSATORY, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

SELLER'S GUIDE

SELLING AT AUCTION

Bonhams can help you every step of the way when you are ready to sell art, antiques and collectible items at auction. Our regional offices and representatives throughout the US are available to service all your needs. Should you have any further questions, please visit our website at **www.bonhams.com/us** for more information or call our Client Services Department at +1 (800) 223 2854 ext. 23550.

AUCTION ESTIMATES

The first step in the auction process is to determine the auction value of your property. Bonhams' world-renowned specialists will evaluate your special items at no charge and in complete confidence. You can obtain an auction estimate in many ways:

- Attend one of our Auction Appraisal Events held regularly at our galleries and in other major metropolitan areas. The updated schedule for Bonhams Auction Appraisal Events is available at www.bonhams.com/us.
- Call our Client Services Department to schedule a private appointment at one of our galleries. If you have a large collection, our specialists can travel, by appointment, to evaluate your property on site.
- Send clear photographs to us of each individual item, including item dimensions and other pertinent information with each picture.
 Photos should be sent to Bonhams' address in envelopes marked

as "photo auction estimate". Alternatively, you can submit your request using our online form at **www.bonhams.com/us**. Digital images may be attached to the form. Please limit your images to no more than five (5) per item.

CONSIGNING YOUR PROPERTY

After you receive an estimate, you may consign your property to us for sale in the next appropriate auction. Our staff assists you throughout the process, arranging transportation of your items to our galleries (at the consignor's expense), providing a detailed inventory of your consignment, and reporting the prices realized for each lot. We provide secure storage for your property in our warehouses and all items are insured throughout the auction process. You will receive payment for your property approximately 35 days after completion of sale.

Sales commissions vary with the potential auction value of the property and the particular auction in which the property is offered. Please call us for commission rates.

PROFESSIONAL APPRAISAL SERVICES

Bonhams' specialists conduct insurance and fair market value appraisals for private collectors, corporations, museums, fiduciaries and government entities on a daily basis. Insurance appraisals, used for insurance purposes, reflect the cost of replacing property in today's retail market. Fair market value appraisals are used for estate,

tax and family division purposes and reflect prices paid by a willing buyer to a willing seller.

When we conduct a private appraisal, our specialists will prepare a thorough inventory listing of all your appraised property by category. Valuations, complete descriptions and locations of items are included in the documentation.

Appraisal fees vary according to the nature of the collection, the amount of work involved, the travel distance, and whether the property is subsequently consigned for auction.

Our appraisers are available to help you anywhere and at any time. Please call our Client Services Department to schedule an appraisal.

ESTATE SERVICES

Since 1865, Bonhams has been serving the needs of fiduciaries – lawyers, trust officers, accountants and executors – in the disposition of large and small estates. Our services are specially designed to aid in the efficient appraisal and disposition of fine art, antiques, jewelry, and collectibles. We offer a full range of estate services, ranging from flexible financial terms to tailored accounting for heirs and their agents to world-class marketing and sales support.

For more information or to obtain a detailed Trust and Estates package, please visit our website at **www.bonhams.com/us** or contact our Client Services Department.

BUYER'S GUIDE

BIDDING & BUYING AT AUCTION

Whether you are an experienced bidder or an enthusiastic novice, auctions provide a stimulating atmosphere unlike any other. Bonhams previews and sales are free and open to the public. As you will find in these directions, bidding and buying at auction is easy and exciting. Should you have any further questions, please visit our website at **www.bonhams.com** or call our Client Services Department at +1 (800) 223 2854 ext. 3550.

Catalogs

Before each auction we publish illustrated catalogs. Our catalogs provide descriptions and estimated values for each "lot." A lot may refer to a single item or to a group of items auctioned together. The catalogs also include the dates and the times for the previews and auctions. We offer our catalogs by subscription or by single copy. For information on subscribing to our catalogs, you may refer to the subscription form in this catalog, call our Client Services Department, or visit our website at www.bonhams.com/us.

Previews

Auction previews are your chance to inspect each lot prior to the auction. We encourage you to look closely and examine each object on which you may want to bid so that you will know as much as possible about it. Except as expressly set forth in the Conditions of Sale, items are sold "as is" and with all faults; illustrations in our catalogs, website and other materials are provided for identification only. At the previews, our staff is always available to answer your questions and guide you through the auction process. Condition reports may be available upon request.

Estimates

Bonhams catalogs include low and high value estimates for each lot, exclusive of the buyer's premium and tax. The estimates are provided as an approximate guide to current market value based primarily on previous auction results for comparable pieces, and should not be interpreted as a representation or prediction of actual selling prices. They are determined well in advance of a sale and are subject to revision. Please contact us should you have any questions about value estimates.

Reserves

Unless indicated by the \square symbol next to the lot number, which denotes no reserve, all lots in the catalog are subject to a reserve. The reserve is the minimum auction price that the consignor is willing to accept for a lot. This amount is confidential and does not exceed the low estimate value.

Auction House's Interest in Property Offered at Auction

On occasion, Bonhams may offer a lot in which it has an ownership interest, in whole or in part. Such property, if any, is identified in the catalog with a **A** symbol next to the lot number.

Similarly, Bonhams may have an economic interest in a lot beyond its commission as a result of making an advance against anticipated proceeds to the consignor which is secured by the consigned property or where it has guaranteed the consignor a minimum auction price for consigned property. Such property, if any, is identified in the catalog with a o symbol next to the lot number.

Bidding at Auction

At Bonhams, you can bid in many ways: in person, via absentee bid, over the phone, or via Bonhams' live online bidding facility. Absentee bids can be submitted in person, online, via fax or via email.

Valid Bonhams client accounts are required to participate in bidding activity. You can obtain registration information online, at the reception desk or by calling our Client Services Department.

By bidding at auction, whether in person or by agent, by absentee bid, telephone, online or other means, the buyer or bidder agrees to be bound by the Conditions of Sale.

Lots are auctioned in consecutive numerical order as they appear in the catalog. Bidding normally begins below the low estimate. The auctioneer will accept bids from interested parties present in the saleroom, from telephone bidders, and from absentee bidders who have left written bids in advance of the sale. The auctioneer may also execute bids on behalf of the consignor by placing responsive or consecutive bids for a lot up to the amount of the reserve, but never above it.

We assume no responsibility for failure to execute bids for any reason whatsoever.

In Person

If you are planning to bid at auction for the first time, you will need to register at the reception desk in order to receive a numbered bid card. To place a bid, hold up your card so that the auctioneer can clearly see it. Decide on the maximum auction price that you wish to pay, exclusive of buyer's premium and tax, and continue bidding until your bid prevails or you reach your limit. If you are the successful bidder on a lot, the auctioneer will acknowledge your paddle number and bid amount.

Absentee Bids

As a service to those wishing to place bids, we may at our discretion accept bids without charge in advance of auction online or in writing on bidding forms available from us. "Buy" bids will not be accepted; all bids must state the highest bid price the bidder is willing to pay. Our auction staff will try to bid just as you would, with the goal of obtaining the item at the lowest bid price possible. In the event identical bids are submitted, the earliest bid submitted will take precedence. Absentee bids shall be executed in competition with other absentee bids, any applicable reserve, and bids from other auction participants. A friend or agent may place bids on your behalf, provided that we have received your written authorization prior to the sale. Absentee bid forms are available in our catalogs, online at www.bonhams.com/ us, at offsite auction locations, and at our San Francisco, Los Angeles and New York galleries.

By Telephone

Under special circumstances, we can arrange for you to bid by telephone. To arrange for a telephone bid, please contact our Client Services Department a minimum of 24 hours prior to the sale.

Online

We offer live online bidding for most auctions and accept absentee bids online for all our auctions. Please visit **www.bonhams.com/us** for details.

Bid Increments

Bonhams generally uses the following increment multiples as bidding progresses:

\$50-200	by \$10s
\$200-500	by \$20/50/80s
\$500-1,000	by \$50s
\$1,000-2,000	by \$100s
\$2,000-5,000	by \$200/500/800s
\$5,000-10,000	by \$500s
\$10,000-20,000	by \$1,000s
\$20,000-50,000	by \$2,000/5,000/8,000s
\$50,000-100,000	by \$5,000s
\$100,000-200,000	by \$10,000s
above \$200,000	at auctioneer's discretion

The auctioneer may split or reject any bid at any time at his or her discretion as outlined in the Conditions of Sale.

Currency Converter

Solely for the convenience of bidders, a currency converter may be provided at Bonhams' auctions. The rates quoted for conversion of other currencies to U.S. Dollars are indications only and should not be relied upon by a bidder, and neither Bonhams nor its agents shall be responsible for any errors or omissions in the operation or accuracy of the currency converter.

Buyer's Premium

A buyer's premium is added to the winning bid price of each individual lot purchased, at the rates set forth in the Conditions of Sale. The winning bid price plus the premium constitute the purchase price for the lot. Applicable sales taxes are computed based on this figure, and the total becomes your final purchase price.

Unless specifically illustrated and noted, fine art frames are not included in the estimate or purchase price. Bonhams accepts no liability for damage or loss to frames during storage or shipment.

All sales are final and subject to the Conditions of Sale found in our catalogs, on our website, and available at the reception desk.

Payment

All buyers are asked to pay and pick up by 3pm on the business day following the auction. Payment may be made to Bonhams by cash, checks drawn on a U.S. bank, money order, wire transfer, or by Visa, MasterCard, American Express or Discover credit or charge card or debit card. All items must be paid for within 5 business days of the sale. Please note that payment by personal or business check may result in property not being released until purchase funds clear our bank. For payments sent by mail, please remit to Cashier Department, 220 San Bruno Avenue. San Francisco, CA 94103.

Sales Tax

California, Arizona, Colorado, Connecticut, Florida, Georgia, Illinois, Nevada, New York, Massachusetts, Pennsylvania, Texas, Washington state and Washington DC residents must pay applicable sales tax. Other state or local taxes (or compensating use taxes) may apply. Sales tax will be automatically added to the invoice unless a valid resale number has been furnished or the property is shipped via common carrier to destinations outside the states listed above.

Shipping & Removal

Bonhams can accommodate shipping for certain items. Please contact our Cashiers Department for more information or to obtain a quote. Carriers are not permitted to deliver to PO boxes.

International buyers are responsible for all import/export customs duties and taxes. An invoice stating the actual purchase price will accompany all international purchases.

Collection of Purchases

Please arrange for the packing and transport of your purchases prior to collection at our office. If you are sending a third party shipper, please request a release form from us and return it to +1 (212) 644 9009 prior to your scheduled pickup. To schedule collection of purchases, please call +1 (212) 644 9001.

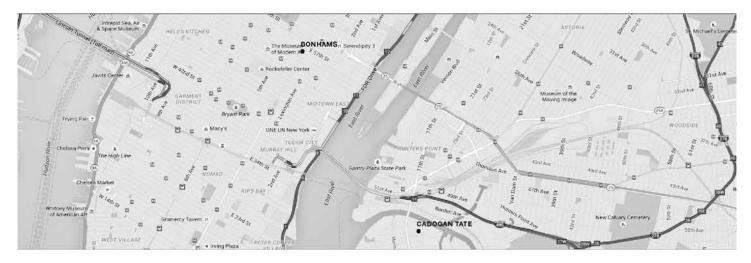
Handling and Storage Charges

Please note that our offices have requirements for freight elevator usage. Please contact us to schedule an elevator appointment for pickup of any large or awkward items. Bonhams will hold all purchased lots in our gallery until Monday October 5 without penalty. After October 5 collection of lots will be by appointment only. Please call +1 (212) 644 9001 at least 24 hours in advance to make an appointment.

Storage charges of \$5 per lot, per day will begin accruing for any lots not collected by the 31st day after the auction. Bonhams reserves the right to remove uncollected sold lots to the warehouse of our choice at the buyer's risk and expense. Handling and storage fees will apply.

Auction Results

To find out the final purchase price for any lot following the sale, please call our automated auction results line at +1 (800) 223 2854 ext. 3400. All you need is a touch-tone telephone and the lot number. Auction results are usually available on the next business day following the sale or online at www.bonhams.com/us.



IMPORTANT NOTICE TO BUYERS

COLLECTION & STORAGE AFTER SALE

Please note that all oversized lots listed below, that are not collected by **5PM ON MONDAY, OCTOBER 5** will be removed to the warehouse of Cadogan Tate Fine Art Storage Limited. Lots not so listed will remain at Bonhams; provided, however,

THAT IF BUYERS OF LISTED LOTS ALSO BUY OTHER NON-LISTED ITEMS, THESE OTHER LOTS WILL ALSO BE REMOVED TO THE WAREHOUSE OF CADOGAN TATE, SO

that all lots remain together and buyers can collect their entire purchases from one location. For any questions please refer to the Bonhams department.

LOTS WILL BE AVAILABLE FOR COLLECTION FROM CADOGAN TATE BEGINNING AT 9.30AM ET ON WEDNESDAY, SEPTEMBER 23.

Address

Cadogan Tate 301 Norman Ave Brooklyn, NY 11222

Lots will be available for collection 24hrs following transfer to Cadogan Tate every business day from 9.30am to 4.30pm ET.

Collections appointments must be booked 24 hours in advance (subject to full payment of all outstanding amounts due to Bonhams and Cadogan Tate) by contacting Cadogan Tate at (t) +1 (718) 707 2849.

HANDLING & STORAGE CHARGES

Please note: For sold lots removed to Cadogan Tate there will be transfer and insurance charges but no storage charge due for lots collected within 7 days of the transfer date. For sold lots that remain at Bonhams, there will be no storage charge for lots collected within 21 days of the sale date.

The per-lot charges levied by Cadogan Tate Fine Art Storage Ltd are as follows (plus any applicable sales tax):

FURNITURE/LARGE OBJECTS

Transfer \$75	
Daily storage \$10	
Insurance (on Hammer + Premium + tax) 0	.3%

SMALL OBJECTS

Please contact Catherine More at Cadogan Tate Fine Art Storage at

- +1 (917) 464 4346
- +1 (347) 468 9916 (fax)
- c.more@cadogantatefineart.com

For more information and estimates on domestic and International shipping, please contact Catherine More at

+1 (917) 464 4346 or

c.more@cadogantatefineart.com

PAYMENT

All amounts due to Bonhams and all charges due to Cadogan Tate Fine Art Storage Ltd must be paid by the time of collection of the property from their warehouse.

TO MAKE PAYMENT IN ADVANCE

Telephone +1 (718) 707 2849 to ascertain the amount due, payable by cash, check, or credit card.

PAYMENT AT TIME OF COLLECTION

May be made by cash, check, or credit card.

Lots will only be released from Cadogan Tate's warehouse upon production of the "Collection Slip" obtained from the Cashier's office at Bonhams.

The removal and/or storage by Cadogan Tate of any lots will be subject to their standard Conditions of Business, copies of which are available at Bonhams.

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OVERSIZED LOTS

FOREWORD

We are very pleased to present Bonhams' second annual History of Science sale, which includes books, manuscripts, photographs, scientific & technological instruments and more.

The sale opens with a section on Astronomy & Navigation, with beautiful examples of both books and scientific instruments, including an extremely rare and beautiful George III Mahogany and Engraved Brass Orrery (lot 3). A geared model of the earth-moon system, and the planets Venus and Mars revolving around a central brass sun, it is signed "Made by Ed. Beavess, London, 1760" and is one of only a handful of such instruments, almost all of which are in science museums. A video explaining the history of this lot can be seen on our website at www.bonhams. com/auctions/22964/lot/3. This section also includes one of only two know hand-colored copies of Lubienecki's encyclopedic treatise on comets, the Theatri Cometici (lot 4), and a lovely copy of the preferred second edition of the first accurate star atlas, our cover lot, Bayer's Uranometria (lot 2). Amongst the other exceptional items in this section are a variety of rare early navigational instruments from the collection of Dr. Thomas Schoborg, including a fine Boxwood Nocturnal with a rare star volvelle (lot 5).

Our section on Medicine & Biology contains some truly outstanding items, and we are very proud to offer the 1934 Nobel Prize medal in Medicine or Physiology awarded to George Minot for his pioneering work on pernicious anemia (lot 46). Minot, along with William P. Murphy and George Hoyt Whipple, developed the effective treatment for this disease, which was lethal in almost all cases - their work saved countless lives. The Medal is offered with Minot's original Nobel diploma, the radiogram announcing the award, the official letter from the committee, as well as several other related items. A video explaining the history of this lot can be seen on our website at http://www. bonhams.com/video/19794/. Another exceptional item in this section is a very rare and important letter from the great naturalist and founder of the theory of evolution, Charles Darwin (lot 39). In this letter, marked "Private," Darwin clearly states that he neither believes in the Bible as a divine revelation nor in Jesus Christ as the son of

God. The contents of the letter were kept secret for over a century after it was written.

In our Mathematics & Physics section, we have an excellent selection of important documents, including an unpublished manuscript by Sir Isaac Newton (lot 49) at the beginning of his chemical researches, very possibly being a first attempt at his famous "Index Chemicus"; several excellent letters and postcards by Albert Einstein (lots 56-60), as well as an advance copy of the press release "Britain and the Atomic Bomb" (lot 61) in which the events leading to the development of the atomic bomb, as well as their being dropped on Japan are shared with the public.

Our final section on Technology & Computing contains a selection of machines that have had a tremendous impact on the world as we know it including machines that entertained us, helped to fight wars, and changed the way we handle and process data. Lot 69 is an excellent example of one of the rarest and most desired treasures of pre-1940 television sets, a Baird T-23 mirror-lid type television receiver. Lot 73 is a very fine example of a rare early German Enigma machine - it is fully operational, and still retains the original rotors whose serial numbers match that of the machine's reflector - and can be seen being operated at http://www.bonhams.com/ video/19793/. Last year, in our inaugural History of Science sale we sold a fully operation Apple-1 computer for the world record price of \$905,000. This year, we again have the pleasure of offering a fully operational Apple-1 computer, this one in the finest condition we have ever seen. A video demonstrating its operation can be viewed at http://www. bonhams.com/video/19792/. The sale previews Friday September 18th-Monday September 21st, with a highlights preview in San Francisco September 11th -13th, and special previews of the Nobel Prize medal in both Hong Kong (August 25th-28th) and Los Angeles (September 11th-13th). We look forward to seeing you here in our New York galleries for the preview, and are happy to answer any questions or prepare condition reports for any of the lots.

Cassandra Hatton, Director History of Science & Technology

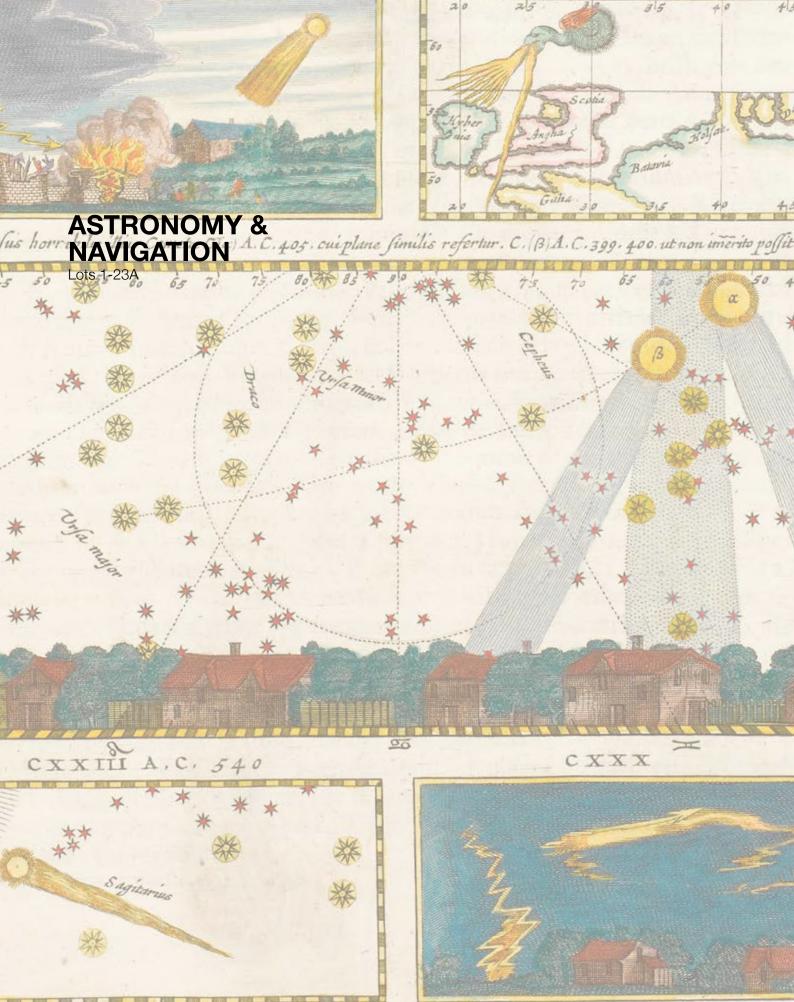
ORDER OF SALE

Astronomy & Navigation	.1 -	23A
Medicine & Biology	.24	- 47
Mathematics & Physics	.48	- 63
Technology & Computing	.64	- 78

HISTORY OF SCIENCE & TECHNOLOGY

Lots 1-78

Ch. Down in From life Copy right Julia margaret fameron.







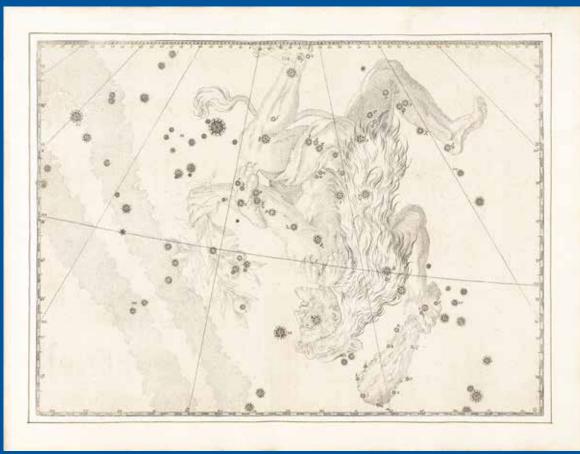
HIERONYMO DE CHAVES. 1523-1574.

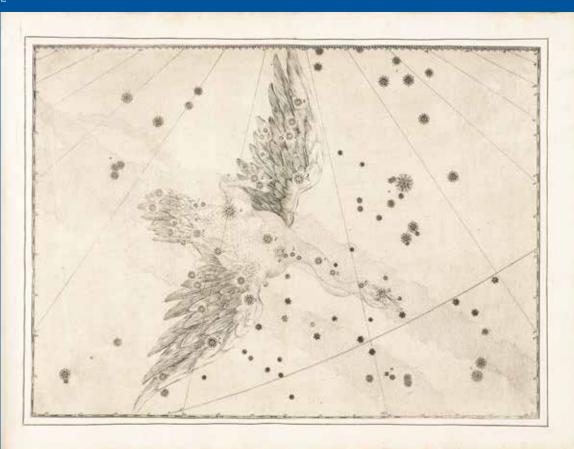
Chronographia Reportorio de los Tiempos el mas copioso y preciso que hasta agora ha salido a luz. Compuesto por Hieronymo de Chaves Cosmographo de su Magestad y professor Real de Cosmographia en Sevilla. Seville: Juan Gutierrez, [1561]. 4to (205 x 152 mm). 219 ff; +8 (-+8), a-z8, A-D8 E3 (-k6, -m3, -m6, -E1, -E2, and -E3, all supplied in facsimile; lacking final leaf of index, +8). Title page with woodcut portrait of the author within architectural border, 67 woodcut text illustrations including circular map of the New World on i4v, map of the Eastern hemisphere on i1v, a circular map of the elemental regions, 7 representations of the personification of the planets, 12 of the stars of the zodiac, 39 of various phases of both lunar and solar eclipses, and one full page illustration showing astrological influences on various parts of the body, woodcut chapter initials, several historiated. Contemporary vellum, title in manuscript to spine, re-cased with endpapers renewed, vellum soiled and stained; title soiled and re-margined with loss to woodcut borders; numerous leaves with marginal or other minor repairs.

