Bonhams 1793

Illuminating Space:
Images from a Private Virginian Collection

Wednesday December 5, 2012 at 1pm
New York

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New York

Bonhams

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

Preview

Saturday December 1, 12pm to 5pm
Sunday December 2, 12pm to 5pm
Monday December 3, 10am to 6pm
Tuesday December 4, 10am to 5pm

Bids

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

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

Sale Number: 20830
Lots 1 - 187

Catalog: $35

Inquiries

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Automated Results Service
+1 (800) 223 2854

Online bidding will be available for this auction. For further information please visit:
www.bonhams.com/illuminating

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

Illustrations

Front cover: Lot 15
Session page: Lot 183
Back cover: Lot 98

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 $50,000 OF THE BID PRICE, 20% OF THE AMOUNT OF THE BID PRICE ABOVE $50,000 UP TO AND INCLUDING $1,000,000, AND 12% OF THE AMOUNT OF THE BID PRICE OVER $1,000,000, and (c) unless the purchaser is exempt by law from the payment thereof, any California, Arizona, Connecticut, 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. However, if the purchaser pays for all lots purchased by it from the sale in cash or by "cash equivalent" (which term is defined to include cashier's check or money order, approved check, wire transfer or other immediate bank transfer), and makes such payment in full by the payment due date specified in Paragraph 2 below, a discounted buyer's premium rate of 23% will apply to the first $50,000 of the bid price.

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;

(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 of 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. 3550.

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 ¤ 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 ▲ 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 ○ 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. If you pay for all lots purchased in the auction in cash or cash equivalent (as defined), a reduced premium rate will apply, as set forth in the Conditions of Sale.

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, Connecticut, 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 Wednesday December 12 without penalty. After December 12 collection of lots will be by appointment only. Please call +1 (212) 644 9001 at least 24 hours in advance to make an appointment.

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 and Storage After Sale

Please note that all lots listed at the beginning of our printed catalog that are not collected by **5pm on Wednesday, December 12** 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 Tuesday, December 18.

Address:
Cadogan Tate Fine Art Storage Limited
41-20 39th Street
Sunnyside, New York, 11104

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) 718 707 2849.

Handling and 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

Transfer	$37.50
Daily storage	$5
Insurance (on Hammer + Premium +tax)	0.3%

Please contact Catherine More at Cadogan Tate Fine Art Storage at
(t) 718 247 2070
(f) 347 468 9916 or
c.more@cadogantatefineart.com

For more information and estimates on domestic and International shipping, please contact Michael Driver at
(t) 718 247 2064 or
m.driver@cadogantate.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 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.

Please note in particular the following:
Cadogan Tate does not accept liability for damage or loss, due to negligence or otherwise, exceeding the sale price of such goods, or at their option the cost of repairing or replacing the damaged or missing goods.

Cadogan Tate reserves a lien over all goods in their possession for payment of storage and all other charges due them.

Included Lots

1	95
4	96
7	97
8	98
11	99
12	159
13	160
17	174
18	183
60	

Per aspera ad astra

The human desire to travel in space is as old as our species itself. As the planet's most sophisticated tool builder, humankind finally created the technology to realize space travel during the mid-20th century. At the height of the Apollo era, an astonishing 4.6 percent (today's NASA allocation is a paltry 0.4 per cent) of the federal budget went to our military industrial complex to fulfill the Kennedy/Johnson mandate of landing a man on the Moon. The Soviet Union, as an unaccountable command economy, will prevent us from ever gaining a true accounting by their military industrial complex during their unsuccessful race to the Moon.

The Cold War rivalry has put in place a technical template that has enabled America to carry out six successful manned missions to our Moon and maintain an extended manned presence in Earth orbit. During the past five decades, we have sent unmanned sentinels to our Moon and trans-lunar space to sensor and image most of the planets in our solar system. Those elegant technical systems have sent back data, including images, of strikingly beautiful topographic surfaces from Mercury, Venus, our Moon, Mars and her moons, Jupiter and her moons, Saturn and her moons and the outer planets and other Near Earth Objects.

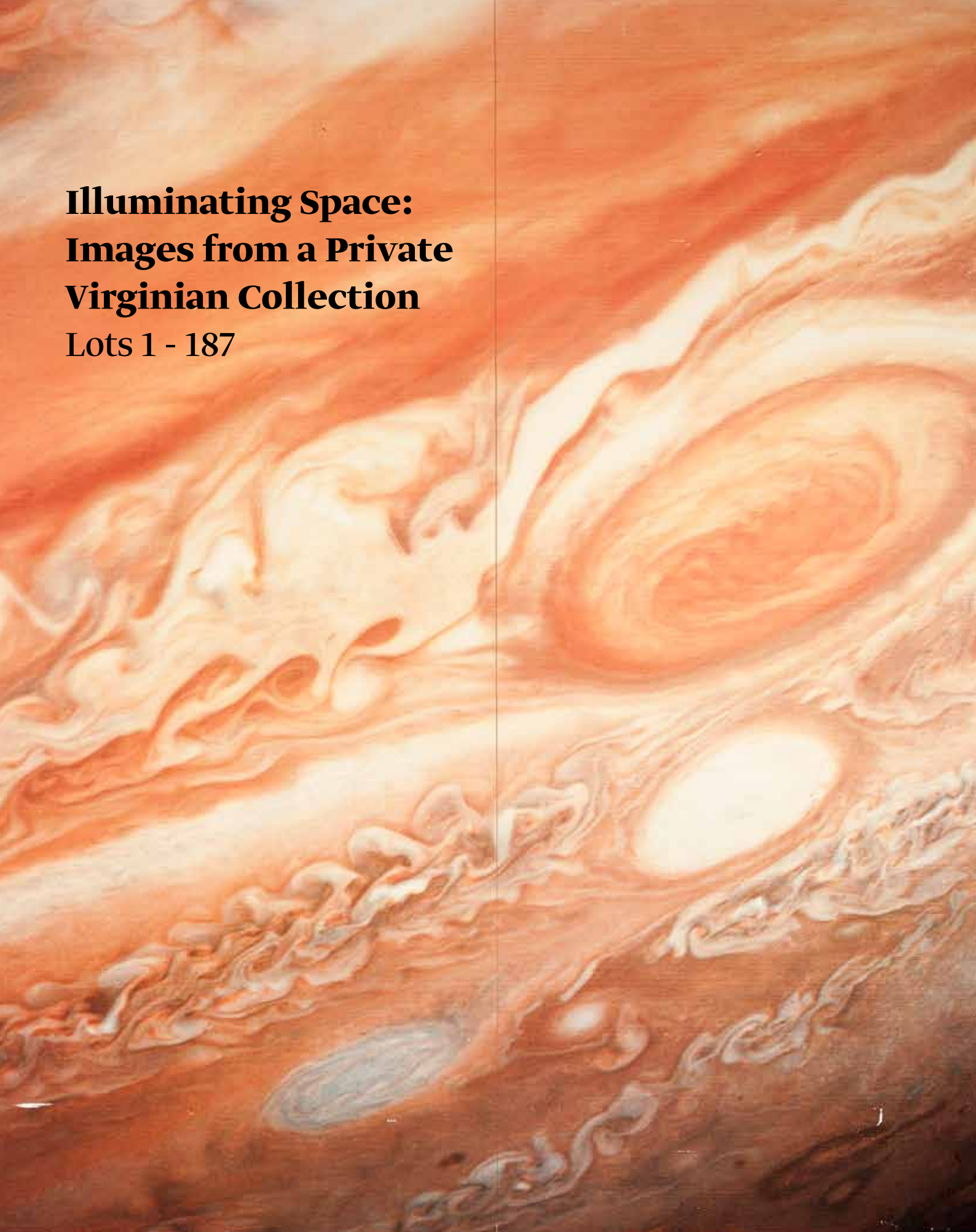
Presently, the World is at the formative stages of a space race that will make the 1950s and 1960s Cold War race in space look like Kinderspiel. Within the next two decades, we will see the US government adopt the recommendation of rocket pioneer Robert C. Truax who urged for the creation of an entirely new branch of the military that will focus on all strategic aspects of space assets. Separate and apart from this significant shift in government expenditure, the non-governmental development of space, through many complex alliances, will begin to blossom. Decision makers will soon awaken from their sleep of reason and energize a focused effort to thoroughly explore the Nearest Earth Object, our Moon. It has been forty years since we have last visited the Moon and we did so in great haste and as a Cold War stunt. With a small human settlement on our Moon, the harvesting of Off Earth Resources will begin and enable our species to build a permanent human presence on a celestial body.

It will be quite interesting to see how the rise of China and her great potential will impact World space activities and planning. Will China go her separate way or will she choose to cooperate with major space faring players?

Realize that the objects in this catalog are among the most significant original representations of humanity's primary phase of space exploration. The vast majority of this material ranges from very scarce, at the very least, to being singularly unique. We may compare many of the photographs here to those of the great 19th century photographer Carleton Watkins whose magnificent photographs of the raw American West opened that vast frontier. It is only the beginning. The Race is on.

A Collector from Virginia and father of L. Enlil L.

Order of Sale



Illuminating Space: Images from a Private Virginian Collection

Lots 1 - 187

1

2

3

The Universe

1[Y]

PASSEMANT, CLAUDE-SIMEON. 1702-1769.

A 6-inch reflecting telescope with speculum metal mirror, France, c.1750, signed *"Passemant Ingenieur Royal Louvre Paris,"* black-painted brass, each end of the tube painted in gold with foliate and fleuron motifs, with brass and cast iron stand, the stand adjustable by means of an ivory-handled key, the tube 1380 mm long, the stand 400 mm tall, with cap.

PROBABLY THE LARGEST PASSEMANT TELESCOPE IN PRIVATE HANDS. In 1738, Passemant published a treatise entitled *Construction d'un télescope de réflexion* (Paris: P.N. Lottin, 1738). Later, he "won fame for his astronomical clocks, but was also well known for his terrestrial and celestial globes and his sundials, barometers, telescopes, and microscopes ... His inventive faculty earned him the title of 'ingénieur du Roi' ... and, in 1749, he was awarded quarters in the Louvre above what were then the premises of the Académie des Sciences" (Parker). He was responsible for three telescopes presented to the King in 1751, 1755, and 1759, and around that time he successfully incorporated a clock drive into a telescope.

$30,000 - 50,000

2[□]

DIEN, CHARLES. 1809-1870.

Planisphère mobile simplifié, donnant immédiatement l'aspect du Ciel. Paris: Alphonse Giroux, [c.1844].

Engraved card device enclosing rotating pasteboard disc, 470 x 380 mm. Letterpress description pasted at foot. Lacking spindle, well rubbed with abrasions to the disc with some loss of captions.

Dien improved on the traditional pictorial style of depicting constellations, and originated the connecting-line manner, which highlighted the constellation without extraneous clutter (Kanas pp 295-296).

$300 - 500

3[□]

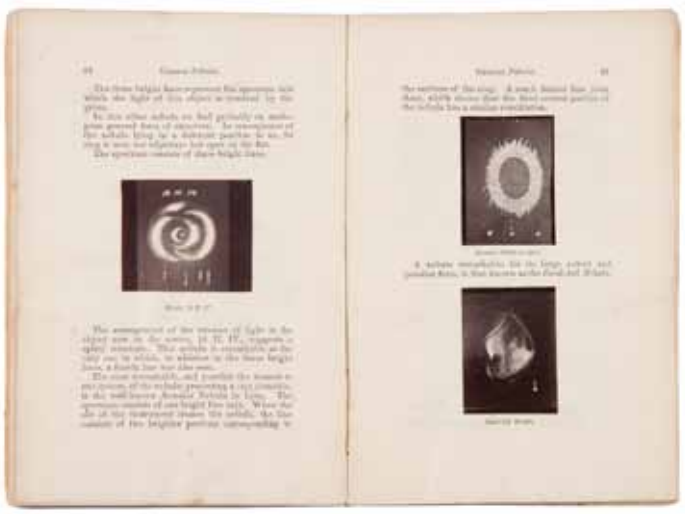
WHITALL, HENRY. 1819-1887.

A Moveable Planisphere Showing the Position of the Heavens at any given time. Philadelphia: Henry Whitall, 1856.

Engraved device, pasted onto thick board, with guide rotating on central spindle, 390 x 390 mm. Letterpress description *"The Starry Heavens"* pasted on verso. Toned, corners slightly bumped.

$300 - 500

4



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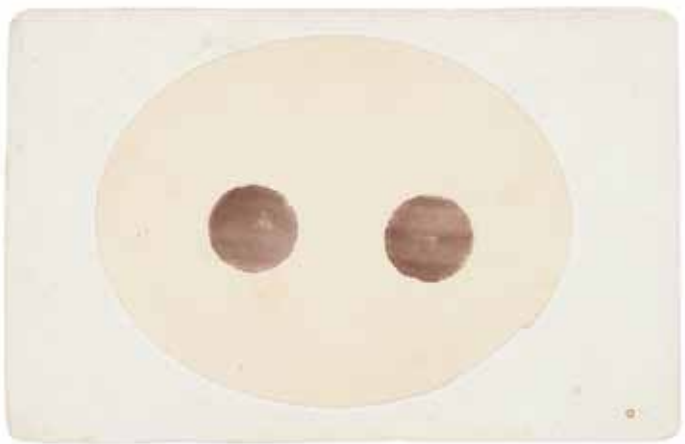


6

4
MERZ, G. & S.
A 2-inch refracting telescope, c.1865, by Merz of Munich, brass, with brass and steel stand, 910 mm long, stand 1100 mm high, with lens cap.

Munich-based Georg Merz [1793-1867] and Joseph Mahler took over the Utzschneider & Fraunhofer company in 1839. On Mahler's death, Merz continued the business with his sons. After 1858, the firm was known as G. & S. Merz, and was one of the most renowned German makers of microscopes and optical and astronomical instruments of the second half of the 19th century.
$3,000 - 4,000

5
HUGGINS, WILLIAM. 1824-1910.
On the Results of Spectrum Analysis Applied to the Heavenly Bodies. A Discourse Delivered at Nottingham, before the British Association, August 24, 1866. London: W. Ladd, [1866].
8vo (180 x 120 mm). 56, 2 ad pp; tipped-in advertisement for the photographs on glass for lantern slide use. 18 albumen prints mounted in text reproducing diagrams of spectrums, sketches of nebulæ, and *"Apparatus for the Measurement and Comparison of Stellar Spectra"*; additional albumen print of the latter loosely inserted. Original purple cloth, blindstamped and gilt lettered. Occasional very light spotting, lightly rubbed, spine faded.
Provenance: J. Parnell (ownership inscription on front free endpaper); Harvey Plotnick (his sale, Christie's, October 4, 2002, lot 138).

RARE PHOTOGRAPHICALLY-ILLUSTRATED SCIENTIFIC WORK. Only one other copy appears in the auction records since 1975. "Huggins perfected a spectroscope which, attached to his telescope, brought the prominent spectral lines of the brighter stars into view. Huggins's star spectroscope enabled astronomers to ask new questions and undertake new mensuration, and ultimately altered the boundaries of acceptable astronomical research" (*ODNB*). Ladd, the publisher, appears to have also been a manufacturer and retailer of spectroscopes and apparatus.
$2,500 - 3,500

6
YOUNG, CHARLES AUGUSTUS. 1834-1908.
2 carte-de-visite photographs of solar prominences, Observatory of Dartmouth College, Hanover, NH, September 28, 1870, oval albumen prints mounted, each 2½ x 3¾ inches (65 x 97 mm), together with cabinet photograph of spectroscope that was made by Alvan Clark & Sons in 1869 for Dartmouth College, albumen print mounted, 4 x 6¾ inches (105 x 170 mm), captioned below in ink, all printed by H.O. Bly of Hanover, NH.

THE EARLIEST PHOTOGRAPHS OF SOLAR PROMINENCES. On September 28, 1870, Young announced that "this afteroon, with the help of Mr H.O. Bly, our photographer ... I have succeeded in obtaining photographs of protuberances on the sun's limb, of which I enclose a specimen. They were obtained by attaching a small camera to the eye-piece of the telescope and opening the slit somewhat widely" (*Journal of the Franklin Institute*, third series, vol LX pp 232a-233b).
The two cartes-de-visite have printed captions on verso reading, *"Protuberances or Clouds of Incandescent Hydrogen on the edge of the sun's disc. Photographed by the aid of a Spectroscope at the Observatory of Dartmouth College, September 28, 1870."* The cabinet photograph is illustrated in Warner and Arial p 36.
$800 - 1,200

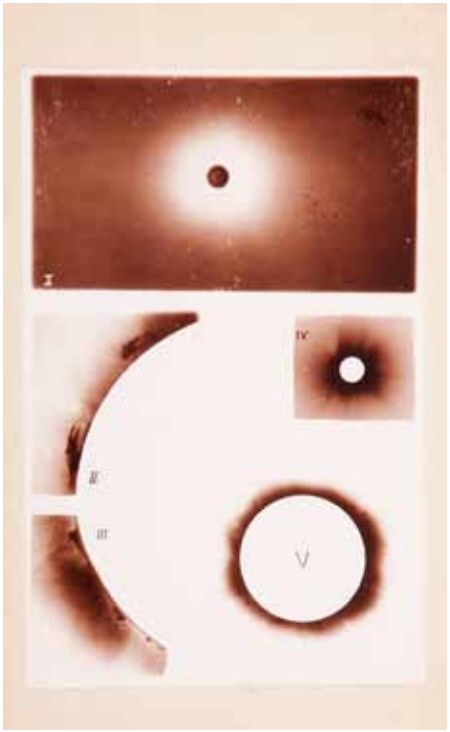
7

8

7
TELESCOPE—ENGLISH.
A very large 7-inch reflecting telescope, England, c.1870, the tube of wooden barrel-like construction, sighting scope, with substantial blue-painted metal stand, 1550 mm long, the stand 1000 mm high, with small wooden box containing 3 additional small lenses.
$4,000 - 6,000

8
MEYROWITZ, PAUL, retailer.
A 4-inch refracting telescope, America, c.1890, signed by the retailer *"Paul A. Meyrowitz, 389 5th Ave., New York City,"* brass, sighting scope, with wood tripod base, 1400 mm long, the base 1500 mm high, housed in original wood case together with 4 additional lenses, right-angle finder, and lens cap, one joint of tripod repaired.
Provenance: Astronomical Society of Harrisburg (engraved plaque on one leg of tripod, probably second half 20th century).
$4,000 - 5,000

11



9

12

9□
SCHAEBERLE, JOHN MARTIN. 1853-1924.
Contributions from the Lick Observatory No. 4. Report on the Total Eclipse of the Sun, Observed at Mina Bronces, Chile, on April 16, 1893.
Sacramento: State Office, 1895.
8vo (230 x 145 mm). With silver gelatin print frontispiece, and 9 plates (one of which is folding). Original pebble-grain cloth, spine gilt lettered. Wanting front free endpaper, very lightly rubbed.

Describes the outcome of the Lick Observatory's expedition to the Atacama Desert in Chile in 1893, funded by Phoebe Hearst. The main telescope used was the Observatory's 5-inch Clark objective.
$300 - 500

10□
LICK OBSERVATORY.
The Pleiades, from Lick Observatory, Mount Hamilton, CA, December 28, 1899, glass-plate positive, image 6 x 8¼ inches (155 x 210 mm), together with a view of the Observatory, glass-plate positive, image 5¾ x 8¼ inches (145 x 200 mm), both on plates 7¾ x 9¾ inches (195 x 245 mm), captioned outside in the image in manuscript, framed.

The Pleiades, photographed through the 36-inch Crossley Reflector, given to the observatory in 1895 by British politician Edward Crossley.
$300 - 400

11
MAILHAT, R., ATELIERS.
A 4-inch refracting telescope, Paris, c.1900, signed *"Ateliers R. Mailhat | Paris - XIVe,"* brass, with sighting scope, on heavy steel mount with counterweights, 1690 mm long, bracket 550 mm tall including counterweight, the drive mechanism incomplete.

Mailhat's workshop was founded in 1894, when he acquired the business of Lerebours & Secrétan which had itself been founded at the beginning of the 19th century. In 1909, Mailhat stepped down as director, and the firm continued under the direction of Mouronval. The present telescope resembles the two *lunettes equatoriales à latitude variables* illustrated in Ateliers R. Mailhat's 1910 catalog (pp 11-12).
$6,000 - 8,000

12
MOGEY, WILLIAM AND DAVID.
A 3-inch refracting telescope, Bayonne, NJ, c.1900, signed on the focus knob *"W. & D. Mogey | Bayonne, N.J.,"* brass, with wood tripod base, 1200 mm long, the base 1350 mm high, housed in original wood case, with cap.
Provenance: Harrisburg Natural History Society (engraved plaque on one leg of tripod, probably second half 20th century).

William Mogey began his career in the optics and astronomy industry in 1882 in New York. In 1888, his brother joined the business, and in 1893 they moved to larger premises in Bayonne, where they remained until 1911. The present model is listed in Mogey's 1932 catalog as "E-130," with a price of $165 (p 18).
$2,500 - 3,500

13
QUEEN, JAMES W., AND COMPANY, retailer.
A 2½-inch refracting telescope, France, c.1900, probably manufactured by Bardou, signed *"Queen & Co. | Philadelphia,"* brass, with brass stand, 1070 mm long, stand 440 mm high, housed in original wood case, with alternate eyepiece with shutter, lens cap.

"Time and again during the second half of the nineteenth century, James W. Queen and Company claimed to have 'the largest and best assorted Stock of Mathematical, Optical, and Philosophical Instruments, both of foreign and domestic manufacture, in the United States.' This was no idle boast ... This Philadelphia firm was the leading American purveyor of a wide range of the objects that were coming to be known as scientific instruments" (Warner, p vii).
$2,000 - 3,000

14¤
SMITH, ALEXANDER.
3 views of deep space, probably from Yerkes Observatory, March 30 to November 15, 1903, gelatin silver prints mounted, 6 x 7¾ inches (150 x 200 mm), captioned and dated below in ink.

Comprising: the vicinity of Epsilon Aurigae, Beta Cygni, and the vicinity of A. Persei. The photographs are signed *"Alex. Smith"* below, likely the Scottish-born American chemist [1865-1922]: a keen astronomer during his youth, in the fall of 1903 Smith was at the University of Chicago's Yerkes Observatory, working on the manuscript of his *Introduction to Inorganic Chemistry* (Noyes p 4).
$400 - 600

10 (part)


13


14 (part)

15 (color reversed)

15

"This series of telescopes, by revealing to all men, graphically, by means of exquisite photographs, a Universe of which the Earth, the Sun and the Milky Way are but an infinitesimal part, will bring to the world a greater Renaissance, a better Reformation, a broader science, a more inspiring education, a nobler civilization."

- In *Transactions of the Optical Society*, vol 29 p 197, London, 1928.

15
RITCHEY, GEORGE WILLIS. 1864-1945.
The substantial archive of pioneering astronomer, photographer, and telescope designer George Willis Ritchey, c.1895-1935, including (all figures approximate):
1. 80 glass plates of celestial phenomena taken as seen from the observatories at Mount Wilson, Yerkes and Lick, and of the Observatory at Mount Wilson and its construction, of which at least 35 are original negatives, the remainder being contact print positives, and enlarged positives and negatives.
2. 283 vintage photographs of celestial phenomena; many of these and the following photographic prints are annotated on the verso by Ritchey.
3. 244 vintage photographs of various observatories and their telescope apparatus.
4. 76 vintage photographs of Ritchey's cellular mirrors.
5. 83 vintage photographs of Ritchey-Chrétien telescopes and celestial phenomena seen through them.
6. A 30-inch experimental cellular mirror made in 1924-5 at the Paris Observatory, and a 20-inch optical flat made c.1900 from a Saint Gobain blank while Ritchey was at Yerkes, the latter in original crate with Ritchey's annotation.
7. 150 glass slides used by Ritchey in a series of lectures.
8. 371 vintage or near-vintage photographs of mostly terrestrial natural wonders by photographers such as Ritchey himself (many of his beloved Grand Canyon), Vroman, Hillers, Mindeleff, and others, intended for reproduction in Ritchey's proposed book *Depths of the Universe*.
9. Various printed and manuscript items, such as detailed lists of exposures, blueprints, notes on the manufacture, polishing and silvering of the 100-inch Hooker telescope mirror, correspondence with sub-contractors and further notes relating to the Ritchey-Chrétien telescope in Washington, DC, notes on the origin of the Moon, lecture notes, and the original French patent for cellular mirror technology.
10. Upwards of 40 books, periodicals, and pamphlets.
A more detailed listing is available on request.

BEGINNINGS
Ritchey's grandfather George, a mechanic, was an Irishman who emigrated to America in 1841 shortly before the potato famine. With his wife and three young sons, he settled in Ohio and bought a mill. By around 1850, Ritchey's father James, the eldest child, was of working age, and the father and son founded a furniture company in Pomeroy, Ohio. Ritchey himself was born on the last day of 1864.

Initially Ritchey followed his father and grandfather into the cabinetmaking business, but soon enrolled at the new University of Cincinnati. There he studied drawing and design for one year, and science for a second. His grandfather had been an amateur astronomer, and George Willis Ritchey likewise worked as an assistant at the Cincinnati Observatory during his college years. Studying the writings of Henry Draper and A.A. Common, he began to produce his own telescope mirrors at home. In 1888, he married and moved to Chicago, teaching in the Manual Training School.