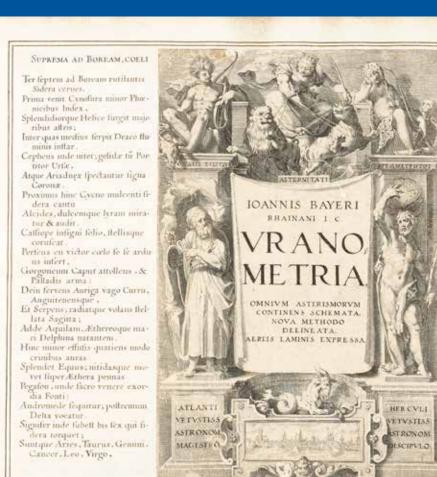
Provenance: Mathematical notations in an early hand to verso of title; occasional marginalia in an early hand; incorrect inked date of 1560 to title in early hand.

Very rare fourth edition of one of the premier Spanish works on cosmology from the 16th century. Divided into four books, this richly illustrated treatise covers geography, astronomy, astrology, and chronology, and is of special interest for its American content. Chaves draws freely from the numerous traditions in vogue at the time, including the influence of the heavens on human anatomy and the many-tiered arrangement of a geocentric universe. Quoting ancient and medieval sources, Chaves does not neglect new discoveries such as that of the New World by Columbus, and includes a lovely map showing in some detail the Yucatan Peninsula, the isthmus of Panama, and the continents of North and South America. Also included are astronomical and navigational data pertaining to many of the cities of the New World, such as San Juan, Mexico, Quito, and many others. A splendid example of the eclectic interests and elaborate system of scholars during the Renaissance. The map of the Americas notably includes recent discoveries, such as the Gulf of California, while the text gives a brief description of these newly discovered lands. Included is a table of the latitude and longitude of major towns, 67 located in the New World. Chaves was the first Chair of Cosmography at the Casa de Contratacion, responsible for handling New World settlements and revenues. He was one of the first cartographers to publish a map of the New World which was printed by Ortelius (see Bagrow-Skelton History of Cartography p 237). Rare in all editions, and almost always encountered in poor condition. Adams C-1422; Palau 67452; Shirley 86A.

\$5,000 - 8,000







PARS INFINA AD AUSTRUM.

[Que mine fuccedant playing life vendicat Author I

Libra Nepa, Arciteneus (tervus Caper, Amphora Pifces) Sel ubi Zodiaco gradiena totum efficit annum

Mox properat Cerus Pertei falce peremptus.

Atque enfe auraro nauro miellus Orion .

Afpice nune magnum Eridanum, Leporemque lugacem;

Dem Sirium . & Procyon bino Ipe dabile Sign Inter & Auftrales Argo micat m-

clita flammas; Statque ferox duplici Centaurus

imagine fulgons. Inde facrum Bacche poteris Cra-

ters videre: Er varium claro Phoebeum fidere Corvum

Leruzam Herculeis domitamque laboribus Hydram a

Immaneunque Lupum ,hine Aram fi-mul atque Coronam;

Queis una tandem Notium conjugito Pifcem . All alius non vila extrema in par-

te locamur Phoenix ,Grus , Indus , Xyphias ,Pa-

ve, Aufer, & Hydrus,

Pifeis, Apes, Triquetrum, Muléa, aslde, Chamaqueleontein Unde Hominum genus & pecu-

dex, unde Aquor,& Anrae Concipiunt motus propeios, atq. optima Tellus;

Et rerum eventus manant, fericlique flaturi.

CELESTIAL ATLAS.

BAYER, JOHANN. 1572-1625. Uranometria, omnium asterismorum continens schemata, nova methodo delineata, aereis laminis expressa. [Augsburg: Christophorus Mangus, 1639.]

Folio (435 x 330 mm). Engraved architectural title (285 x 191 mm) signed with monogram "AMF" [Alexander Mair Fecit] and dated 1603, featuring figures of Atlas and Hercules on pedestals flanking central title scroll, Apollo, Cybele, and Diana on pedestals above, and figure of Capricorn and vignette of the city of Augsburg below; manuscript star catalogue in Latin entitled "Suprema ad Boream, Coeli pars Infima ad Astrum" in an early hand to blank space on either side of title. With 51 copper-engraved star charts (383 x 280 mm) featuring the 48 Ptolemaic constellations, 1 chart of the 12 new constellations unknown to Ptolemy, and 2 planispheres showing the northern and southern hemispheres, each unfolded, pressed, and mounted. Early vellum binding. Binding worn & soiled, some areas of loss to vellum at spine and edges; repaired tear to title, small area of loss at title scroll, a few other very small areas of loss at edges, one with lines drawn in in manuscript, fly-leaves soiled, some occasional soiling or spots to margins, overall plates fresh & bright. Provenance: Early ownership inscription to title. Property of a Prominent New England Physician

SECOND EDITION OF THE FIRST ACCURATE STAR ATLAS, with title page of the first edition of 1603. The first edition inconveniently printed the table of stars for each constellation to the verso of each plate. This not only made it impossible to consult the table while looking at the chart, but also, the letterpress showed through, spoiling the beauty of the plates. This problem was rectified in the second edition, which left the versos of the plates blank.

The *Uranometria* was the first book to render the maps of the constellations as an atlas, rather than as pictures, in order to present the 48 Ptolemaic constellations. Prior to Bayer, star charts used awkward verbal descriptions to identify the location of individual stars within the constellations. Bayers' great innovation was to instead use Greek nomenclature to identify the individual stars, which made locating stars with the naked eye immensely easier, a hugely helpful system at the time, as Galileo was not to introduce his greatly refined telescope for another seven years. Honeyman 246; Norman 142; Deborah Warner, The Sky Explored: Celestial Cartography 1500-1800 pp 18-19; Zimmer 3951.

\$12,000 - 18,000





3
VERY RARE GEORGE III MAHOGANY AND ENGRAVED BRASS ORRERY.

Signed "Made By Ed. Beavess, London, 1760." Most probably made for him by the workshop of Benjamin Cole, London. 11" in diameter, 10½" tall, 30" circumference at base. Sun in brass; Earth, moon, Mercury and Venus in bovine horn.

Provenance: Property of a prominent New England Physician.

This type of geared model of the solar system, or tellurium, traces its origin to an instrument devised by George Graham and Thomas Tompion in 1712. That model was soon copied and improved by John Rowley, their neighbor in Fleet Street, and a master of Mechanics to George I. Rowley also made many instruments for Charles Boyle, 4th Earl of Orrery, who bequeathed his collection to Christ Church, Oxford in 1731. It is from the tellurium in this group that similar geared models acquired the name "Orrery." Rowley was succeeded by his former apprentice, Thomas Wright (d.1767) whose trade card depicts an orrery similar to this example. Upon Rowley's death in 1728, Wright received a Royal appointment as Instrument Maker to the Prince of Wales, later George II. Wright, in turn was succeeded by Benjamin (I) Cole (d. 1766) and his son Benjamin (II) who was active from 1766-1782.

The Coles were among the most important retailers of mathematical instruments in 18th century London with premises at Athe Orrery, next to the Globe Tavern in Fleet Street (later 136 Fleet Street). Their trade card was engraved with a magnificent "Grand Orrery." As pointed out by Turner (p 211), the highly specialized trade of instrument making in 18th century London comprised a network of "chamber masters,"

each producing a single type of instrument. The Coles, in effect, coordinated the manufacture and provided the retail outlet. This observation is supported by the similarity of surviving Rowley, Wright and Cole orreries. It is most probable that the small number of these instruments that do survive were made by successive generations of craftsmen in the same workshop.

Aside from this instrument, Edward Beavess is known only from a 1759 newspaper advertisement as being established "two doors from the Brown Bear in Seacole Lane, Snow Hill, London." If he was a retailer, it is likely that this orrery was produced to his order in the Cole workshops. Indeed, Beavess does not appear in Taylor's compilation of mathematical practitioners. A video discussing the history and workings of this item is linked to the online description of this lot at www.bonhams.com/auctions/22964/lot/3.

LITERATURE: Calvert, H. R. Scientific Trade Cards in the Science Museum Collection. London: H.M.S.O., 1971; Clifton, Gloria. Directory of British Scientific Instrument Makers, 1550-1851. London: National Maritime Museum, 1995; Symonds, R. W. Thomas Tompion. London: Batsford, 1951; Taylor, E. G. R. The Mathematical Practitioners of Hanoverian England, 1714 - 1840. Cambridge: The University Press, 1966; Taylor, E. G. R. The Mathematical Practitioners of Tudor and Stuart England. Cambridge: The University Press, 1954; Turner, A. J. Early Scientific Instruments: Europe 1400-1800. London: Sotheby's Publications, 1987. \$200,000 - 250,000





LUBIENIECKI, STANISLAW. 1623-1675.

[Theatri Cometici pars posterior] Historia Cometarum, a Diluvio usque ad præsentem annum vulgaris Epochae à Christo nato 1665. Decurrentem, Unà cum Indiculo lætorum & tristium eventuum, Cometarum apparitionem secutorum, In qua simul Synopsis quædam Universalis Historiæ proponitur. Amsterdam: Daniele Baccamude, 1666. [BOUND WITH]: Theatri cometici Exitus De significatione Cometarum... Amsterdam: Daniele Baccamude, 1668. Parts II-III only (of III). Folio (383 x 223 mm). []2 *4 A3-4 B-3H4 3l⁶ 3K-3M⁴; []² A-l⁴ K⁶. [xii], 464; [iv], 78, [6] pp. Half-title and 2 letterpress titles. With 2 elaborately engraved allegorical titles by Sebastien Stopendaal after M. Scheits, both richly hand-colored and heightened in gold, and 24 hand-colored engraved plates (20 full page, 2 double page, and 1 portrait of Joannes Ernestus de Rautenstein). Contemporary calf, covers with rules and wreath devices in gilt; all edges gilt and gauffered. Rebacked with remains of original white-washed spine laid down, red cloth repairs to hinges. Open tear with loss of text to lower corner of A4; small closed tear to pl 60, lengthy closed tear to pl 72; small closed tear to H3. Other scattered small closed tears not affecting text or plates. Some light finger-soiling and foxing, but mainly a pleasant copy. Provenance: Jesuit College of Neuburg [an der Donau] (ownership inscription dated 1667 & later inscription to fly-leaf); two plates with contemporary marginal notations;

FIRST EDITION, FINISHED IN RICH HANDCOLOR—ONE OF ONLY 2 KNOWN HAND-COLORED COPIES. "CET OUVRAGE EST SI RARE, QUE BENTKOWSKI ... QUI N'A VU QUE LA 1RE PARTIE, DOUTE SI LA CONTINUATION AIT PARU'" (Graesse). Lubieniecki's encyclopaedic treatise gathered together the observations of dozens of his contemporaries including Bayer and Hevelius, covering all known comets up to the year 1665. The fine engravings consist of celestial maps showing the paths of comets and the figures of the constellations traversed. "Since each map represents the observations of a different astronomer, taken together they illustrate the variety of cartographic traditions popular during the seventeenth century." (Warner, The Sky Explored, p 164). Halley's Comet, for example, is shown during its 1607 apparition (facing p 406). The second part (offered here) provides a chronology of 415 comet sightings from the flood (the first report is dated to 2312 BC) to 1665, with commentaries, drawn from a range of historical sources.

Rarely encountered in anything near a complete state, even when found in all three parts. Only two complete copies of the first edition are recorded at auction since 1975 by ABPC: the Honeyman and Dunham copies. A third copy, with 3 additional titles and 81 plates, but lacking one of the 2 portraits, was sold in 1989. Of the three copies held by the British Library, two are substantially defective. Brunet III, 1194; Graesse IV, p 270: Honeyman 2052; Knijff & Jan Visser, *Bibligraphia Sociana* 2067; Poggendorff I, 1508; Thorndike *History of Magic and Experimental Science* VIII, 336; Warner 164I; Not in Houzeau and Lancaster.

\$25,000 - 35,000





5

BOXWOOD NOCTURNAL WITH RARE STAR VOLVELLE.

English, fourth quarter 17th century, 11 3/4" overall. Obverse marked "Both Bears" and mounted with a later plain long pointer arm, plus a twice-12 hour volvelle with indices for "GB" and "LB," calendar/ Zodiacal scale divided by days of the months as well as days of the Zodiacal sign. Reverse side with calendar, hour and degree scales, plus rare star volvelle with index, labelled for numerous circumpolar stars such as "Dog Thigh," "Buls Eie," and "Wails Tail." Provenance: From the collection of Dr. Thomas Schoborg, M.D.

Most nocturnals relied on the observations of the Big and Little Bear constellations to determine the time at night; this particular nocturnal also permitted observation of any of the other bright stars surrounding the North Pole for calculation of time, latitude, Moons' age, tide, times, etc. Nocturnals with star volvelles are extremely rare, and seem to have been only made during the fourth quarter of the seventeenth century.

See Sturmy *The Mariner's Magazine...*. London: Anne Godbid for William Fisher, 1679, pp 64-67 (illustration and description of a similar construction).

\$5,000 - 8,000

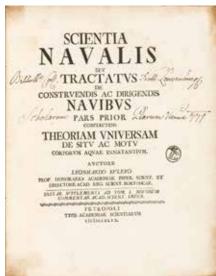
BOXWOOD GUNTER'S QUADRANT.

English, 17th century, 3/8" thick, 7" radius, with central hole for pillar mounting. Face of quadrant engraved and stamped with Gunter's design, first described in 1623, and laid out here for 52° latitude. Months indicated on calendrical scale with stamped capital letters below unusual stamped crown/anchor designs. Reverse side scratch engraved with an early unfinished design of calendrical/Zodiacal circles (for a pre-1752 vernal equinox of March 10) as well as an angel and castle decoration. Some slight warping, and loss of edge sights. *Provenance:* From the collection of Dr. Thomas Schoborg, M.D.

An early example of the English Gunter's quadrant. Quadrant were a practical, portable instrument used to carry out astronomical calculations sun as finding the time of day or the sun's azimuth, to observe astronomical phenomena, and to perform the basic tasks of surveying.

See Bennett *The Divided Circle: A History of Instruments for Astronomy Navigation and Surveying*. Oxford: Phaidon, 1987, pp 79-80. **\$1,500 - 2,500**





EARLY SEA CAPTAIN'S BACKSTAFF.

English, 1735, signed "Made by Will Garner for Robert Duesbery 1735." 25" long, in dark hardwood with arcs and plaque in contrasting boxwood. Large arc divided every five arcminutes from 0° to 25°, with a scale of transversals for accurate interpolation. Punched with decorative fleur-de-lys and rosettes. A few chips at old break in small shadow arc, modern replacement sight vanes in light wood. Provenance: From the collection of Dr. Thomas Schoborg, M.D.

The backstaff, a great improvement over the cross staff, allowed a navigator to measure the sun's altitude with the sun at one's back, thus saving one's eyesight. It further eliminated the cross staff's problem of parallax and difficulty of simultaneously sighting two widely separated objects (the sun and horizon for example). The maker, William Garner, is known for three other backstaves, dated 1732, 1734, and 1737.

\$2,500 - 3,500

EULER, LEONARD. 1707-1783.

\$2,000 - 3,000

Scientia Navalis, seu Tractatus de construendis ac dirigendis navibus pars prior complectens theoriam universam de situ ac motu corporum aquae innatantium. [et] Pars posterior in qua rationes ac praecepta navium construendarum et gubernandarum fusius exponuntur. St Petersburg: Typis Academiae Scientiarum, 1749. 2 volumes. 4to (250 x 194 mm). [ii], 44, [2], 1-444; [ii], 534 pp. With 65 folding engraved plates. Contemporary half-calf and sprinkled boards. Vol 1 re-backed with original spine laid down, vol 2 re-cornered with minor repairs to head and foot of spine.

Provenance: Library of the Piarist Lowenburg College, Vienna, (ownership insciptions to titles dated 1771).

FIRST EDITION of Euler's important contribution to fluid mechanics and ship-building. "With this work Euler made a major contribution to the study of fluid mechanics. In the first volume he presents a general theory of equilibrium of floating bodies with an original theory of stability and small oscillations in the neighborhood of the equilibrium position. The second volume applies the general theory to ship design, and deals with ships in general, stability and equilibrium, the motion of ships, and the wind; as well, it treats of such parts as masts, sails, oars, and rudder" (Roberts & Trent, p 105). "The work first expresses mathematically the resistance meeting a ship on its path through the water" (Sotheran). Dictionary of Scientific Biography IV, 480; Roberts-Trent 105; Sotheran 1257.





OCTAGONAL REVERSE TAPERED SEA GLASS.

English, mid-18th century. 36" octagonal maintube in mahogany, complete with original preachromatic objective with dust slide, brass drawtube with erecting optics and sliding eye cover, opening to 44". Drawtube considerably larger at eye end than at objective end, which is stopped down to 9/16" diameter to improve image quality. Provenance: From the collection of Dr. Thomas Schoborg, M.D. \$800 - 1,200

10

EIGHTEENTH CENTURY SUNDIAL.

English bronze horizontal sundial displaying the Equation of Time, second quarter 18th century, signed "T. Heath Fecit," 8" diameter. Fixed gnomon, the circular plate engraved with roman chapter ring enclosing ring giving the annual variation between Mean Time and Solar Time, labeled "Watch Faster / Watch Slower," further engraved with a calendar ring and central compass rose labeled with cardinal and intermediate points.

Thomas Heath, a London instrument maker, worked from 1720-1753 at the sign of Hercules and Globe in the Strand.

\$2,000 - 3,000



MEMOIRE

Sur une Equation nouvelle du troineme -Satellice de Jupiter ~

Depuis la déconseite de la loi de la grissitation universale one a limmorter Newton, la delirmination du nunvenent des plantités et des fa-tetités n'en plus qu'un problème de médianique, pour la Johnton draquet la théorie n'a besoin, als rigueur, veloblervation, que pour determiner las constantes extitories, on a quion namme les Elenuno astronomiques Truce planette. Les tables. construites Eugene les formules données pour la folis tion de ca problème connu depuis longtono fois le nom de problème des trois corps, deurients Dono être loujours excutes en ne fécurter jamais. Detalfervation: calo ferre cartainamene aux, fi cette folulion elein rygonrewe); mais Jano telato Susperfection on be trave landise, on na pu i encore que des solutions approximations dece fameux problème, on ne privisere mame aver folutions imparfails que pou un long tatome ment en faisant fuccessivement differentes bypo

12

DATED DUTCH NAVIGATOR'S LOG BOX.

Dutch, dated 1775. 6" long, 1 1/4" high in brass with metal hinge. Front side engraved with motto "Reght Door See" [Straight on through the sea], lid engraved with perpetual calendar and vignettes of Julius Caesar (for the Julian calendar) and Pope Gregory (for the Gregorian calendar), bottom engraved with vignette of a man (Christoper Columbus/Amerigo Vespucci?) holding a globe and dividers with date 1497, a table for computing the ship's speed through the water, and motto "Geen konst maar rijkdom kan men verliesen, Daarom is konst voor rijkdom te kiezen" [Not experience but riches can be lost, therefore let experience prevail above riches]. Some minor surface wear and slight damage to hinge. Provenance: Etched ownership inscription "Tho[ma]s Sinclair, 1776." From the collection of Dr. Thomas Schoborg, M.D.

An early example of Swedish seaman Pieter Holm's design, known as the "Dutchman's Log" or the "Seaman's Tobacco Box." Holm founded a nautical school called "Regt door Zee," and developed this unusual nautical instrument while an instructor there. The tables engraved on the box could be used to determine the speed of the ship through the water based upon the passage of a log or wood chip thrown overboard. \$700 - 1,000

12

FLAUGERGUES, HONORÉ. FL. 1755-1835.

Manuscript in French on paper, entitled "Mémoire sur une Equation nouvelle du troisième Satellite de Jupiter," 10 pp recto and verso, 4to (229 x 178 mm), 24 ruled lines per page, [France], c. 1808, clear italic hand in brown ink, including 1 large folding double-sided manuscript chart of observations. Contemporary French marbled wrappers with paper label, spine worn but holding, edges lightly worn, unobtrusive repair to edge of folding table.

Contemporary manuscript of Flaugergues' investigation of the satellites of Jupiter, the movements of which had fascinated Galileo and Reinieri, and had even served as the basis of Cassini's computation of the speed of light. Using his own observations gathered over 14 years, Flaugergues offers a new equation to describe the orbit of the third satellite of Jupiter. He was awarded prizes by the Academies of Montpellier, Lyon and Toulouse for his astronomical work, and has a crater named after him on the moon. He is perhaps best known for his discovery of the Great Comet of 1811, and his independent co-discovery of the Comet of 1807. The present treatise was published in the Journal de Physique LXVII, for the year 1808; this is evidently an early copy, with no indication of authorship. See The Royal Society Catalogue of Scientific Papers (1800-1863) 1868, II, p 633; Houzeau & Lancaster II, 1393.

\$1,000 - 1,500



12A







BRASS 3-INCH DIALYTIC REFRACTING TELESCOPE AND CASE. Signed Plössl in Wien, mid 19th century.

On folding tripod base, with adjustable draw tube, rack and pinion

focusing, lens cap, two terrestrial eyepieces, two celestial eyepieces and solar filter, in fitted wood case with label of instructions. Length of tube 17¾" (45cm).

Georg Simon Plössl (1794 – 1868) the eminent Viennese optician is known primarily for his microscopes. However, in 1860, he introduced a telescope eyepiece consisting of two identical achromatic doublets, oriented so that the biconvex crown elements face each other with the doublets almost in contact, increasing the refraction of the field lens flint element, and reducing the diameter of the field doublet. This design of eyepiece was reintroduced in the 1960's and remains in use today.

\$1,200 - 1,800

THOMSON'S LUNAR CORRECTOR.

English, c. 1820, signed "D. Thomson Invt" and "Bate London, N° 209." Boxwood, 37" long with brass fittings and cursor. Both sides of rule and slider marked with numerous scales, including on the Lunar side "App Alt.," "App. Dist.," "Hor. Par.," "Corr." and "Comp. Corr.," and on the Time side, "Half Sun," "Lat.," "Diff.," "Time P.M.," and "Time A.M.." Brass cursor engraved with Declination scale. Provenance: From the collection of Dr. Thomas Schoborg, M.D.

Invented by Captain David Thomson (1789-1834) and made and sold by Robert Bate in 1816, this extremely rare device was used for calculating the longitude at sea, and was described as a "Longitudinal Scale" or "Lunar Corrector" for reducing lunar distance observations in determining the longitude. It was endorsed by many, including Edward Troughton as giving apparent distances within a few arcseconds.

\$700 - 1,000

MOON-PHOTOGRAPH FROM THE ARGENTINE NATIONAL OBSERVATORY.

GOULD, BENJAMIN APTHORP & JOHN A. HEARD. Photograph of the Full Moon 1875, June 18, 10^H, 52^M, Sid. Time. [Cordoba]: Argentine National Observatory, 1875.

Large mounted albumen print, 18 7/8 x 19 1/4 inches on 22 x 22 inch original mount with printed caption label. Toned, significant craquelure to the blacks, mount chipped at corners and with residue from previous matting, small losses to imprint. Matted.

UNUSUALLY LARGE ALBUMEN PHOTOGRAPH OF THE FULL MOON FROM 1875. The National Observatory in Argentina was founded on October 24, 1871 by the American astronomer Benjamin Apthorp Gould (1824-1896). The photographer was John A. Heard of Boston, who had emigrated to Cordoba for his health. His photographic work for the Observatory spanned from only May of 1875 to the end of 1876. See Gould Photografías Cordobesas, 1897, p 5.

\$1,500 - 2,500

15

MOON-PHOTOGRAPH FROM THE ARGENTINE NATIONAL OBSERVATORY.

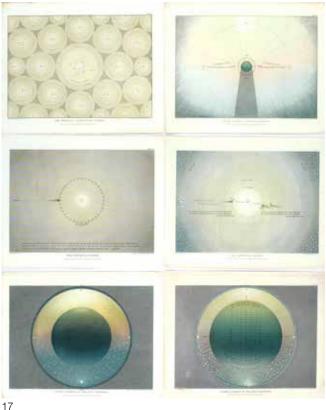
GOULD, BENJAMIN APTHORP & JOHN A. HEARD. Photograph of Moon at Last Quarter. 1876, April 18, 18h, 54m, Sid. Tim. Cordoba: Argentine National Observatory, 1876.

Large mounted albumen print, 20 1/8 x 15 1/2 inches on 27 1/4 x 21 1/2 inch original mount with printed caption label. Toned, significant craquelure to the blacks with tiny chips mostly to lower edge, mount with residue from previous matting. Matted.

UNUSUALLY LARGE ALBUMEN PHOTOGRAPH OF THE MOON FROM 1876.

\$1,500 - 2,500





16 DOUBLE-FRAMED VERNIER SEXTANT WITH PLATINUM SCALE BY TROUGHTON.

English, c. 1828, 11½ x 9½", polished brass straight-bar frame, frame numbered "1371," arc signed "Platina Troughton London," inset platinum scale divided -5°, -0°, -150°, adjustable telescope socket and telescope, Vernier with swivel magnifier, seven shades, mirrors, and hardwood handle, complete with sighting tubes and filters. Polished. Housed in keystone mahogany box with engraved paper label of instrument sellers Parkinson & Frodsham. Some staining to lid of box.

Edward Troughton (1765-1835) was one of England's leading scientific and astronomical instrument makers. This type of sextant was used by navigators to measure the elevation of objects above the horizon, such as the altitude of the sun above the horizon in order to tell the ship's latitude.

\$1,000 - 1,500

MUGGLETONIANS-CELESTIAL CHARTS.

FROST, ISAAC. Fl. 1846. Suite of six celestial charts, each 255 x 318 mm, engraved by W.P. Clubb after Isaac Frost, "printed in oil colors by G. Baxter Patentee, 11, Northampton Square," [1846]. Matted, framed and glazed together.

An attractive suite of plates demonstrating the Muggletonian sect's geocentric astronomical theory, which refuted the Newtonian standpoint. Isaac Frost, a scientist and author (with his brother) of The Works of J. Reeve and L. Muggleton (1832) was a practicing Muggletonian, the religious sect founded in the aftermath of the English Civil War by two cousins who claimed themselves to be the "two witnesses" mentioned in the Book of Revelations. The plates, first issued under the title Two Systems of Astronomy, illustrate the "The Newtonian System of the Universe," and "The System According to the Holy Scipture," the text caption on plate 6 reading "This diagram will show that if the Earth revolves round the sun, as the Solar System states, then it will necessarily follow, that the Earth will differ in its position with the sun and any given fixed star on its equator, every day throughout the whole year. Now consider it is so. If it is not so, then it will make much in favor of the Holy Scriptures, that the Sun revolves round the Earth." They were presumably circulated amongst members of the Muggletonian sect (which, due to a rule on not proselytizing, remained small until the last member died in 1979) and therefore printed in limited numbers. Printed by George Baxter, using his patented colour oil technique, they were originally unrecorded by Baxter's first bibliographer Courtney Lewis.

\$1,000 - 1,500

17





18 (reverse)

10

18

OTTOMAN ASTROLABE-QUADRANT.

Turkey, dated 1296 AH [1878-79] signed "Rasamahu Mustafa," wood, $43/4 \times 4$ ", 6/8" thick, painted in red, black and gilt with sinecal quadrant and inscriptions, pivotal hole with later thread (used to provide loci of constant North polar distance), with 3 delicately inscribed cartouches in Turkish containing instructions on how to use the device in the winter or summer months. Housed in a later velvet-lined box.

An astrolabe-quadrant of the type devised in 1288 by the astronomer Jacob Tibbon ben Makir, better known as Profatius. The instrument, described in his *Traité du Quadrant Moderne*, is essentially an ingenious variant of the astrolabe, in which the instrument is reduced to a quarter circle, and the four quarters of the astrolabe are folded.

See Michel, *Traité de l'Astrolabe*. Paris: Gauthier-Villars, 1947, pp 22-24. **\$1,500 - 2,500**

19

TAPERED SPYGLASS BY DOLLOND.

English, c. 1800, signed "Dollond, London" on drawtube. 26" tapered mahogany maintube extending by single brass draw to 31". Maintube bound in green oilskin tied with woven cord and set with brass fittings, fine 1 5/8" diameter triplet objective and erecting eyepiece system complete with lens cap and dust-slide. A few small dents to drawtube. Provenance: Signed "Edward Greatkin to George Blackman, May 1st, 1807" on drawtube, "George Blackman, H.M.S. Penelope, 1807; Lieutenant, 1814; Now Captain G. Harnage, H.M. Brig Raleigh, 1820" on lower brass mount, and "Now Sir G Harnage, Bart., Belswardyne 1845" on upper brass mount.

Provenance: From the collection of Dr. Thomas Schoborg, M.D.

An attractive captain's telescope with excellent naval provenance. Captain Sir George Harnage (b. 1792) was born George Blackman to Sir George Blackman, Bart., and Lady Mary, née Harnage. Young George joined the royal Navy in 1807 as a midshipman aboard the H.M.S. *Hibernia* before transferring to the H.M.S. *Penelope*. He served on her at the blockade of Ferrol and later in the West Indies, where he took part in the capture of Martinique in 1809. He was then appointed Lieutenant in 1813, before eventually being promoted to Commander of the H.M.S. *Raleigh* in 1820. When he returned home a year later, he, along with his father, assumed his mother's family name of Harnage before succeeding to the baronetcy in 1836.

\$800 - 1,200





20 (illuminated)



ASTRAL LANTERN.

BAILEY, FRANKLIN. 1845-1914. *Bailey's Astral Lantern*. The New England School Furnishing Co., Boston, Mass., c. 1881. Stenciled tin gas lantern with glass windows, 13½ x 13½ x 13½", east and west sides of lantern fitted with removable round tin plates, each plate fitted with a rolling printed celestial maps, north and south sides fitted with 12½" diameter circular celestial maps.

A wonderful apparatus used to teach astronomy. This Astral Lantern, which was invented in 1879 and patented in 1881 by Franklin Bailey, functioned as a sort of adjustable map of the heavens. When lit from within, it shows the stars in correct relative positions as they would appear in the sky (if visible). The movements of the maps were meant to keep pace with the apparent movement of the stars, thus enabling the student to not only learn the names of the stars and constellations, but also their positions in the heavens at each minute, their movement, as well as how to tell the time at night, the latitude of the position of observation, and the exact time of the rising and setting of each star.

Franklin Bailey's archive, including papers relating to this invention are housed at the Bentley Historical Library at the University of Michigan. Exhibited: *Selections from the E. Buk Collection of Technology and Invention*, Christine Burgin Gallery, NYC, October 29-December 18, 2004.

\$2,500 - 3,500

POCKET GLOBE; LANE, NICOLAS.

London: [William] Wetton, [c. 1824].

3" diameter terrestrial pocket globe in original fish skin covered wood case with 3 brass hook and eye clasps and red painted rim. 12 copper engraved hand-colored full gores over papier maché and plaster, overlaid cartouche reading "Wetton / 21 / Fleet St' / London" in North Pacific, metal pivot at both poles, case with 2 sets of 12 hand-colored copper engraved celestial half gores and 2 polar calottes. Some browning, soiling and spotting (most pronounced beginning in Asia, India, Eastern Ocean and moving east through the Pacific), scattered chipping to varnish, some peeling to celestial gores in case.

A nice example of a late 18th century pocket globe from Nicolas Lane, whose pocket globes were used well into the 19th century, often bearing the name of another vendor as in the present example. Shows the routes of Cook's three voyages (and the return route of Captain King in 1780, but not the location of the death of Cook as in some Lane examples) as well as Anson's voyage, a pictorial Great Wall in China, Van Dimen's land separated from Australia by the Bass Straight; does not depict an Antarctic continent.

"Very little is known about Nicolas Lane ... whose business is particularly associated with pocket globes ... The Lane pocket globes of 2.75 and 3 in. diameter derive from two traditions ... For the smaller one, the copper plated of the celestial counterpart of the Cushee ... pocket globes were used. These were perhaps acquired by Nicolas in the early 1770s when the Cushee firm was dissolved. How the other 3 inch pocket globe came into production is at present unknown" (Dekker Globes at Greenwich p 393).

William Wetton moved his offices from 65 Pasternoster Row to 21 Fleet Street in 1824 (see Brown, *London Publishers and Printers c.1800-1870*, p 220).

\$3,000 - 5,000

TELLURIAN; TRIPPENSEE CO.

The Trippensee Planetarium. Detroit, Mich.: The Trippensee Mfg. Co, c. 1959. A 13½ inch tall, 16¾ inch long Trippensee tellurian, fitted with a 91/2" (24.5 cm) diameter terrestrial globe, signed within round cartouche in Pacific, with small wooden moon painted black & white rotating around it on a geared metal arm, the two revolving around a central yellow plastic sun which has a small planet Venus painted black and white rotating around it on a metal arm, all mounted on geared mechanisms on a plastic arm with raised legend reading "TRIPPENSEE/ PLANETARIUM CO./ SAGINAW, MICH." Small round compass inset on top of the arm beside, the whole mounted on a turned ebonized wooden central standard, set on a round, stepped, plastic base, with a circular zodiac dial affixed to the top, printed in black on gold.

An excellent example of a Trippensee tellurian, a model which demonstrates the rotation of the moon around the earth, and the rotations of the earth and Venus around the sun, as well as the phases of the moon and Venus from the sun.

\$1,000 - 1,500

23

LUNAR GLOBE.

Denoyer-Geppert Lunar Globe. [Chicago, IL, c.1969].

16-inch lunar globe, 21¾" tall on stand. Printed paper gores showing the lunar surface in raised relief; surmounted by a metal finial; the halfcircular brass meridian fork holding a rotating calibrated meridian; and with conforming flat band moveable calibrated mylar scale between the North and South Poles; raised on a fauxwood grained domed round metal base.

"In 1969, to commemorate the Apollo 10 mission, Denoyer Geppert designed a special lunar globe that the astronauts of the mission presented to President Nixon. Contracted by NASA, Denoyer Geppert created the first complete Moon globe, using the Apollo 10 film footage and photographs of the far side of the moon. 200 first edition globes of this type were produced, the first of which went to President Nixon and four others to special members of Congress" (American Globe Preservation Society, AMGS Newsletter, March 2012, p 4). \$1,000 - 1,500



22





23A

23A

20TH CENTURY TABLE ORRERY.

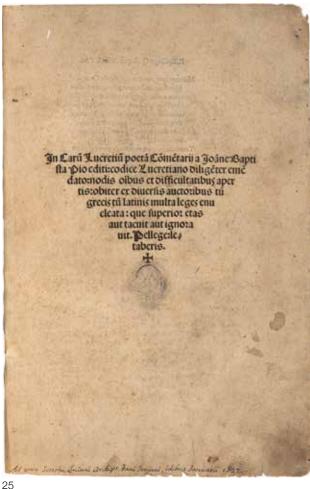
Twelve sided mahogany base mounted with plain brass armillary bands and ecliptic on baluster pillars, the tellurium showing the annual motions of Mercury, Venus and the Earth and Moon around a central Sun, the movement operated by hand crank at the side. 12" (30.5cm) high.

Based on the late 18th century miniature orrery by Edward Troughton (1753-1835) in the collection of the Science Museum, London.

\$3,000 - 5,000

DOWN, BECKENHAM, KENT. An. 24 1850 ORPINCTON. S.E.R. MEDICINE & BIOLOGY Lots 24-47 Le a Vi I am 10mg I have to inform gru the I do no betwee in To Bike an a Frin similar I therfore hot in ferry Chuit in a in of for. gun frat ping Ch. Farwin





MEDIOLANENSIS, MAGNINI, AVEROËS DE VENENIS, ARNALDUS DE VILLA NOVA, HIPPOCRATES, ET AL.

Regimen sanitatis Magnini mediolanensis medici famosissimi attrebacensi episcopo directum. Paris: Gaspardum Philippe expensis Johannis Petit, July 5th, 1506.

4to (199 x 135 mm). cxxviii, [ii] ff. Title with large woodcut printer's device, woodcut chapter initials, many historiated. Modern sheep. a2-3 with light dampstain touching upper margin and corner, a2 with offset ink marks (from something laid-in?), e2 with dampstain and paper flaw, lower margin of e5 clipped away, lower corner of x8 torn away and clumsily replaced, sheep lightly rubbed at extremities. Provenance: Marginalia in three different hands (period ink, period red ink, and early pencil).

EARLY EDITION OF THIS RARE AND IMPORTANT WORK ON HEALTH AND HYGIENE, written in the fourteenth century and first printed in 1482 in Louvain. Wellcome I:3968 (recording the 1510 Petit edition); not in Garrison-Morton.

\$1,500 - 2,500

25

LUCRETIUS CARUS, TITUS C.99-58 B.C.;

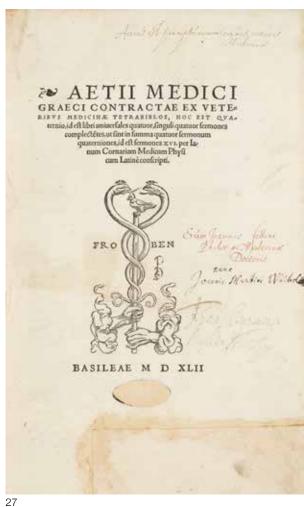
PIO, GIOVANNI BATTISTA, editor. In Carum Lucretium poetam commentarii a Joanne Baptista Pio editi.... Bologna: Hieronymus de Benedictis, May 1511.

Folio (308 x 207 mm). Roman and Greek type, initial spaces, text by Lucretius surrounded by commentary of Pio on each page, woodcut printer's device to colophon. Vellum over boards, spine gilt, new endpapers. Title soiled with 2" open tear at lower edge, light occasional thumb-soiling to text, V2-X3 with wormhole and stains (rather large stain touching V5 & V6), vellum soiled. Provenance: Archbishop Joseph Luciani (ownership inscription dated 1877).

FIRST EDITION OF LUCRETIUS "DE RERUM NATURA" TO BE EDITED BY THE HUMANIST PIO (d.1540); fifth edition overall. Adams L-1648; Gordon 101.

\$1,500 - 2,500





26

MAGNUS, ALBERTUS AND BARTHOLOMAEUS METLINGER.

Der Weyber natürliche Heymlichaiten vnd zügehör Alberti Magni, allen Hebammen vnd kindtbarn Fraüwen dienlich. [Augsburg: Heinrich Steiner], 1531.

Small 4to (187 x 139 mm). A-G4 (final leaf blank). Large title woodcut of a birthing chamber scene, large uroscopy woodcut on A2 recto. Modern quarter vellum. Some minor light foxing, small hole to final blank, but a fine copy.

RARE WORK ON OBSTETRICS AND PEDIATRICS. Includes Metlinger's famous text on pediatrics, first published in 1473, as well as information on childbirth attributed to Albertus Magnus. Scarce on the market: we locate only a single copy in auction records, which lacked the final blank. Waller 314. Not in Garrison-Morton or Wellcome.

\$2,500 - 3,500

AËTIUS OF AMIDA. C.450-C.550.

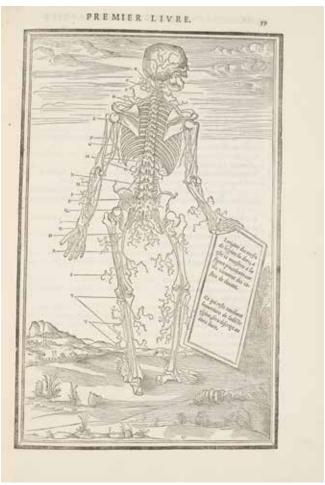
Contractae ex veteribus medicinae tetrabiblos.... Basel: [Hieronymus Froben & Nikolaus Episcopius], 1542.

Folio (311 x 193 mm). a6 a-z6 A-Zz6 AA-HH6 II4 KK-LL8. Large woodcut printer's device on title and final leaf, and 17 woodcut initials by HANS HOLBEIN THE YOUNGER. Contemporary pigskin elaborately stamped in blind, upper cover centered with armorial arms in black, brass clasps. Part of lower margin of title cutaway and repaired, old stamp pasted over on title, small marginal worming and some pale dampstaining to extreme upper margin, occasional light foxing but a clean, wide-margined copy.

Provenance: Joannes Follinus (ownership signature to title "Sum Joannis follini Philos Medecina Doctoris"); Joannis Martini Waibel (ownership signature to title; marginalia throughout).

SECOND COMPLETE LATIN EDITION, "much improved" (Garrison-Morton) from the first complete Latin edition of 1533-34. "Aëtius studied in Alexandria and lived in Byzantium where he was court physician under the Emperor Justinian I. He was held in great repute by Renaissance physicians and his translator here, Janus Cornarius (1500-1558), regarded him as the greatest of the medical writers. His Tetrabiblos (so called because the text, as here, is divided and subdivided into four parts each) is a compilation which remains the chief source of knowledge for the works of Rufus of Ephesus and Leonides in surgery, and of Soranus and Philumenos in gynecology and obstetrics. Aëtius gives his own description of diseases of the eyes, ears, nose, throat, and teeth and includes good accounts of goiter, rabies, diphtheria, and various surgical procedures, such as tonsillectomy, urethrotomy, and the treatment of hemorrhoids" (Heirs of Hippocrates). The present copy bears the ownership signature of Joannes Follinus, likely the German physician who published Tyrocinium medicinæ practicæ (1648) and other medical texts in the mid-17th century. Heirs of Hippocrates 49; Wellcome 50. Cf. Garrison-Morton 33 & 6974. \$6,000 - 8,000





28

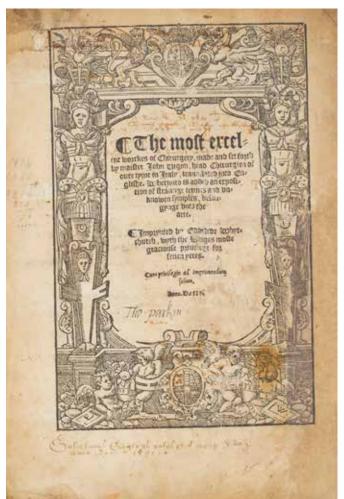
ESTIENNE, CHARLES. 1504-1564.

La dissection des parties du corps humain. Paris: Simon de Colines, 1546. Folio (316 x 220 mm). a⁸ A-Z⁸ AA-BB⁸ CC⁴ (-CC4, final blank). Illustrated with woodcut vignette on title and 64 full-page anatomical woodcuts, woodcut illustrations and initials in text. Modern quarter red morocco and marbled boards. Marginal restoration and browning to title and final leaf of text, lacking final blank, faded pen-trials to title.

FIRST EDITION IN FRENCH OF "ONE OF THE FINEST OF ALL ANATOMICAL TREATISES ... the full-page woodcuts, artistically presenting the anatomical subjects in special poses before unusual background settings, are unusually sumptuous and imaginative" (Heirs of Hippocrates). With two full-page woodcuts not included in the Latin edition of the year before. Estienne, of the famous family of printers, received his medical degree in 1542 but had been begun work on the treatise at least a decade before. In fact, the work was finished by 1539 with much of the text already set in type when a lawsuit held up publication for several years. "Had De dissectione been published in 1539, there is no question that

it would have stolen much of the thunder from Vesalius's Fabrica: it would have been the first work to show detailed illustrations of dissection in serial progression, the first to discuss and illustrate the total human body, the first to publish instructions on how to mount a skeleton, and the first to set the anatomical figures in a fully developed panoramic landscape, a tradition begun by Berengario da Carpi in his Commentary on Mondino. Nonetheless, Estienne's work still contained numerous original contributions to anatomy, including the first published illustrations of the whole external venous and nervous systems, and descriptions of the morphology and purpose of the "feeding holes" of bones, the tripartate composition of the sternum, the valvulae in the hepatic veins and the scrotal septum. In addition, the work's eight dissections of the brain provide more anatomical detail that had previously appeared" (Garrison-Morton 378, Latin ed). Heirs of Hippocrates 256 (Latin ed); USTC 24290; Wellcome 6077.

\$12,000 - 15,000





VIGO, GIOVANNI DA. 1450-1525.

The Most Excelent Worckes of Chirurgery ... traunslated into Englishe. Whereunto is added an exposition of straunge termes and unknowen symples, belonging unto the arte. [London]: Edwarde Whytchurch, 1550.

Small folio (280 x 185 mm). [par.]6 A-2Z6 [et]6 3A4 (3A4 blank). Black letter, text in double columns. Title within woodcut architectural border, woodcut decorative initials throughout. Contemporary paneled calf over new boards and rebacked. Title repaired with a few losses with lower right of woodcut border restored in facsimile, repair to upper corner of 2A3 partially affecting 6 lines of text on recto and verso, a few additional small repairs, a few marginal tears, some scattered staining.

Provenance: Near contemporary annotations to title (recto and verso), last blank, and to a few margins.

SECOND ENGLISH EDITION of the "the first complete system of surgery after that of Guy de Chauliac. It contains an account of gunshot wounds and a section on syphilis" (Garrison-Morton). It was one of the most popular works on the subject, going through some fifty editions. The English translation by Bartholomew Traheron first appeared in 1543. Durling 4616; STC 24721 (2nd ed); Wellcome I 6621 (Ff. 19-240 only). Cf. Garrison-Morton 5559.1.

\$5,000 - 7,000

30

GESNER, CONRAD. 1516-1565.

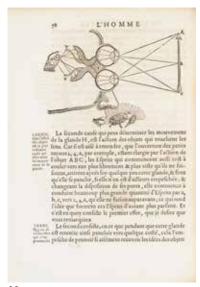
Chirurgia. De chirurgia scriptores optimi quique veteres et recentiores.... Zurich: Andreas Gessner and Hans Jakob Gessner, 1555. Folio (315 x 200 mm). †6 *4 a-z6 2A-2Y6 α6 β6 y8. Woodcut printer's device on title and 2Y6v and approximately 250 woodcut illustrations in text. Contemporary roll-tooled paneled pigskin, manuscript spine title. Ownership signature effaced from title, small hole to †6 with loss of two words on verso, light browning to a small number of leaves, old pale dampstain to upper corner of last half of index, but a clean, fine copy.

FIRST EDITION. Gesner edited, compiled, and contributed a work of his own to this extensive collection of surgical works by Biondo, Bolognini, Dondi, Ferri, Galen, Houllier, Langius, Maggi, Santo, Oribasius, and Tagault, among others. "The list of surgical writers and their works which Gesner appended to this book is one of the earliest bibliographies of surgery" (Garrison-Morton 5562). Adams G520; Durling 960; Heirs of Hippocrates 309; Osler 643; Wellcome 1460. \$8,000 - 12,000





32



PARÉ, AMBROISE, 1510?-1590.

Les Oeuvres, Paris: Gabriel Buon, 1579. Folio (333 x 242 mm). ã⁶ ẽ⁴ a-z⁶ A-4K⁶ A-K⁴ L⁶. Numerous woodcut illustrations in text, additional suite of nearly all the illustrations on the final 45 leaves, woodcut initials and headpieces throughout. 20th century calf, covers double gilt ruled with floral device in corners, five raised bands, spine gilt in panels, gilt turn-ins, marbled endpapers, a.e.g. First two

gatherings neatly remargined at lower and bound margins, a few additional marginal repairs, a few minor spots, spine slightly sunned and rubbed.

SECOND EDITION. REVISED AUGMENTED BY THE AUTHOR. Profusely illustrated with anatomical and surgical woodcuts, as well as woodcuts of "monsters" and zoological oddities. The first edition appeared in 1575. "Paré, of humble Huguenot beginnings and poorly educated, became the sixteenth century's outstanding surgeon and the greatest military surgeon before his fellow countryman, Larrey, more than two hundred years later. He began his studies as a barbersurgeon and at age nineteen, while working as a surgical dresser and assistant in a Paris hospital, he began to acquire the fund of practical knowledge for which he became a legend in his own time. Probably his best known innovations were his discarding the use of boiling oil in gunshot wounds and the reintroduction of simple ligature instead of red hot cautery after amputation. He invented many surgical and dental instruments and was especially adept at devising ingenious artificial limbs" (Heirs of Hippocrates 271, 1582 ed). Garrison-Morton 5565 (1575 ed); USTC 34800; Wellcome 4820.