15

CHICAGO, HALE, AND YERKES

It was in Chicago in 1890 that Ritchey met George Ellery Hale. Hale, a graduate of MIT, was from a wealthy family and had a private observatory at his family's mansion in Kenwood, a suburb of Chicago. Ritchey did occasional machining and optical jobs for Hale. The combination of the new University of Chicago and a donor named Charles T. Yerkes accelerated the careers of Hale and Ritchey, and by 1897 Hale was running the new Yerkes Observatory in Williams Bay, Wisconsin, home of the largest refracting telescope in the world, with a Clark 40-inch lens.

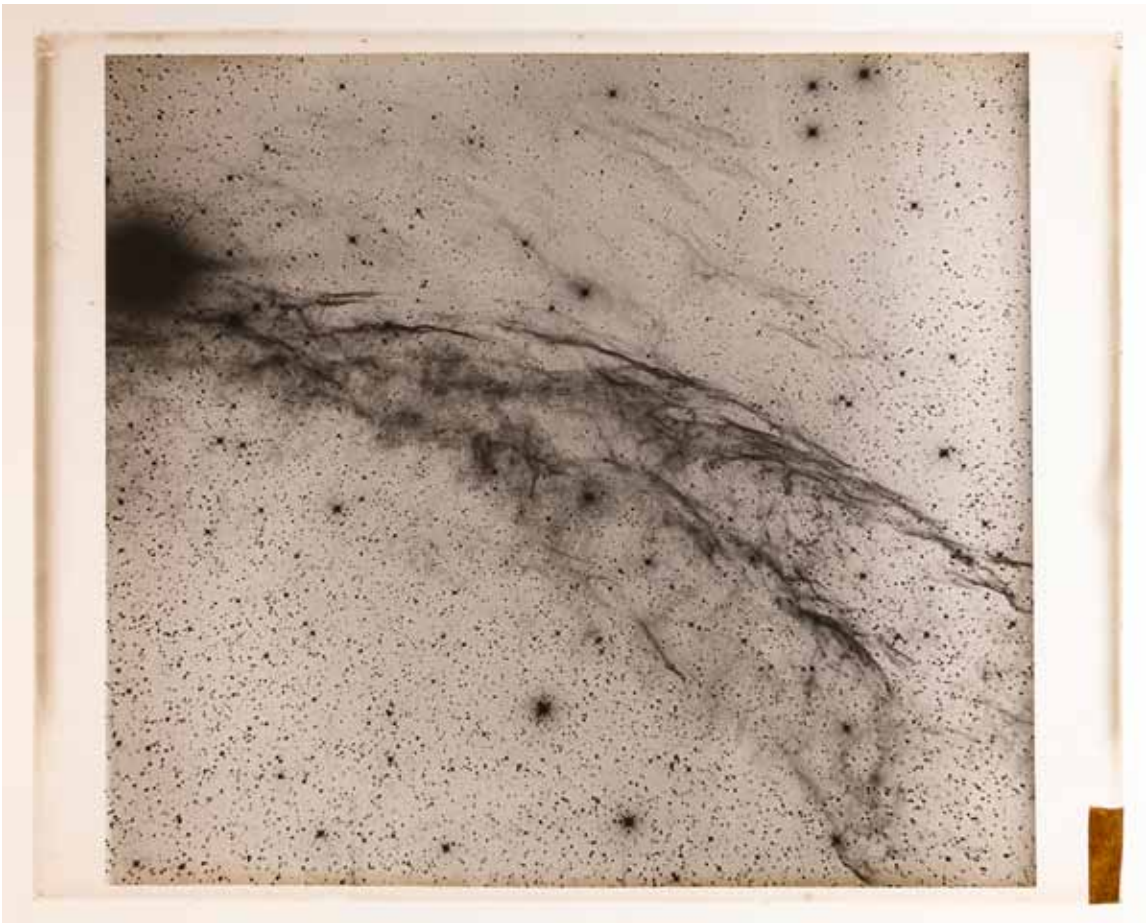
Even while the 40-inch was under construction, Ritchey and Hale felt that a reflecting telescope was the future, and they began work on a 60-inch lens. With the existing 40-inch refractor, and a new 24-inch reflector telescope Ritchey had designed and built, he began to produce ever better photographs of the Moon, faint stars, and nebulae. His images were an improvement upon those taken through the 36-inch refractor at Lick Observatory, and Ritchley impressed the astronomical community when they were unveiled in Washington in 1901.

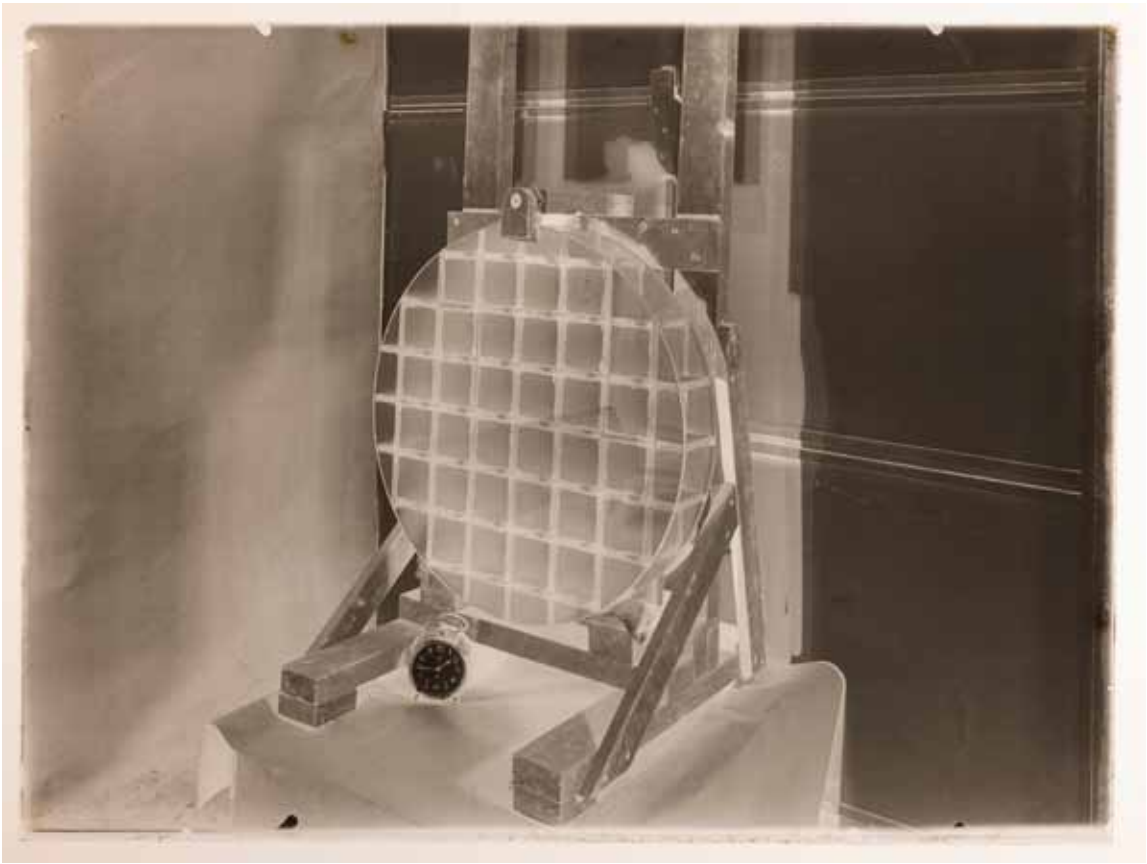
MOUNT WILSON

Around that time, Hale began to develop a new observatory in California, on Mount Wilson near Pasadena. Ritchey came with him, and by 1908 a new telescope with the 60-inch lens was in operation. Once again, the photographic results were dramatically better than anything that had gone before. The next logical step was a 100-inch reflector. Ritchey began to focus on the idea of a cellular mirror, essentially two thin glass discs separated by a waffle pattern of supports cemented together, which would allow air to flow freely and keep the mirror at a constant temperature. Hale vetoed the plan. Ritchey was increasingly in conflict with Hale and his efforts at Mount Wilson were marginalized before the 100-inch Hooker telescope saw first light in September 1917. Ritchey continued to develop his cellular mirror experiments and carry out further work on a new type of telescope today known as a Ritchey-Chrétien. Henri Chrétien was a visiting French astronomer at Mount Wilson who had worked closely with Ritchey. Hale felt that Ritchey's technical path was ill-suited to his own primary goal for Mount Wilson, stellar spectroscopy, where only the center of the field of a telescope mirror needed to be so sharp in focus. In 1919, Ritchey was fired and left Mount Wilson.

FRANCE

In 1924, Ritchey arrived at the Paris Observatory, through the efforts of his former colleague Chrétien. Throughout the 1920s, Ritchey, with help from Chrétien, experimented with cellular mirrors and together they went on to construct the first Ritchey-Chrétien telescope. The telescope was of limited success, a result of the light pollution that was inevitable given its location.





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FINAL YEARS AND LEGACY

In 1930, Ritchey came back to the United States and went on to design and build a 40-inch Ritchey-Chrétien telescope for the US Naval Observatory in Washington, DC. That telescope yielded mediocre results, but when it was moved to a light pollution-free site in northern Arizona in the late 1950s—after Ritchey's death—the results were spectacular. In common with other visionaries who suffered setbacks during their lives, Ritchey has been vindicated by history: the Hubble Space Telescope is a reflector of Ritchey-Chrétien design, and the primary mirror is cellular, consisting of inch-thick top and bottom plates sandwiching a honeycomb lattice.

Ritchey is arguably the greatest astronomical photographer in history, and is one of the most significant telescope designers. At his core, he was a photographer, and he saw the telescope as a lens through which to take ever better celestial photographs. Through his efforts in improving the design and construction of telescopes and observatories, and advancing the chemistry of astronomical photography, Ritchey left a legacy that continues today.

References:

Hargreaves, F.J. Obituary of Ritchey in *Monthly Notices of the Royal Astronomical Society,* vol 107, p 36. Oxford: Blackwell Scientific Publications, 1947.

Osterbrock, D. E. "The Canada-France-Hawaii Telescope and George Willis Ritchey's Great Telescopes of the Future," in *Journal of the Royal Astronomical Society of Canada,* vol 87, no 1, p 51. Toronto: RASC, February, 1993.

Estimate on request

16

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16□
KEELER, JAMES EDWARD. 1857-1900.
Photographs of Nebulæ and Clusters made with the Crossley Reflector. [In:] *University of California Publications. Publications of the Lick Observatory.* Sacramento: W.W. Shannon, Superintendent of State Printing, 1908. Volume 8. 4to (290 x 225 mm). Photogravure frontispiece, 70 photogravure plates. Original cloth lettered in gilt. Final plate irregularly toned, gilt lettering discolored, extremities lightly rubbed.
Provenance: Frank D. Uric of Elgin, IL (ownership inscription dated February 17, 1919).
$300 - 500

17
PETITDIDIER, OCTAVE LEON. 1853-1918.
A 3½-inch refracting telescope, Chicago, IL, c.1915, signed *"O.L. Petitdidier | Chicago,"* brass, sighting scope, with wood tripod base, 1350 mm long, base 1900 mm high, housed in original wood case together with 3 additional lenses, 2 right-angle finders, and leather lens cap, one tripod spike loose.
Provenance: original shipping tag from well-known scientific instrument dealer William Gaertner & Co., Chicago, IL to the purchaser in Winona, MN.

Included in the lot is a letter signed by Petitdidier to the first owner of the telescope, dated December, 1915.
$5,000 - 6,000

18
LOHMANN BROTHERS.
A rare 5-inch pneumatic-drive refracting telescope, Greenville, OH, c.1918, signed *"Lohmann Bros. | Makers | Greenville, Ohio,"* pale blue-painted brass, sighting scope, steel headset, with wood tripod base, 1800 mm long, the base 1900 mm high, some paint loss.

PERHAPS THE ONLY SURVIVING EXAMPLE OF A PNEUMATICALLY-DRIVEN TELESCOPE. The Lohmann Brothers emigrated from Germany to America around 1890, and initially concentrated on basic engineering and woodwork. Not many of their telescopes are known to exist. Lohmann's advertisements in the magazine *Scientific Monthly* featured the present design of telescope, described as "5-in. with pneumatic clock"—an unusual form of drive mechanism allowing the observer to track his subject in the night sky (vol 9 no 3, September, 1919, and vol 10 no 2, January, 1920). The advertisements seem to show a pneumatic bulb on a cord, not present here.
$5,000 - 7,000

19

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19
PEASE, FRANCIS GLADHEIM. 1881–1938.
3 large views of deep space, from Mount Wilson Observatory, near Pasadena, CA, c.1920, gelatin silver prints mounted, 19 x 15 inches (480 x 380 mm).

Three stunning images taken through the 100-inch Hooker Telescope, the largest telescope in the world from its completion in 1917 until 1948. The mounts suggest these prints were produced for exhibition purposes.
$2,000 - 3,000

20¤
TELESCOPE—RUSSIAN.
A 2¾-inch Maksutov telescope, Leningrad, USSR, 1959, signed *"T.M.Sh.,"* beige-painted steel, with stand, 240 mm long, the stand 370 mm high, interchangeable eyepieces for 70x and 25x, the 25x eyepiece apparently incomplete, painted numerals to base.
$400 - 600

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GLOBES—REPLOGLE.
Set of 4 globes, of Mercury, Earth, the Moon, and Mars. [Chicago, IL: Replogle, c.1981-1982].
Designed by R.M. Batson, shaded relief by J.L. Inge, both of USGS. Diameters 16, 8½, 6, 4½ inches (406, 216, 152, 114 mm) respectively. Each on wood stand, printed caption labels on stands, with original boxes.
Provenance: Robert H. Steinbacher.

"This set of globes was compiled to display the similarities and differences between the surfaces of Mercury, Earth, the Moon, and Mars" (caption). Reportedly only 300 sets were produced.
$1,500 - 2,500

The Moon

22¤
[CAPUTI, ANTONIO.]
Estasi e rapimento sopra la luna di Archerio Filoseleno. Poema diviso in tre parti. Naples: Vincenzo Pauria, 1763.
4to (250 x 200 mm). Engraved frontispiece, 8 plates. [viii], 290, [4] errata, [9]-14 pp. Untrimmed in original limp boards, rebacked in marbled paper. Scattered light foxing, faint ink inscription to title *"L'autore è Caputi Antonio,"* gathering I toned, one plate with repair at fore-edge just reaching inside platemark, Oo1 with repaired corner tear, covers worn.

FIRST EDITION. A curious *"Ecstasy and Rapture About the Moon"* in verse by "Filoseleno," in which he considers a voyage thereto.
$300 - 500

23

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23
RUSSELL, JOHN. 1745-1806.
A Globe representing the Visible Surface of the Moon, constructed from Triangles Measured with a Micrometer and accurately drawn & engraved from a long series of Telescopic Observations by J. Russell, R.A. London: John Russell, Newman Street, June 14, 1797.
Pasteboard globe fitted with Russell's patent apparatus for displaying lunar libration. Diameter 12 inches (300 mm). 500 mm high overall. The globe mounted within a brass hemisphere on a baluster column raised by a shallowly domed circular foot. The globe fitted with 10 (of 14) facsimile gores, but accompanied by the same 10 original stipple-engraved printed gores, comprising: gores 2-7 (the vast majority of the near side of the Moon), 10, 11 (the cartouche with title and patent details), 13 and 14 (calottes to be placed at diametrically opposite points in the equatorial plane); several of the absent gores would in fact be blank, covering the far side. Lacking the small terrestrial globe. TOGETHER WITH: *"Back and Profile of the Selenographia, invented by John Russell,"* engraving, 190 x 230 mm, possibly the plate from Russell's *A Description of the Selenographia* (London: W. Faden, 1797), lightly toned, a vertical fold repaired on verso with gummed paper.

ONE OF THE BLACK TULIPS OF 18TH CENTURY ENGLISH SCIENTIFIC INSTRUMENTS, AND A STUNNING TECHNICAL ACHIEVEMENT. John Russell was the son of a book- and print-seller, but made his name as a portraitist working in pastel. He exhibited in 1769 at the first exhibition of the Royal Academy, and gained increasing fame and commercial success—charging about the same high prices as Sir Joshua Reynolds. In 1788 Russell was elected a Royal Academician, and shortly after he was appointed painter to the King and the Prince of Wales, and to the Duke of York. He was also responsible for the frontispiece to Robert Thornton's *Temple of Flora* (1797-1807).
Russell's interest in the Moon began in his youth, and he made a drawing of his observations through the telescope of his friend and neighbor the sculptor John Bacon (*ODNB*). Some time later, he wrote, "an accidental possession of a powerful Glass awakened my attention to this beautiful Object once more, and for several years I have lost few opportunities when the Atmosphere has exhibited the Object of my study and imitation" (letter to Dr Thomas Hornsby, Observer at the Radcliffe Observatory in Oxford, February 19, 1789, quoted by Philip, p 18).
Over the course of many years, Russell used a six-foot reflecting telescope by Herschel and a refracting telescope by Dollond, as well as a homemade micrometer, to delineate the Moon in all its phases. In around 1797, he issued a 3-page broadside entitled *Proposals for Publishing by Subscription, a Globe of the Moon.* Among those authorized to receive subscriptions were the London instrument maker George Adams. Russell considered a simple lunar globe to be inadequate for scientific purposes, since the Moon oscillates constantly, always showing a slightly different face. This lunar motion, called libration, also causes changes in the angle at which the Sun strikes the Moon's surface. What he called his *Selenographia* uniquely accounts for libration, the brass stand having graduated scales and a variety of possible rack and pinion adjustments, and the small Earth globe demonstrating parallax. Other parts of the mount-apparatus show the "boundary of light" from the Sun, so that the user can identify which topographic features will appear on the edge of the lunar disc.
There were few subscribers—the price was five guineas—and no more than eleven *Selenographias* are believed to survive (six of which are in institutions). Russell probably did not assemble the globes himself and as a result some examples vary in their form: there exist simple Moon globes on wood stands, without the mechanical selenographic apparatus; others have frameworks of mahogany rather than brass. The present example varies slightly from those in public collections: the main mechanism is not engraved with Russell's name as usual, and the outer curved bracket leading from the mechanism up to the north pole is rounded in section, not rectangular.
$200,000 - 300,000

24

24

25

24¤
GREAT MOON HOAX.
2 lithographs:
1. *Scoperte fatte nella luna dal Sigr. Herschell.* Naples: Fergola, [c.1836].
2. GALLUZZO, LEOPOLDO. *Altre scoverte fatte nella luna dal Sigr. Herschel.* Naples: L. Gatti e Dura, 1836.
Each 460 x 350 mm. Laid down with some loss, creases. Framed.

In 1836, Richard E. Locke, writing for the *New York Sun,* claimed that the noted British astronomer Sir John Herschel had discovered life on the Moon. Flora and fauna included bat-men, Moon maidens (with luna-moth wings), Moon bison, and other extravagant life forms. Locke proposed an expedition to the Moon using a ship supported by hydrogen balloons.
$500 - 700

25¤
GREAT MOON HOAX.
[LOCKE, RICHARD ADAMS.] *Pubblicazione completa delle nuove scoperte di Sir John Herschel nel cielo australe e nella luna; traduzione dal francese.* Milan: Lorenzo Sonzogno, 1836. WITH: *Delle scoperte fatte nella luna ... Versione d'un articolo della Gazette de France del giorno 27 febbraio.* Milan: estr. dalla Gazzetta, March 1836. AND: *Alcune osservazioni del Signor Arago ... intorno alle scoperte fatte nella luna.* Milan: estr. dalla Gazzetta, March 1836. AND: *Apparente conferma delle scoperte.* Milan: estr. dalla Gazzetta, April 1836.
4 works bound in one volume. 8vo (200 x 125 mm). 104; 28; 16; 16 pp. Large folding lithographed plate. Period roan-backed and -tipped boards. Occasional faint foxing, stub-tear to plate.
$400 - 600

26
DE LA RUE, WARREN. 1815-1889, attributed.
2 views of the Moon, from south-east England, c.1855, albumen prints mounted, 6 x 6½ inches (155 x 165 mm) and 4½ x 5½ inches (115 x 140 mm), framed together.

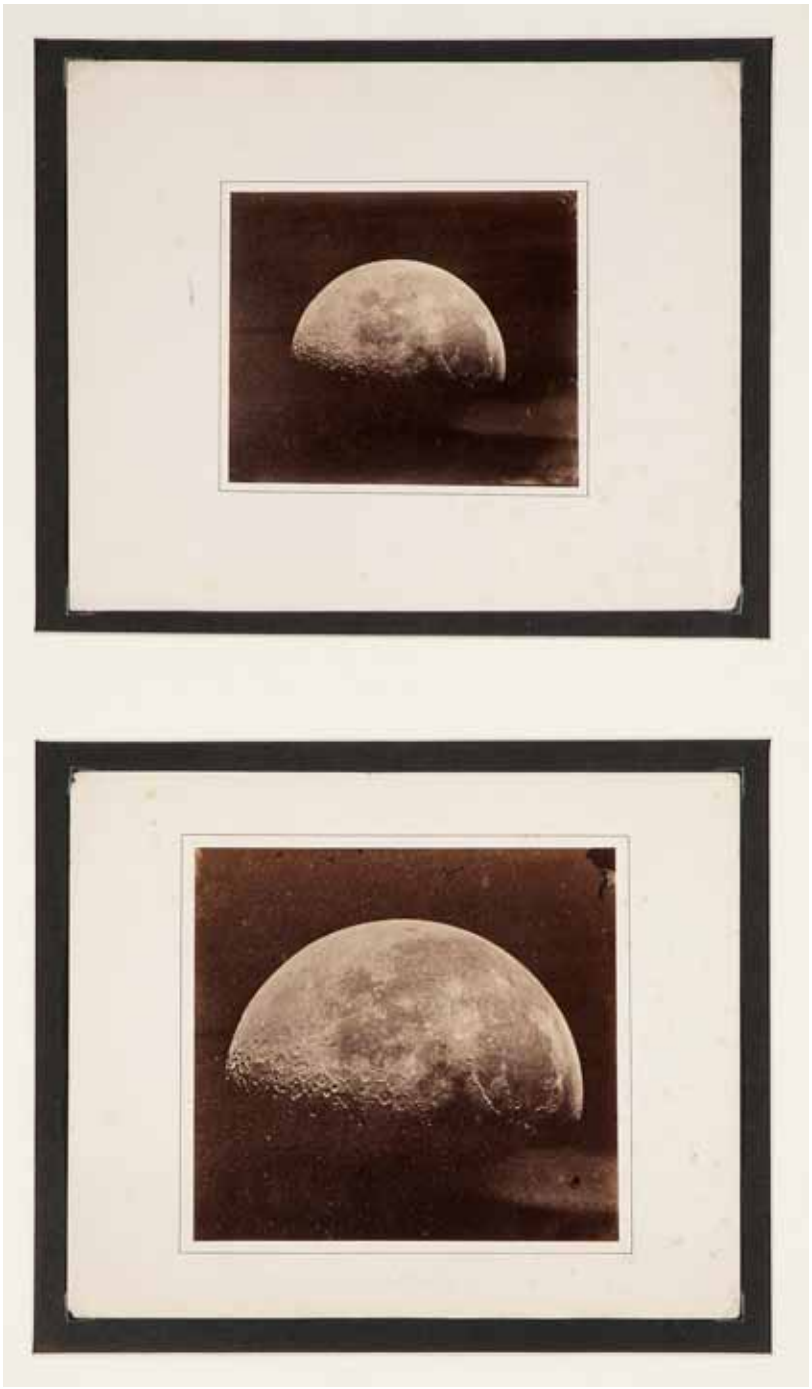
AMONGST THE EARLIEST PHOTOGRAPHS OF THE MOON. De la Rue was inspired by his friend James Nasmyth (1808-1890) to build a reflecting telescope in 1850. He began to make drawings of celestial objects, but upon seeing George P. Bond's daguerreotype of the Moon at the 1851 Great Exhibition in London, de la Rue turned his attention to photography. Using the new wet collodion process, he was by 1854 producing well-defined photographs of the Moon (Hannavy vol 1 pp 394-395). De la Rue's images were widely reproduced: see lot 30 for a published set in carte-de-visite format.
$6,000 - 8,000

27
WHIPPLE, JOHN ADAMS. 1822-1891.
A view of the Moon, from Harvard College Observatory, Cambridge, MA, c.1857, lightly albumenized print, 5 x 4 inches (130 x 105 mm), corners trimmed.