\$5,000 - 7,000

GUILLEMEAU, JACQUES. 1550?-1613.

Child-Birth, or, The Happy Delivery of Women. London: printed by Anne Griffin, for Joyce Norton, and Richard Whitaker, 1635. 2 parts in 1 volume. 8vo (175 x 123 mm). [16], 247, [1], [14], 118 pp. Separate title for part 2. Woodcut illustrations in text, woodcut initials. Contemporary sheep. Custom cloth clamshell case. Old marginal dampstaining at front and end just reaching into text, some dustsoiling to title.

SECOND EDITION IN ENGLISH of this important work on childbirth. "Actual origin of the so-called 'Mauriceau' manoeuvre, usually credited to Mauriceau. Guillemeau was not only responsible for this technique for delivery of the after coming head [breach] so important before the forceps and Caesarian section, but he was also the first to employ podalic version in placenta praevia" (Garrison-Morton). The second part is on nursing. The French edition first appeared in 1609, with the first English edition following in 1612. STC 12497 (2nd ed). Cf. Garrison-Morton 6145.1 (First French ed).

\$1,500 - 2,500

33

DESCARTES, RENÉ. 1596-1650.

L'Homme ... et la formation du foetus. Paris: Theodore Girard, 1677. 4to (240 x 170 mm). [64], 511, [9] pp. Woodcut illustrations throughout. Contemporary mottled calf, five raised bands, spine gilt in panels. Some chipping to joints and head of spine, small marginal tear to p 99, but a clean and bright copy.

SECOND FRENCH EDITION revised and corrected. Another issue by Angot was published the same year. The work represents "the first attempt to cover the whole field of 'animal physiology'" (Garrison-Morton). The first edition appeared in Latin in 1662, a translation from the original French manuscript; the first French edition appeared in 1664, and included the first printing of the treatise De la formation du foetus, which appears on pp 99-154 in the present edition. The woodcuts are based on drawings by Descartes in the manuscript. This edition, edited by Descartes' friend Claude Clerselier, also includes a commentary by Louis de La Forge and a preface by Florentio Schuyl.

\$1,000 - 1,500

COWPER, WILLIAM. 1666-1709.

LAIRESSE, GÉRARD DE. 1640-1711, The Anatomy of Humane Bodies, with Figures Drawn after the Life.... Oxford: printed at the Theater, for Samuel Smith and Benjamin Walford, 1698. Folio (555 x 329 mm). [72] ff, including mezzotint frontispiece, allegorical engraved title with pasted-on English title in cartouche as usual, second engraved title with large vignette. With 114 engraved anatomical plates (2 folding - one of which printed on two joined sheets, 105 designed by Gérard de Lairesse and probably engraved by Bloteling, 9 mostly drawn and engraved by M. van der Gucht), woodcut tailpieces and floriated initials. Contemporary diced calf, neatly rebacked, 8 raised bands, spine titles gilt. Repairs to portrait, engraved titles and first five leaves (dedication and index), lower margin of portrait extended, a few additional short edge tears and small repairs to margins, loss to blank bound margin near fold of plate 23, repairs to folding plate 10, appendix plates 3 and 6 trimmed at bottom edge just inside plate line with loss of engraver signature to the latter, left margin of plate 28 trimmed inside plate line with no loss to image, scattered light foxing and occasional marginal thumbsoiling, still an attractive copy overall. Provenance: 18th century marginalia in brown ink scattered throughout.

FIRST EDITION OF "THE LARGEST IN FORMAT, AND MOST ELABORATE AND BEAUTIFUL OF ALL 17TH CENTURY ENGLISH TREATISES ON ANATOMY, and also one of the most extraordinary plagiarisms in the entire history of medicine. Cowper purchased sets of the copperplates used to illustrate [Govard] Bidloo's book [Anatomia humani corporis, 1685] ... apparently without Bidloo's permission, and issued them under his own name with an improved text in English, and a new illustrated appendix. For the frontispiece Cowper had a small printed flap with his own name pasted over Bidloo's own engraved title and name" (G-M). In spite of this blatant plagiarism, Cowper's text showed "a great deal of original research and fresh new insights" (Heirs of Hippocrates). The nine new plates that Cowper commissioned, drawn by Cooke and engraved by van der Gucht, include front and back views of the entire musculature. The engraver of the Lairesse plates is not mentioned in Bidloo's work except on the bust portrait of Bidloo which is signed A. Blooteling sculp. According to Haller the engravings are by Van Gunst, and Moehsen identifies the brothers Peter and Philip Van Gunst (see Choulant p 250). Whomever the engraver, the illustrations are considered masterpieces of Dutch baroque art. Garrison-Morton 385.1; Heirs of Hippocrates 723.9; Welcome II p 401; Wing C6698. \$7,000 - 9,000

35

ADAMS, GEORGE. C. 1709-1773.

Micrographia Illustrata, or the Knowledge of the Microscope Explain'd: Together with an Account of a New Invented Universal, Single or Double, Microscope... London: Printed for and Sold by the Author, and by Samuel Birt, in Ave Mary Lane, 1747. 4to (220 x 163 mm). 16, 263 pp. With 65 folding engraved plates. Modern half calf over marbled boards with gilt title label on spine. Frontispiece with repaired closed tear (soiled); blank margin torn from pl 13; some light spotting or toning to pages and plates, but generally a pleasant copy.

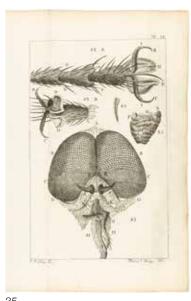
SECOND EDITION, a re-issue of the first, with 65 plates and the 20 pp catalogue of Adams' instruments at the end. Probably intended as a manual to accompany the sale of Adams' own microscopes from his shop at "Tycho Brahe's Head in Fleet Street," the work contains six plates illustrating Adams' instruments followed by 59 plates depicting all manner of objects to be viewed beneath the lens, from spermatozoa to lice and snow. The Micrographia Illustrata (1746) broadly challenged Henry Baker's profitable monopoly on the subject of popular microscopy, but was far more richly-illustrated than Baker's The Microscope Made Easy (1743). Baker in turn attacked Adams on the grounds of plagiarism. The "Catalog of the Mathematical, Philosophical, and Optical Instruments" at the rear contains some 335 items for use in experiments concerning electricity, astronomy, geography, and physics. ESTC T53415; Poggendorff I, p 10. \$2,000 - 3,000



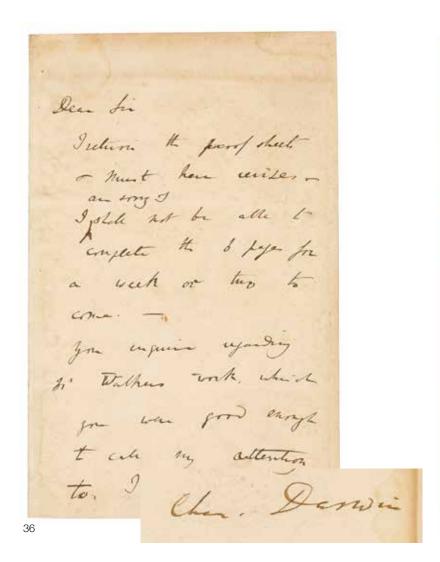
34

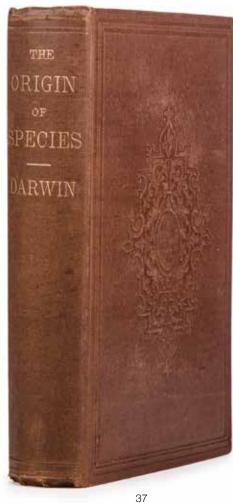


34



35





DARWIN, CHARLES. 1809-1882.

Autograph Letter Signed ("Ch. Darwin"), 2 p, 8vo (integral address leaf), 12 Upper Gower Street, Friday, [c. 1839-1842], to Thomas Green Esq., some general browning, heavier to verso of address leaf, offset and lighter browning to recto of address leaf and verso of p 2, faint dampstain to inner margin.

A SIGNIFICANT AND EARLY LETTER RELATING TO THE PUBLICATION OF DARWIN'S BEAGLE RESEARCHES, in which Darwin discusses the proofing of a type-set manuscript. Thomas Green was a member of the Geological Society of London, and probably oversaw the publication of its journals, in which Darwin published a number of his Beagle based geological researches. Darwin resided at "12 Upper Gower St" between 1839 and 1842. Given the dating of this letter and the number of proof sheets in question, the letter is most probably referring to typeset pages relating either to Darwin's article "On the Connexion of Certain Volcanic Phenomena in South America" (1840) or to his article "On the Distribution of erratic Boulders and the Contemporaneous Unstratified Deposits of South America" (1842). Dr. John Walker, whom the letter references, was a noted Scottish naturalist who published work in several fields, including several books on fossils. Darwin letters of early date and with Beaglerelated content are very rare. See Darwin Correspondence Database, http://www.darwinproject.ac.uk/entry-524F.

\$9,000 - 12,000

37

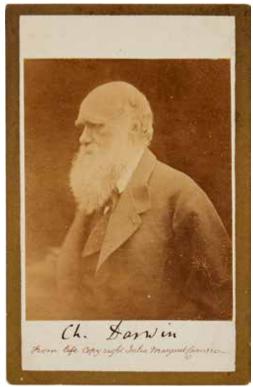
DARWIN, CHARLES. 1809-1882.

On the Origin of Species by Means of Natural Selection, Or the Preservation of Favoured Races in the Struggle for Life. New York: D. Appleton and Company, 1860.

8vo (195 x 125 mm). 432 pp. With folding lithographed plate. Original publisher's embossed brown cloth with gilt titles on spine; neat contemporary bookseller's blindstamp to flyleaf (J. M. Westhaffer of Lancaster, PA). Half-title glued rather tightly, poorly effaced collector's stamp at head of title, binding strong and very well preserved, contents crisp but with scattered foxing throughout.

FIRST AMERICAN EDITION, FIRST ISSUE, with two quotations on the verso of the half-title. "Darwin not only drew an entirely new picture of the workings of organic nature; he revolutionized our methods of thinking and our outlook on the natural order of things. The recognition that constant change is the order of the universe had been finally established and a vast step forward in the uniformity of nature had been taken" (PMM). Noting the Origin of Species' dramatic impact in Britain in November of 1859, the American scientist Asa Gray was eager to bring Darwin's book to the American public as soon as possible and began to arrange its publication in Boston in 1860. However, the New York firm of Appleton had beat him to it by mid-January, printing the first American appearance of "the most important biological work ever written" (Freeman). Freeman 377.

\$1,000 - 1,500



38 (actual size)

DARWIN, CHARLES. 1809-1882.

Photograph Signed ("Ch. Darwin"), albumen print carte-de-visite on gilt-edged card by JULIA MARGARET CAMERON, [1868], signed by Darwin on lower margin; with imprint "From life copyright Julia Margaret Camerson" below image.

Important and powerful image of the great naturalist by the pioneer photographer, Julia Margaret Cameron (1815-1879). The portrait was taken in Freshwater, Isle of Wight where Darwin went for a month-long family holiday in the summer of 1868. Cameron lived in Freshwater and made the acquaintance of the family. "She received the whole family with open-hearted kindness and hospitality, and Darwin always retained a warm feeling of friendship for her. When they left she came to see them off, loading them with presents of photographs. Moved, Darwin said: 'Mrs. Cameron, there are sixteen people in this house, all in love with you.' Darwin paid her for her portraits of him, and as the Camerons had by that time lost a great deal of money through the continued failure of the coffee crop, she gladly accepted payment and ran boasting to her husband, 'Look, Charles, what a lot of money!" (Gernsheim Julia Margaret Cameron: Her Life and Photographic Work, 1975). \$25,000 - 35,000

"YOURS FAITHFULLY": CHARLES DARWIN ON THE BIBLE.

39

DARWIN. CHARLES. 1809-1882.

Autograph Letter Signed ("Ch. Darwin"), 1 p, 8vo (integral blank), Down, Beckenham, Kent, November 24, 1880, on personal stationery watermarked Joynson Superfine, [to Frederick A. McDermott], light soiling to blank, small spot to lower right corner, fine condition.

"Private
Nov. 24 1880
Dear Sir,
I am sorry to have to
inform you that I do
not believe in the Bible
as a divine revelation
& therefore not in Jesus
Christ as the son of God.
Yours faithfully
Ch. Darwin"

An extraordinarily pointed letter from Charles Darwin to a curious potential reader. The recipient, Frederick McDermott, was a young barrister who wrote Darwin on November 23rd, 1880 with a very unusual request: "...if I am to have pleasure in reading your books I must feel that at the end I shall not have lost my faith in the New Testament. My reason in writing to you therefore is to ask you to give me a Yes or No to the question Do you believe in the New Testament. If you could answer me Yes I should most gladly enter upon the study of your wonderful books but without that assurance I fear my brain is not fine enough to argue out doubts which might be suggested by your works but if I can say that the author of these doctrines believes as I do that Christ was the Son of God, I can say it is only in matters of detail that Mr Darwin differs from Charles Kingsley and I may read with full pleasure of all the wonders of nature which he has collected...." McDermott continues by promising not to publicize Darwin's reply in the "theological papers." McDermott was true to his word, and the contents of this letter were not made public until more than a century after they were penned. (See Darwin Correspondence Database, http://www.darwinproject.ac.uk/entry-12845 for a full transcription of McDermott's letter.)

Darwin's reply was both swift and frank. Under the heading "*Private*" he states his lack of faith in the New Testament. This exchange apparently comprises the entirety of the correspondence. Darwin's writing on religion is typically much more circumspect, perhaps because his correspondents were usually more public figures: Asa Gray, Charles Kingsley, William Reade, John Fordyce, et al. Darwin's attitude towards religion has been the subject of debate since the publication of *On the Origin of Species* in 1859. In 1880 the topic was again making headlines as the atheist Charles Bradlaugh was elected as an MP but prevented from taking his seat. The secularist Edward Aveling asked Darwin for his endorsement in October, 1880 but failed to secure it. Darwin replied that, "It has ... been always my object to avoid writing on religion, & I have confined myself to science. I may, however, have been unduly biassed by the pain which it would give some members of my family, if I aided in any way direct attacks on religion." Just a month after Darwin declined to publicly support secularism he pens this private letter. See Darwin Correspondence Database, http://www.darwinproject.ac.uk/entry-12851.

\$70,000 - 90,000

finate DOWN, BECKENHAM, KENT. Am. 24 1850 RAILWAY STATION ORPINCTON. S.E.R de a si I am 10mg to how to inform you the I to no between in to Bike a a frie suitan I Therfore hot in ferry Churt in a my ford. zun fruttig Ch Farrini

39 (actual size)

DARWIN, CHARLES. 1809-1882.

Autograph Letter Signed ("Ch. Darwin"), 1 p, 8vo (integral blank), Down, Beckenham, Kent, Railway Station Orpington S.E.R., November 11, 1881, on personal stationery watermarked Joynson Superfine, [to J.F. Galbraith], some stains to blank, two small spots to upper section, light thumb-soiling to fore-edge, some small adhesive stains to lower edge.

"November 11, 1881.

Dear Sir,

I thank you for your kindness in having written me so long a letter, but I can assure you that there is not a naturalist in the world who would credit that germinating seeds could be developed into animals of any kind. There was plenty of time and means for the indefinite multiplication of innumerable kinds of animals in the cask.

Yours faithfully

Ch. Darwin."

The recipient, J.F. Galbraith of Nelsonville, Manitoba, wrote Darwin a 3-page letter on October 20, 1881 in which he recounts an incident of development of worms in a barrel of wheat, noting that he had pondered Darwin's view that plants and animals may have had a common ancestor. Darwin tactfully sets him straight.

See Darwin Correspondence Database, http://www.darwinproject.ac.uk/entry-13417; Burkhardt, Frederick, *A Calendar of Correspondence of Charles Darwin, 1821-1882*, Volume 1, p 562.

\$6,000 - 10,000

house 11" 1881 DOWN, BECKENHAM, KENT. RAILWAY STATION Dear Ju I think you for you that mays in hering written me 10 ling you afrom the Then is not a naturalist in to word who and croit the generally suits and he Quelpet into anotals of any Wint of The was plant of time of men for to wilfinite multiplication of mounth thinks of an mille in to cark. Dear JE zom fact full Ch. Darwin

40 (actual size)











41

NINETEENTH-CENTURY JAPANESE MEDICAL PHOTOGRAPH COLLECTION.

Collection of 10 albumen print *carte-de-visite* photographs, depicting 10 different subjects with various ailments and diseases by Japanese photographer M. Wakabayashi, c. 1880, Kitashinchi, Osaka, Japan. Each card bears the name of the disease in manuscript in German, 3 cards additionally bear the corresponding Japanese name. A few photos with loss to images at edges.

A fascinating collection, most likely used for medical research. Diseases depicted include sarcoma, lupus, pseudo-leukemia, paralysis agitans, hydrocele, hysteria, and kyphosis. \$600 - 900

42

WHITE'S PHYSIOLOGICAL MANIKIN.

White's Physiological Manikin. New York, James T. White & Co., Publishers, 1886.

Two folding wooden panels measuring $34\frac{1}{2} \times 23\frac{3}{4}$ ", opening vertically to $68\frac{3}{4} \times 23\frac{1}{2}$ ", with chromolithographed flaps for both halves of torso, arms, hands, legs, feet, the head, as well as a large ear and large eye, opening to reveal various layers of a male human body, flaps held down with movable metal tabs.

A wonderful, nearly life-sized anatomical "manikin" used primarily by medical students, giving an internal view of the human body, including the muscles, tendons, arteries, bones, joints, digestive organs, heart, lungs, and reproductive organs.

\$800 - 1,200

KOCH, ROBERT. 1843-1910.

Autograph Letter Signed ("R. Koch") 2 1/2 pp recto and verso, 8vo (conjoined leaves), Berlin, December 4, 1900, on stationery of The Royal Institute for Infectious Diseases, large tear from second leaf affecting a portion of text, some tape repair and a small hole to first leaf. WITH: Cabinet card woodburytype portrait of Robert Koch, light spotting to mount.

RARE ROBERT KOCH LETTER FROM HIS MICROBE-HUNTING HEYDAY. In the present letter Koch excuses himself from a lecture invitation on the grounds that he is 1) too busy catching up after his return (from the tropics), 2) that he was been away too long from the society to know the group, and 3) that he will still be engaged in malaria research at that date. "The pace of travel and discovery was frenetic. After having spent only nine months in Germany over a period of four years Koch returned to Berlin in October 1900. By that time, Pasteur, Koch and their disciple microbe hunters, seeking salvation for humankind and perhaps a little glory for themselves, had in the space of just over two decades identified 21 germs that cause disease. 'As soon as the right method was found, discoveries came as easily as ripe apples from a tree,' Koch said. And it was Robert Koch who had developed those methods." (Persson Smallpox, Syphilis and Salvation, 2010, p 90).

\$1,500 - 2,500

44

JAPANESE MEDICAL ADVERTISEMENT.

Kimochin [Gastrointestinal Medicine; Daruma [Cold Medicine]. Made by Honpo Hokuriku Toyama Baiyaku Kabushiki Kaisha Company & sold by Hatsubaimoto Tanikawa Kaishindo, Japan, c. 1910. Broadsheet (300 x 255 mm), xylographically printed in red & black on rice paper. Small paper flaw to one edge, else fine.

A whimsical early 20th century Japanese medicine advertisement, featuring the extremely popular Japanese folklore figure Kintarō, a boy with superhuman strength, defeating a huge bear.

\$600 - 900

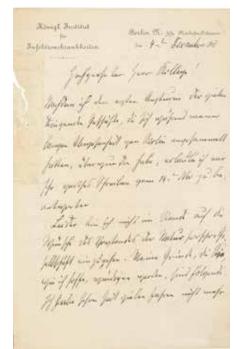
45

RICHET, CHARLES. 1850-1935.

Autograph Letter Signed ("Charles Richet"), 1 p, 4to, [Paris, n.d.], on letterhead, light soiling.

In full, translated: "Dear Sir, I do believe that quinine is an excellent remedy against tuberculosis. I wrote a book on this subject which I will send to you." Richet won the Nobel Prize for Medicine in 1913 for his work on anaphylaxis.

\$500 - 800



43



44





George Minot, c.1934

THE 1934 NOBEL PRIZE MEDAL FOR PHYSIOLOGY OR MEDICINE.



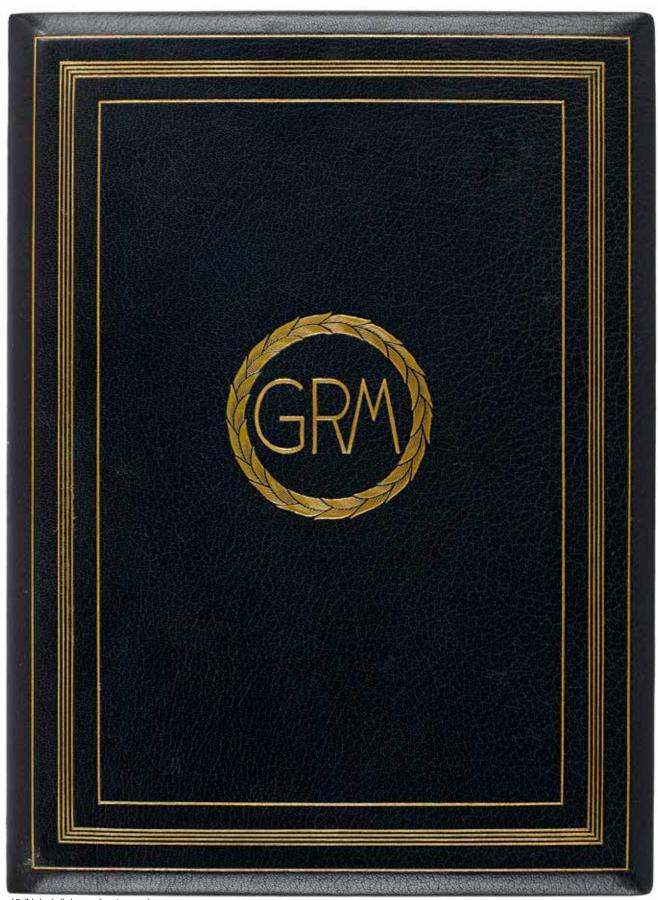
46 (actual size)



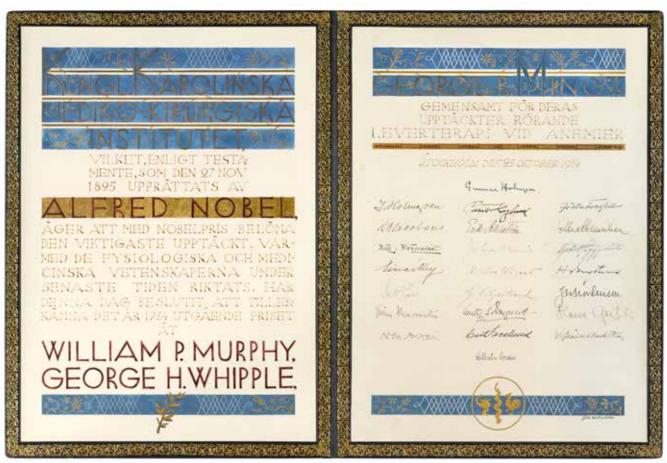
46 (actual size)

THE 1934 NOBEL PRIZE MEDAL FOR PHYSIOLOGY OR MEDICINE.

PRESENTED TO GEORGE MINOT FOR HIS PIONEERING WORK ON PERNICIOUS ANEMIA. [MINOT, GEORGE. 1885-1950.] Nobel medal, struck in 23 carat gold, approx. 200 g, 67 mm in diameter. Designed by Erik Lundberg and manufactured by the Kungliga Mynt och Justeringsverkey (Swedish Royal Mint). Obverse with bust of Alfred Nobel facing left, "ALFR. / NOBEL" to left of bust, "NAT. / MDCCC / XXXIII / OB. / MDCCC / XCVI" to right of bust, signed "E. LINDBERG" at the lower left edge. Reverse features allegorical vignette of the Genius of Medicine holding an open book in her lap, and collecting the water pouring out from a rock in order to quench a sick girl's thirst. Legend above vignette reads "INVENTAS VITAM IUVAT EX COLUISSE PER ARTES", plaque below vignette reads "GEORGE MINOT / MCMXXXIV", motto to either side of plaque reads "REG. UNIVERSITAS" "MED. CHIR. CAROL." Signed "E. LINDBERG" to lower right of vignette. Housed in the original diced maroon morocco case, decorated in gilt and lined in velvet and satin.



46 (Nobel diploma, front cover)

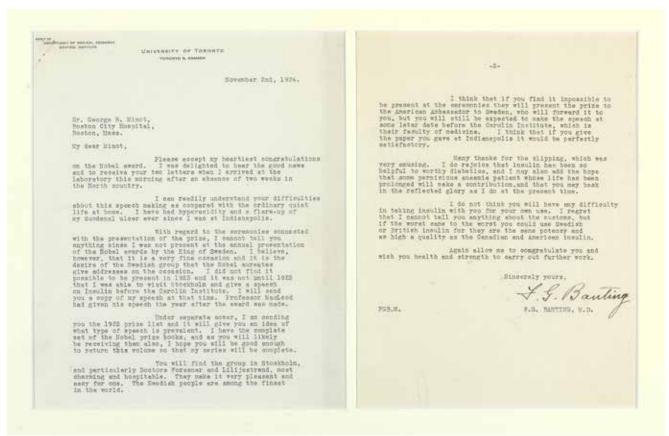


46 (Nobel diploma, open)

WITH:

1. Nobel Prize Diploma, two vellum leaves (each 341 x 242 mm) with calligraphic inscriptions in Swedish in blue, red & gold, including William P. Murphy & George H. Whipple's names on first leaf, and giving George R. Minot's citation dated October 25, 1934 on second leaf, second leaf signed by 23 members of the Royal Swedish Academy of Sciences, both leaves with decorative cartouches in blue, gray, and gilt, second leaf with gilt vignette signed by Swedish artist Jerk Wermäster, featuring a staff of Asclepius (the Greek God of Medicine & Healing), a bowl of Hygieia (the Greek goddess of hygeine, and daughter of Asclepius), and a cockerel (sacred bird to Asclepius, often sacrificed at his altar). Both leaves mounted as linings in a blue morocco portfolio ruled in gilt (363 x 266 mm), upper cover with central wreath device encircling monogram "GRM" [George Richards Minot], lower cover with gilt staff of Asclepius and small blind-stamp of Royal Swedish bookbinder Gustaf Hedberg.

- 2. Original Radiogram sent to George Minot from Gunnar Holmgren, Rector of the Caroline Institute, informing him of his win. Stamped with date 1934, Oct 26 AM 6:53.
- 3. Typed Letter Signed ("Gunnar Holmgren.") 1 p. folio. Stockholm. Sweden, Oct[ober] 26, 1934, on blind-stamped letterhead of the Rektor of the Caroline Institute, being the official letter informing George R. Minot of the committee's decision to award him the Nobel prize. 4. George R. Minot & William P. Murphy, "Treatment of Pernicious Anemia by a Special Diet." Offprint from The Journal of the American Medical Association, Aug. 14, 1926, vol 87, pp 470-476.
- 5. Typed Letter Signed ("F.G. Banting,") 2 pp, rectos only, folio, Toronto, Canada, November 2nd, 1934, congratulating Minot on his Nobel prize win, giving him advice on writing his speech, and on obtaining insulin in Sweden, on letterhead of the University of Toronto, Department of Medical Research, Banting Institute. Matted, framed, and glazed.

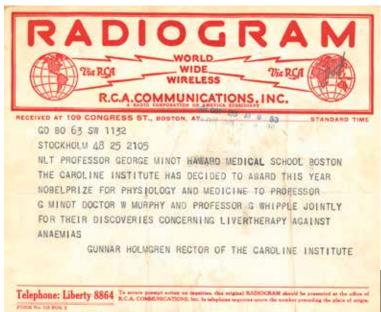


46 (Congratulatory letter from F. Banting)

- 6. Carbon copy of speech given by Minot to Nobel committee upon acceptance of his prize. 2 pp, rectos only, with 4 line notation in pencil to p 1 by Minot.
- 7. Gelatin silver print photograph of 1934 Nobel prize winners seated at award ceremony.
- 8. H. Schuck & R. Solman, *Alfred Nobel*. London: William Heinemann Ltd, 1939. Limited edition, number 51 of 100 numbered copies. Presentation inscription to flyleaf to George Minot from the Nobel Foundation, dated Dec[ember] 12th, 1934.

GEORGE MINOT'S 1934 NOBEL PRIZE MEDAL FOR HIS LIFE-SAVING WORK ON PERNICIOUS ANEMIA, a disease which was invariably fatal until Minot described the effective treatment. A video explaining the history of this medal can be viewed on our website at http://www.bonhams.com/video/19794/

The Nobel Prize represents the summit of human achievement. Established by Swedish inventor Alfred Nobel in 1895 in his will, the prizes in the initial five categories of Physiology or Medicine, Physics, Chemistry, Literature and Peace were first instituted in 1901, with the Nobel Peace Prize being presented in Oslo, and the other categories in Stockholm. Each category is awarded by a different body, with the prize in Medicine or Physiology being awarded by the Nobel Assembly at the Karolinska Institute, the prizes in Physics, Chemistry and Economics (the related *Sveriges Riksbank* Prize in Economic Sciences, established in 1968 by the Swedish Academy, the prize in Literature by the Swedish Academy and the Peace Prize by the Norwegian Nobel Committee. Awarded each year on December 10th, each laureate is presented with a Nobel Medal engraved with their name, a Nobel diploma custom designed by the leading



46 (Original radiogram announcing award)



46 (Vintage photograph of Minot & other Nobelists at 1934 Nobel ceremony)

Swedish and Norwegian artists and calligraphers, and an official letter from King Carl XVI Gustaf of Sweden, confirming their cash award amount (which varies, but is usually set at 8 million Swedish kronor per full prize). Nobel medals after 1980 have been minted in 18 carat gold and plated in 24 carat gold, but prior to this, as is the case with the present medal, they were minted in solid 23 carat gold, weighing in at about 200 grams. The medals in Physiology or Medicine, Chemistry and Physics all carry on the obverse the same design, being a profile bust of Alfred Nobel, while each category has its own specific design on the reverse.

George Richards Minot (1885-1950), the son of a physician, was a Harvard graduate, completing medical school there in 1912. He then trained at Massachusetts General Hospital and Johns Hopkins before being appointed Assistant in Medicine at Harvard Medical

School and Massachusetts General Hospital in 1915. Seven years later, he was appointed Physician-in-Chief of the Collis B. Huntington Memorial Hospital of Harvard University, before being elected Professor of Medicine at Harvard in 1928.

Minot published numerous papers on topics ranging from blood disorders, to arthritis, cancer, and dietary deficiencies (in particular vitamin B deficiency) and researched many others such as blood transfusions, coagulation of the blood, and disorders of the lymphatic tissues, but his name will always be best known for his pioneering work in pernicious anemia. Minot's interest in this area began as early as 1914, shortly after completing medical school, and much of his early research related to the topic. However, it was not until later, in 1926 that he and fellow Harvard physician William P. Murphy discovered the impressive work of George Hoyt

CANCER COMMISSION OF HARVARD UNIVERSITY

Reprint No. 200

Treatment of Pernicious Anemia by a Special Diet

GEORGE R. MINOT, M.D.

AND

WILLIAM P. MURPHY, M.D. BOSTON

Reprinted from The Journal of the American Medical Association Aug. 14, 1926, Vol. 87, pp. 470-476

COPYRIGHT, 1926
AMERICAN MEDICAL ASSOCIATION
FIVE HUNDRED AND THIRTY-FIVE NORTH DEARBORN STREET
CHICAGO



Whipple on the treatment of anemia in dogs. Later that year, Minot and Murphy described the effective treatment of pernicious anemia by means of a diet of liver in their paper "Treatment of Pernicious Anemia by a Special Diet." Minot, Murphy, and Whipple went on to be awarded the 1934 Nobel Prize for Physiology or Medicine for this pioneering work. Other than the Nobel Prize, one of the highest honors conferred. Minot was also awarded the Cameron Prize in Practical Therapeutics (jointly with Murphy), the John Scott Medal of the City of Philadelphia, and the Popular Science Monthly Gold Medal and Annual Award for 1930 (jointly with Whipple). He was also a fellow or member of numerous medical organizations, both in the US and internationally.

It is interesting to note that were it not for the discoveries of two previous Nobelists, Frederick Banting (1891-1941) and John James Rickard Macleod (1876-1935) it is very likely that Minot would not have lived long enough to win his own prize. Minot suffered from diabetes mellitus, which was a fatal disease for most of Minot's life. Banting and Macleod's discovery of insulin, for which they were jointly awarded the 1923 Nobel in Physiology or Medicine, saved Minot's life, allowing him to go on to complete his work on pernicious anemia, savings countless lives himself. Included in the present lot is an excellent letter from Banting to Minot congratulating him on his win, and offering advice on the availability of insulin in Sweden and London.

\$200,000 - 300,000



FROM THE COLLECTION OF NOBEL PRIZE WINNER PHILIP HENCH.

47

"THE ANATOMY LESSON OF DR. NICOLAES TULP."

Group portrait after Rembrandt Van Rijn, unattributed, oil on canvas, approx. $31 \times 23\frac{1}{2}$ ", framed to $38 \times 30\frac{1}{2}$ ", depicting a group of men watching a dissection, [c. 1950].

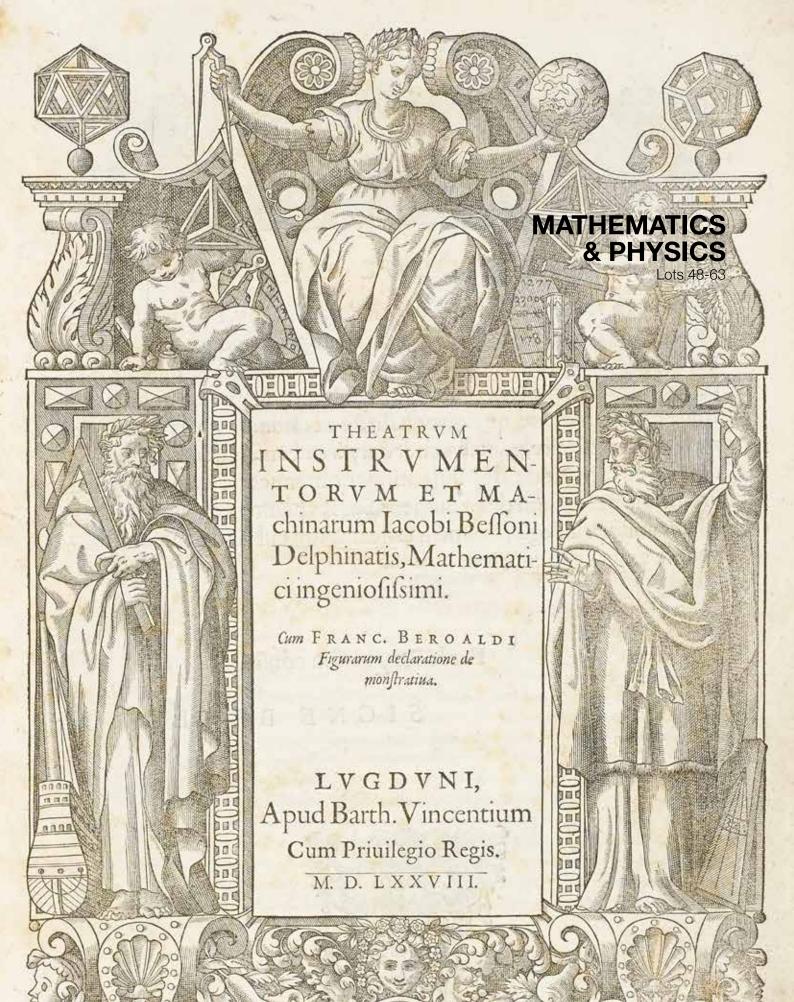
Provenance: From the collection of Nobel Prize-winner Philip Hench (1896-1965), who purchased the painting in Amsterdam while on his trip to Oslo to accept his Nobel prize.

20th century oil painting on canvas reproducing Rembrandt's painting of Dr. Nicolaes Tulp's famous anatomy lesson (1632). Rembrandt's original work hangs in the Royal Picture Gallery Mauritshuis in The Hague. "Sixteenth-century artists started the practice of setting a group portrait in an anatomy theater, which was a special room where students and other interested spectators could watch a corpse being dissected. The onlookers in Rembrandt's painting ... are not [all] medical men. They are local government officials who, as was customary in their day, are attending a lecture by a distinguished scientist, just as they might attend an important theater performance. The goal was to see and be seen" (Pescio, p 34). Two figures in the painting "Dr. Frans van Loenen, the uppermost figure, and Dr. Jacob Koolvelt, at the extreme left, paid, as the first five ... had already done, to have themselves painted in some years later" (Delaney, p 98). The paper held by the second figure from the right is a list of all the men

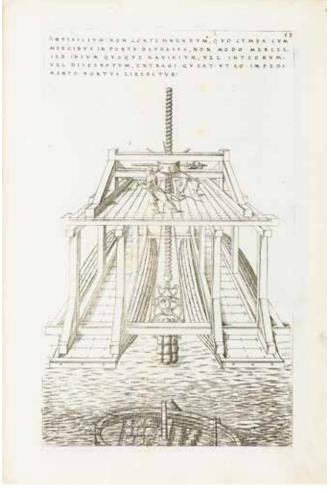
featured in the painting, and the open book at the cadaver's feet is Andreas Vesalius' quintessential anatomical work, *De humani corporis fabrica* (1543). The cadaver was, in life, Adriaen Adriaanszoon, alias Aris Kint [Kindt], who was found guilty of armed robbery and violence, and sentenced to death by hanging, though he was strangled shortly before his execution ceremony.

Nicolaes Tulp (1593-1674) was a Dutch surgeon and mayor of Amsterdam. While Rembrandt's painting ensured his place in history, Tulp (one of several who commissioned the painting) is also remembered for signing the fitness reports for the first Dutch settlers on the island of Manhattan, and for writing, with some doctor and chemist peers, the first pharmacopoeia of Amsterdam, *Pharmacopoea Amstelredamensis* (1636).

Philip Hench, along with his Mayo Clinic co-worker Edward Calvin Kendall and Swiss chemist Tadeus Reichstein was awarded the Nobel Prize for Physiology or Medicine in 1950 for the discovery of the hormone cortisone, and its application for the treatment of rheumatoid arthritis. The Nobel Committee bestowed the award for their "discoveries relating to the hormones of the adrenal cortex, their structure and biological effects."







THE THEATRE OF MACHINES.

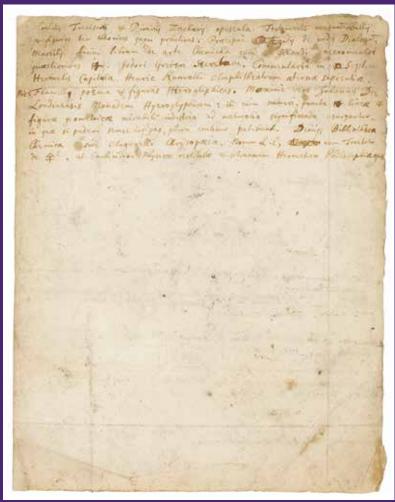
48

BESSON, JACQUES. 1540?-1573.

Theatrum instrumentorum et machinarum. Lyon: Barthelemy Vincent, 1578. Folio (368 x 252 mm). Text in Latin. [11] ff; A-B⁴ C⁴(-C4), plus 60 full-page engraved plates, title within wide elaborate woodcut architectural border; woodcut head- and tail-pieces, chapter initials. Additions by Francisco Beroaldus. 19th century quarter calf. Very pale foxing to title and some other leaves, spine dry and chipped, upper cover started. Provenance: Harrison D. Horblit, 1912-1988 (bookplate).

HORBLIT COPY of the Beroaldus edition of Besson's work on engineering machinery and mathematical instruments, the first book on the topic to be printed in France. There were three editions done by Vincent in 1578: this one in Latin, one with French text, and another with title in both French and Latin and text in French. Most of the plates were engraved for Besson by the architect Jacques Androuet du Cerceau in the 1560s, four being engraved later by Rene Boyvin and with his monogram. Together they comprise a fine visual record of the state of mechanical engineering at the end of the sixteenth century, including tools for stone-cutting, raising ships, fire-fighting, dredging etc., together with designs for wells, pontoons, mill-wheels, and a water-driven musical clock. This was the first book produced in the new 16th century genre of "theatre of machines." Before this work, illustrations of machines had been produced, but represented mainly current or new inventions; this was really the first time fantastical and conceptual machines had been represented, as the book shared a range of machines that Besson had envisioned as being possible to build. Adams B838; Mortimer French 58; Norman 227.

\$4,000 - 6,000



ISAAC NEWTON, CHEMICAL PHILOSOPHER.

49

NEWTON, ISAAC. 1642-1727.

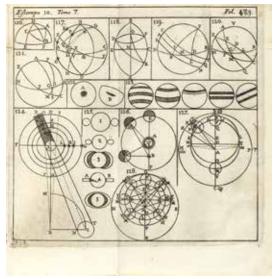
Autograph Manuscript in Latin, 2 pp, 4to (199 x 155 mm), [np], [c. 1670], being an unpublished listing of chemical authors with some citations of their works that Newton has worked with or is intending to research, some light soiling to edges and a few very minor spots.

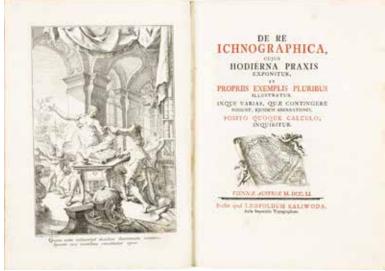
VERY RARE UNPUBLISHED MANUSCRIPT WRITTEN AT THE BEGINNING OF HIS CHEMICAL RESEARCHES, in which Newton composes a list of chemical authors (together with some citation of their works) he has either worked with or is intending to research. The authors listed range from Democritus, the ancient proponent of atomic theory, to the Elizabethan scientist/magus John Dee, and include many of the most famous "chymists" and alchemists: e.g. Geber, Basil Valentine, Albertus M[agnus], Arnold de Villa Nova, [Raymond] Lull, Ripley, Sendivogius, Flamel, Marsilio Ficino, and Heinrich Kunrath. The final two lines on the recto (beginning "Tabulae Senioris") single out the illustrations in the work of 4 noted authors. In contradistinction to the text on the recto, which lists authors alphabetically on distinct lines, the text on the verso is written as a paragraph and Newton intercalates the author citations with his own thought and comment. John Dee's work on the Monas Hieroglyphica is especially singled out for its excellence - Newton here writing: "There numbers, points, lines and geometrical figures are used with remarkable industry to signify natural things. Once you put your foot there, more will immediately open." This manuscript bears relationship to Newton's famous "Index Chemicus" which he compiled over the course of years and which ultimately ran to some 100

pages, and is very possibly a first effort to its creation. The new scholarly paradigm of Isaac Newton evidences the integral linkage of Newton's "chemical philosophy" and his "natural philosophy" (i.e. physics). It is widely recognized that Newton thought chemistry held the solution to "the active cause of gravity" (which the *Principia* did not provide). Many scholars would argue that Newton's pre-*Principia* researches into the "active principles" of chemical philosophy had a formative influence on the concept of gravitational force expressed in his natural philosophy — a concept of "attraction" which, in turn, subsequently appears to have framed his post-*Principia* conclusions about chemical philosophy. The scientific fruit of this mutual intercourse of fields is most prominently evident in Newton's "De natura acidorum," where we observe "the transition from the alchemical concept of active principle to the Newtonian concept of attraction expressed in his own words."

Newton spent some 30 years in the research of chemistry and was highly guarded about his studies throughout his lifetime. Indeed his sole lifetime published work in the field, "De natura acidorum" (printed in Harris' Lexicon Technicum), was perhaps published without his official permission. It is only in recent decades that scholars have had access to Newton's chemical manuscripts and have begun their formal study.

Almost all of Newton's manuscripts are in institutions, and manuscripts bearing on his scientific researches are especially rare in private hands. \$60,000 - 90,000





50

TOSCA, TOMAS VICENTE. 1651-1723.

Compendio mathematico, en que se contienen todas las materias mas principales de las Ciencias, que tratan de la Cantidad. Madrid: Antonio Marin, 1727.

9 volumes. 8vo (170 x 110 mm). Engraved plate of arms and 125 plates only (of 133, most of which are folding), 5 folding letterpress tables. Period vellum (vols 1-8), and tree sheep (vol 9). Worming, occasional dampstains, many plates frayed or with loss, vol 1 pp 275/6 defective, 3 titles irregularly trimmed w/out loss, rubbed. Sold not subject to return.

Second edition. Tosca was a veritable polymath, and the Compendio touches on ballistics, astronomy, music, architecture, earthquakes, and other fields. Palau 337932.

\$800 - 1,200

51

MARINONI, GIOVANNI JACOPO DE. 1616-1755.

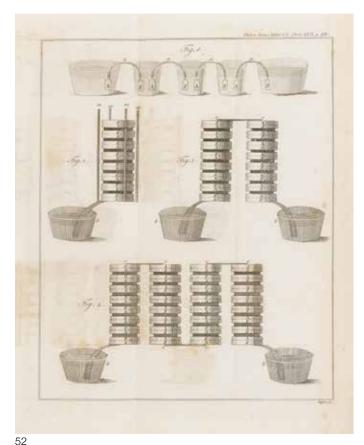
De Re Ichnographica, cujus Hodierna Praxis Exponitur, et Propriis Exemplis Pluribus Illustratur. Inque varias, quae contingere possunt, ejusdem aberrationed, posito quoque calculo, inquiritur. Vienna: Leopold Kaliwoda, 1751.

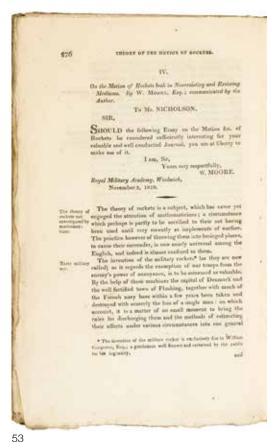
Folio (311 x 225 mm). [xviii], 294, [2, errata] pp. With engraved frontispiece, 43 full page engraved plates, 5 double-page engraved plates, and 87 engravings in-text, title in red & black with engraved vignette, woodcut head- and tail-pieces. Contemporary blind-ruled calf, spine gilt in compartments, all edges red. Binding rubbed, some chipping to spine; blank margin of E1 torn with small repair; overall an excellent copy, clean and fresh.

Provenance: Gerard van Swieten, personal physician to Empress Maria Theresa (full-page manuscript presentation leaf from author).

FIRST AND ONLY EDITION, AUTHOR'S PRESENTATION COPY of this treatise on architectural surveying. The work concerns the geometrical representation of buildings, cities, fortifications, and landscapes, and is luxuriously illustrated with numerous engravings of instruments as well as plans, maps, and diagrams. Marinoni was Imperial Mathematician and Director of the Academy for Geometry and Military Science in Vienna. Berlin Ornamentstichkatalog 1736; Cicognara 939; Graesse IV, 401; Riccardi II, 119.

\$2,500 - 4,000





VOLTA, ALESSANDRO. 1745-1827.

"On the Electricity Excited by the Mere Contact of Conducting Substances of Different Kinds." Extracted from: Philosophical Transactions of the Royal Society of London, volume 90, part II. London: W. Bulmer & Co. for Peter Elmsley, 1800. 4to (270 x 214 mm), 403-431 pp, with 1 folding engraved plate by James Basire illustrating the first electric battery. Text in French. Old tan paper wrappers with some penciled notations to front wrapper. Light offsetting from folding plate, otherwise a fine copy.