Whipple was the first person in the USA to manufacture the chemicals needed for daguerreotypes. From around 1847 to 1860, he collaborated with William Bond and his son George Phillips Bond at the Harvard College Observatory. Their daguerreotype of the Moon won a prize at the 1851 Great Exhibition in London, and opened the eyes of the world to the potential of astronomical photography. The 15-inch Great Harvard Refractor which they used was fitted with a clockwork drive mechanism, allowing the telescope to track the Moon and permitting long exposures and sharp images (Hughes p 189).
In 1850, Whipple received a patent for the albumen-on-glass negative process, and began to produce salt prints from the plates, although he continued to work with daguerreotypes. The present photograph, like others in the Metropolitan Museum and MoMA attributed to Whipple and his partner James Black, exhibits a faint "mask" surrounding the Moon. Whipple and Black are known to have copied their daguerreotypes using glass negatives, and the mask may have served to cover the reflective blank areas of the daguerreotype. The present image, however, shows more detail than one would expect from a daguerreotype copy. Given Whipple's experimentation with photographic chemistry and processes, the precise method behind this print is unclear.
$5,000 - 7,000

28
BOND, GEORGE PHILLIPS. 1825-1865, attributed.
A view of the Moon, probably from Harvard College Observatory, Cambridge, MA, c.1857, albumen print, 4 x 5 inches (105 x 130 mm).

George Phillips Bond succeeded his father William as director of Harvard College Observatory in 1859, and held the position until his death. His cousin was Edward Singleton Holden, the first director of Lick Observatory. Bond worked closely with Whipple, and on July 17, 1850, they took the first daguerreotype of a star (apart from the Sun).
$2,500 - 3,500



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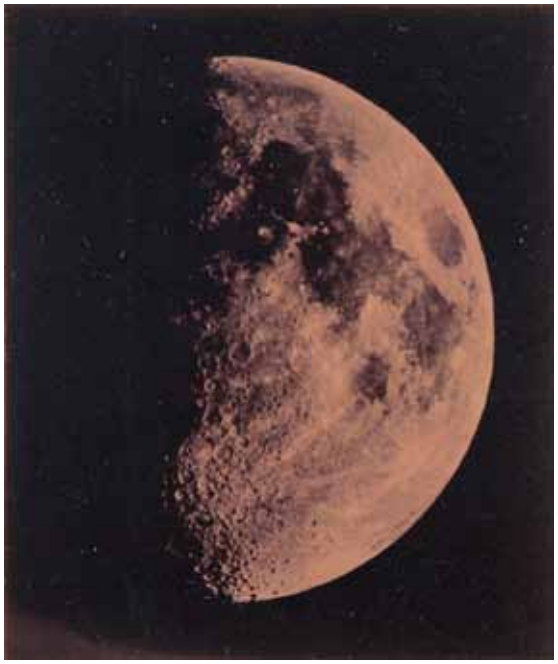
27



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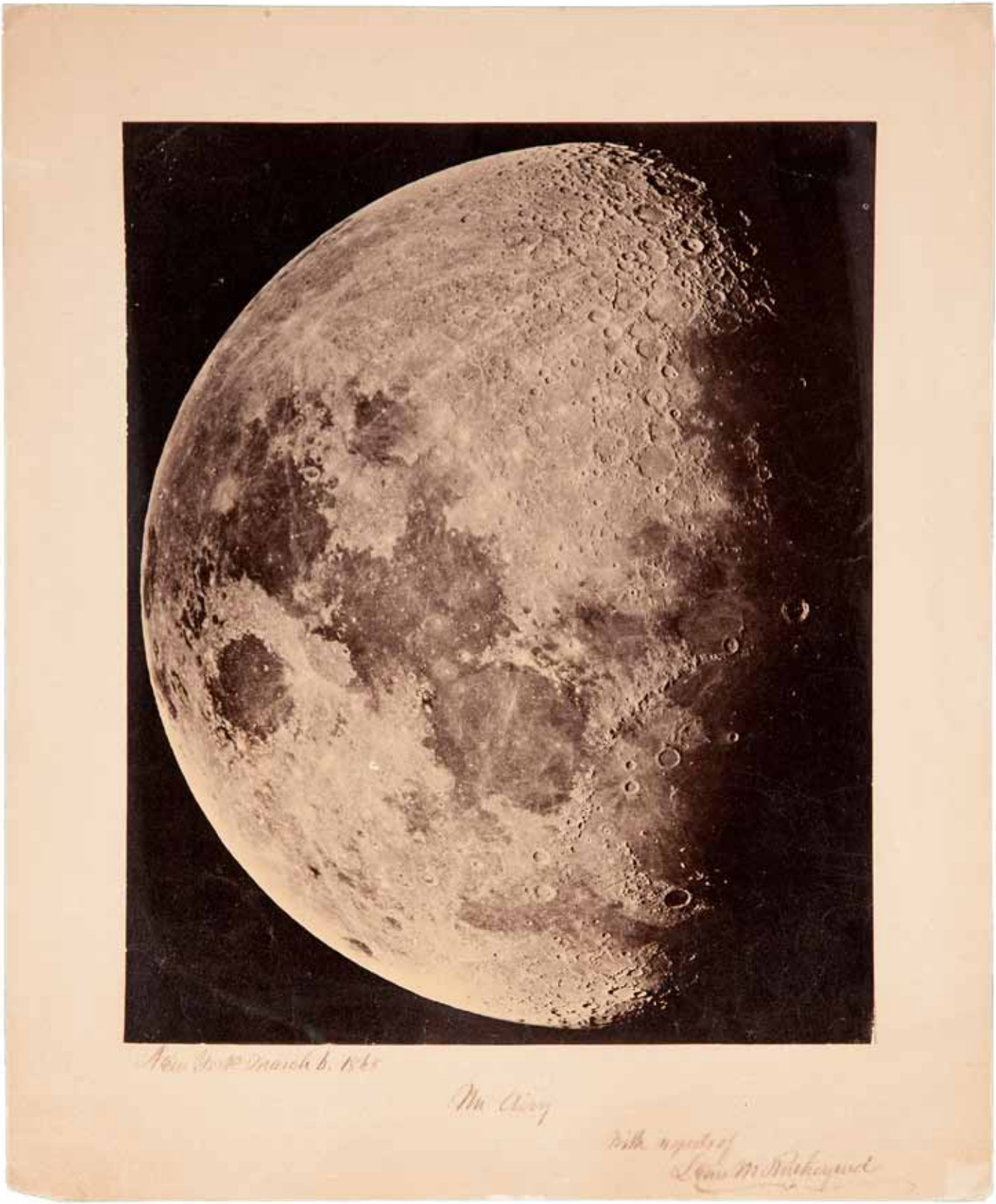
29
LE VENGEUR D'ORSAN, A.
Our Satellite: a Selenography According to the Present State of Science. London: A.W. Bennett, August 1862.
Part 1 only (all published). Folio (430 x 335 mm). viii, 9-38 pp. Illustrated with 8 mounted albumen prints (the largest 220 x 180 mm and on lithographed background, but mostly much smaller), one lithographed plate. Unbound (as issued?), ornate printed upper board, prospectus loosely inserted. Lacking one albumen print plate and lower board, dust-soiling, very heavy at ends, a few edge tears and creases.

Nothing is known of the author, but he had grand plans for his part-work, which he intended to issue in quarterly parts for three years. After the first part appeared, D'Orsan was shown to have pirated images taken by De La Rue, and the publisher Bennett suspended publication (*The Photographic News*, February 27, 1863, p 107).
$600 - 800

30
DE LA RUE, WARREN. 1815-1889.
"A Series of Twelve Photographs of the Moon. Photographed by A.A. Turner, from Original Photographs by Warren de la Rue, F.R.S." New York, D. Appleton, [1863].
12 cartes-de-visite, each with albumen print 2½ x 2 inches and captions printed in gold above and below. With original pull-off case (in pieces), and 32mo *"Description"* in printed wrappers (105 x 60 mm).
$2,000 - 3,000

31
RUTHERFURD, LEWIS MORRIS. 1816-1892.
A view of the Moon, from New York, March 6, 1865, albumen print mounted, 9½ x 7½ inches (240 x 190 mm), dated and inscribed below in ink to *"Mr Airy, with respects of Lewis M. Rutherfurd."*

A CIVIL WAR-ERA PHOTOGRAPH OF THE MOON AS SEEN FROM MANHATTAN—INSCRIBED BY ONE GREAT ASTRONOMER TO ANOTHER.
Rutherfurd trained as a lawyer, but in 1849 he changed direction, had an observatory built at his home at 11th Street and 2nd Avenue in New York, and spent the rest of his life working on astronomical photography and spectroscopy.
Sir George Biddell Airy [1801-1892] was Astronomer Royal from 1835 to 1881, and was responsible for establishing Greenwich as the location of the prime meridian. Photography appealed to Airy as a method for "self-registration"— a way to eliminate the discrepancies that arose as each observer tried to reproduce what he saw through the telescope. On November 1, 1865, Airy wrote to Rutherfurd that "I had long looked to self-registration generally, and to that by photography in particular, as likely more than anything else to advance observing science" (quoted by Rothermel p 168).
$8,000 - 10,000



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32

35


OBSERVATORIO NACIONAL ARGENTINO CÓRDOBA 1873

34


OBSERVATORIO NACIONAL ARGENTINO CÓRDOBA 1873

34

33

33

33

32
RUTHERFURD, LEWIS MORRIS. 1816-1892.
9 images of the Moon at different phases, from New York, March 6, 1865-May 19, 1874, albumen prints mounted on black cabinet cards with pasted-on printed captions below, images 5 x 5 inches (130 x 125 mm), printed and published by O.G. Mason of New York.

Oscar G. Mason [1830-1921] worked as a daguerreotypist, later directing the Photographic Department of Bellevue Hospital in New York City. At the same time, from 1865 onwards, he was publishing Rutherfurd's photographs of lunar phases. He seems also to have been involved in their production, for in 1887 Mason gave a detailed description of activities at Rutherfurd's observatory, writing "From his observatory we started for the moon, or, rather, under its great revolving dome found means for pulling the moon down, to be hung on the wall for our inspection" ("A Voyage to the Moon," in *Scientific American Supplement*, no 606, August 18, 1887, pp 9684-9685).
$6,000 - 8,000

33
RUTHERFURD, LEWIS MORRIS. 1816-1892.
3 views of the Moon, from New York, c.1865-1870, albumen prints mounted, 12¾ x 9½ inches (325 x 245 mm), pencil captions below by the printer Alfred Brothers of Manchester.

A portfolio of three images of the Moon, likely identical to the present examples, was issued by Brothers in around 1870 under the title *The Moon | Rutherfurd and Proctor*, although those prints had blindstamped credits (cf. Museum of the History of Science, Oxford, item 12962).
$6,000 - 8,000

34
FREITAS HENRIQUES JUNIOR, JOSE CHRISTIANO DE. 1832-1902.
2 views of the Moon, from the Observatorio Nacional Argentino, Cordoba, Argentina, June, 1873, albumen prints mounted, 7 x 7 inches (180 x 180 mm), printed captions and credits below, one framed.

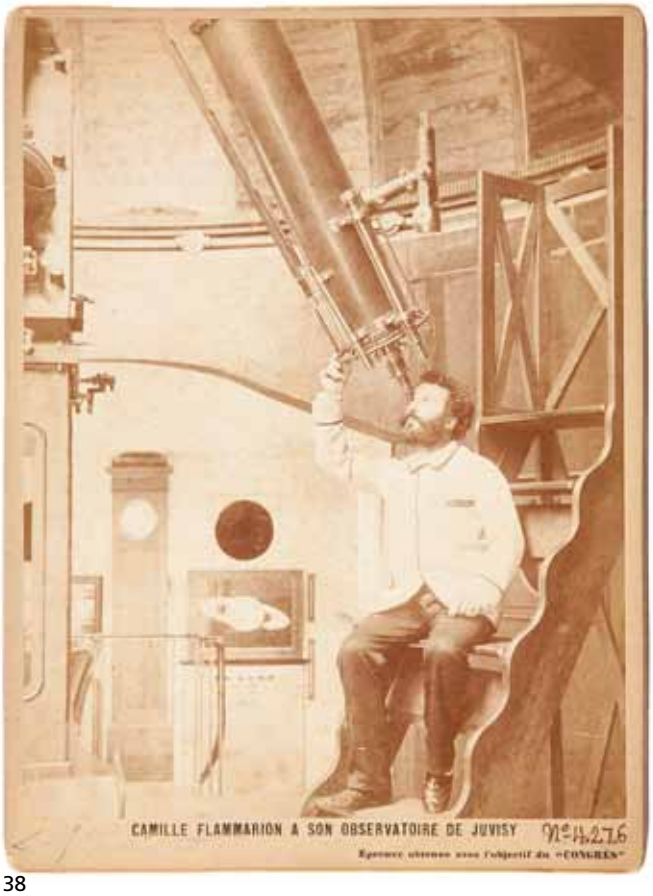
THE MOON AS SEEN FROM THE SOUTHERN HEMISPHERE, INSCRIBED TO GEORGE B. AIRY. The National Observatory in Argentina was founded on 24 October 1871 by the American astronomer Benjamin Apthorp Gould [1824-1896]. Both photographs are inscribed on the verso, as follows, and with a similar inscription: *"Sir George B. Airy, with best remembrances of B.A. Gould, Corboda, June 1873. The flint of the photographic object glass had been broken into two nearly equal parts, on the voyage hither, and is supported by a system of twelve adjusting screws, made in Cordoba."* The lens in question was an 11-inch made by Rutherfurd, and Gould had a local watchmaker manufacture a clamp to hold it together. A new lens arrived in 1875.
Freitas Henriques, known as "Christiano Junior," was born in 1832 in the Azores. He emigrated to Brazil in 1855 and from there continued on to Buenos Aires in 1867. He appeared in the 1869 Argentine census under the name Christiano Junior, as a photographer.
$3,000 - 4,000

35
GREAT MELBOURNE TELESCOPE.
A view of the Moon at 9 days, from Melbourne, Australia, September 1, 1873, albumen print mounted, 9¾ x 7¾ inches (250 x 200 mm), printed caption pasted below and with details added in manuscript, framed.

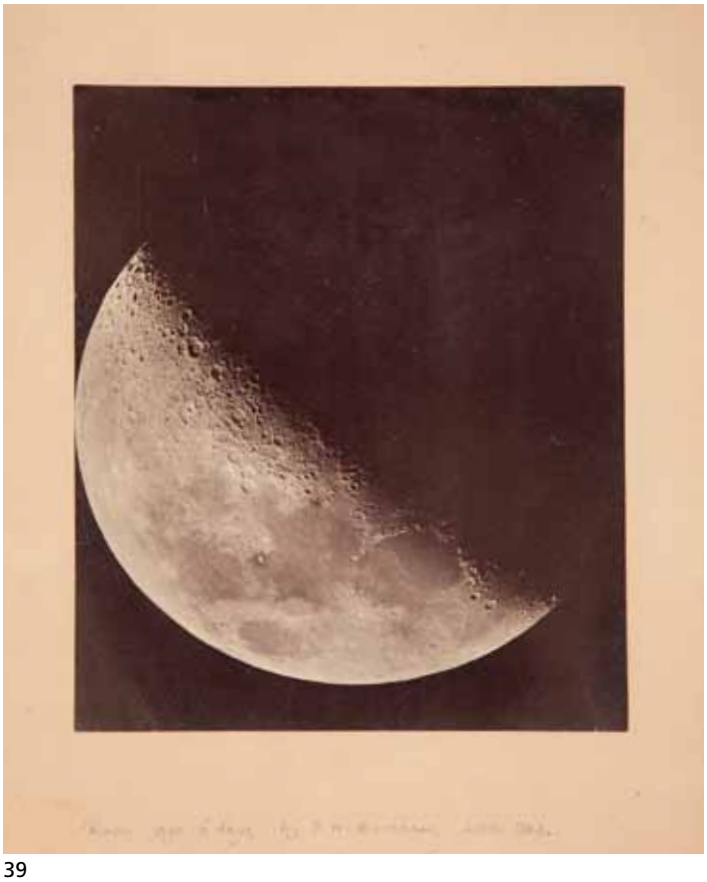
The 48-inch Great Melbourne Telescope was built by Thomas Grubb in Dublin in 1868, and installed at the Melbourne Observatory in 1869.
$2,500 - 3,500

36

37


CAMILLE FLAMMARION A SON OBSERVATOIRE DE JUVISY
Nº 4276
Épreuve obtenue avec l'objectif du «CONGRÈS»

38



39

36
DRAPER, HENRY. 1837-1882, attributed.
"Clavius, the moons diameter 30 inches," probably from Hastings-on-Hudson, NY, February 28, 1874, albumen print mounted, 8 x 7 inches (205 x 180 mm), titled and inscribed in pencil *"Voigtlander 16305,"* framed.

BY THE FIRST MAN TO TAKE A CLEAR PHOTOGRAPH OF THE MOON? The attribution to Draper is uncertain, but he is known to have been using a Voigtlander lens for astrophotography around this time. A doctor, he was also a keen astronomer and directed an expedition to photograph the 1874 transit of Venus. *"16305"* is almost certainly the serial number of the lens, indicating it was manufactured in 1870.
$2,500 - 3,500

37
CLARK, ALVAN. 1804-1887.
A view of the Moon, perhaps from Cincinnati Observatory, June, 1878, albumen print mounted, 8½ x 6½ inches (215 x 165 mm), captioned below in ink, framed.

The only photograph known to have been taken by Clark through a telescope. The caption reads: *"Taken by Alvan Clark with a telescope of 11 inches aperture in the month of June 1878."* Famous for crafting lenses for some of the largest refracting telescopes of the 19th and early 20th centuries, Clark and his sons were prolific in their output. Amongst their best-known telescopes are the 24-inch at Lowell Observatory, the 36-inch at Lick Observatory, and the 40-inch at Yerkes.
Clark provided an 11-inch to Cincinnati Observatory in 1876; another 11-inch lens was intended for a telescope in Lisbon, Portugal, but was delivered in 1880 to Henry Draper.
$2,500 - 3,500

38¤
FLAMMARION, CAMILLE. 1842-1925.
Large cabinet portrait of Flammarion at the eyepiece of his 9½-inch Bardou refractor at his Juvisy observatory, mid-1880s, albumen print mounted, 8½ x 6½ inches, printed caption below, a few pencil and ink annotations on margins of recto and on verso.
$250 - 350

39
BURNHAM, SHERBURNE WESLEY. 1838-1921.
2 views of the Moon, at 5 and 6 days, from the Lick Observatory, San Jose, CA, August 12 and 13, 1888, the first a gelatin silver print mounted, 6 x 5 inches (155 x 125 mm), printed by Roberts & Fellows *"on Anthony's Aristotype Paper,"* printed caption below, the second an albumen print mounted, 6¾ x 5½ inches (170 x 140 mm), captioned below in pencil.

The view from August 12 is the first photograph taken through the telescope at Lick, a 36-inch refractor. "Aristotype" was an early term used interchangeably for gelatin- and collodion-coated paper (the latter being briefly in vogue) as these new emulsions overtook albumen.
$2,000 - 3,000

40
HENRY, PAUL P. AND PROSPER M.
The Moon at 167 hours, from the Paris Observatory, March 27, 1890, albumen print mounted, 15½ x 11½ inches (395 x 290 mm), captioned above and below in ink.

Astronomers at the Paris Observatory, the brothers Henry inherited in 1872 a project begun twenty years earlier—the mapping of the heavens by means of painstaking observation, calculation, and notation. From 1884 they began to employ photography in their task, and developed an extraordinarily precise mechanism for tracking stars across the night sky during exposures as long as one hour. They were thus able to photograph stars so distant and faint that they had hitherto been invisible to the eye.
$2,500 - 3,500

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41

42

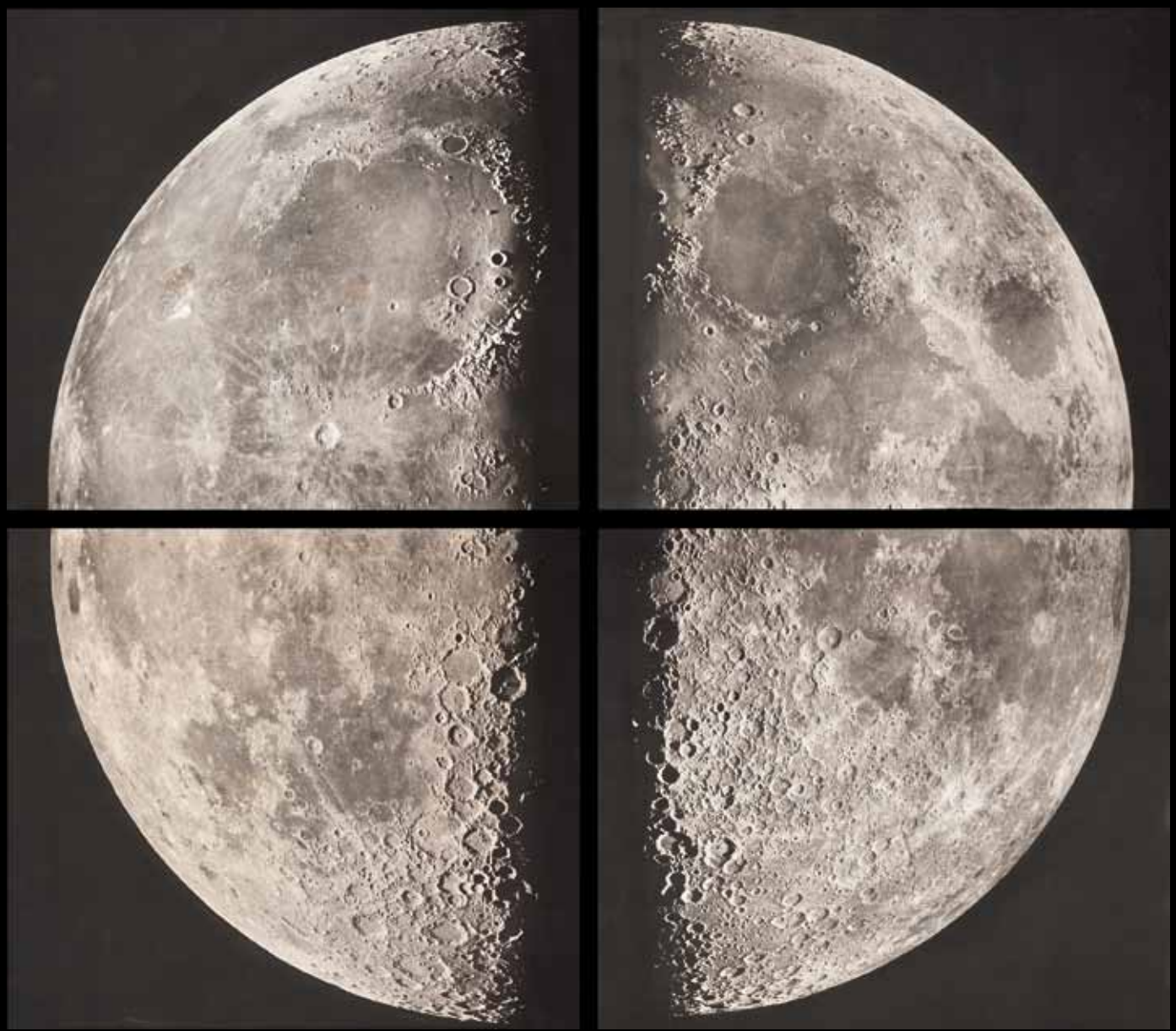
41
HENRY, PAUL P. AND PROSPER M.
The Moon at 215 hours, from the Paris Observatory, March 29, 1890, albumen print mounted, 15½ x 11½ inches (395 x 290 mm), captioned above and below in ink.
$2,500 - 3,500

42
HOLDEN, EDWARD SINGLETON. 1846-1914.
The Moon at 23 days and 8 hours, from Lick Observatory, Mount Hamilton, CA, July 28, 1891, albumen contact print, 9¾ x 7½ inches (250 x 195 mm), faintly captioned in negative (in part *"E.S.H. & W.W.C."*), titled on verso in ink.

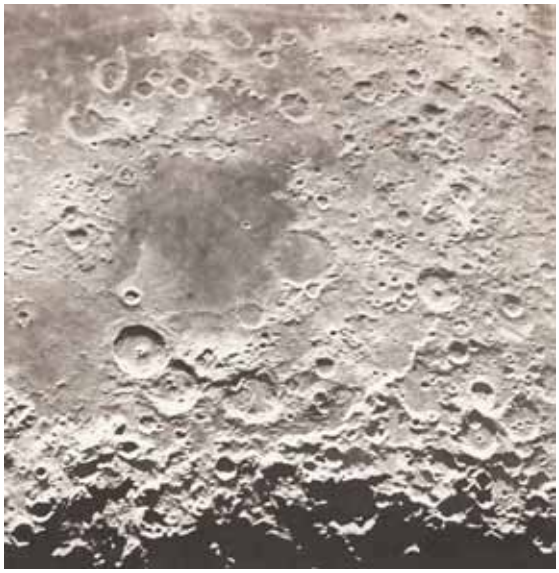
Holden was the first director of the Lick Observatory, from 1888 until the end of 1897. Prior to then, he had been president of the University of California. The W.W.C. with whom Holden made this photograph was the young William Wallace Campbell [1862-1938], who had only just joined the Observatory but would also go on to be its director.
$2,000 - 3,000

43
PUISEUX, PIERRE HENRI, AND MAURICE LOEWY.
4 large-format quadrants of the Moon, from the Paris Observatory, 1899, photogravures, each 29¼ x 33½ inches (745 x 850 mm), 2 with printed captions below giving dates and times, enlargement details, and lunar diameters, matted.