FIRST EDITION of "the first announcement of the voltaic 'pile,' or electric battery" (Grolier/Horblit). "The voltaic pile revolutionized the theory and practice of electricity, so that within one hundred years of Volta's invention, more progress was made than in the two thousand four hundred years between the tentative experience of Thales and the publication of Volta's letter addressed to Sir Joseph Banks, President of the Royal Society ... The indispensability and ubiquity of electricity, in one form or another, in western civilization today emphasize sharply the fact that before 1800 human environment and existence were closer to life in ancient Egypt than to our own" (PMM). "This paper, in French, was sent by Volta to Sir Joseph Banks in London for communication to the Royal Society. In it Volta describes the pile of alternating dissimilar metals (silver and zinc) which, when moist, generated the flow of constant-current electricity. With this new force, water was decomposed, metal was electro-deposited, the electromagnet was created and the electrical age was begun" (Dibner 60). Grolier/Horblit 37b; Norman 2164; PMM 255.

\$2,000 - 3,000

THE TRUE FATHER OF ROCKETRY, PRE-DATING TSIOLKOVSKY.

53

MOORE, WILLIAM. FL. 1806-1826.

"On the Motion of Rockets both in Nonresisiting and Resisiting Mediums." WITH: "Correction of an Errour in a former Paper on the Motion of Rockets." In: A Journal of Natural Philosophy, Chemistry, and the Arts. Vols 27-30. London: for the author, 1810-1812. 4 volumes. 8vo. Pp 276-285; 161-169; 241-254; 93-94. Publisher's blue boards over tan paper spines, uncut. Spines with manuscript titles. Spines tanned, corners bumped, some light chipping to blue paper, front cover of vol 3 detached.

Provenance: Franklin Institute, Philadelphia (old paper library labels to spines and bookplates).

FIRST APPEARANCE of Moore's groundbreaking paper on rocket dynamics, the first scientific mathematical work of its kind, which applied Newton's third law of motion. The first publication of the first rocket equation, the equation was widely credited to and named after Konstantin Tsiolokovsky, who independently derived and published it in 1903, almost 100 years after the publication of Moore's paper, making Moore the true unrecognized "Father of Rocketry." "His theories on rockets first appeared in Nicholson's Journal for 1810 and 1811. In 1813 Moore published his collected findings as A Treatise on the Motion of Rockets. The world's first mathematical treatise on rocket dynamics, it had many shortcomings; and Moore admitted that lack of data had hindered his calculations. Nonetheless, he correctly recognized and demonstrated that Newton's third law of motion explained the principle of rocket motion. Moore was the first to consider rocket performance in terms other than range and altitude, and he arrived at calculations for thrust and specific impulse. He also suggested the use of the ballistic pendulum for a more accurate determination of performance" (Dictionary of Scientific Biography.) \$1,000 - 1,500

A. E. Taylor and Philippin der when Newtole-bourding be beleficiale Processes die Lage - Bentalland in benette hat it mile die Laber genomente Efficien don't grange Menger Nebruger teel ene In Versionalen Hanten understie fet weeds to adulated our let him her and Noffentlish wind a sein bale lu in die Pharitrigheite in mit dem Mon soft about down die deutste Testante down Fred Low Francisco was hinden Wassempt ist so selve training In seles, and annihistrate Elemente 23 Genering Sentulland her der jet with Kind verlinden Wit when mit giveter Unite de Cargainer in Ma then and jetst noch made in Berlin as grape Him falls de Anarchimuns -Statullend witchend geniunt to and er in der übrigen Well und auch der Assisten Bildebrugen die wieden de met, solv soline fallen with gogs. diese Pandamie as linten Tet estate jeter stone side die ich senate dan die Reis - grown

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54

GIBBS, JOSIAH WILLARD. 1839-1903.

On Multiple Algebra. An Address Before the Section of Mathematics and Astronomy of the American Association for the Advancement of Science at the Buffalo Meeting, August 1886. Massachusetts: Salem Press, 1886. 8vo (245 x 156 mm). 32 pp. Original printed wrappers. Extremities with some chipping, lower right corner of front wrapper bent and professionally repaired; closed tear to lower portion of spine, lower corners chipped off of back wrapper; internally fine and unopened.

FIRST EDITION of this important offprint, of which only 276 copies were printed. It contains Gibbs' address given while Vice President of the AAAS. "The great merit and power of Grassman's system, as set forth in Gibbs' address, lies in its generality and inclusiveness. It is in the recognition of different kinds of products that Grassman's system differs most radically from the multiple algebras of the others, such as those of Hamilton and Pierce. And it was in connection with this concept of a plurality of multiplications that Gibbs founded his principal contributions to the subject. The development of the dyadic analysis undoubtedly forms Gibbs' most significant contribution to multiple algebra. His recognition of the key position of the indeterminate product in the Grassmanian system and its relation to the theory of matrices as well as his demonstration that both the algebraic and the external of combinatorial products could be derived from the indeterminate product, was an original contribution of great value" (Wheeler Josiah Willard Gibbs 113).

\$600 - 900

55

ARRHENIUS, SVANTE. 1859-1927.

Autograph Letter Signed ("Svante Arrhenius"), in German, 4 pp recto and verso, 8vo (conjoining leaves), [Stockholm], March 3, 1919, discussing food shortages in Germany and his recent work, leaves creased, lightly spotted and toned, red crayon mark at left margin of p 3 not affecting text. WITH: Typed Letter Signed of Dr. J. Morganroth, 1 p, 4to, Berlin, April 7, 1919, to Mrs. Paulson, forwarding the Arrhenius letter for her collection.

A FOUNDER OF THE SCIENCE OF PHYSICAL CHEMISTRY, & DISCOVERER OF THE GREENHOUSE EFFECT. Arrhenius began his career as a physicist before turning his interest to chemistry, founding (with others) the discipline of physical chemistry. He was awarded the 1903 Nobel Prize in chemistry, and two years later was made director of the Nobel Institute. He is best remembered, however, for his 1896 study explaining the Greenhouse Effect. In this letter, written to an unknown correspondent, Arrhenius discusses recent post-war conditions in Germany. In part (translated): "We are extremely sorry for the Germans, who are still suffering from a severe shortage of food. My brother-in-law, Professor Johansson, was in Berlin about 1 1/2 months ago and wrote a report about it, which was given to the local American Consul for forwarding to President Wilson. A professor A.E. Taylor from Philadelphia, presently staying in the Hotel Adlon, reported the conditions in Germany, stating that sufficient amounts of food products should be provided from the United States. ... One says, however, that the German sailors prevent the transport by strikes. In fact, it is very sad to see how anarchistic elements prevent the forwarding to Germany at this point ... In case the anarchy in Germany gets the upper hand, it will be very difficult to guard against such nonsense in the rest of the world and also where we are." The work Arrhenius refers to here is most likely The Food Problem (NY: 1917) by Alonzo Englebert Taylor (1871-1949), a discussion of wartime disruption of the world food supply.

Arrhenius goes on: "I am now working a bit on the influence of neutral substances on catalytic processes. I would like to use the resulting information for serological purposes, I have now noticed in the literature, that quite a number of observations have been made concerning the action of salts and other such compounds on the Wassermann reaction. I would be very thankful to you, if you could let me know, where to find a summarized presentation of the available information. If I have that, I could pursue the matter further with the data in the literature." Arrhenius closes by sending news of other colleagues and congratulating his correspondent on his recent publications.

EINSTEIN, ALBERT. 1879-1955; AND HABER, FRITZ. 1868-1934.

Autograph Letter Signed ("A. Einstein"), in German, 1 p. 4to, Berlin, March 20, 1918, to Fritz Haber, on personal letterhead, with additional annotation and signature in pencil at upper margin by Haber, light creasing and toning, three holes punched at left margin. WITH: Typed Letter Signed of Dr. J. Morganroth, 1 p, 4to, Berlin, February 21, 1919, forwarding the letter to Fraulein Bing.

EINSTEIN ASKS FOR HELP FUNDRAISING FOR PHYSICS STUDENTS. In 1914 Einstein returned to Berlin, and two years later was appointed president of the German Physical Society (Deutsche Physikalische Gesellschaft). In this capacity, he writes to noted chemist Fritz Haber asking for help with a fundraising project. Haber would go on to win the 1918 Nobel Prize for Chemistry and is remembered today for his invention of synthetic fertilizer and as the "father of chemical warfare." In part (translated): "We have decided, in spite of these difficult times, to try to establish a fund to support Physics Laboratories ... Scheel and I should take care of it. Everything has been prepared for a mailing but we are worried that our valiant effort may end up in the wastebaskets of the firms without having ever been read unless the request is delivered into the hands of the correct people. However, we do not know the right people to contact ... We are embarrassed, but politely ask you to look through the enclosed list of leaders and to give us pointers as well as the addresses...." Einstein adds in a post-script: "I beg you not to let this affair rest. If you have no time for this matter, please send the list back" and suggest another person who might be willing to help. Haber adds a note mentioning another chemist and signs at the upper margin of the page. Unusual to have the signatures of two Nobel Laureates on the same letter.

\$3,000 - 5,000

57

EINSTEIN, ALBERT. 1879-1955.

Autograph Letter Signed ("A. Einstein"), in German, 1 p. 4to, [Berlin], June 30, 1920, to Hans Reichenbach, uneven toning, a few spots in upper margin, two-hole punch at left margin, folding creases.

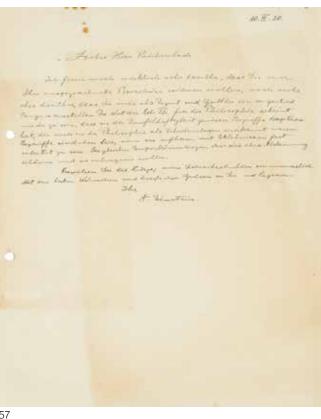
"CONCEPTS ARE SIMPLY EMPTY WHEN THEY STOP BEING FIRMLY LINKED TO EXPERIENCES." EINSTEIN ON THE VALUE OF RELATIVITY FOR PHILOSOPHY. Einstein writes to Hans Reichenbach, the philosopher of science and an influential expositor of Relativity. In

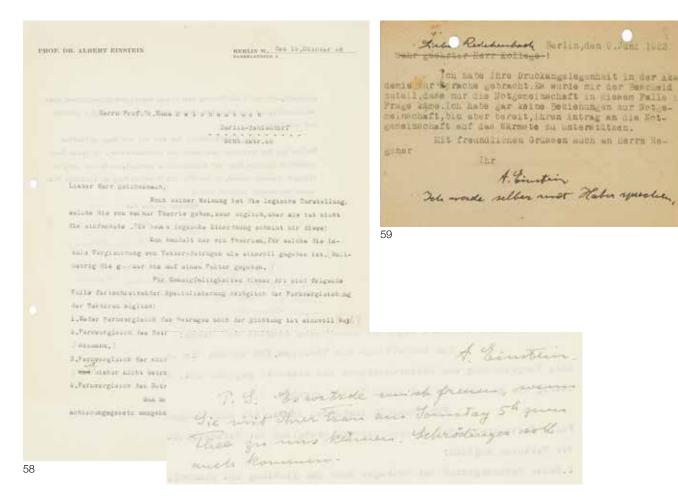
"I am really very pleased that you want to dedicate your excellent brochure to me, but even more so that you give me such high marks as a lecturer and thinker. The value of the th. [eory] of rel. [ativity] for philosophy seems to me to be that it exposed the dubiousness of certain concepts that even in philosophy were recognized as small change. Concepts are simply empty when they stop being firmly linked to experiences. They resemble upstarts who are ashamed of their origins and want to disown them." The letter was published in the Collected Papers of Albert Einstein, vol 10, doc 66, pp 323-324 (CPAE Translation, vol 10, doc 66, p 201).

We are grateful for the assistance of Dr. Diana Kormos Buchwald, general editor of the Einstein Papers Project, in cataloguing this lot. \$4,000 - 6,000

Prof. Dr. ALHERT EINSTEIN Jam B Ameli Calucar We komme met eine Kleinen Bette für der type Genelleshaft. His haben besetelosan, knoty ola estiminga watershallynning destructed tomas tond you Westershipping dy Mysek - Holischal - Kulmuchte (Luboration) his de amadelstygen Industric yearnery betteler Therest ich rollen die Toche berorgen Alles ist zum Absender garat. to home I was not do hadreton, dres were Hustine hest wilder to and down therefore probably his dear Hit and his and toping Tommer getergen Green. De fallt as mis also and der. Remakins des ainselm Gradulistebes den der Formen, and der was me menden kilmeten Dis erreichbaren wollen org much Remainde et a company hand In disease Verlegen had bille and a set the ligger state of the lease of making in the late of the graphen hand glass has the state of the sease terming. For hills has the state of the sease terming to the late of the state of the sease o Heyerdre Grisse von Threm T. J. Lassen Lebitle de Suche beinesfallgliege. Henne Le hame Let f. to de huga legenheet labor, or exhibited. Le little dans beleet die Gister mangenlockster mit det se mit intelle Tette missender Town, to but the

56





EINSTEIN, ALBERT. 1879-1955.

Typed Postcard Signed ("A. Einstein") with Autograph Salutation and Postscript, in German, 12mo, Berlin, June 9, 1923, to Hans Reichenbach (1891-1953), two-hole punch at top margin touching one letter in salutation, toned.

WITH: Autograph Postcard Signed ("Ilse Einstein"), in German, 12mo, Berlin, May 12, 1923, to Hans Reichenbach, explaining that Albert Einstein has not seen his letter of request (see below) as he has already left for the Netherlands, and promising to deliver it upon his return.

Einstein responds to Reichenbach's request for assistance in finding a publisher for his *Axiomatik der relativistischen Raum-Zeit-Lehre* (Braunschweig: Vieweg, 1924). In full (translation): *Dear Reichenbach*,

I have brought up your printing matter with the Academy. I was informed that only the Notgemeinschaft could come under consideration in this case. I have absolutely no connection to the Notgemeinschaft, but am willing to support your application to the Notgemeinschaft most warmly.

With friendly regards also to Mr. Regener,

Your,

A. Einstein

I will personally talk to Haber.

See *The Collected Papers of Albert Einstein*, vol 14, abs 89, p 844. We are grateful for the assistance of Dr. Diana Kormos Buchwald, general editor of the Einstein Papers Project, in cataloguing this lot.

\$3,000 - 4,000

59

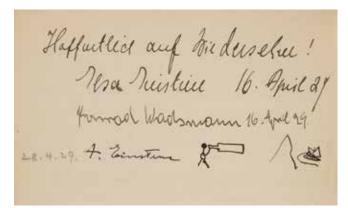
EINSTEIN, ALBERT. 1879-1955.

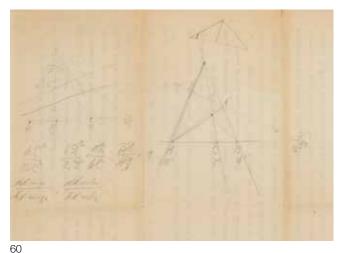
Typed Letter Signed ("A. Einstein") with Autograph Postscript, in German, 2 pp recto and verso, 4to, Berlin, October 19, 1928, on personal letterhead, to Dr. Hans Reichenbach, two-hole punch at left margin, two tiny edge-tears at folding creases.

UNPUBLISHED LETTER DISCUSSING RELATIVITY. Einstein writes to Reichenbach (1891-1953), a colleague and important expositor of Relativity, to suggest to him a clearer way of explaining one aspect of his theory. He opens the letter by saying (in translation): "I think the logical presentation that you give of my theory is indeed possible, but it's not the simplest one." After providing a list of four possibilities for "increasing specialization regarding the distant comparison of vectors" he comments: "Of course one can also start with an affine connection and specialize either by introducing a metric or by introducing integrability conditions; i.e. do it the way you did. But this is less simple, less natural." He goes on to assert that "[t]he naturalness of the field of structure envisaged by me seems indisputable to me. I will only know in a few months whether this construction contains deeper traits of reality; for the problems needed to be solved to make this decision are not at all easy." The letter ends with a postscript in Einstein's hand, inviting Reichenbach and his wife to tea, noting "Schrödinger is supposed to come as well."

We are grateful for the assistance of Dr. Diana Kormos Buchwald, general editor of the Einstein Papers Project, in cataloguing this lot.

\$5,000 - 8,000







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EINSTEIN, ALBERT. 1879-1955.

A group of material related to Albert Einstein and the family of Adolph Stern, 1929-1932, Caputh, Germany and Los Angeles, California, comprising:

- 1. Guest book signed ("A. Einstein") with an original ink doodle of a stick figure peering through a telescope at a sailboat on a lake with a mountain in the foreground, April 4, 1929, Caputh, on the same page as a signature of Einstein's stepdaughter and secretary Ilse Einstein, 8vo, limp leatherette, guest book belonging to Mr. and Mrs. Adolph Stern. 2. Autograph manuscript equation in Einstein's hand, below a set of figures and equations in the hand of Irene Stern, on the verso of a page from a typed letter to Einstein, 1 p, 4to, toned.
- 3. A collection of 52 photographs and photo-postcards, gelatin silver prints, 2 5/8 x 1 5/8 to 4 3/4 x 7 inches, a few captioned on verso in holograph, being candid shots of Einstein with friends and neighbors in Caputh, a few duplicates and including a group of approximately 27 negatives.
- 4. Head and shoulders portrait photograph, 9 1/4 x 7 1/4 inch platinum print by Aaron Tycko, 1933, Ambassador Hotel, Los Angeles, California, signed by the photographer ("Tycko / L.A.") at lower right, mounted within studio folder.
- 5. A group of correspondence including a 1 p ANS of Ilse Einstein; 2 pp TLS of Elsa Einstein; 2 pp ALS of Elsa Einstein with a photo of her and Albert onboard a Hamburg-Amerika ship; 1 p TLS of Margot Einstein; and related material.

Provenance: Irene (Stern) Salinger; by descent to present owner.

EINSTEIN IN CAPUTH, INCLUDING AN ORIGINAL INK DOODLE, CANDID PHOTOGRAPHS, AND EINSTEIN HELPING A YOUNG GIRL WITH A MATH PROBLEM. An eclectic group of material painting a wonderfully candid portrait of Einstein. The material originates with the family of the German-Jewish architect Adolf Stern, who along with his wife Elsbeth and daughters Inge and Irene were the Einsteins' neighbors in Caputh, the little village six kilometers south of Potsdam where Einstein spent his summers from 1929-1932. Along with the whimsical doodle of a man peering through a telescope at a sailboat beside Einstein's signature in the Sterns' questbook, the collection contains numerous photographs of Einstein in moments of leisure with the Sterns and other Caputh neighbors and friends (including one of Einstein sitting on the laps of two elderly gentleman while smoking a pipe); picking apples with Elsa; with son Hans and two year-old grandson Bernhard; sailing; and photos of the Einstein house in Caputh. Also present is a large portrait photograph of Einstein, being one of a series done by Tycko at the Ambassador Hotel in Los Angeles in 1933, and four photos of Einstein with the Fred Hirsch family at the Highland Springs Resort in Cherry Valley, California.

Also included is an unusual Einstein relic of great charm: a sheet of trigonometric calculations in pencil with an equation at the bottom in Einstein's hand, which according to the Stern family represents Einstein's attempts to help Irene Stern with a school problem.

\$3,000 - 5,000





61

BRITAIN AND THE ATOMIC BOMB.

Advance Release k. 367: Britain and the Atomic Bomb. Washington, D.C.: British Information Services, August 12, 1945. Folio (278 x 215 mm) 22 pp mimeograph on rectos only. WITH: The same, with slightly different type-setting, printed in blue ink rather than black, and with page numbers at the top rather than bottom. Both with original corner staples removed. Provenance: The War Museum.

ADVANCE COPY, "not for publication before morning papers of Monday, August 13th, 1945," of the official British press release describing the events leading to the production of atomic bombs, and the dropping of the first of them on Japan. The document was evidently prepared just after the dropping of the first bomb on Hiroshima on August 6, and provides a detailed account of the co-operation between the US, Canada, and Britain "which led up to or was associated with this remarkable achievement." No hyperbole is spared in the document, which refers to the bomb's development as "one of the greatest triumphs of human genius of which there is record."

\$4,000 - 6,000

62

[FIBONACCI.]

Fibonacci Quarterly. St. Clara, CA etc: Fibonacci Association, 1963-2020. Vols 1-48 in 45. 4to (250 x 175 mm). Cloth with original wrappers bound in.

Complete run of the journal of the Fibonacci Association. \$800 - 1,200

63

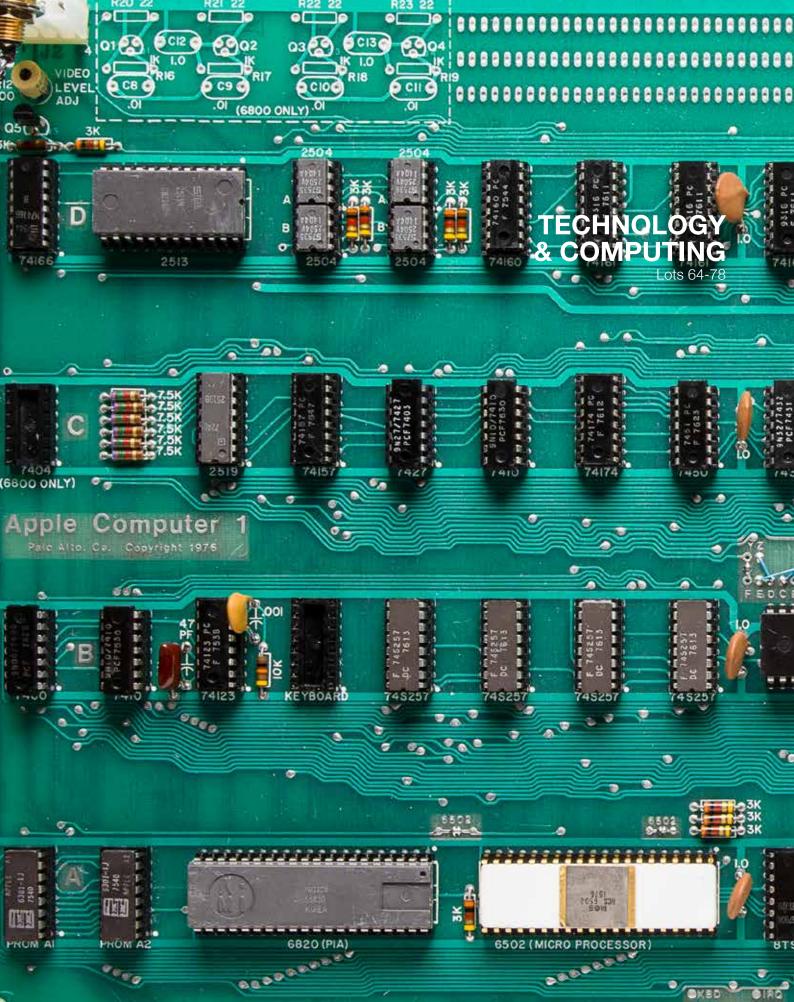
U.S. ATOMIC ENERGY COMMISSION.

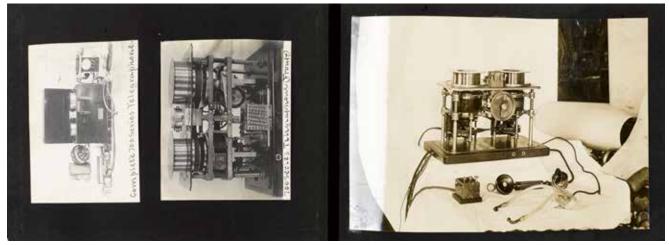
[Understanding the Atom.] Oak Ridge, Tenn.: USAEC Division of Technical Information Extension, 1963-1969.

51 volumes (1 duplicate). 8vo (215 x 139 mm.) Stapled into original color illustrated wrappers. Some occasional light surface wear, otherwise near fine.

Provenance: Robert Gounley, former NASA engineer (ownership inscriptions).

The United States Atomic Energy Commission (AEC) was a US government agency established by Congress after WWII to control and promote the peacetime development of atomic science and technology. These technical pamphlets, published as part of the Atomic Energy Commission's educational assistance program cover various topics; titles in the series include: Fallout from Nuclear Tests; Nuclear Propulsion for Space; Cryogenics, The Uncommon Cold; The Genetic Effects of Radiation; Snap. Nuclear Space Reactors; and The Elusive Neutrino to name but a few. A complete listing of titles is available upon request.









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AMERICAN CIVIL WAR POCKET SPY TELEGRAPH SET.

Signed "L.G. Tillotson & Co., 3 Dey St. New York," c. 1864. Complete telegraph sending and receiving system, coils mounted horizontally, lever and key, housed in original 5 x 2.25" hard rubber case with diced pattern on four small metal feet.

A very rare pocket-sized complete telegraph sending and receiving set. Used by Union spies during the US Civil war to tap into and listen to Confederate telegraph messages. To do so, a Union Spy would throw a bare wire over any Confederate Army's un-insulated telegraph wires, and attach it to a grounded bayonet to complete the circuit. The Union Spy could also use the telegraph key to send false information to the enemy. \$3,000 - 5,000

65

CIVIL WAR ERA TELEGRAPH KEY.

Leg-style telegraph key in brass c. 1860, 4" tall with 5½" lever, signed "Caton, Ottawa, II" on lever, base stamped "494." Lever repaired at contact point.

Commonly referred to as a "leg-key" this Civil War era telegraph key was designed to sit on the telegraph operator's table with the long legs extending through the table, where electrical connections to the legs could be hidden.

\$1,000 - 1,500

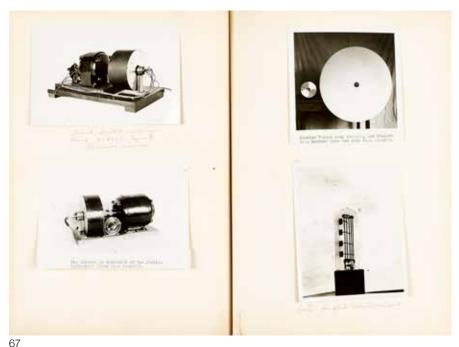
66

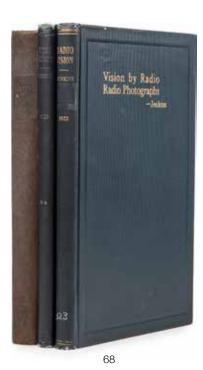
65

TELEGRAPHY AND TELEGRAPHONES.

Archive of photos, patents and documents relating to telegraphy and telegraphones.

- 1. Album containing 66 sepia-toned gelatin silver prints 6 x 4 or 3% x 4% inches, c. 1906, mounted, oblong folio, flexible cloth bound with cord at spine, upper cover with "Photographs" lettered in gilt. A couple photographs with a hint of silvering, otherwise fine. An excellent collection of photographs detailing the various parts and make-up of telegraphones.
- 2. Autograph Manuscript, entitled "American Telegraphone Co. Data Book. Mar. 13th [19]06," 121 pp, primarily recto and verso, 4to, n.p., March 13, 1906, in ink and pencil on lined paper, being a highly technical and detailed data book, with mathematical notations, detailed diagrams, and technical details on a variety of machine parts. Flexible leatherette, chipped at edges, and spine.
- 3. File folder including 7 patents made out to Wilbur H. Thompson, filed 1905-1909 for "Telephone Reciever" etc. in original Patents Office envelope; Thompson's patent for the "Telegraphone" with 9 plates, filed 1909 (3 copies); quantity of stock certificates, newsletters, correspondence, offprints, wiring diagram of a combination telegraphone, and group of 24 early photographs of telegraphones and dictation and transcription machines, the majority with manuscript notations.





67 THE PIONEER OF TELEVISION AND RADIO.

JENKINS, CHARLES FRANCIS & JENKINS, GRACE LOVE. Archive of material relating to C. Francis Jenkins, compiled by his wife, Grace Love Jenkins. 6 folio scrapbooks, comprising personal correspondence, newspaper clippings, advertisements, and photographs, c. 1900-1935.

Large archive of material apparently collected by Grace Jenkins, wife of the inventor and television pioneer C. Francis Jenkins. The six folio volumes contain a fascinating array of promotional and sales literature of the Jenkins laboratories as well as newsletters, newspaper clippings, and photographs depicting Jenkins' inventions. Some amount of material also relates to the Jenkins' personal life, particularly the large amount of correspondence addressed to Mrs. Jenkins (and some to Francis). Jenkins was "an American original for whom inventing was a natural talent, a visionary working on the leading edge of technical discovery in film and television. He was the only inventor present at the inception of both large-screen motion-picture projection and television. A generation later, he was the only American actively working on television. He was primarily a film a television pioneer, but he also held multiple patents for a variety of creations..." (Godfrev. C. Francis Jenkins. Pioneer of Film and Television. p ix). Jenkins spearheaded American efforts to transmit moving pictures, alongside later contributors such as John Logie Baird and Philo Taylor Farnsworth. In competition with Baird, Jenkins was the leading television vendor until the late 1920s, when his company was virtually wiped out in the stock market crash of 1929. The photographs here are of particular interest, depicting the Jenkins television camera in use in cinematography: family portraits: a 'Machine built for Metropolitan Museum of Natural History for continuous exhibition of motion picture film;" early prototypes of changeable lighted signs: 18 photographs of early vehicles ("Steam Horseless Carriages." "the first 'gas buggy'," the "first delivery automobile in Washington," a miniature "electric automobile" built for a Cuban midget named Chaquitta; the "first sight-seeing bus;" the "first lawn mower and roller;" a Jenkins-designed steam-powered truck; and so on.

The primary repository for Jenkins papers appears to be the Wayne County Historical Museum in Richmond, Indiana. The Smithsonian Institution, the American Museum of History, the National Archives, and the Franklin Institute are also major holders of Jenkins material. \$2,000 - 3,000

JENKINS, CHARLES FRANCIS. 1867-1934.

1. Vision by Radio. Radio Photographs. Radio Photograms. Washington, D.C.: [Jenkins Laboratories, Inc., 1925]. 8vo, 140 pp. Blue publisher's cloth lettered in gilt. FIRST EDITION, PRESENTATION COPY inscribed on flyleaf "Chas E L Wingate/ with Kindest Regards/ C. Francis Jenkins 5/7/25". Publisher's presentation slip laid in. 2. Radiomovies. Radiovision. Television. [Washington, D.C.: Jenkins Laboratories, Inc., 1929]. 8vo. 143 pp. Blue publisher's cloth lettered in gilt. FIRST EDITION.

3. The Boyhood of an Inventor. Washington, D.C.: [C. Francis Jenkins], 1931. 8vo. 273 pp. Brown publisher's cloth, decorated in blind. FIRST EDITION, PRESENTATION COPY inscribed on flyleaf "To Mr Kenneth Schooley/ In appreciation of / his interest/ 2/22/32/ C Fr Jenkins." 4. "Men Who Made Radio — C. Francis Jenkins" In: Radio-Craft for the Professional Serviceman Radiotrician, vol 1, no 5, November, 1929. Folio. 193-240 pp. Stapled into original illustrated wrappers. 5. "Pioneers of Television — Charles Francis Jenkins", In: SMPTE Journal, vol 95, no 2, February 1986. Folio. 203-274 pp. Stapled into original wrappers.

C. Francis Jenkins was an American film and television pioneer who held more than 400 patents. He began experimenting with motion pictures in 1891; and he was responsible for inventing the motion picture projector and organized the very first "movie" show of a reeled film with electric light before an audience in 1894. It was also the first colored movie, one that Jenkins carefully hand colored. His Phantoscope eventually evolved into Thomas A. Edison's Vitascope. Television was his next project. He first wrote about transmitting pictures by radio in 1913, but it was not until 1925 that he successfully broadcast synchronized pictures and sound by wire. The Jenkins Television Corporation obtained the first commercial television license in the United States and opened the first television broadcasting station in the United States to transmit "Radiomovies" in 1928. By the next year it was broadcasting five days a week. When the company folded in 1932, its assets were purchased by Lee DeForest Radio Corporation, but they went bankrupt a few months later and RCA bought them out. Today the Academy of Television Arts & Sciences honors individuals who have made lasting contributions to television technology and engineering with the Charles F. Jenkins Lifetime Achievement Award.







EXTREMELY RARE MIRROR-LID TYPE 23 TELEVISOR TELEVISION RECEIVER, BY BAIRD TELEVISION LTD.

C. 1936, serial no 39, with 15" screen circular Cathovisor CRT, black mask with rectangular outer surround, behind safety glass, polished mahogany baffle board, image on reflection from full lid interior mirror plate, in tall mahogany veneered console cabinet with butterfly-cut veneers revealing lighter core to center seams on side and front planes, moulded edge lid with rounded corners. Front with twin column handles - the right opening to access picture and sound controls, the left is fixed to match appearance when closed, on/off toggle switch with concave metal faceplate inset to left-side of cabinet. The back with two cloth-fielded panels for access to CRT and full chassis layout, with the EHT generator within fully enclosed metal case, control mounting chassis numbered A01433, almost all components and vacuum tubes from the manufacturing date, Rola speaker with the matching transformer, the back cabinet strut bearing the two Baird manufacturing plates in brown painted metal for this set, each stamped with set type and serial number. 25" wide, 43" high and 20" deep overall.

THE LOWEST SERIAL-NUMBERED PRE-1940 ELECTRONIC TELEVISION RECEIVER YET DISCOVERED. One of the rarest and most desired treasures of pre-1940 television sets. The T-5 and T-22/23 had the most interesting features technically, both with large screen diameters and a very stable vision strip, helped by the use of a separate chassis mounted away from the EHT transformer in order to try and eliminate RF interference. Almost all the components are from manufacturing date to include all major LT and HT wax condensers, with just a very small number on the vision strip being 1950s aluminium cased types. All wiring is correct with cloth covered VR cable used including the main aerial-in feed and the rubber EHT lead which goes into the base of the

CRT through the center of the connection boss. Very little work has been undertaken on this set and it looks as though it left Britain many years ago where it has been in this "time capsule" condition ever since.

The electronic standard line scanning in 1936 was between two systems - the short-lived Baird 240-line and the later commercially successful Marconi-EMI 405 line system, with both being broadcast from London's Alexandra Palace regularly from the end of November 1936. Baird Ltd were designing these sets from mid 1936 in preparation of the few experimental transmissions before the official November start. Exceedingly expensive, the average set cost in excess of £100 pounds (half the price of the average house).

Of the few hundred pre-1940 televisions made and sold in Britain at the time, only a very small handful have survived. This is one of the best preserved and most complete T-series Baird sets that has come to light. The condition is outstanding, with even the back cloth-panels and mirror untouched. There is every chance this set will run again after concise and sensible work in professional hands. Amateurs should be aware this set carries lethal voltages when switched on, with the mains-derived EHT feeding the CRT field delivering over 5000 volts, so this highly specialist work requires a great degree of care.

This museum-quality example is a historical landmark in the history of early television, bearing the name of the first successful pioneer who demonstrated the first live moving pictures, the Scotsman, John Logie Baird.

\$20,000 - 30,000





RARE HMV TYPE 900 MIRROR-LID TELEVISION AND RADIO RECEIVER.

Made between December 1936 and March 1937, serial number H/1 10194, cabinet number 449, CRT number 25246/36, with 6/4 Emiscope CRT, vision and sound chassis with full run of metal screening cans, EHT generator in metal enclosure, vacuum tube charts pasted inside cabinet, original cloth covered VR cable runs throughout, 14" screen with black mask, behind safety glass and wooden baffle, combined 3-band radio receiver with vertical linier tuning scale dial to right of screen field, vision controls and advanced vision controls under sprung hinged matching brown Bakelite flap incorporating blanked off 240/405-line switch, full mirror-glass fitted lid interior, in walnut and mahogany veneered cabinet in stepped formation measuring 38.6 x 36.75 x 19.25", small metal speaker grille to front center, remains of the original cloth panelled back and white banner HMV plaque to back stretcher.

Several technical observations on this set suggest that is was run up successfully in the USA, following its trip from Britain some years ago. The Band III box, with US two-pin plug and step-down transformer has been hard-wired into the main feed and receiver loop. The supply transformer has been tapped at the 200-210v point with signs that this tap has been in this position for a long time. Linkage wires have been tape-marked pointing towards work which involved removing each chassis for test. The CRT shows no visible sign of vacuum loss or damage.

Sets leaving the Hayes factory after the beginning of 1937 had the 240/405-line switch blanked off, and this escutcheon is seen just above the sprung lidded picture control panel. When the BBC service began again in 1946 following the transmission suspension during WWII, anyone lucky enough to own a television was offered to have it sent to HMV at no charge where they blanked off the line control, removed the 240-line pulse-feed vacuum tube (MH4) and gave it all a good service. As that valve, the escutcheon and other wiring clips match those used in the service of other known examples which visited Mr. Gerald Wells at the HMV workshops, it is highly likely this was one of those sets that were recalled.

The 900 was one of the first sets to have the CRT fully enclosed and surrounded by an earthed steel shield. This not only reduced the nasty interference and kept the final EHT capacitors safely away from technician's fingers, but acted as another protective shroud in case of implosion. This is a historical set, one of the best designed television/radio combinations and certainly the model most likely to come up in conversation between early television connoisseurs. With some cabinet tidying and a full check ahead, one can be sure that all is here, present and correct for the restoration.

\$4,000 - 6,000



CATHOVISOR CATHODE RAY TUBE, BAIRD TELEVISION LTD.

C. 1936, Hysil (Pyrex glass), type 15 MW2, serial No. A2666, premask screen diameter 14½". With the early roundel strip contact boss in black Bakelite, with gilt capital company transfer BAIRD reading across, exposed glass area at neck for heater element view, neck funnel with internal anodised beam coating, etched to cone section with serial and type details with BRITISH MADE below, good phosphorous coated screen field with no ion burn trace in disconnected status. Total length 32".

Complete 5/6 and 6/6 sized CRTs which were used for these first Baird and Marconi/EMI-made mirror-lid televisions are rare enough, but this piece of historic television history is a real true survivor. Heater continuity and emission rate estimated as good. With its original Baird Ltd label, this high-vacuum CRT is one of the best original examples of its type encountered.

\$1,500 - 2,500

72

HILL, LESTER. 1891-1961.

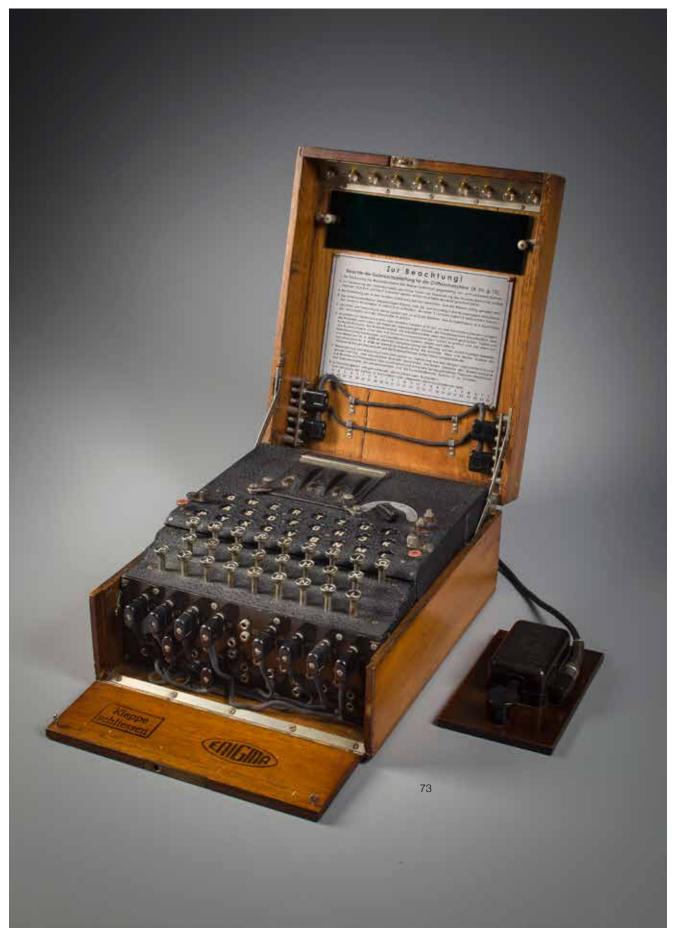
Fascinating archive of material relating to cryptography and Einstein's *Theory of Relativity*.

1. Large quarto notebook, 119 p, on "The Einstein Theory of Relativity," dated Nov. 29, 1923. Probably teaching notes, a fascinating and very detailed reflection of the reception of Einstein in American university curricula. 2. Typewritten page from a larger MS on cryptographic methods for the US Navy in 1956, with xeroxes of correspondence concerning the same. 3. ALS to a colleague, 1 p, dated 1945 from Biarritz, where Hill was stationed after the war. 4. TLS in French to a colleague, 1 p, dated 1946 from New York. 5. TLS, 1 p, to Hill from the US Army in Biarritz dated January 1946 thanking him for his work. 6. Typed Manuscript with handwritten corrections on "An Algebraic Treatment of Geometry on a Spherical Surface", from Hill's time at Hunter College. 7) Small notebook entitled "Special Problems for Undergraduates" dated 1922-1927 during Hill's time teaching at Yale, with 14 problems as well as the names, addresses, and grades of his students.

Provenance: The War Museum.

Earning his PhD from Yale in 1926, Dr. Lester Hill taught at various universities as well as providing special assistance to the Office of Naval Communications both before and during WWII. He is perhaps best known for having invented what is now known as "The Hill Cipher" in 1929. Based on linear algebra, it is a polygraphic substitution cipher. Hill built a cipher machine for his system, which he patented in 1932.

\$4,000 - 6,000









73 (detail with light panel open)

ENIGMA MACHINE.

A Rare Early 3-Rotor German Enigma I Enciphering Machines (aka Heeres Enigma), Berlin, early 1930s.

An early Enigma machine in working condition, serial number 1024, in original oak box with hinged front panel and leather handle, inner front panel with "ENIGMA" and "Klappe schliessen" stamps, rotors I, II, III and reflector with matching serial number A1024, standard QWERTY keyboard of 26 keys, white on black backgrounds, battery switch, ebonite Steckerbrett [plugboard] with 12 stecker cables (12 plugged into the Steckerbrett and 2 spares stored in the top lid of case), battery case with 2 packages of functioning spare light bulbs, upper lid with 10 bulbs, green glare filter, and replica "Zur Beachtung" sign. 13 1/4 x 11 x 6 1/2 inches. Split in oak at lid, glass on key "Q" cracked, internal wires in wiring maze replaced to avoid problems with deteriorating insulation.

WITH: A 1934/1936 German Ta.P. Baumuster T1 Telegraph key; 2 facsimile Enigma operating manuals; 1 copy of Dr. Tom Perera's book, Inside the Enigma; The Secrets of the ENIGMA Machine and other Historic Cipher Machines.

FULLY OPERATIONAL. EARLY ENIGMA MACHINE. The low serial number 1024 indicates that this machine was made in the early 1930s, making it among the very first Enigmas to be delivered to the German Military as they built up their armed forces in violation of the Versailles Treaty. A video of the machine operating can be viewed on our website at http://www.bonhams.com/video/19793/ Patented by Arthur Scherbius in 1918, the Enigma machine utilizes three interchangeable rotors which scramble plain-text messages

and produce a cipher text message which is then sent, generally via Morse code, to a receiving party with an Enigma set up in the same configuration as the sending Enigma. All of the machines could use the interchangeable wheels from any enigma, so to find a matching set of wheels with the same serial number as the Enigma is quite rare. Though the German military was familiar with the Enigma, it was not adopted as their primary cipher device until 1926, when they discovered that all German naval coded messages had been intercepted and read by the British during the latter half of WWI. It is unknown exactly how many enigma machines were made, but we know that few survived the war. Rather than have the machines fall into enemy hands, they were destroyed by the Germans upon retreat and documents pertaining to their manufacture were burned or in many cases simply lost. On top of this, Churchill ordered all Enigma machines to be destroyed at the end of the war, so few machines remain intact.

This example of the standard three rotor enigma machine "Modell 1" was used principally by the army (Wehrmacht), and was their favored enciphering device. British attempts to break the Enigma code were fruitless for years. The breakthrough eventually came after the creation of the famous British codebreaking center Bletchley Park. Using the technology transferred to them from the brilliant Polish codebreaking team, as well as documents supplied by the French Intelligence from a German spy, the great Alan Turing, along with Knox, Foss and many others were able to break the Enigma code, shortening the war by en estimated two years, and saving countless lives.

\$160,000 - 180,000

THE WORLD'S FIRST COMPUTER PROGRAMMER.

[KING, AUGUSTA ADA, COUNTESS OF LOVELACE. 1815-1852.]

A ¾ length portrait, watercolor and ink on heavy paper, approx. 230 x 190 mm, signed lower right "Edward Tayler." In a gilt wood and velvet frame, with an arched gilt matte.

A lovely portrait of Ada, Countess of Lovelace when she was 23 years old by the renowned portrait and miniature painter Edward Tayler (1828-1906), after the celebrated painting by Alfred Edward Chalon (1780-1860). The original painting by Chalon is housed at the Science Museum in London. Ada Lovelace was the only legitimate child of the great English Romantic poet Lord Byron and his wife Anne Isabella Milbanke, Baroness Wentworth. She later married William King, the eighth Baron King, who was elevated to an earldom, making Ada the Countess of Lovelace. While she was the progeny of one of the most famous poets in history, it can be argued that her influence upon the world is far greater than her father's ever was. Having grown up without knowing her father, Ada's mother supplied her with a number of excellent tutors, including one in mathematics, which was highly unusual for a woman at the time. She proved to excel in this field, and continued studying mathematics through adulthood, receiving tutoring from the first professor of mathematics at the University of London, Augustus DeMorgan. Ada became friends with the famous Charles Babbage (1791-1871), who referred to her as the "Enchantress of Numbers," when she was just 18 years old and he was 42. Fascinated with his Difference Engine, the first mechanical computer, she became involved with his plan for the Anaytical Engine, offering him her services as a mathematician. At Babbage's suggestion, Ada executed a masterful translation of Luigi Menabrea's article on the Analytical Engine. She augmented the translation with notes that ended up being longer than Menabrea's paper, and which were later published in Taylor's Scientific Memoirs under her initials "AAL." In these notes, she describes an algorithm for Babbage's Analytical Engine which is considered to be the first algorithm ever specifically intended to be used on a computer. It is thanks to this work that she is recognized as being the first ever computer programmer.

This portrait was exhibited in "Extraordinary Women in Science & Medicine: Four Centuries of Achievement," Grolier Club, New York, 2013, catalog no. 111.

\$12,000 - 18,000

75

LUDGATE, PERCY. 1883-1922.

"On a Proposed Analytical Machine." Offprint from: *The Scientific Proceedings of the Royal Dublin Society*, Vol. XII (N.S.), No. 9, April, 1909. Dublin: The Royal Dublin Society, 1909. 8vo. 77-91 pp. Original blue printed wrappers, uncut and unopened. Wrappers lightly sunned at edges, otherwise an excellent copy. Old library stamp to front wrapper.

FIRST APPEARANCE, offprint issue, of Ludgate's calculating machine, developed independently of Babbage's design and today considered closer to the modern computer than Babbage's. Portable and based on multiplication rather than addition, Ludgate's engine could also be programmed and was "the result of about six years' work, undertaken ... with the object of designing machinery capable of performing calculations, however, intricate or laborious, without the immediate guidance of the human intellect" (p 77). The machine was never built, and sadly, Ludgate's original drawings of it have been lost. Rarely encountered as a separate offprint. Randell, Origins of Digital Computers (3d ed), pp 73-87 (reprinting this paper); 489. See Origins of Cyberspace, p 72.





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KENBAK-1.

Prototype Kenbak-1 Computer built by John Blankenbaker, 8-bit, comprising motherboard with 132 integrated circuits, 2 power supplies (for +5 volts and -12 volts), 2 MOS shift registers (1024 bits each), and cooling fan; in original customized steel case with 3-prong power connector, the front panel with a toggle power switch, 12 incandescent lights, 15 push-buttons and various lettering including the name "KENBAK-1." Approximately 19.25 x 11.5 x 4.25 inches. Overall excellent condition and operational as of July, 2015. WITH: Binder of documentation including the *Programming Reference Manual. Kenbak-1 Computer*. [Los Angeles, 1971]; "*Installation & Maintenance*" and "*Theory of Operation*" manual; original coding sheets, reviews, purchase guides, etc.