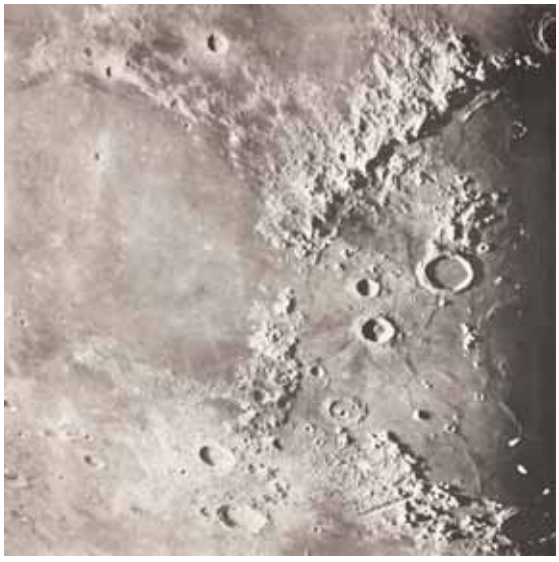
MAMMOTH PHOTOGRAVURES OF THE MOON by Puiseux and Loewy, significantly larger than the plates in their *Atlas photographique de la lune* (Paris, 1896-1910), and probably created specifically for the 1900 Paris Exposition.
The *Atlas* has been hailed as "the ultimate achievement of nineteenth-century astronomical photography," while "the individual photogravure plates, amongst the largest and finest ever made, are prized by collectors for their sheer aesthetic beauty" (Parr and Badger, *The Photobook: a History,* vol 1 p 54).
It was only with NASA's Lunar Orbiters in the 1960s that images substantially better than those of Loewy and Puiseux were obtained. Using the the 24-inch equatorial coudé refractor telescope that they had designed, the Frenchmen were able to capture images only under perfect weather conditions—as few as fifty or sixty nights per year. Each night, only four or five of the 7-inch glass plate negatives could be exposed. As a result, their *Atlas* took fourteen years to complete.
An essay produced by the Library of the University of Bourgogne, France, discusses their copy of the *Atlas*, which contains seven oversize plates in addition to the 83 folio plates normally found. They note that the "7 très grandes planches in-plano ont été tirées à l'occasion de l'Exposition universelle de 1900 et présentées au Palais de l'Optique." The present photogravures, and those in the following lot, are presumably examples of these seven plates. We have traced no oversize prints in the auction records.
$12,000 - 18,000



43



44



44

45 (part)

44
PUISEUX, PIERRE HENRI, AND MAURICE LOEWY.
2 large-format views of the Mare Nectaris, and the Montes Alpes region, from the Paris Observatory, March 4, 1895-February 16, 1899, photogravures, each 30¼ x 30 inches (770 x 760 mm), printed captions below giving dates and times, enlargement details, and lunar diameters, matted.

Rare oversize photogravures, believed to be by Puiseux and Loewy. The sheets in their *Atlas* are around 22½ x 18½ inches. These photogravures may have been intended for the 1900 Paris Exposition (see preceding lot). The view of the Montes Alpes appears to be reversed.
$3,000 - 5,000

45
YERKES OBSERVATORY.
Group of 5 details of the lunar surface, from Yerkes Observatory, Williams Bay, WI, c.1900, platinum prints mounted, 7¼ x 7¾ inches (185 x 200 mm) and slightly smaller, together with gelatin silver print mounted of the Moon, 7¾ x 9¾ inches (200 x 250 mm), and halftone reproduction of one of the platinum prints published by The Binner Mark of Chicago.

Yerkes Observatory was founded in 1897 by George Ellery Hale and financed by Charles T. Yerkes. It is noted for its collection of over 150,000 photographic plates dating from the 1890s onwards.
$1,500 - 2,000

46
TRIP TO THE MOON.
A group of items related to "A Trip to the Moon," the amusement park ride created by Frederic Thompson and Elmer "Skip" Dundy, c.1901-1903, comprising: (from the Pan-American Exposition of 1901, Buffalo, NY) souvenir aluminum pin of the Airship Luna, made by the Heintz Brothers of Buffalo, on original display card; admission tag; original folding promotional card, 140 x 97 mm unfolded (2 copies); brochure, folded in four, 160 x 121 mm folded; glass plate negative by Charles D. Arnold, official photographer of the Pan-American Exposition, depicting "A Trip To the Moon" from the vantage point of one of the canals from Venice in America, 121 x 127 mm; (from Luna Park, Coney Island) 2 chromolithographed postcards, 1904 and 1907; cyanotype postcard, c.1907; glazed porcelain souvenir shoe, Germany, c.1905, approximately 108 mm high.

The ride was originally designed by Thompson for the Pan-American Exposition of 1901 in Buffalo, New York. After the exposition, he and his partner Skip Dundy brought the attraction to Brooklyn, NY, where it formed the anchor of their newly-opened Luna Park in 1903. Visitors traveled on board the airship-ornithopter Luna (which lent its name to Luna Park) through a tunnel with steadily shrinking views of Earth, before leaving the craft to walk around a cavernous papier-mâché lunar surface peopled by costumed characters playing Selenites.
$700 - 900

47

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48

48

47
PEASE, FRANCIS GLADHEIM. 1881–1938.
3 large views, comprising the crater Copernicus, and two the southwest part of the Moon centered on the Mare Nubium, from Mount Wilson Observatory, near Pasadena, CA, September 15, 1919, gelatin silver prints mounted probably for exhibition purposes, 19 x 15 inches (480 x 380 mm), captioned and dated in pencil on verso.
$2,000 - 3,000

48
PEASE, FRANCIS GLADHEIM. 1881–1938.
2 large wide-angle images of the Moon, from Mount Wilson Observatory, near Pasadena, CA, September, 1919, gelatin silver prints mounted probably for exhibition purposes, 19 x 15 inches (480 x 380 mm).

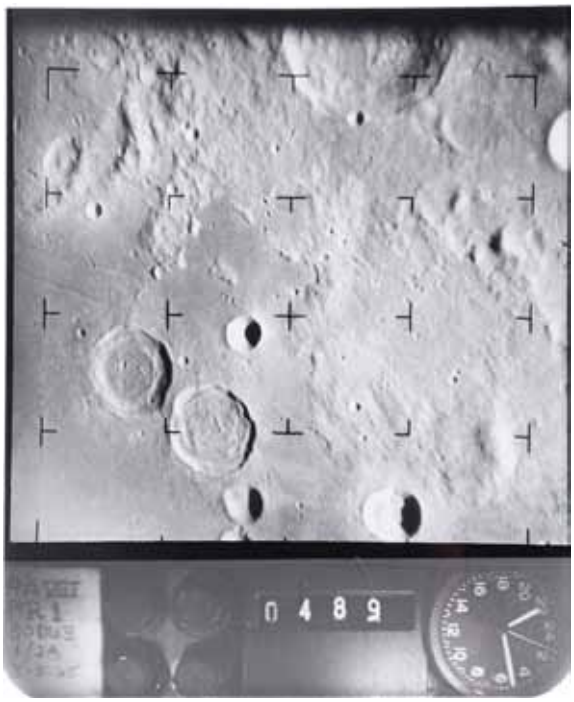
Pease assisted George W. Ritchey at Yerkes, before in 1908 transferring to Mount Wilson. He was responsible for the completion of the 100-inch telecope, a project that his mentor, Ritchey, had started. A crater on the Moon is named after him.
$1,500 - 2,000

49

1. Moon at last quarter as photographed by 100-inch Mount Wilson telescope. The elliptical marking shows Ranger VII impact site in the recently named Mare Cognitum.

All of the accompanying six photographs were taken by Ranger VII's F-a television camera, with a 25-mm f/1 lens. North is at the top of each photograph.

51



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53

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54

49
GLOBE—PERGAMON.
Pergamon Moon Globe. Oxford, London, New York and Paris: [produced by Paul Räth Verlag, Leipzig for] Pergamon Press, [c.1963].
Diameter 13 inches (330 mm). Scale 1:10,400,000. Mounted within metal meridian ring and on wood stand.

Based on the photography of Luna-3, the first space probe to photograph another planetary body, and the source of our first sight of the far side of the Moon. The cartouche reads in part: *"the map material was prepared by the Central Research Institute of Geodesy, Aerial Photography and Cartography together with the Shternberg State Astronomic Institute of the U.S.S.R."*
$1,000 - 1,500

50¤
ALTER, DINSMORE, editor.
Lunar Atlas. [Downey, CA]: Space Sciences Laboratory, North American Aviation, 1964.
Large 4to (430 x 340 mm). x, 340 pp. 154 plates after photographs. Original cloth, upper cover with mounted reproduction of map from Hevelius' *Selenographia* (1647). Binding lightly rubbed.

Reproduces photographs taken at Mount Wilson and Lick Observatories, and one image of the far side from Luna-3.
$50 - 70

The Ranger Program

The goal of the Ranger Program (1961-1965) was to obtain high-resolution images of the lunar surface with features as small as 10 feet across being identified. Nine missions flew, of which seven carried cameras. The spacecraft were designed to fly directly into the Moon's surface, beaming back image after image until the final impact. The radio signals from the Ranger spacecraft were received at NASA's Goldstone station in California, and converted into signals that were viewed as images on two kinescopes which, are similar to small television sets. In front of these sets were 35mm cameras that photographed the image on screen, thereby producing a negative from which a positive print could be made.

51
RANGER VII.
Ranger VII Photographs of the Moon. Part I: Camera "A" Series. Photographic Edition. [Pasadena, CA]: JPL, August 27, 1964.
4to (255 x 200 mm). [1], iv, 16 stapled leaves. 206 gelatin silver prints. Contained together in original printed vinyl case.

"The Ranger VII *mission terminated with the acquisition of some 4000 television records of a preselected area of the lunar surface. Included in this atlas, the first collection of the records, is the complete set of photographs taken by the widest-angle camera"* (Kuiper, preface).
$800 - 1,200

52
RANGER VIII.
Binder containing 82 photographs of details of the lunar surface, February 20, 1965, gelatin silver prints, 10 x 8 inches (255 x 205 mm), in sleeves.
Provenance: William K. Hartmann (ownership inscription on binder; loosely inserted copy of a letter to Gerard P. Kuiper commending Hartmann).
$800 - 1,200

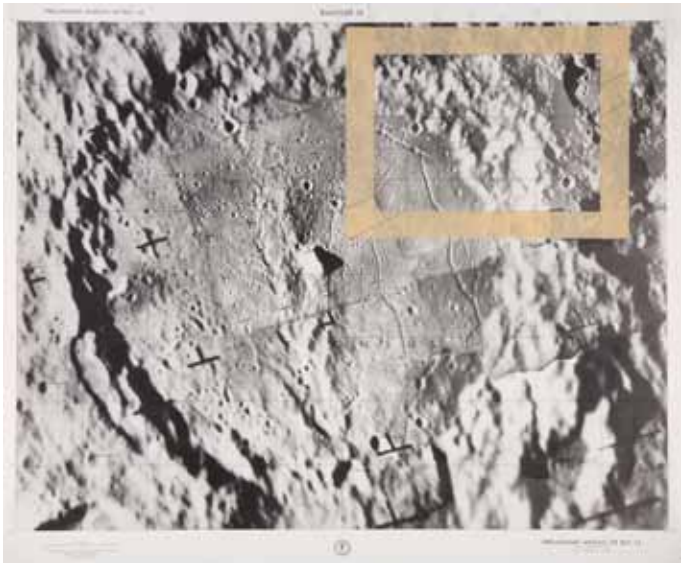
53
RANGER IX.
Alphonsus crater, March 24, 1965, transparency, 23½ x 26¾ inches (600 x 680 mm), inscribed at head *"Alphonsus Ranger IX rectified mosaic 1:250,000,"* framed.
Provenance: Gerard P. Kuiper; Ralph Turner.

From exposure to light, the transparency has faded in a manner that renders it more abstract. Ranger IX was designed to achieve a lunar impact trajectory, and to transmit high-resolution photographs of the lunar surface during the final minutes of flight up to impact.
$2,000 - 3,000

54
RANGER IX.
Binder containing 64 photographs of details of the lunar surface, March 24, 1965, gelatin silver prints, 10 x 8 inches (255 x 205 mm), in sleeves, a few manuscript notes and calculations loosely inserted.
Provenance: William K. Hartmann.
$800 - 1,200

55 (part)

57 (part)



57 (part)

55¤
ZOND-3.
9 photographs taken by Zond-3 of the far side of the Moon, July 20, 1965, gelatin silver prints, 7 x 7½ inches and smaller, on 8 x 10 inch sheets, 3 with printed captions below, together with 3 period copies of captions in Russian and English.

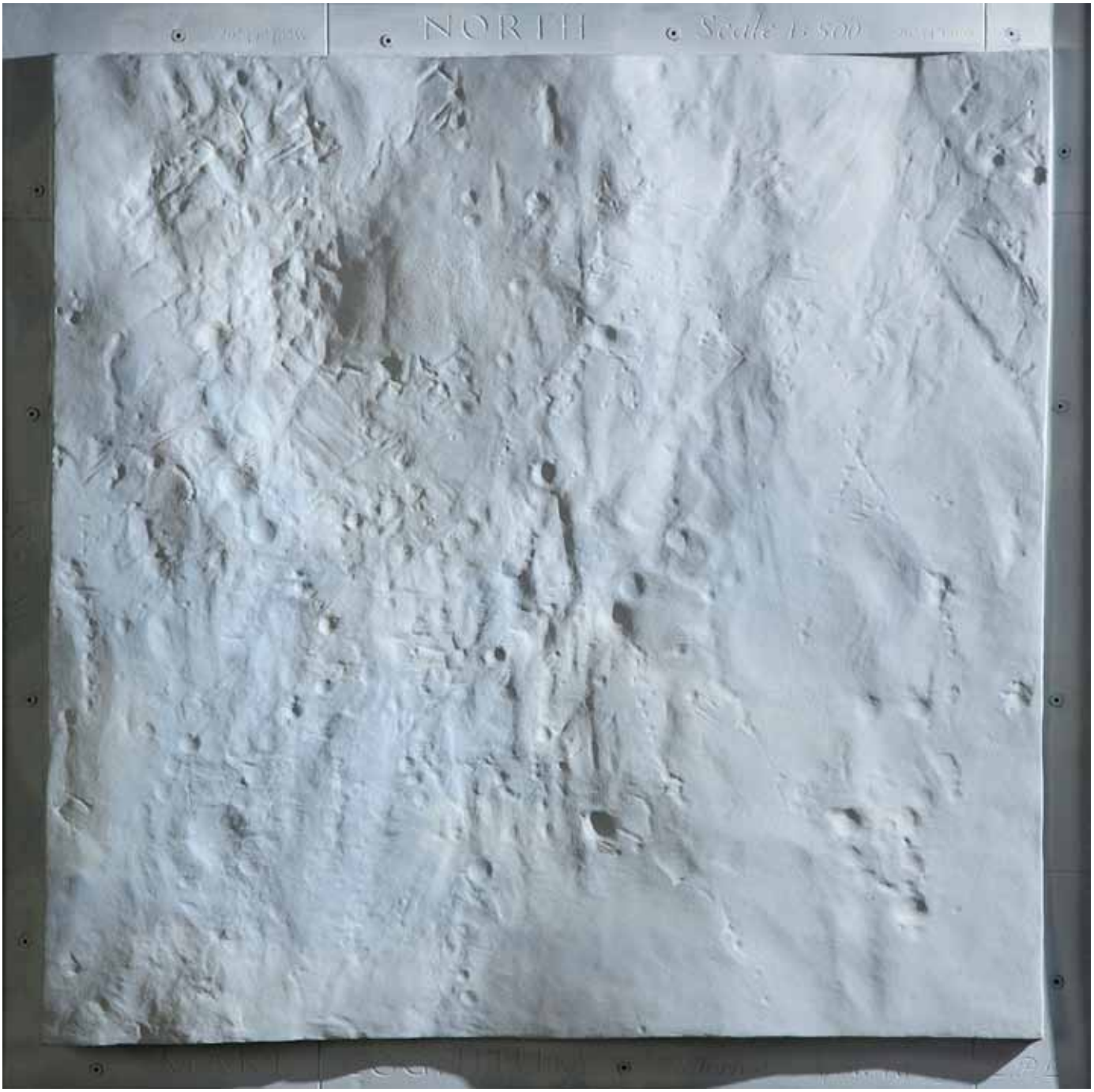
After the success of Luna-3's photography of the far side of the Moon, Zond-3 took a further 23 images, leaving only an area near the south pole on the far side uncharted. Zond-3's photographs were also of much higher quality than the earlier mission's.
$300 - 500

56
TURNER, RALPH. B.1935.
High relief of the Mare Cognitum, made at the Lunar and Planetary Laboratory, Tucson, AZ, April, 1965, gray epoxy, 840 x 840 mm, inscribed below *"Mare Cognitum | R. Turner | April 1965,"* and above *"North," "Scale 1:500,"* and with coordinates, framed.

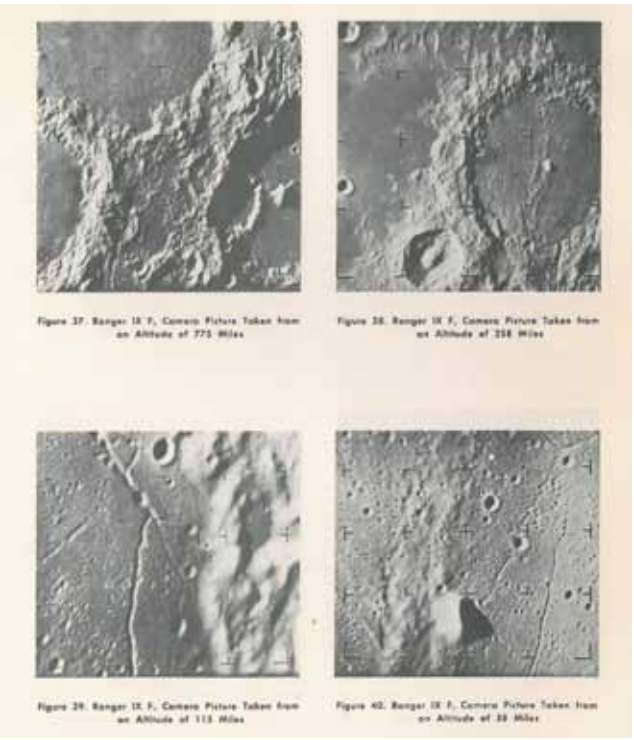
CAST FROM TURNER'S FIRST PLANETOLOGICAL MODEL. In 1964, Oregon-born Ralph Turner was teaching sculpture at the University of Arizona in Tucson, when, in his words, "Dr Gerard Kuiper called on me to help make some relief models of the Moon from the new images arriving from the space probes in preparation for landing on the Moon." Kuiper [1905-1973] spent most of his career at the University of Chicago, but moved to Tucson in 1960 to found the Lunar and Planetary Laboratory at the University of Arizona. He was instrumental in lunar cartography and was involved in selecting landing sites for the Apollo program. Turner continues, "the next year I joined the Laboratory as a Research associate full time and left the art Department. However, I got called to a position at Syracuse University in New York State in 1966 and went there with the stipulation that I could bring some of the lunar research with me, which everyone agreed to. So I continued to make models from 1964 to 1975, under one arrangement or another while I taught and did sculpture of my own" (biography on fineartamerica.com).
The present model was cast from the first lunar relief Turner produced while working for Kuiper. An unnamed lunar mare in the Oceanus Procellarum had been selected as the target for the impact probe Ranger VII, the first American spacecraft to return close up images of the Moon's surface. Ranger VII transmitted its images on July 31, 1964, and the unnamed sea became known as Mare Cognitum ("The Sea that has become known"). Turner worked from a combination of Ranger photographs, telescope observation, and by shining light across his model and comparing the shadows with those on the Moon. This unconventional method proved to be extremely accurate. According to Turner, there were only two casts produced; the location of the other example is unknown.
Illustrated: Kuiper 1965 p 60.
$15,000 - 25,000

57
RANGER VIII AND IX.
3 mosaic views of the Sabine/Ritter region and of the crater Alphonsus, Aeronautical Chart and Information Center, United States Air Force, St. Louis, MO, [1966], gelatin silver prints on acetate, each 18¾ x 23¼ inches (480 x 595 mm), printed captions in borders.

The USAF issued a series of 17 lithographed Ranger Lunar Charts in 1966, based on photography from the Ranger missions. The present items appear to be early iterations towards those published versions, and are captioned *"Preliminary Mosaic of RLC 6 [14, 15]."*
$800 - 1,200



56



58 (part)

59

58
RANGER.
Collection of approximately 60 volumes, documents, or dossiers related to Ranger missions, many being rare internally-circulated items from JPL or contractors, including: series of nine original press releases, October 14, 1962; manuscript material and test results for the Ranger TV system and Bulova Accutron Watch Vibration Test, March 14-27, 1963; "Results of PTM Calibration Tests," June 22-29, 1963, with 31 photographs of the active test screen; 7 photographs taken June 18, 1964 using 8-inch reflecting telescope and Kintel closed circuit TV in JPL parking lot; JPL Technical Reports 32-700 and 32-800, "Experimenters' Analyses and Interpretations"; NASA Special Publications 61, 62, 63, 111, 112, and 4210; "Ranger TV Subsystem (Block III) Final Report" prepared by RCA, 5 volumes; Shoemaker and Moore, "Telescopic Visibility of Ejecta Produced By Impact of Ranger-3," January 18, 1962, with Shoemaker's manuscript notes; Smalley and Ronca, "Structures Inside a Lunar Crater Photographed By Ranger VII." For a full listing, please download the condition report for this lot from bonhams.com/20830.
$1,200 - 1,500

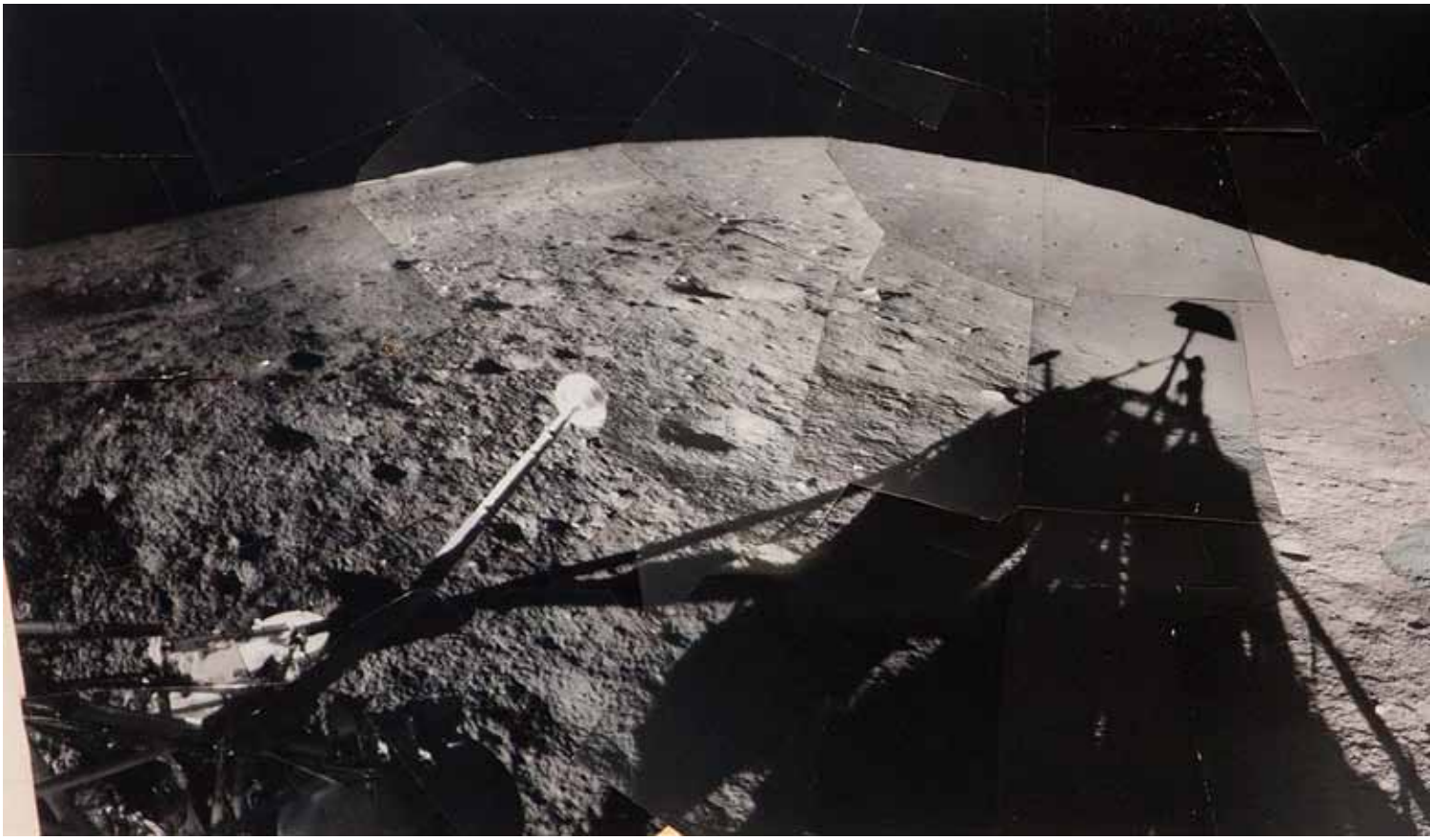
59
TURNER, RALPH. B.1935.
High relief of an unidentified area of the lunar surface, made at the Lunar and Planetary Laboratory, Tucson, AZ, 1966, apparently pale blue-painted plaster, 430 x 430 mm, inscribed lower right *"R.T. 1966,"* framed, a few small cracks and early restorations.

Thought to be a test made by Turner, perhaps in preparation for a larger work. Unique, according to Turner.
$5,000 - 7,000

60
TURNER, RALPH. B.1935.
High relief of Alphonsus Peak, made at the Lunar and Planetary Laboratory, Tucson, AZ, April, 1966, reinforced greenish-gray epoxy, 1280 x 1220 mm, inscribed at top *"Scale 1:20,500"* and *"West,"* and at foot *"April 1966 L.P.L. | Alphonsus Peak | R. Turner,"* framed. Together with a large group of photographs used by Turner in the preparation of the relief.

A VERY LARGE AND STRIKING RELIEF OF ONE OF THE MOON'S MOST NOTABLE FEATURES. Turner's model of Alphonsus Peak was initially done in plasticene over six months, before a cast was made in epoxy. Kuiper and his team were particularly interested in the rille that passes by the peak at the center of Alphonsus Crater, and appears connected to the crater at the lower right of this relief.
Photographs from Ranger IX, which impacted the Moon on March 24, 1965, were the primary source for this relief. Included in the present lot are approximately 70 gelatin silver prints (20 x 16 inches and smaller) of Ranger and Lunar Orbiter photographs, mounted on board and frequently captioned below by Turner, sometimes explaining that they were used for *"shadow "determination."* According to Turner, there were only two casts produced; the location of the other example is unknown.
Illustrated: Kuiper 1966 pp 120-129.
$40,000 - 50,000

60



62

The Surveyor Program

The Surveyor Program (1966-1968) called for soft landings on the Moon by landers equipped with television cameras. Surveyor I returned ten thousand images before sunset on its first day on the Moon. The images gave us close-up views of lunar soil and rocks, and Surveyor III had a robotic arm for sampling soil. Surveyor's imaging system was similar to that of Ranger, but with the additional benefit that contact prints and enlargements from the negatives generated at Goldstone could be mosaicked together by hand to create wider views and panoramas.

61¤
SURVEYOR.
3 memoranda issued by the US Geological Survey Surveyor Television Investigations, comprising: "Mosaicking Procedures for Surveyor Television Experiment," December 1964, [iii], 12 pp; "Evaluation of the Sphere Stereometer," June 1965, [iii], 16 pp; "Surveyor Television Experiment Field Test Two Stellar Measurement Capabilities," March 1966, [iv], 18 pp. All printed recto only, stapled at upper left corner. Light toning to first pages of second two items.
Provenance: Eugene M. Shoemaker (ownership inscriptions to first pages of first two items).
$300 - 500

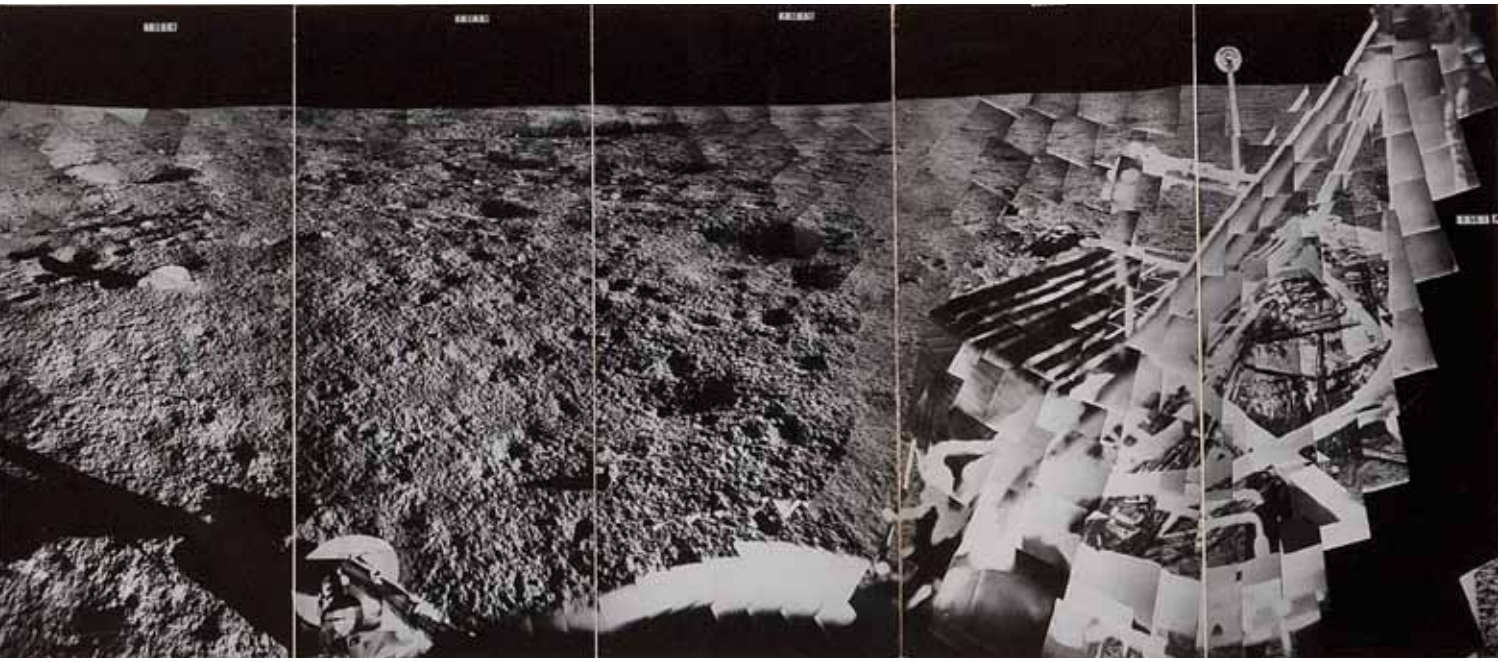
62
SURVEYOR I.
Unique wide-angle hand mosaic of Surveyor I's shadow on the Oceanus Procellarum, June 13, 1966, 66 gelatin silver prints mounted, each approximately 6 x 6 inches (150 x 150 mm), 18 x 59 inches (460 x 1500 mm) overall, matted and framed.

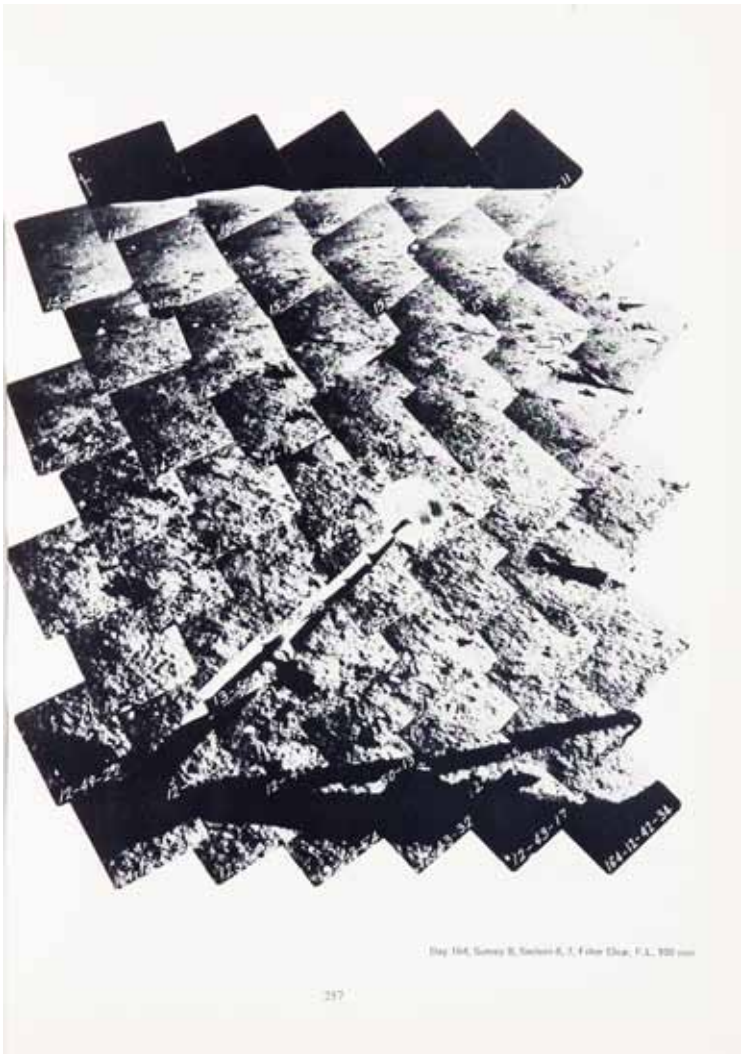
"SURVEYOR I STANDS QUIETLY, ITS JOB WELL DONE.... HERE IS A PICTURE OF ITS OWN MAKING. SURVEYOR CASTS A LENGTHENING SHADOW AS THE LONG LUNAR DAY NEARS ITS END." Thus Homer E. Newell, Associate Administrator of NASA, described this photograph (see Cortright).
This unique hand mosaic was assembled by Kay Larson of the US Geological Survey in Flagstaff, AZ, within a few months after the images captured by Surveyor were downloaded. Unlike the more common—but still rare—analytical mosaics, this presentation item was made by careful image matching. The distorted horizon is a result of the camera being tilted, in order that it could better observe the ground at its feet.
Exactly a month later, Surveyor I would send its last photograph back to Earth. "Because of battery failure," Newell explained, "presumably caused by the bitter cold of the lunar night, Surveyor I can no longer send earthward pictures of its lonely vigil."
Included within the frame is a period window mount, reading *"Pictures taken by Surveyor I, June 13, 1966, between 18:53 and 19:14 GMT. Sun elevation 10°. | Surveyor I Landing Site. Day 164. Photomosaic by Kay Larson. | Department of the Interior, United States Geological Survey."*
Exhibited: Lunar Landscapes, Menil Collection, Houston, TX, March 10-June 4, 2000.
Illustrated: Cortright pp 62-63.
$80,000 - 100,000

63

63
SURVEYOR I.
Panorama of the Flamsteed region in Oceanus Procellarum, June 2, 1966-July 14, 1966, 10 gelatin silver prints of a hand mosaic, mounted together, 18¾ x 86½ inches (480 x 2200 mm) overall, framed.

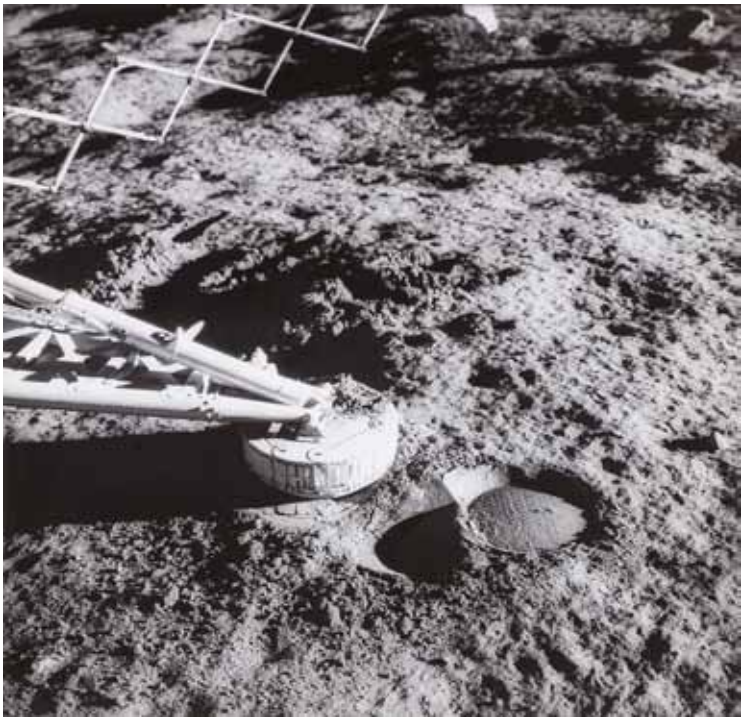
Reminiscent of David Hockney's photographic collages, Surveyor I captures its own shadow on the surface of the Moon. Where the preceding lot is made up of myriad prints collaged together, the present photograph is of such a mosaic.
Exhibited: Cosmos: from Romanticism to the Avant-Garde, Palazzo Grassi, Venice, March 25 to July 23, 2000.
Illustrated: Clair p 243.
$50,000 - 70,000





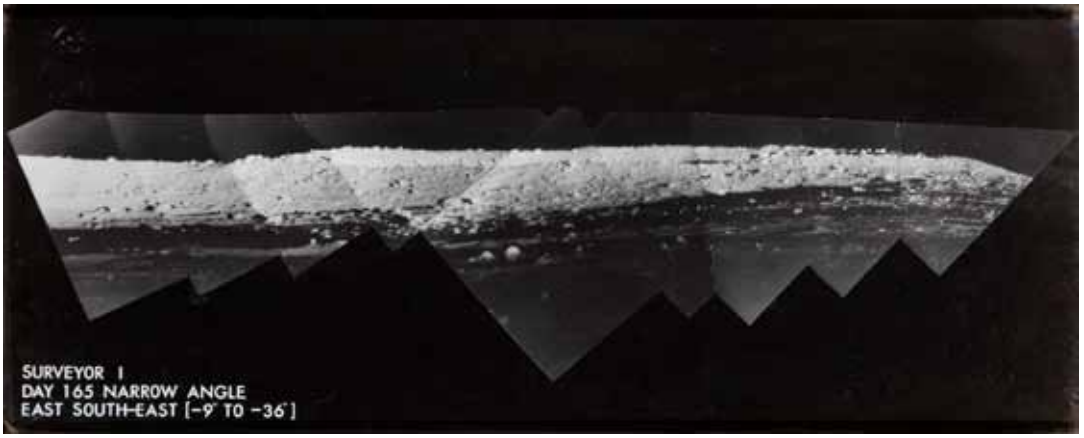
65

66



68

69 (part)



64


67

64
SURVEYOR I.
View of the lunar surface, east south-east, June 14, 1966, gelatin silver print of a hand mosaic, 8 x 19½ inches (205 x 495 mm), mounted on board, verso of board stamped *"Official NASA photograph ... Ames Research Center | Moffett Field, California,"* framed.
Provenance: acquired from the collection of Donald S. Gault.
$1,000 - 1,500

65¤
SURVEYOR I.
Catalog of Surveyor I Television Pictures. Washington, DC: USGS for NASA, April, 1968.
Folio (355 x 265 mm). Plates reproducing every Surveyor I photograph. Original printed wrappers. Wrappers lightly creased and toned.
Provenance: Leonard D. Jaffe (inkstamp on upper cover).
$300 - 500

66¤
SURVEYOR III.
Group of 10 images taken by Surveyor III, around April 21-22, 1967, Polaroid prints, approximately 3¾ x 3 inches (95 x 75 mm) on 7 x 4¼ inch (178 x 110 mm) sheets, *"Polaroid"* and reference numbers printed on verso, together with 5 period NASA press release photographs (3 being duplicates), gelatin silver prints, 7 x 7½ inches (178 x 190 mm) on 8 x 10 inch (200 x 255 mm) sheets, mimeographed captions on verso.

The Surveyors used television cameras to transmit images back to Earth. Each ground station had the ability to produce instant Polaroid prints from the television pictures.
$300 - 500

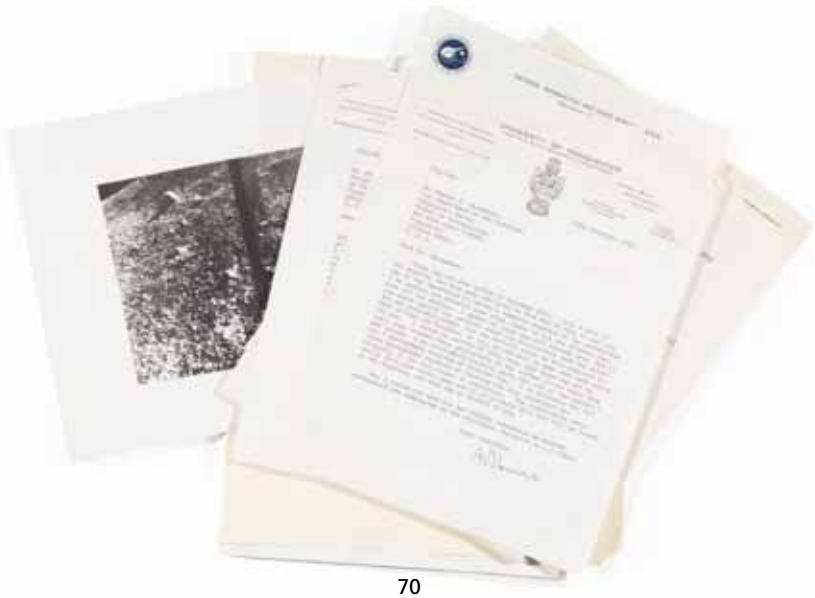
67
SURVEYOR III.
Surveyor III's Soil Mechanics Surface Sampler, April 23, 1967, gelatin silver print of a hand mosaic, 22½ x 11¼ inches (575 x 285 mm) overall, matted and framed.

Surveyor III photographs its Soil Mechanics Surface Sampler in trench 2. The device manipulated lunar material in view of the television system, and accumulated 18 hours of operation, yielding significant new information on the strength, texture, and structure of the lunar material to a depth of seven inches.
$2,000 - 3,000

68
SURVEYOR III.
The number 2 footpad of Surveyor III, photographed by Alan Bean, November 20, 1969, gelatin silver print, 19¼ x 19¼ inches sight (490 x 490 mm), window-mounted.

The crew of Apollo 12 visited Surveyor III during their second moonwalk. Surveyor III had landed on the Moon on April 20, 1967, and on landing the craft hopped and slid a short distance. Even after over 2½ years, the waffle-like footprint was clearly visible, showing that there are no significant depositional or erosional processes affecting the lunar surface on this time scale. The footpad is roughly a 12 inches in diameter. Part of the sampling arm can be seen at upper left.
$800 - 1,200

69
SURVEYOR.
Substantial collection of approximately 100 volumes, documents, or dossiers related to Surveyor missions, many being rare internally-circulated items from JPL or contractors, including: "Design Study Requirements For A Lunar Soft Landing Spacecraft," May 13, 1960; Choate, "Evaluation of Surveyor Exhaust Effects on the Moon"; "Surveyor I Mission Report" (Technical Report 32-1023, 3 parts); similar, Surveyors III (32-1177), V (32-1246), VI (32-1262), VII (32-1264), and "Final Report" (32-1265); JPL interoffice memorandum "Total Eclipse of the Moon for Mission C"; approximately 20 original or period copies of interoffice memos or handwritten notes from June 1967 pertaining to the Surveyor IV camera system; approximately 18 original or period copies of interoffice memos or reports pertaining to use of LO V photographs to locate the lost Surveyor IV lander, with approximately 45 photographs or transparencies, summer 1967 (the first attempt by one spacecraft to locate another which had crashed on another celestial body); "Determination of Footpad Penetration Depth from Surveyor Spacecraft Shadows," October 15, 1967; NASA Special Publications 146, 163, 166, 173, 184, 341, 6504; Hughes Aircraft Company, "Surveyor Attitude Determination on Lunar Surface," February, 1968; Fairchild, "Final Report, Surveyor Lander Camera Control Sequence," January 15, 1964. For a full listing, please download the condition report for this lot from bonhams.com/20830.
$2,500 - 3,500



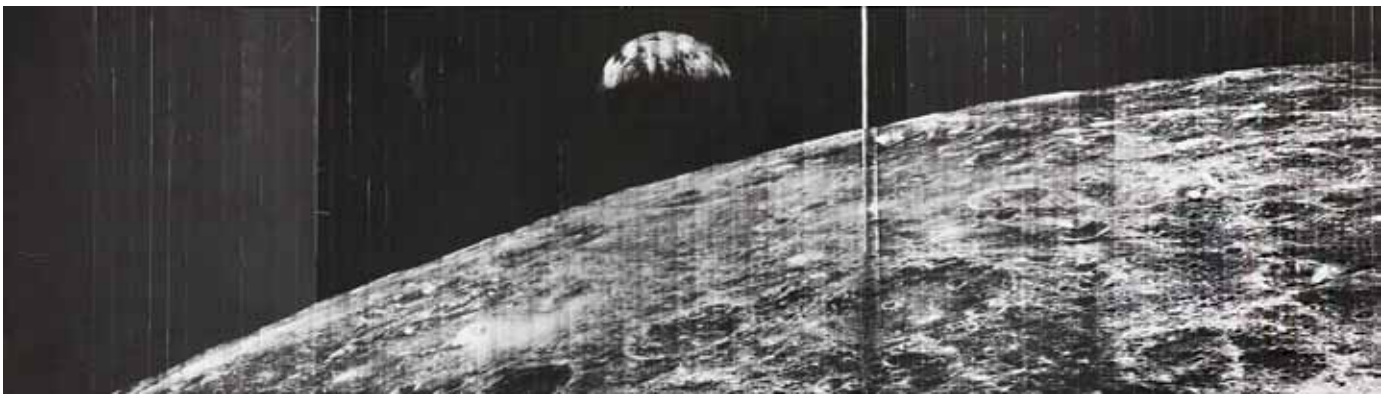
70

71

70
LUNA-9.
An archive of letters, documents and photographs relating to the interception by British astronomers of photographs transmitted from the lunar surface by the Soviet lander Luna-9, comprising:
1. 10 photographs taken by Luna-9, gelatin silver prints, 6 x 8½ inches (150 x 220 mm) or smaller on 8 x 10 inch (200 x 255 mm) sheets, 2 or 3 of which are copy prints of wire photographs.
2. Period photocopies of TASS press releases regarding Luna-9, 23 pp, stapled, together with a letter of transmittal from Philip E. Culbertson, February 21, 1966, to Eugene M. Shoemaker, on NASA letterhead.
3. Small group of correspondence relating to the Luna-9 imagery and data, February-April, 1966, 18 pp in all, including the following: file copy of a wire sent by Eugene M. Shoemaker, from Flagstaff, AZ, February 7, 1966, to Sir Bernard Lovell, congratulating him on the interception of Luna-9 image telemetry and requesting *"film negatives of the reconstituted pictures and duplicate magnetic tapes"*; original typed letter signed by Lovell, Jodrell Bank, February 11, 1966, to Shoemaker, reporting that an official from *"a certain government agency in this country"* will hand-carry tapes to the US; 2 further letters from Lovell to Shoemaker; file copy of a wire sent by Shoemaker to Lovell, March 2, 1966, reporting that *"Repeated inquiries with officials at NASA have failed to disclose the whereabouts of the duplicate magnetic tapes and film"*; original typed letter signed by Shoemaker, Flagstaff, AZ, March 5, 1966, to Homer E. Newell, Associate Administrator, Office of Space Science, NASA, complaining *"about the loss of confidence of our British colleagues in NASA's handling of their material."*
Provenance: Eugene M. Shoemaker; Leonard D. Jaffe.