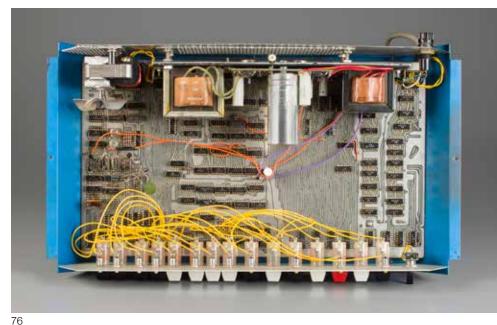
AND: Laboratory Exercises. Kenbak-1 Computer. [Los Angeles, 1971.] Spiral-bound.

Provenance: Directly from the collection of the inventor, John Blankenbaker (b.1929).

FIRST VERSION OF THE "THE WORLD'S FIRST PERSONAL COMPUTER," so deemed by a panel of judges including Steve Wozniak at The Computer Museum (Boston) in 1987. The present example is the prototype from the collection of the inventor, the very one which was demonstrated in the spring of 1971 at a high school teacher's convention in southern California.

John Blankenbaker first began to imagine personal computers in the late 1950s while working for Hughes Aircraft Company. His target was a programmable computer for \$500. However, it was not until 1970, finding himself unemployed, that he pursued the project in earnest. In his own words, "My criteria for the computer were low cost, educational, and able to give user satisfaction with simple programs ... It should demonstrate as many programming concepts as was possible. Because of the small size, the native language of the unit would be the machine language. Above all, it had to



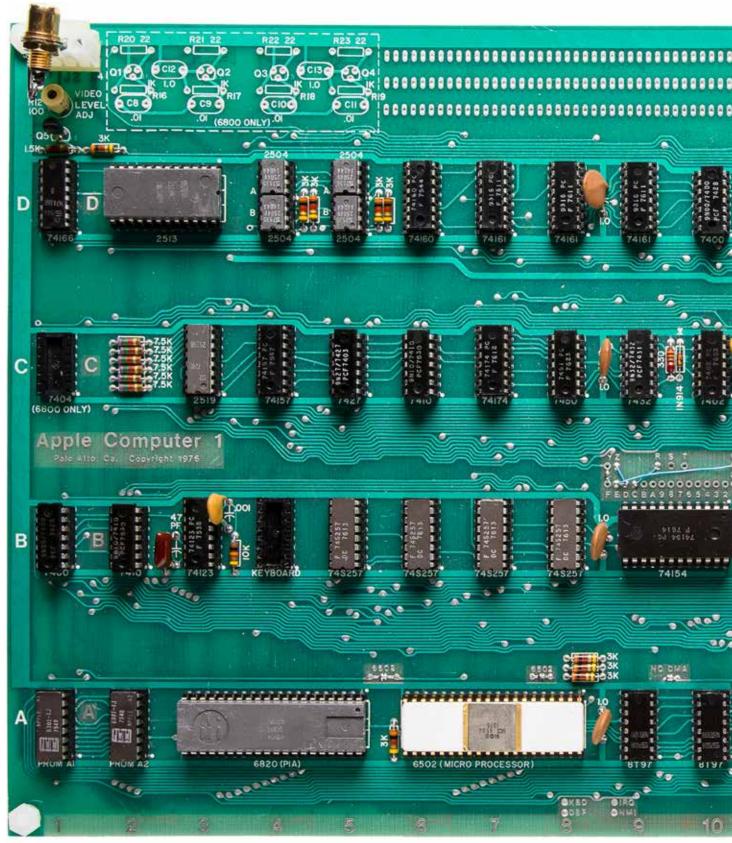


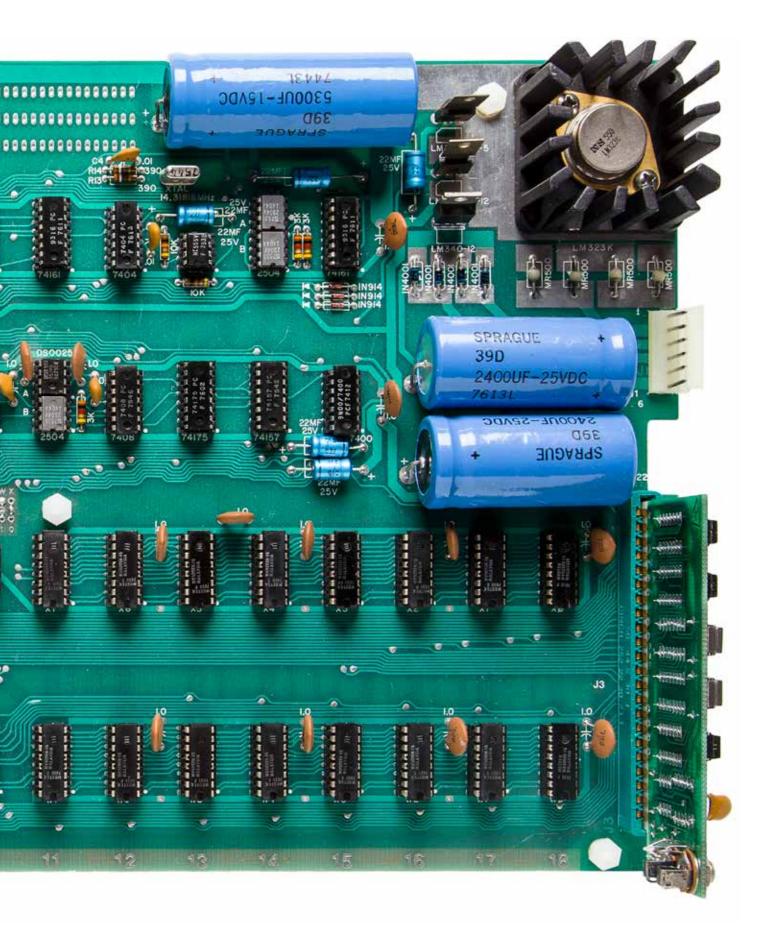
be a stored program machine in the von Neumann sense" (www. kenbak-1.net). Designed in the autumn of 1970, the Kenbak-1 predates the invention of microprocessers and obviates the principles of microprogramming completely, using TTL logic instead. To keep costs low, switches and lights are the input/output of the machine. It has 256 bytes of memory and a clock speed of about 1 MHz.

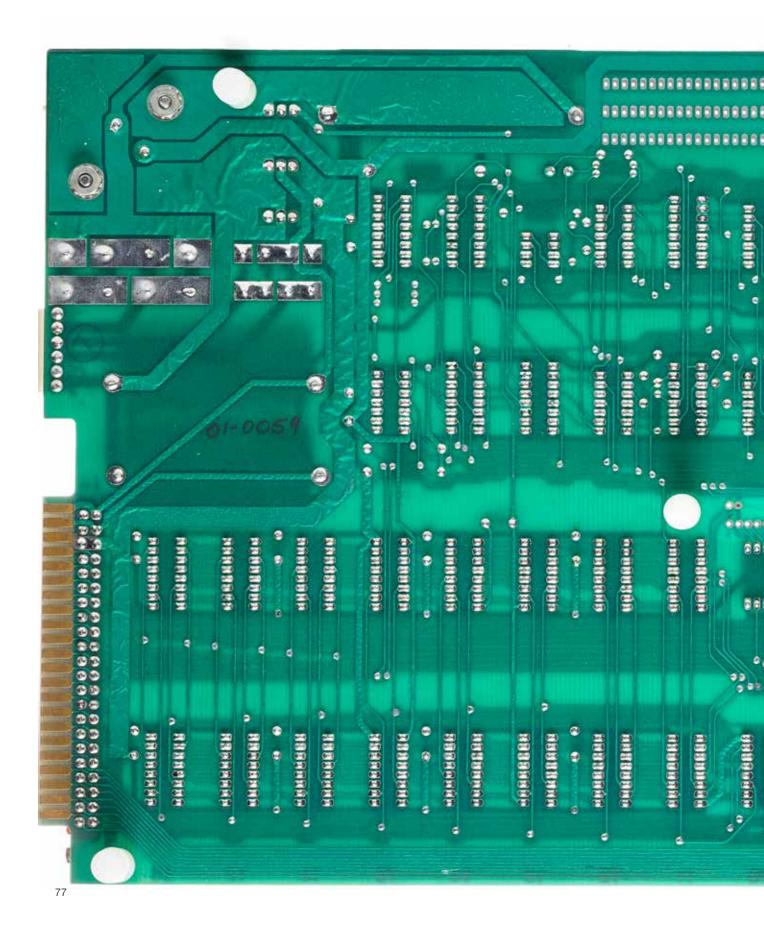
THIS PROTOTYPE IS THE VERY ONE USED IN THE FIRST DEMONSTRATION OF A COMMERCIAL PERSONAL COMPUTER in May of 1971 at an Anaheim convention of high school mathematics teachers. It has the same functionality as the later production models, but differs in several respects: the red "enter" button in the prototype was replaced by a memory lock switch; the position of the labels was changed to above the buttons for better legibility; and, thirdly, the production models had a slot for an unrealized punch card reader.

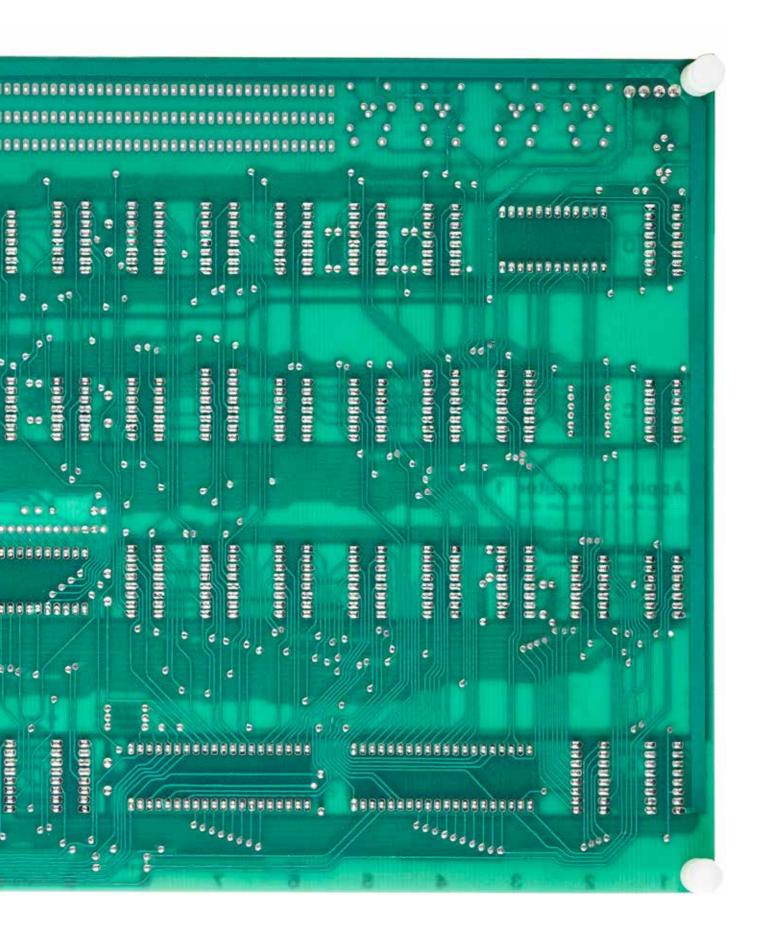
Blankenbaker built the computers at his home in Los Angeles (purchased with a VA loan) and the first advertisement for Kenbak-1's appeared in the September 1971 issue of Scientific American at a price of \$750, again using this very machine as the illustration. In retrospect, Blankenbaker acknowledged that he should have followed his first instincts to market the computer to hobbyists rather than educators. He had envisaged a newsletter with games and programs. A few of the fun programs that run on the Kenbak-1 are "Is it a legitimate date and if so what day of the week did it fall on?", "I predict your next guess will be..." and "Three dimensional tic-tac-toe." In the event, about 40 units were sold over the next year, chiefly to schools, until the company was sold in early 1973. See Computer History Museum, "Oral History of John Blankenbaker," interviewed by Lee Felsenstein, 2007; www.kenbak-1.net; and "What was the First PC?" on www.computerhistory.org.

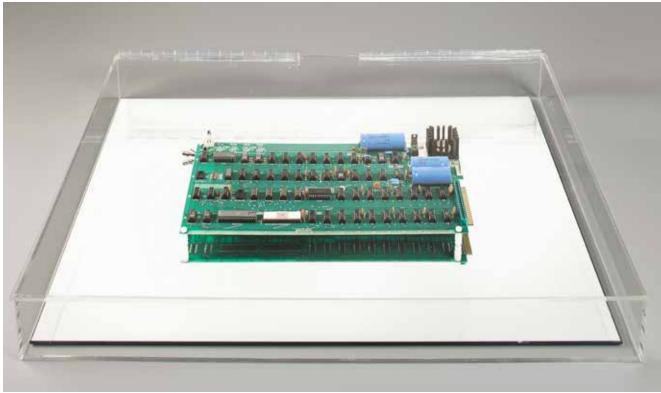
\$30,000 - 50,000











APPLE-1 COMPUTER IN NEAR-PERFECT, WORKING CONDITION.

77

APPLE-1 COMPUTER.

Apple 1 Motherboard, with label "Apple Computer 1 / Palo Alto. Ca. Copyright 1976." Includes circuit board with four rows A-D, and columns 1-18; MOS Technologies 6502 microprocessor, labeled MCS 6502 1576; keyboard interface and connector; 8K bytes RAM in 16-pin 4K memory chips; 4 power supplies including 3 capacitors; firmware in PROMS (A1, A2); low-profile sockets on all integrated circuits; "01-0059" in security pen to underside; heatsink; expansion connector; cassette board connector; and original cassette interface, labeled Apple 1 Cassette Interface Copyright 1976 with "NTI" lettered in triangle on component side, overall approximately 15 x 9 x 2½", on four corner and one central plastic pedestals.

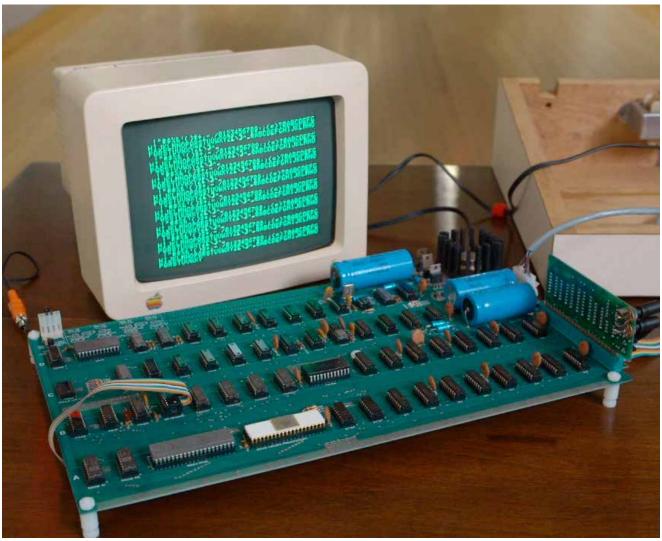
WITH: Custom triad power supply and vintage keyboard integrated into custom wooden box & vintage Apple II mini monitor. Computer was operational as of July 30th, 2015; a video of that operation can be viewed on our website at http://www.bonhams.com/video/19792/ . It was examined and powered up by Corey Cohen, Apple-1 expert and member of the Board of Directors for

Mid-Atlantic Retro Computing Hobbyists Museum at the InfoAge Science Center in NJ. Mr. Cohen notes that the Apple-1 "is in near perfect condition. Even the back of the board lacks the typical peeling that seems to exist on nearly all known Apple-1 boards." Provenance: Tom Romkey, owner of the Personal Computer Store in Florida.

APPLE-1 COMPUTER IN NEAR-PERFECT, WORKING CONDITION.

The Apple-1 computer is the first pre-assembled personal computer to come to market, heralding the dawn of the personal computer revolution. The story of its production and sale has become one of the most potent legends in 20th century history. Indeed, the story is perhaps just as famous now as the one that inspired the company name: Newton theorizing gravity under the apple tree.

Steve Wozniak had demonstrated his breakthrough design at the Homebrew Computer Club in Palo Alto and, with his high-school



77 (still from demonstration video with the vintage components, July 2015)

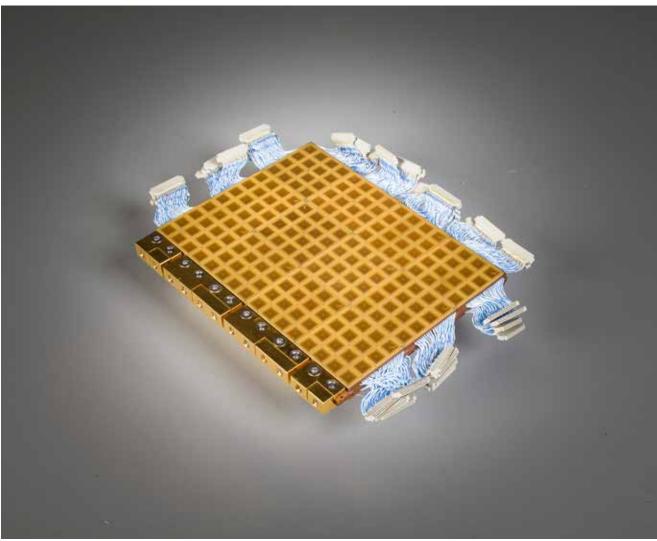
buddy Steve Jobs, obtained an order from Byte Shop owner, Paul Terrell, for 50 assembled boards to be delivered in 30 days. The Apple-1 was built by Wozniak in the Jobs' family garage (or possibly Jobs' sister's bedroom). Approximately 200 units were eventually made, but this is thought to be one of the first batch of 50 with the PCB manufacturer unidentified on the front copper layer of the board. It also bears the number "01-0059" in security pen on the reverse, of unknown significance, though conjectured to be a Byte Shop inventory number. Only 66 surviving authentic Apple-1's are listed in Mike Willegal's Apple 1 Registry as of June, 2015. Of those 66, only 17 are documented as having been successfully operated since 2000. Although the first Byte Shop order sold extremely well (at a retail price of \$666.66), there were at least some remainders from the additional 150 and many of these were recycled into Apple II's. Additionally, at least some of the Apple-1 first users sent them back for conversion to Apple II's or modified them on their own. In this context, the state of preservation of this example is particularly remarkable. Of the approximately 15 other working boards, it is

not known if any of those are in as excellent condition as this one. In particular, note the nearly pristine state of the motherboard's underside where modifications or prior modifications are typically visible. According to Corey Cohen, the condition of the present example is significantly better than any of the operating units that have come up for public sale in the past 4 years.

The superlative rarity of an Apple-1 in this condition is corroborated by this machine's early history. The owner, Tom Romkey, owned the "Personal Computer Store" in Florida, and was certified as an Apple level 1 technician in 1981. One day, a customer came into his shop and traded in his Apple-1 computer for a brand new NCR Personal Computer. The customer had only used the Apple-1 once or twice, and Mr. Romkey set it on a shelf, and did not touch it again.

For an excellent discussion of the history of the Apple-1 see the documentary: Steve Jobs: The Lost Interview (2012).

\$300,000 - 500,000



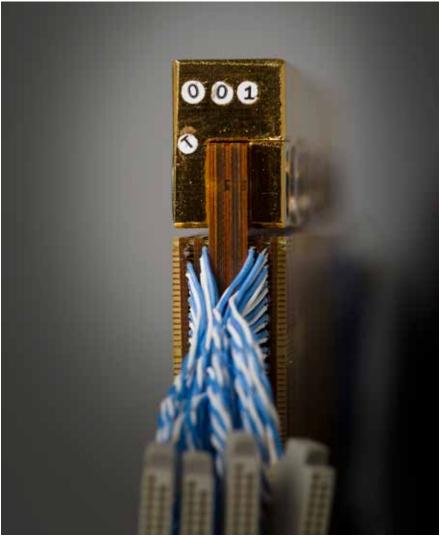
THE ONLY EXISTING CRAY-4 SUPERCOMPUTER.

Complete Cray-4 processor, serial number 001, on one $4 \times 5 \times 3/8$ inch 3-dimensional logic multi-board module with 90 electrical layers (each .33 inches). Module with pathways and connections in all 3 directions using unique barrel twist pins for 36,000 Z-axis inter-board connections; gallium arsenide semi-conductors.

WITH: Archive of documentation, including original marketing brochures for the Cray-4 & Cray-3 supercomputers, Cray Computer Corporation print-outs on Core Technologies, Gallium Arsenide, Printed Circuit Board Materials, and Software.

THE LAST SUPERCOMPUTER DESIGNED BY SEYMOUR CRAY, BEING SERIAL NUMBER 001. THE ONLY EXISTING CRAY-4.

Seymour Cray (1925-1996) was an electrical engineer and supercomputer architect. Known as "The Father of Supercomputers," he was one of the founders of Control Data Corporation, Cray Research, Cray Computer Corporation and SRC Computers. Seymour designed and developed the world's fastest computer systems — UNIVAC 1103, the CDC 1604, CDC 6600, CDC 7600, Cray-1, Cray-2, Cray-3 and his last processor, the Cray-4. The Cray-1, which boasted a world-record speed of 160 million floating-point operations per second, had an 8MB main memory, and could perform over a hundred million arithmetic operations per second was installed at Los Alamos National Laboratory in 1976 at a cost of \$8.8 million. Taking months to build, the Cray-1 had a distinctive "C" shape system, which was designed so that the integrated circuits could be placed closer together, with no wire in the system being longer than 4



78 (detail)

feet. The Cray-1, which was over 6 feet tall, had a cylindrical base of 9 feet and contained 576 modules for the processor, was considered "small" at the time, and used a unique Freon Cooling System to remove heat. By comparison, the Cray-4 is about the size of a smallbook, contains the entire processor in one module – a size reduction of 500X.

Each subsequent system was a significant improvement over the previous, with the Cray-2, introduced in 1985, providing a tenfold increase in performance over the Cray-1. It was with the Cray-3 that Seymour Cray first introduced the gallium arsenide semiconductors, which were much faster than the silicon conductors used in other machines. Despite the remarkable innovations of the Cray-3, the system was not a commercial success. Development of the Cray-4,

a substantial improvement over the Cray-3, began in 1995, but the Cray Computer Corporation ran out of money and filed for bankruptcy. Seymour Cray died a year later in a car accident, and was never able to see his final project to production.

Seymour Cray's impact on the history of computing cannot be overstated. Joel Birnbaum, former CTO of HP Corp said of him "It seems impossible to exaggerate the effect he had on the industry; many of the things that high performance computers now do routinely were at the furthest edge of credibility when Seymour envisioned them ... Seymour combined modesty, dedication, and brilliance with vision and an entrepreneurial spirit in way that places him high in the pantheon of great inventors in any field."

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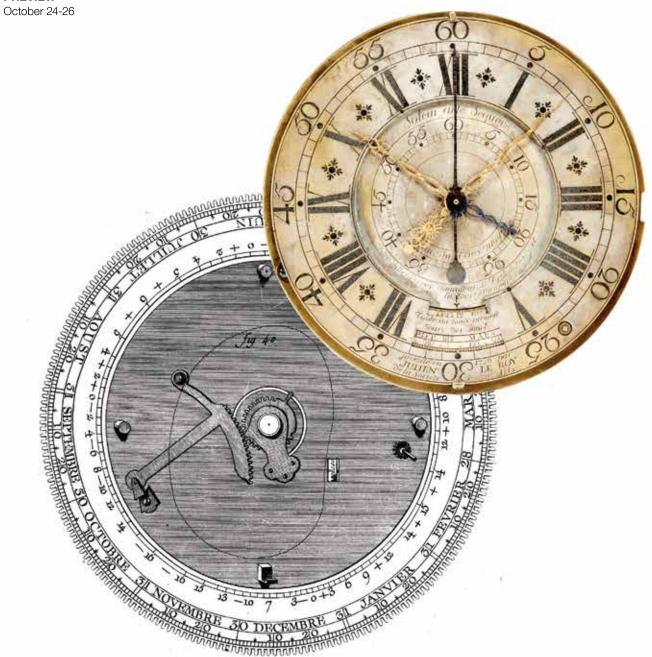
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