On February 3, 1966 Luna-9 became the first spacecraft to achieve a semi-soft landing on any planetary body other than Earth. The Soviet authorities did not immediately release the images received from the lander, but staff at the Jodrell Bank Observatory in England picked up the signals, identified them as being in the format used by newspapers to wire photographs, and published the images. (Some believed the use of unencrypted signals was a deliberate move by the Soviets.)
The present archive is composed of correspondence between Culbertson (Director of Lunar Mission Studies, Advanced Manned Missions Planning group, NASA), Shoemaker (Principal Investigator for Television Experiment, Project Surveyor, at the US Geological Survey), and Lovell (Director of Jodrell Bank Observatory). In addition to the scientists' observations about the Luna-9 images (Shoemaker writes that they *"represent not only a magnificent technical achievement but are very rich in information about the lunar surface"*), the correspondence charts the rather haphazard handling of this significant material.
$800 - 1,200

71
ZOND, LUNA AND LUNOKHOD.
1. [In Cyrillic:] *Atlas obratnoj storony Luny.* [*Atlas of the Far Side of the Moon.*] 1960-67-75. 3 volumes. Numerous plates after photographs, some folding. Volume 1 in slipcase, others with dust-jackets. Jackets rubbed.
2. [In Cyrillic:] *Pervye panoramy Lunoj poverhnosti.* [*First Panoramas of the Lunar Surface.*] 1966. Plates after photographs, some folding. Dust-jacket. Jacket rubbed.
3. *First Panoramas of the Lunar Surface According to the Material from the Automatic Station Luna-9. Edited by the USSR Academy of Sciences.* [Greenbelt, MD]; NASA Goddard Space Flight Center, June 29, 1966. Plates after photographs. Punched, bolted in original printed wrappers. Draft translation of the previous item, published in 200 copies.
4. [In Cyrillic:] *Peredvizhnaja laboratorija na Lune Lunokhod-1.* [*The Mobile Laboratory "Lunokhod-1" on the Moon.*] 1971. Plates, some after photographs and folding. Dust-jacket. One folding plate with edge-tear, jacket rubbed.
Together, 6 volumes. 4to. The Russian works all Moscow: Nauk, in original cloth.
$800 - 1,200



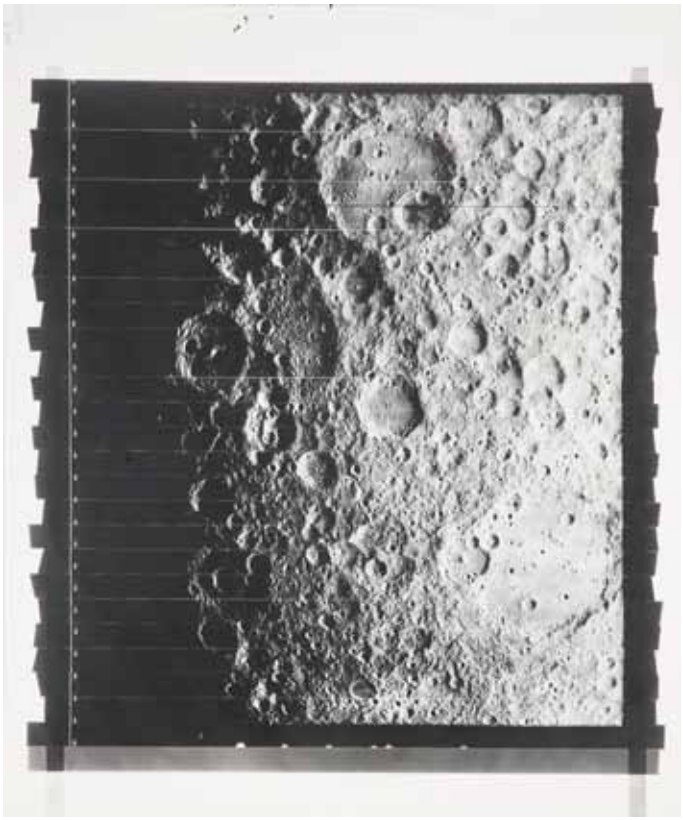
72

The Lunar Orbiter Program

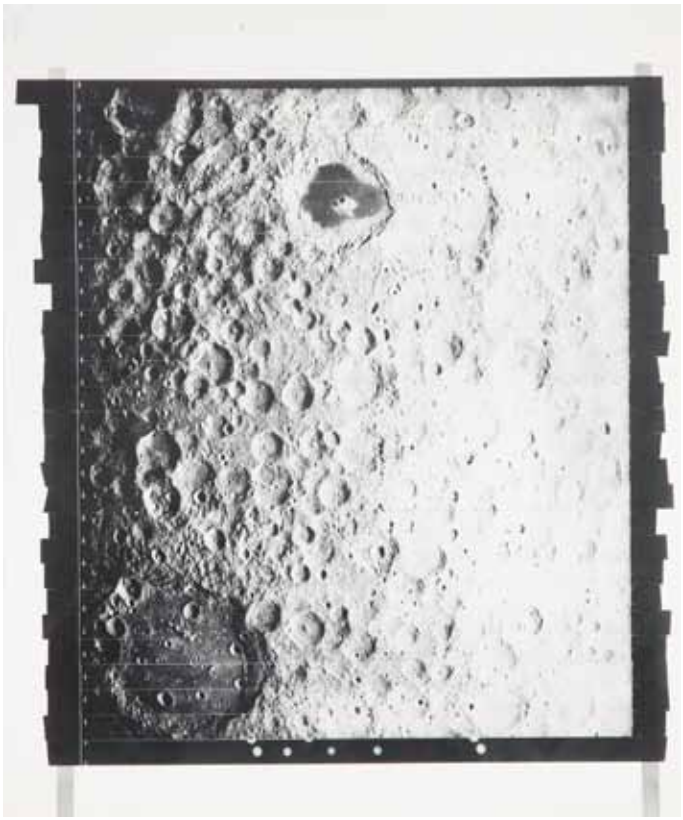
One of the primary objectives of the Lunar Orbiter Program (1966-1967) was to identify potential landing sites for the manned Apollo missions. An equally important achievement was the photographic record the five spacecraft created of the Moon, capturing the entire near side in extraordinary detail. For details of the photographic technology involved, see lot 83 below.

72
LUNAR ORBITER I.
Telephoto panorama, being the first photograph of Earth from lunar orbit, with the craters Hilbert, Khvolson and Meitner in the foreground, August 23, 1966, 3 gelatin silver prints joined, 54 x 15½ inches (1370 x 390 mm sight) overall, matted.
Provenance: Israel Taback; Leonard D. Jaffe.

"MAN'S FIRST LOOK AT EARTH FROM THE MOON" (Cortright).
Lunar Orbiter I photographs Earth, with the East Coast of the US in afternoon sunlight, with the African continent in darkness. "By this reversal of viewpoint, we here on the Earth have been provided a sobering glimpse of the spectacle of our own planet as it will be seen by a few of our generation in their pursuit of the manned exploration of space," wrote Floyd L. Thompson, Director of Langley Research Center at the time (see Cortright).
Illustrated: Cortright pp 84-85.
$8,000 - 12,000



73



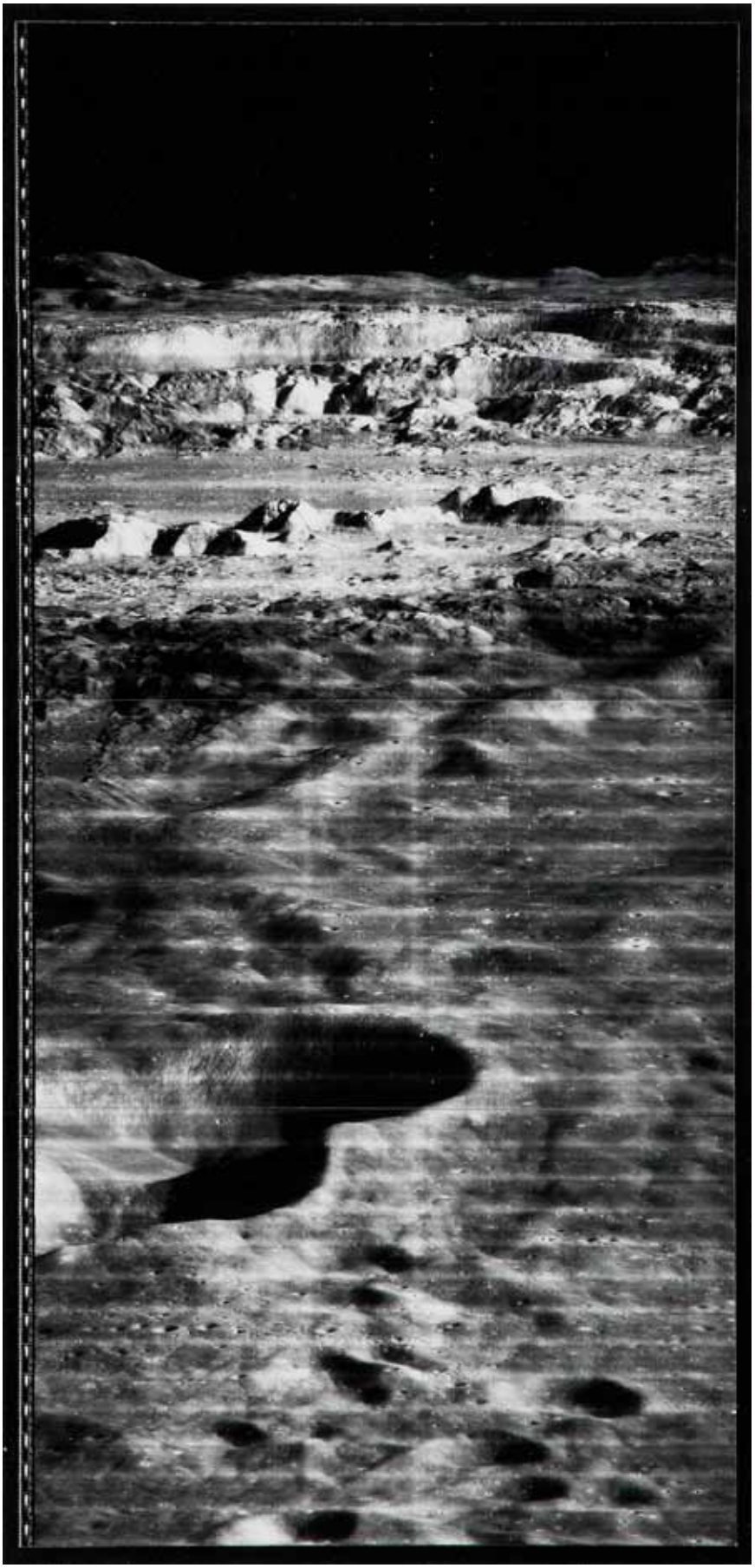
74

73
LUNAR ORBITER I.
View of the craters Gagarin and Mendeleev, August 25, 1966, gelatin silver contact print, image 18 x 16¼ inches (455 x 415 mm) on 20¾ x 17¼ inch (530 x 440 mm) sheet.
$3,000 - 5,000

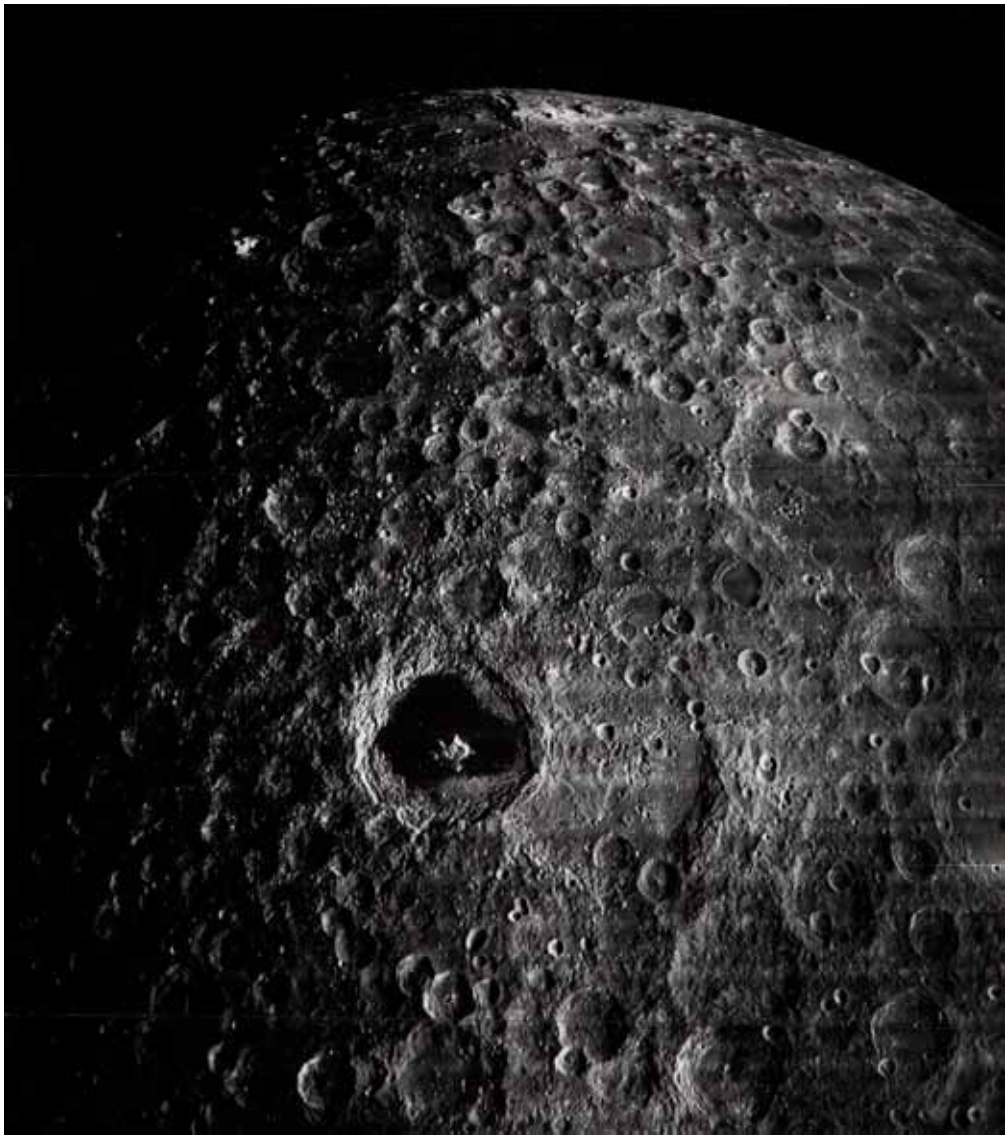
74
LUNAR ORBITER I.
View of the craters Mendeleev, Fermi, and Tsiolkovsky, August 26, 1966, gelatin silver contact print, image 17¾ x 16¼ inches (450 x 415 mm) on 20¾ x 17½ inch (530 x 445 mm) sheet.
$3,000 - 5,000

75
LUNAR ORBITER II.
Panorama of the crater Copernicus, November 24, 1966, 4 gelatin silver prints joined, 30¾ x 14¾ inches (780 x 375 mm) overall, matted and framed.

"THE PICTURE OF THE CENTURY," in the words of *Life* magazine. This image was taken by Orbiter II from 28.4 miles above the lunar surface and about 150 miles due south of Copernicus. Oran W. Nicks, Deputy Associate Administrator, Office of Space Science and Applications, remarked on first seeing this image, "I was awed by the sudden realization that this prominent feature I have often viewed by telescope is a landscape of real mountains and valleys, obviously fashioned by tremendous forces of nature" (see Cortright).
Illustrated: Cortright p 89 (detail).
$7,000 - 9,000



75



76

78

79

76
LUNAR ORBITER III.
The far side of the Moon from Orbiter III's apolune, February 19, 1967, 3 gelatin silver prints mounted together, 15¼ x 13¾ inches (390 x 350 mm), printed caption pasted on verso.

Showing the lunar equator and the south pole on the horizon, this photograph overlaps with a slightly comparable photograph taken by Orbiter II, and includes a large area captured in a similar photograph from Orbiter I. The large crater is Tsiolkovsky. A Kodak exhibition print.
$1,500 - 2,000

77
LUNAR ORBITER III.
Telephoto panorama of the Hortensius domes, February 20, 1967, 10 gelatin silver prints joined, 16 x 55 inches (405 x 1395 mm) overall, matted and framed.

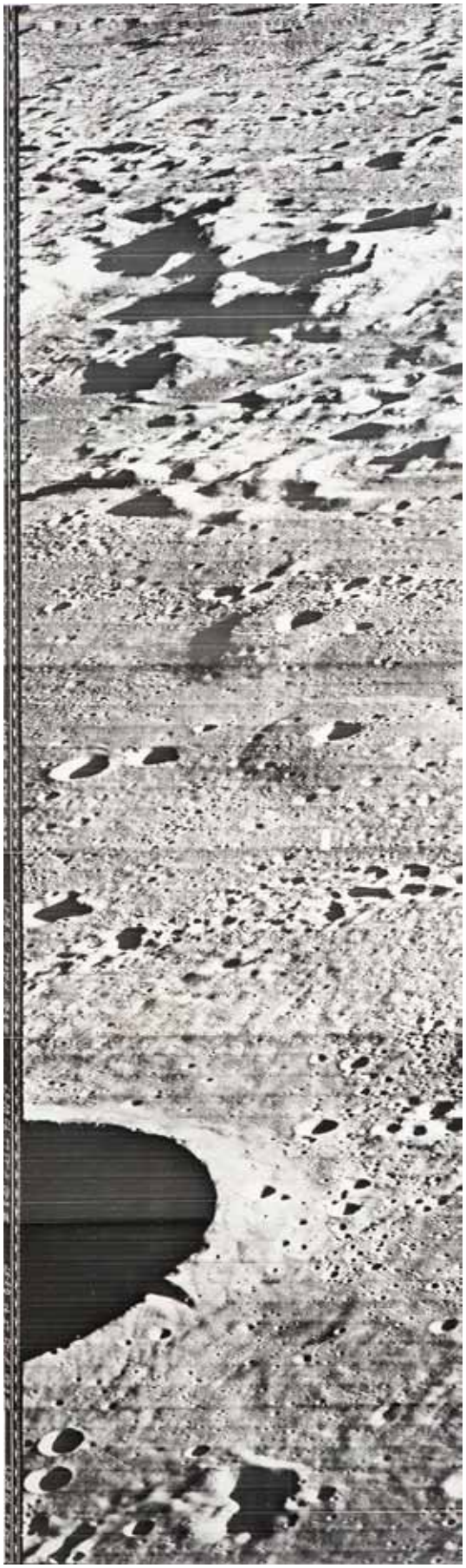
Exhibited: Lunar Landscapes, Menil Collection, Houston, TX, March 10-June 4, 2000.
$7,000 - 9,000

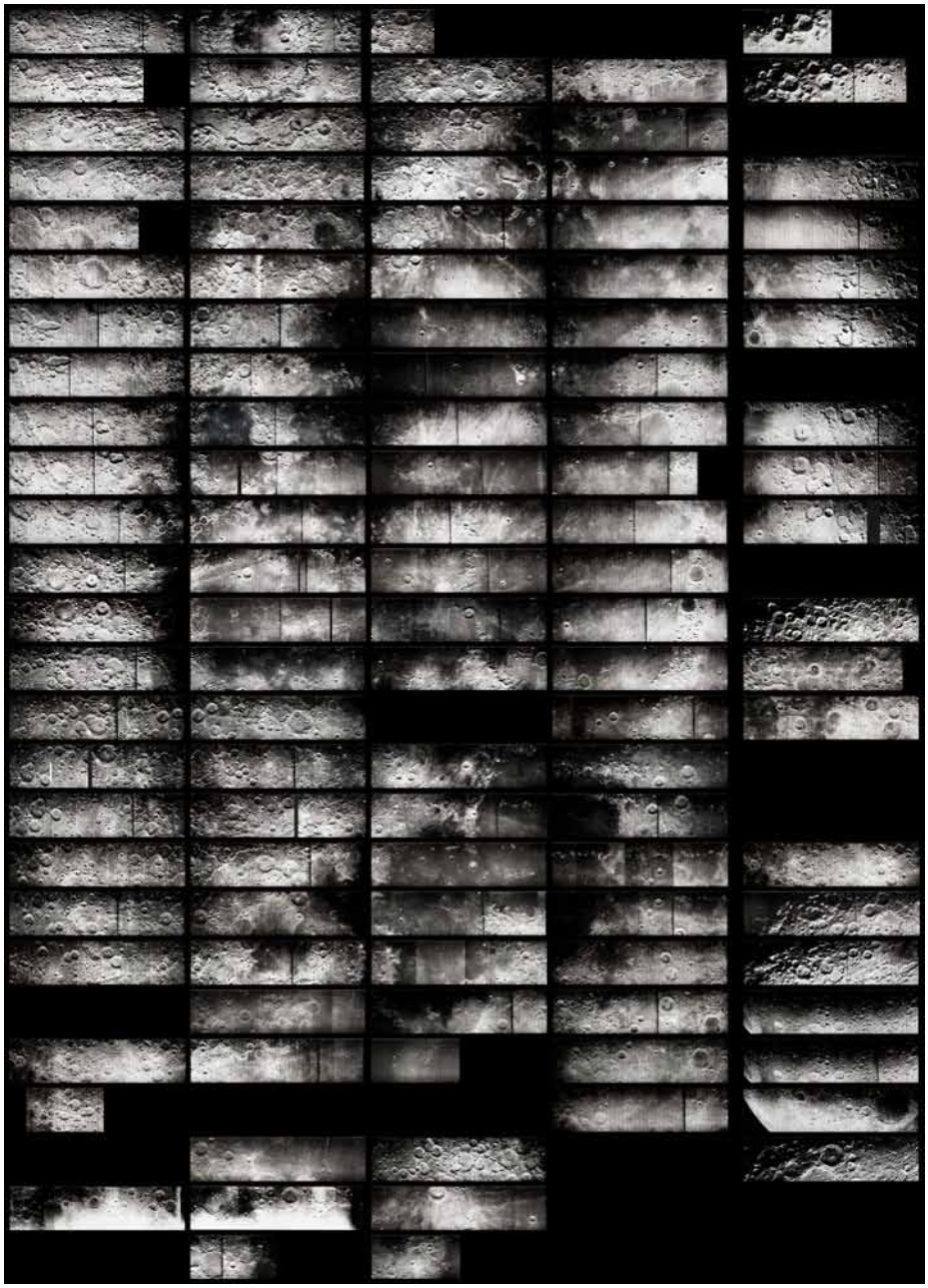
78
LUNAR ORBITER III.
View of Kepler crater and vicinity, February 21, 1967, 2 gelatin silver prints mounted together, 12¼ x 13¾ inches (310 x 350 mm) overall, printed caption pasted on verso.

A Kodak exhibition print.
$1,500 - 2,000

79
LUNAR ORBITER III.
View from the southwestern edge of the Oceanus Procellarum near the crater Grimaldi, February 22, 1967, 2 gelatin silver prints mounted together, 13 x 13¾ inches (335 x 350 mm) overall, printed caption pasted on verso.

A Kodak exhibition print, showing the northeastern edge of Grimaldi and the small crater Damoiseau E.
$1,500 - 2,000


77

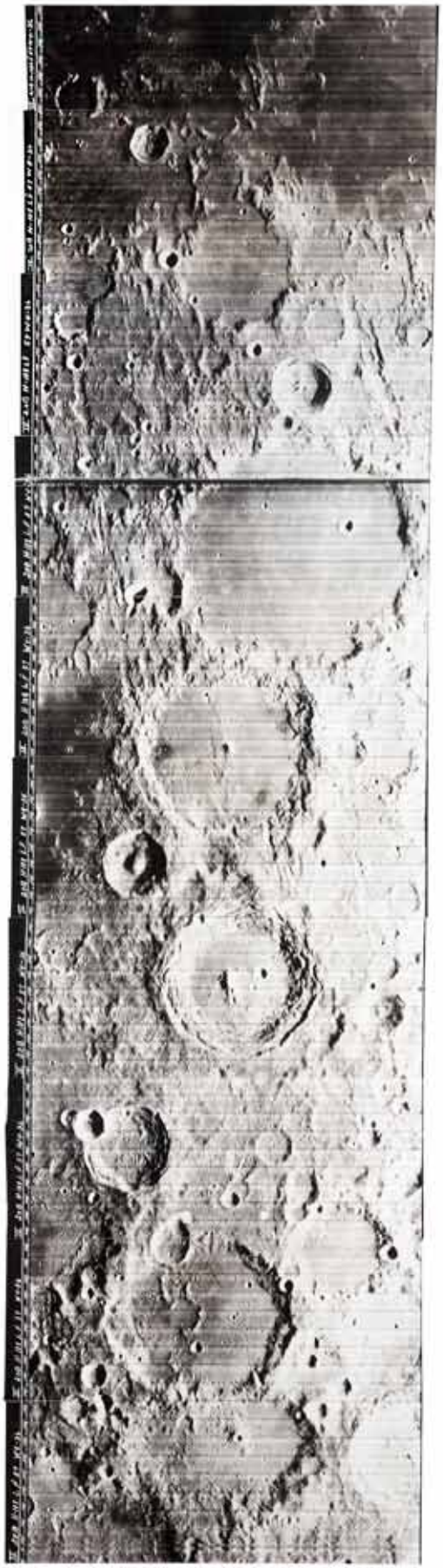


80

80
LUNAR ORBITER IV.
Giant mosaic of the near side of the Moon, May 11-25, 1967, comprising 218 panels, each with 4 gelatin silver prints mounted together on board, each panel 360 x 715 mm, together with chromogenic print mounted of the rubric showing assembly and with topographic features labeled, very approximately 34 x 24 feet overall when assembled.

PROBABLY THE LARGEST PHOTOGRAPH OF THE MOON IN EXISTENCE.
"The prime objective of Lunar Orbiter IV ... was to photograph the entire front side of the Moon at a resolution considerably better than is possible from Earth" (James S. Martin, Deputy Lunar Orbiter Project Manager; see Cortright p 109). Recognizing the PR value of the photographs, the US Information Agency, whose mission was to influence foreign publics in promotion of the national interest, commissioned Kodak to turn the images into a giant mosaic. The mosaic would be assembled on a floor and covered with sheets of clear lucite so that the public could "walk on the Moon." The mosaic is made up of 109 pairs of panels, each pair overlapping with its neighbor so as to create a continuous image. Only two mosaics in this format were produced. One was exhibited in a gymnasium in Prague during the meeting of the International Astronomical Union Meeting in late August, 1967. The present example is the second copy, believed to have been a back-up. Many searches have failed to locate the Prague mosaic, which must be presumed lost.
$80,000 - 100,000

80



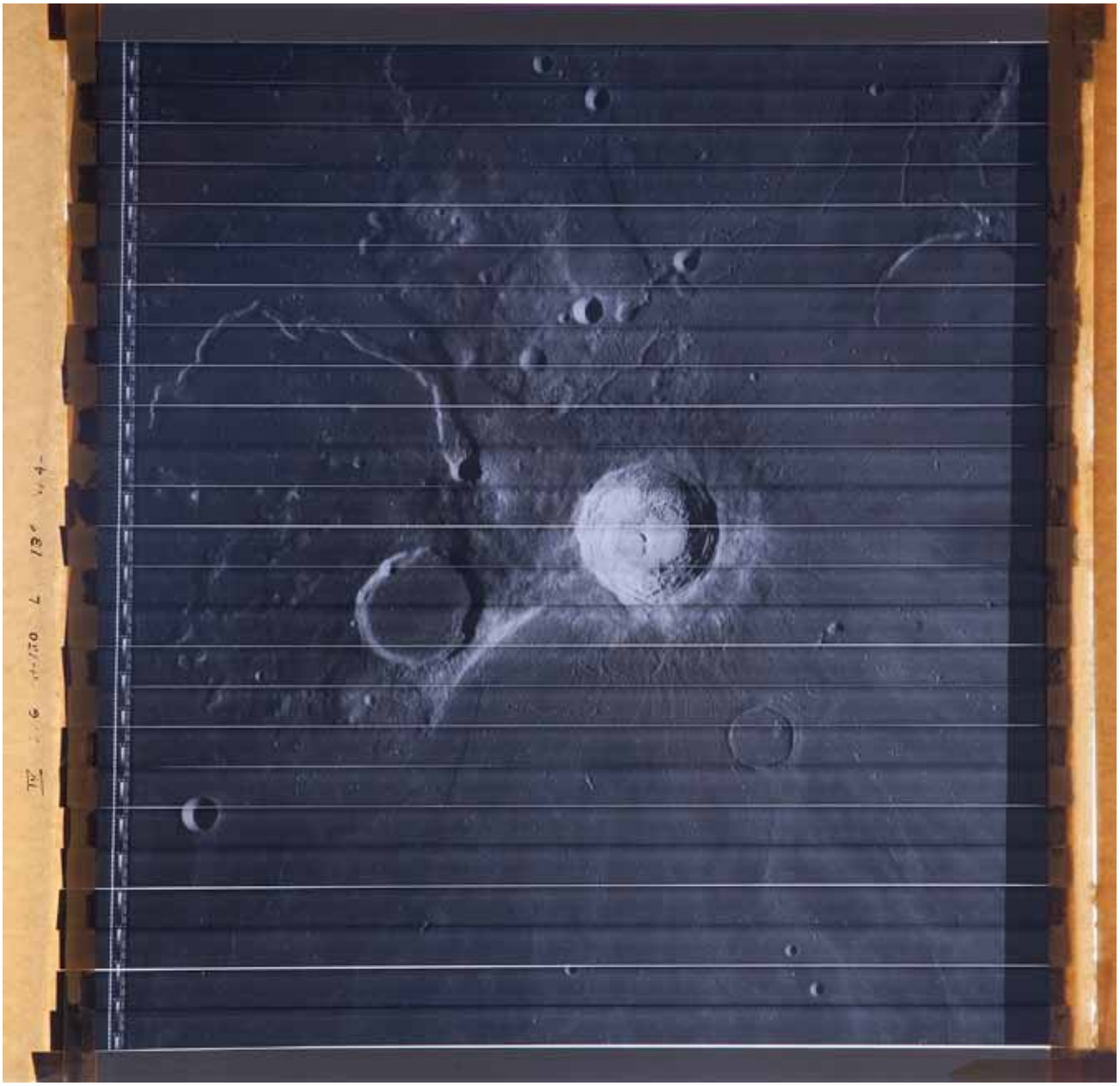
82

81

81
LUNAR ORBITER IV.
A view of the Moon, centered on the Mare Australe and with the dark crater Tsiolkovsky visible near the limb, May 11, 1967, 3 gelatin silver prints joined, 16¼ x 18 inches (415 x 460 mm sight) overall, matted.

Illustrated: Cortright p 109.
$5,000 - 7,000

82
LUNAR ORBITER IV.
Telephoto panorama centered on the crater Alphonsus, May 18, 1967, 10 gelatin silver prints joined, 16½ x 62 inches (420 x 1575 mm) overall, framed.
$6,000 - 8,000



83

83
LUNAR ORBITER IV.
View of the crater Aristarchus, and Schröter's Valley, May 22, 1967, 27 original positive film framelets, taped together and preserved between plexiglass in preparation for producing contact prints, 19½ x 17½ inches (495 x 445 mm) overall.

DE FACTO AN ORIGINAL NEGATIVE FROM A LUNAR ORBITER, THOUGHT TO BE THE ONLY COMPLETE EXAMPLE TO SURVIVE.
The Lunar Orbiter cameras were a technological feat that almost defies belief. Each Orbiter carried a Kodak camera equipped with two lenses, a lower resolution (or wide-angle) 80 mm lens, and a 610mm high-resolution (or telephoto) lens. Each exposure resulted in two simultaneous photographs, a wide-angle view, and a telephoto view. The exposures were made onto a roll of 70 mm film, which was moved during exposure to compensate for the spacecraft's velocity.
The film was then processed on board the Orbiter, by a method Kodak invented called Bimat—somewhat akin to the Polaroid process. Next, the developed film passed through an analog scanner which transmitted the data back to Earth by radio (technology largely derived from television broadcasting and developed by the R&D wing of CBS). The data was gathered by three NASA Deep Space Network receiving stations: Goldstone, CA; South Africa, or later Madrid, Spain; and Woomera, Australia. The data was then sent on to the Army Map Service and NASA Langley. The video signal was converted into variations of light on a cathode ray tube, and the image produced was captured on positive film by a 35 mm camera. Each film positive is known as a framelet, and the Orbiter's original photograph is recreated by placing the framelets side by side. That film positive is considered zero-generation, and from it were produced negatives, from them contact prints, and so forth.
The present assemblage is one of those zero-generation positives. It derives from the data stream received at Goldstone, and is believed to be the only surviving set of original assembled framelets from any of the five Lunar Orbiter missions.
$6,000 - 8,000

84

85

86

84
LUNAR ORBITER IV.
Telephoto panorama centered on the crater Gauss, May 23, 1967, 9 gelatin silver prints joined, 62¼ x 16 inches (410 x 1580 mm), matted.
$8,000 - 10,000

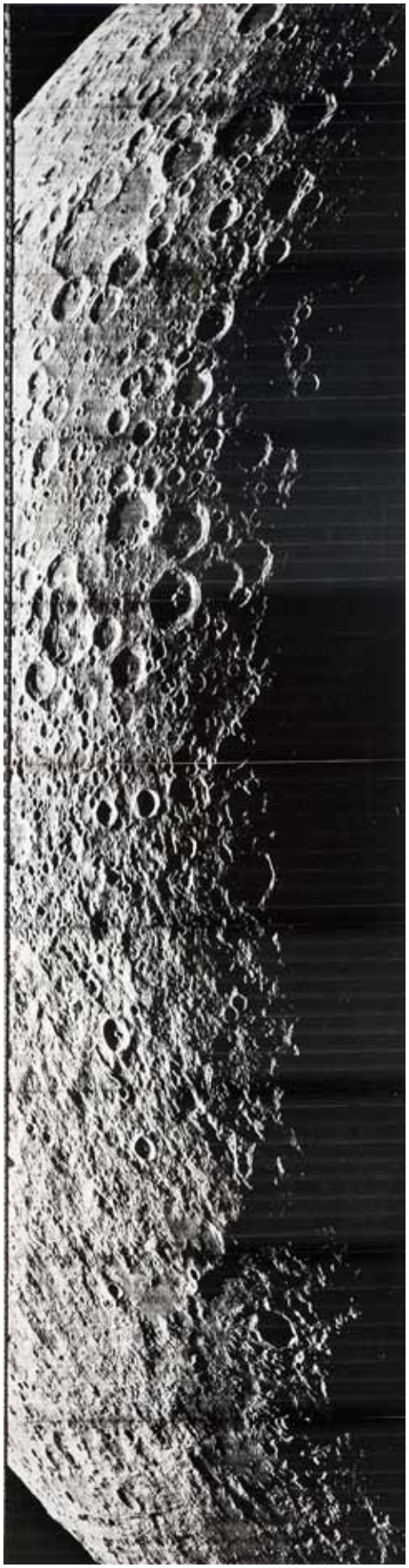
85
LUNAR ORBITER IV.
View of the Mare Imbrium, May 23, 1967, 3 gelatin silver prints joined, 17¼ x 16½ inches (440 x 420 mm) overall.
$4,000 - 6,000

86
LUNAR ORBITER IV.
View of a lunar limb with the Mare Crisium visible, May 24, 1967, 3 gelatin silver prints joined, 19 x 16¼ inches (480 x 415 mm) overall.
$4,000 - 6,000

87
LUNAR ORBITER IV.
Telephoto panorama of the Mare Crisium, May 25, 1967, 4 gelatin silver prints joined, 61 x 16 inches (1555 x 410 mm) overall, matted and framed.

Exhibited: Lunar Landscapes, Menil Collection, Houston, TX, March 10-June 4, 2000.
$10,000 - 15,000


87



89

88
LUNAR ORBITER V.
View of the area just south of the Alexander formation, August 6, 1967, 3 gelatin silver prints joined, 18 x 16¼ inches (460 x 415 mm) overall.
$4,000 - 6,000

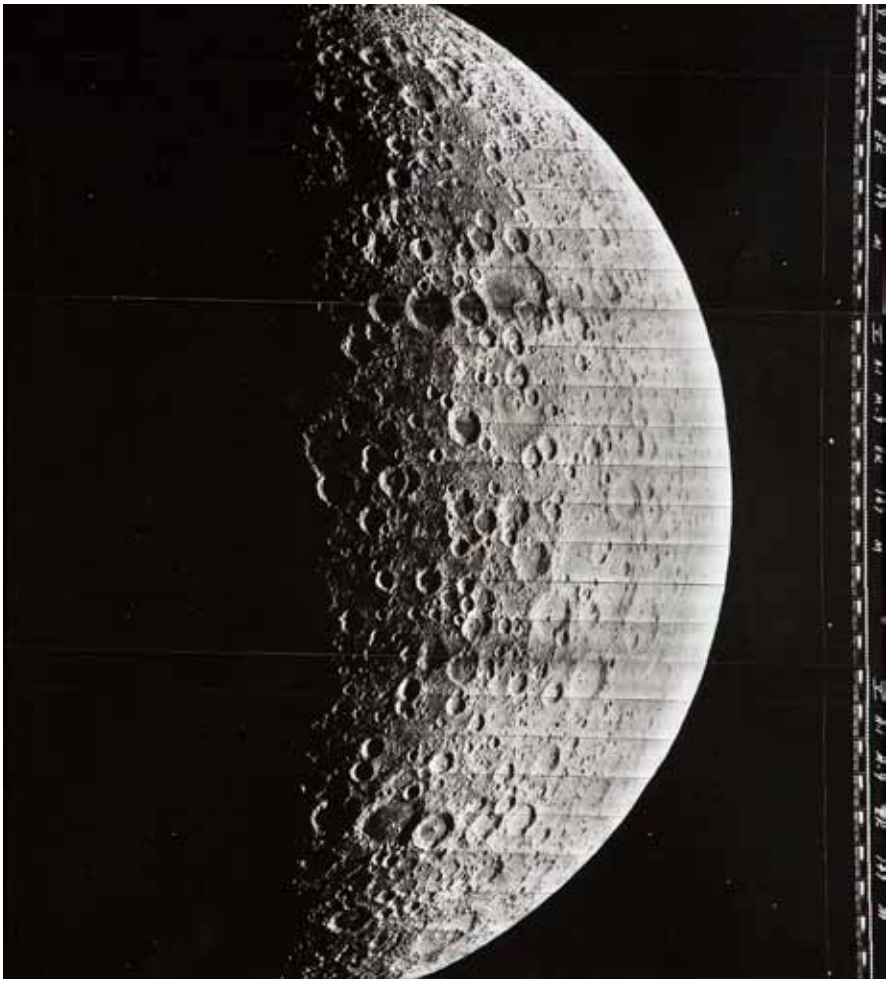
89
LUNAR ORBITER V.
Telephoto panorama from Censorinus to Littrow, August 6, 1967, 10 gelatin silver prints joined, 60½ x 15½ inches (1540 x 395 mm) overall, matted and framed.

Exhibited: Lunar Landscapes, Menil Collection, Houston, TX, March 10-June 4, 2000.
$12,000 - 18,000

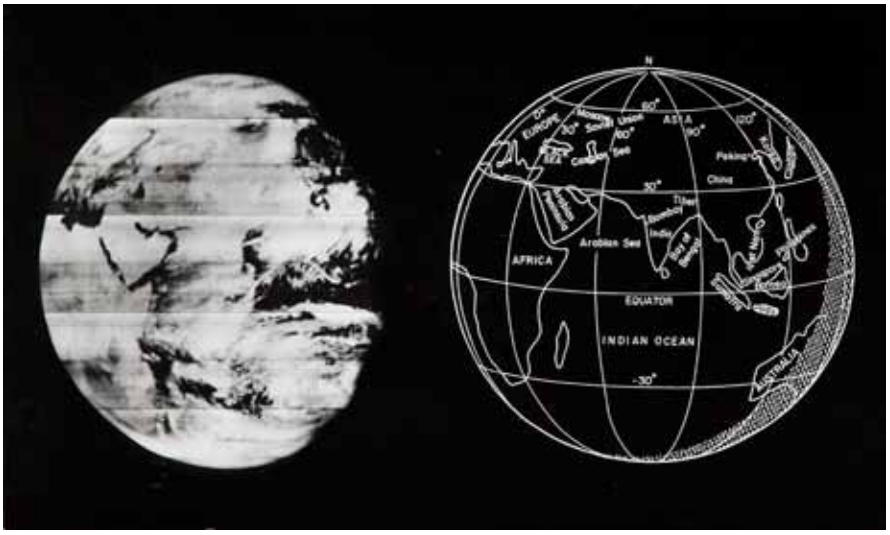
90
LUNAR ORBITER V.
Earth from lunar orbit, with diagram of the geographical features, August 8, 1967, gelatin silver print mounted, 8½ x 14 inches (215 x 360 mm) overall, printed caption pasted on verso.

The first photograph of the Earth in its entirety, with the Arabian Peninsula prominently shown. An exhibition print produced by Kodak.
$2,000 - 3,000

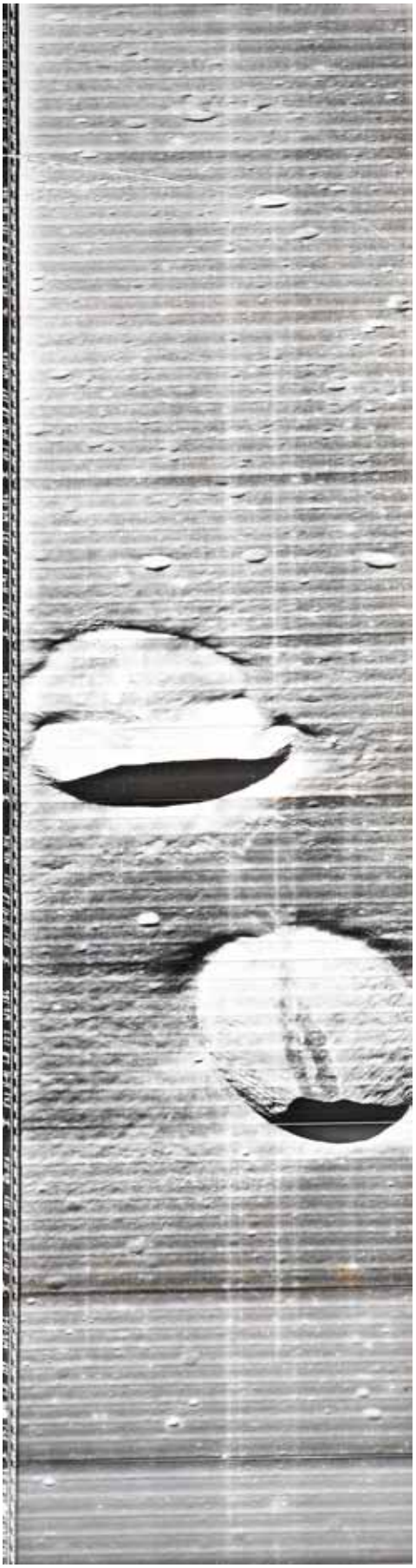
91
LUNAR ORBITER V.
Telephoto panorama of the craters Messier and Messier A, August 10, 1967, 8 gelatin silver prints joined, 16 x 60½ inches (410 x 1540 mm) overall, matted.
$8,000 - 10,000



88


N
EUROPE
ASIA
Peking
China
Tibet
India
Arabian Sea
AFRICA
EQUATOR
INDIAN OCEAN
AUSTRALIA

90



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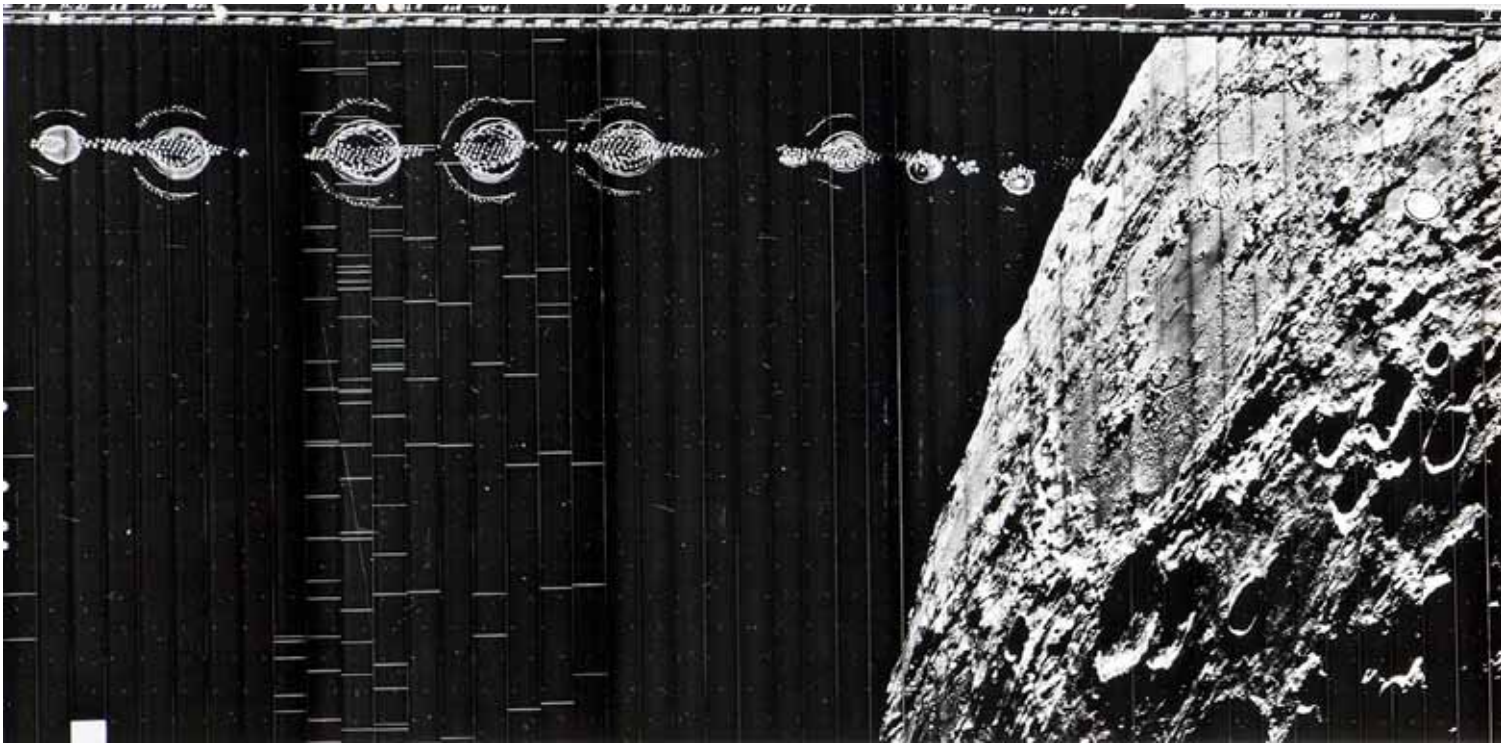
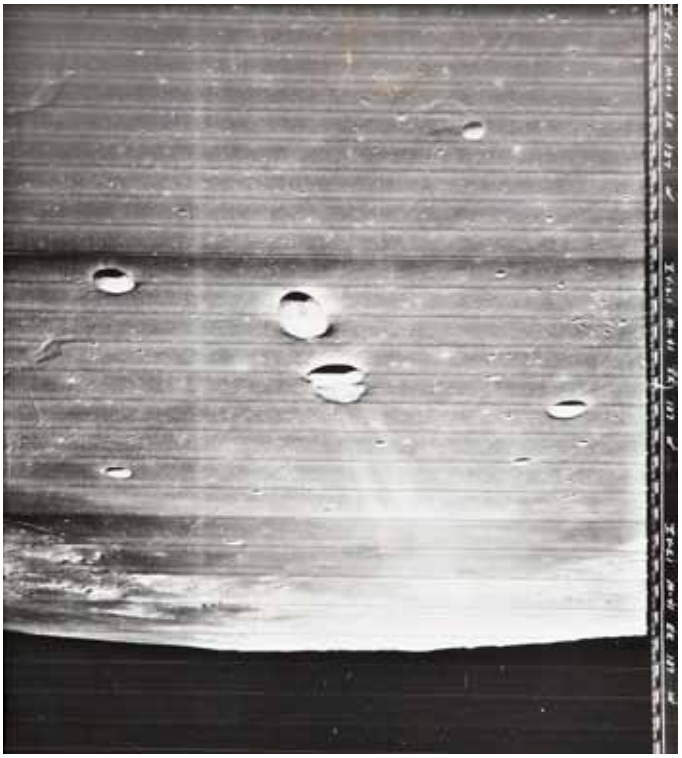
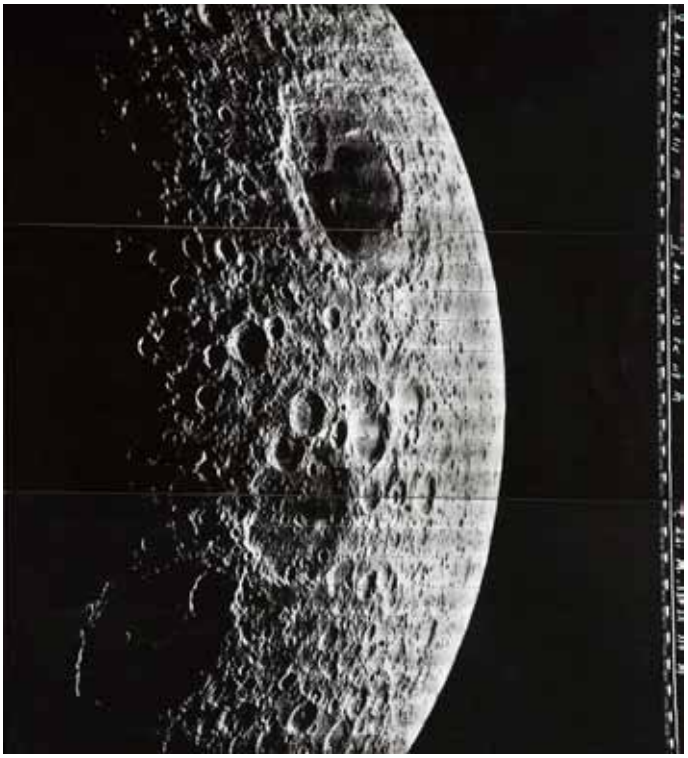


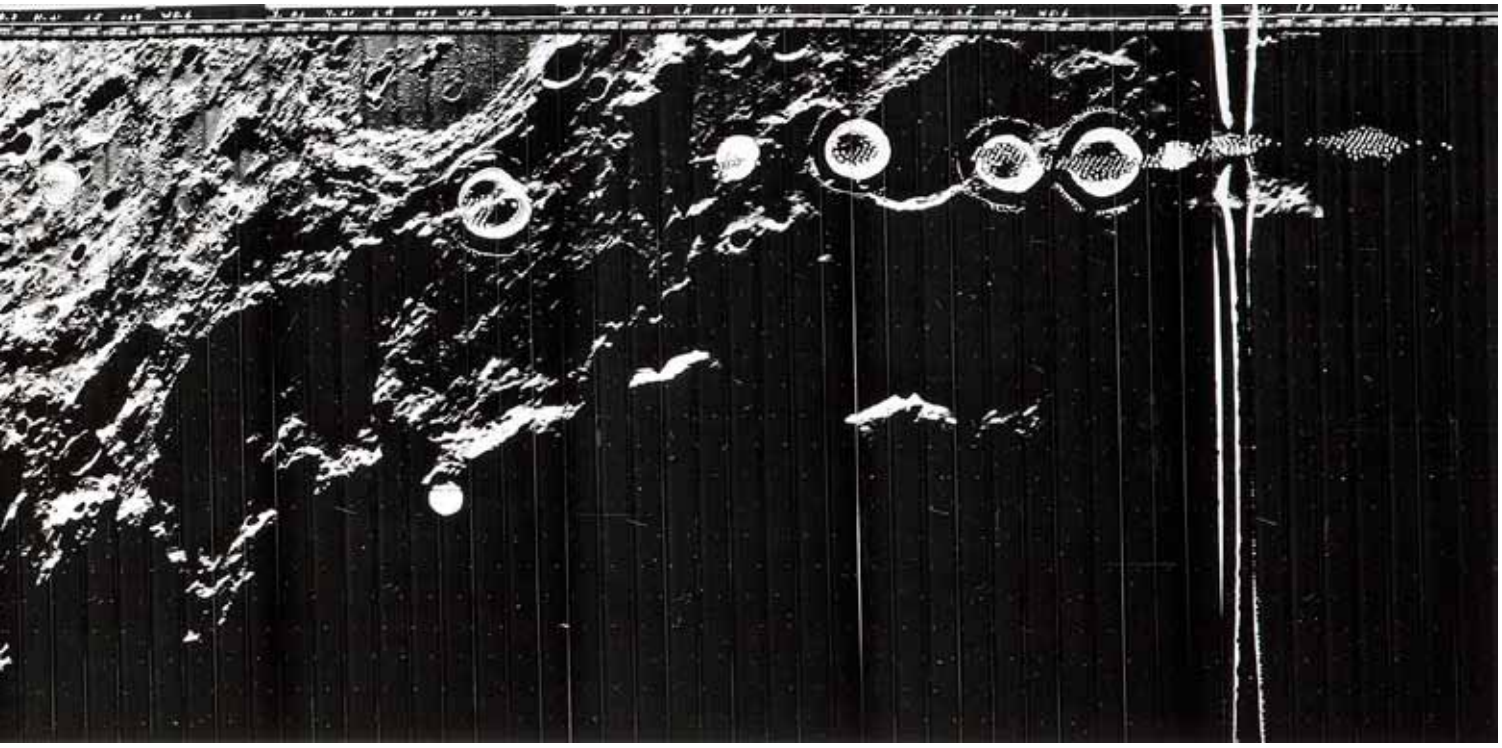
93



92



94



92
LUNAR ORBITER V.
View of the craters Messier and Messier A, August 10, 1967, 3 gelatin silver prints joined, 18 x 16 inches (460 x 410 mm) overall.
$3,000 - 5,000

93
LUNAR ORBITER V.
Telephoto panorama of part of the lunar limb. August 10, 1967, 9 gelatin silver prints joined, 16 x 65¼ inches (410 x 1660 mm), matted.

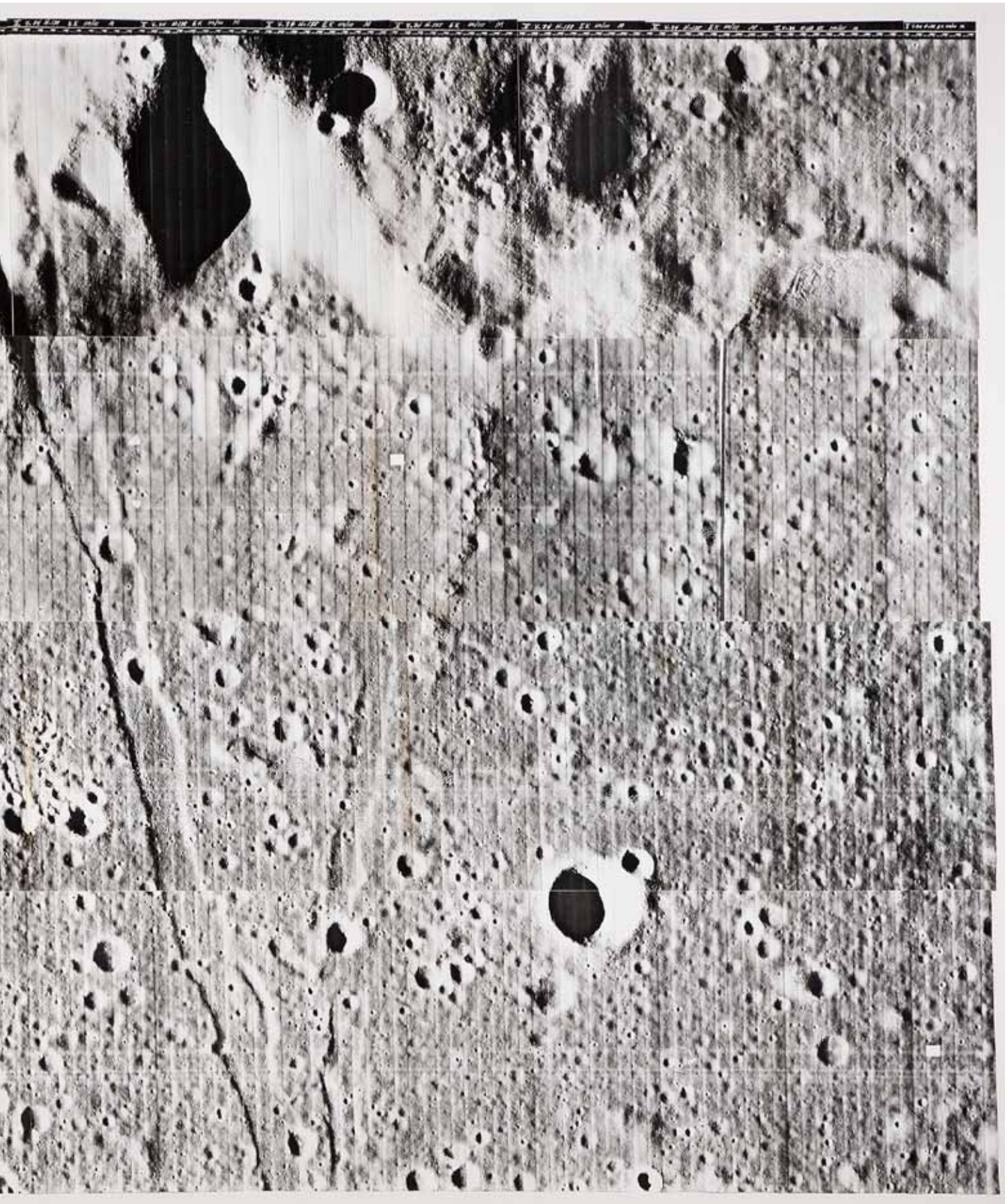
The "bubbles" in the image are the result of transmission artifacts.
$8,000 - 10,000

94
LUNAR ORBITER V.
View of the Mare Moscoviense and the crater Campbell, August 14, 1967, 3 gelatin silver prints joined, 18 x 16¼ inches (460 x 415 mm) overall.
$4,000 - 6,000

95
LUNAR ORBITER V.
Oversize view of the Rimae Parry leading into Fra Mauro crater, August 15, 1967, 4 telephoto panoramas, each comprising 10 gelatin silver prints joined, 59½ x 61½ inches (1510 x 1560 mm) overall, framed.

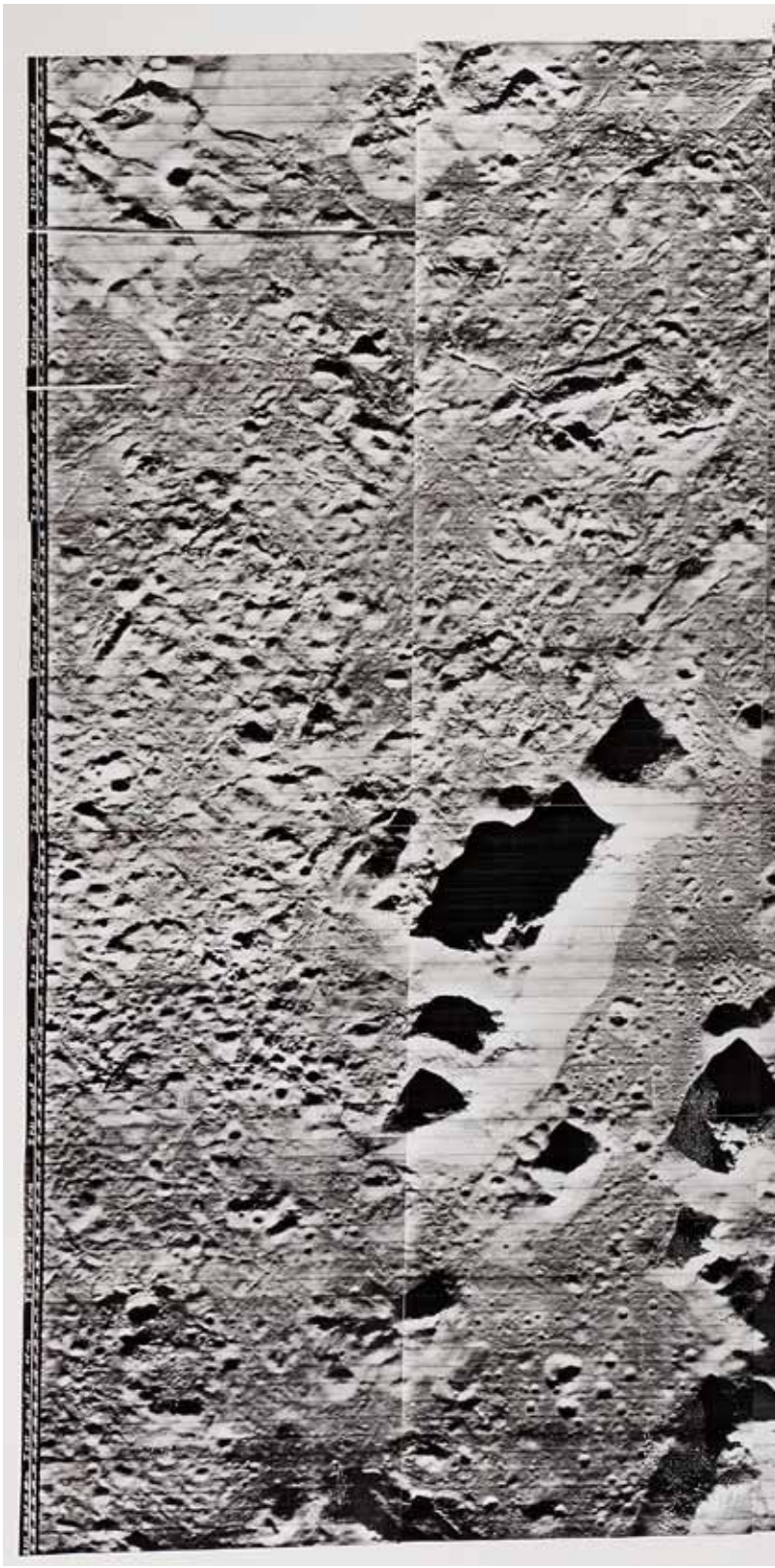
A VAST IMAGE OF PART OF THE LUNAR SURFACE, some five feet square. At this scale, the ridges, rilles, pock-marks and craters take on an almost abstract quality.
$25,000 - 35,000

95

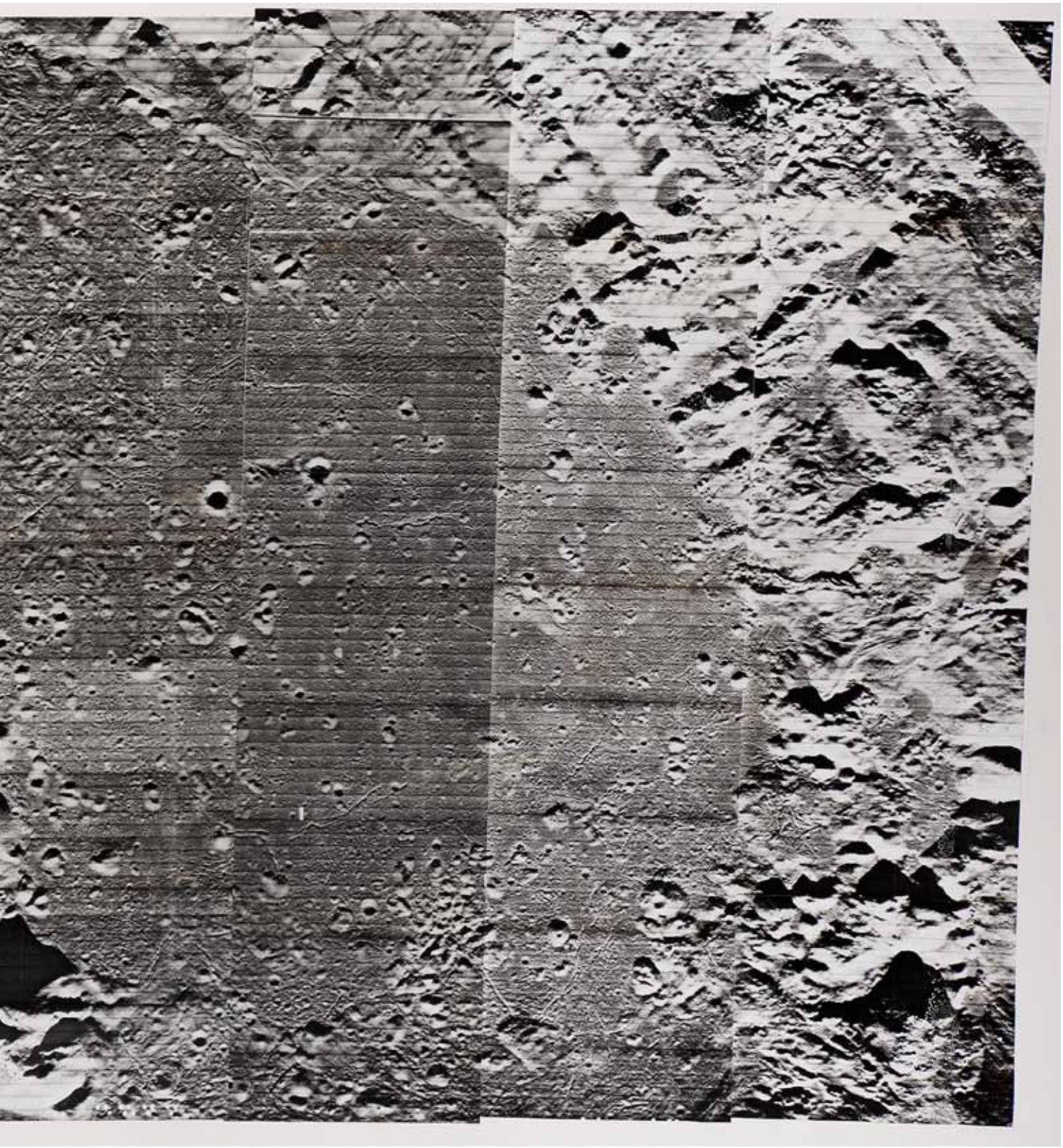


96
LUNAR ORBITER V.
Oversize view of peaks at the center of the crater Copernicus, August 16, 1967, 6 telephoto panoramas, each comprising 10 gelatin silver prints joined, 62 x 86¼ inches (1575 x 2190 mm) overall, framed.

SEVEN FEET WIDE—a fitting scale at which to depict the peaks at the center of Copernicus, which rise to around 4,000 feet.
$30,000 - 50,000

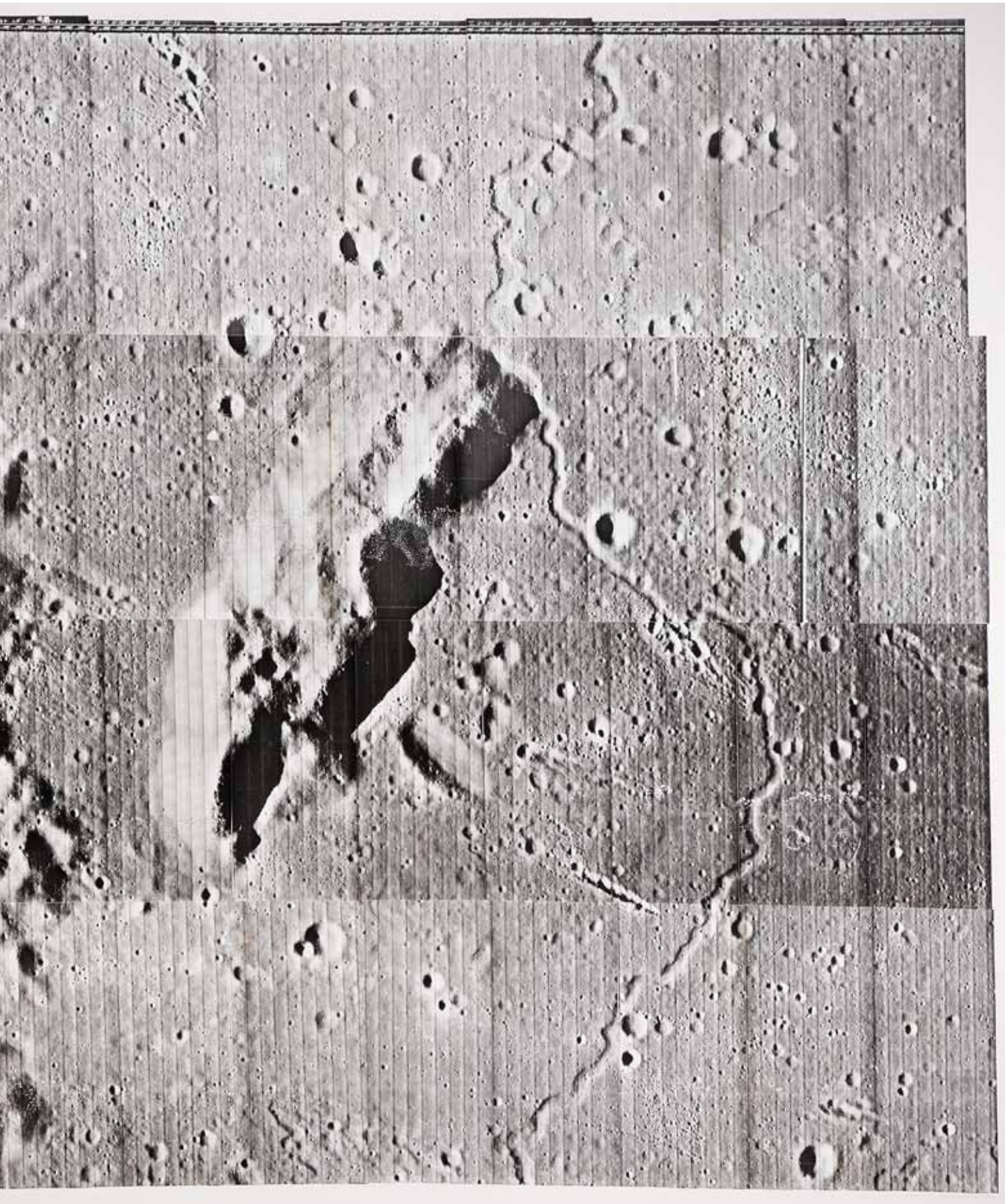


96



97
LUNAR ORBITER V.
Oversize view of the Rima Tobias Mayer, and a low dome, August 17, 1967, 4 telephoto panoramas, each comprising 10 gelatin silver prints joined, 58½ x 61¾ inches (1485 x 1570 mm) overall, framed.
$25,000 - 35,000

97



98
LUNAR ORBITER V.
Oversize view of the crater Aristarchus, August 18, 1967, 4 telephoto panoramas, each comprising 8 gelatin silver prints, mounted, 51½ x 57¾ inches overall, framed.

ONE OF ONLY TWO KNOWN COPIES of this large and impressive image, the other being in George Eastman House, Rochester, NY. Aristarchus is considered the brightest of the large formations on the lunar surface, and is visible to the naked eye.
Exhibited: Lunar Landscapes, Menil Collection, Houston, TX, March 10-June 4, 2000.
Illustrated: Cortright p 123 (detail).

Provenance: George T. Keene, Director of the Eastman Kodak Photo Science Group.
$100,000 - 150,000

98

99
LUNAR ORBITER V.
Oversize view of Schröter's Valley, August 18, 1967, 4 telephoto panoramas, each comprising 10 gelatin silver prints joined, 59 x 61 inches (1495 x 1550 mm) overall, framed.

Illustrated: Cortright, p 124 (detail).
$25,000 - 35,000

99

100 (part)

101

102

104 (part)

105 (part)

100
LUNAR ORBITER.
Collection of approximately 32 volumes, documents, or dossiers related to Lunar Orbiter missions, several being rare internally-circulated items from NASA Langley or contractors, including: Taback, "Lunar Orbiter: Its Mission and Capability," original mockup; JPL, "The Lunar Orbiter / A Radio-Controlled Camera"; NASA Special Publications 197, 200, 206, 241, 242; *Lunar Orbiter I Postmission Photo Supporting Data,* September 29, 1967; Boeing, "Agena Class Lunar Orbiter, Photographic Project, Flight Programmer Proposal," March 19, 1964; Kodak, "A New Processing Method For The Aerospace Age"; Rand Corporation, "Lunar Exploration By Photography From A Space Vehicle," March 5, 1959; Space Technologies Laboratories, proposal to NASA Langley Research Center for the Agena Class Lunar Orbiter Photographic Project, October 1963. For a full listing, please download the condition report for this lot from bonhams.com/20830.
$1,500 - 2,000

101
LIPSKY, Y.N.
[In Cyrillic:] *Globus Luny sostavlen po fotografijam.* [*Globe made from photographs of the Moon.* Moscow:] Sternberg State Astronomical Institute and USSR Topographical Service, [1967].
Diameter 13½ inches (343 mm). Scale 1:10,000,000. On plastic stand.

Based on photographs produced by Luna-3, Zond-3, and NASA Lunar Orbiters, this globe covers 95% of the lunar surface.
$800 - 1,200

103

106 (part)

102
KUIPER, GERARD P., AND OTHERS.
1. *Orthographic Atlas of the Moon.* St. Louis, MO: Aeronautical Chart and Information Center, USAF, June, 1961. 2 parts in one volume. Oblong folio (460 x 570 mm). v leaves, printed recto only. 2 charts, 29 halftone photographic charts of Selenographic Positions of central fields; chart, 30 halftone photographic charts of Selenographic Positions of limb fields. Punched and bolted as issued in original cloth covers. Plates lightly toned, covers slightly rubbed.
2. *Rectified Lunar Atlas.* St. Louis, MO: Aeronautical Chart and Information Center, USAF, [1963]. Oblong folio (380 x 470 mm). [iv] pp. Numerous halftone plates photographic plates printed recto and verso. Original cloth. Extremities lightly rubbed.
3. Another copy, but the issue published Tucson: University of Arizona Press, 1963. *Provenance:* William K. Hartmann, one of the four editors (ownership inscription).
4. *Consolidated Lunar Atlas.* [Tucson, AZ]: Lunar and Planetary Laboratory, University of Arizona, 1967. 4to (380 x 300 mm). 24 pp. With 228 loose gelatin silver prints, each 10¼ x 13¼ inches (270 x 340 mm). Text in original blue wrappers. Together in original blue cloth case. Case extremities rubbed. Together, 4 volumes.

A complete run of supplements 1-4 (the last item comprising both numbers 3 and 4) to the 1960 *Photographic Lunar Atlas* (Kuiper et al., University of Chicago Press, 1960). The 1960 *Atlas* had halftone reproductions; the *Consolidated Lunar Atlas* reproduces the same images in high-quality gelatin silver prints. The photographs were taken through the 61-inch NASA Telescope at Catalina Observatory, and the 61-in Astrometric Telescope at the US Naval Observatory, Flagstaff, AZ.
$2,500 - 3,500

103
TURNER, RALPH. B.1935.
Northeast Rim of Tycho. Tucson, AZ: Lunar and Planetary Laboratory, March 25, 1970.
Contour diagram printed on acetate, 1220 x 1200 mm, framed.

A contour diagram based on a relief model Turner made in 1968-1970, using photographs from Orbiter IV and V, and Earth-based photographs.
$1,000 - 1,500

104
ZOND-8.
Group of 23 photographs of the Moon, October 24, 1970, gelatin silver prints, 12 x 16 inches (305 x 405 mm), several with *"Zond-8"* captions in negative in Cyrillic.
$1,000 - 1,500

105
APOLLO 9 & 11.
Group of 32 short strips of duplicate positives from the astronauts' Hasselblad cameras, March 3-July 24, 1969, the strips mostly 23 x 2¾ inches (580 x 70 mm) overall, approximately 280 frames in all.

Apollo 9 images include: one of the two spacewalks; the Command Module; the Lunar Module awaiting extraction from the SIV-B stage. Apollo 11 images include: Buzz Aldrin hammering in a core-sample tube; the Lunar Module Eagle from afar; and the Apollo Lunar Surface Closeup Camera in front of a small crater; the lunar surface from orbit.
$3,000 - 5,000

106¤
APOLLO 15.
10 stereo photographs taken by Dave Scott on the lunar surface, July 31-August 2, 1971, pairs of color transparencies in metal mounts, each transparency 1 x 1 inch (25 x 25 mm), mostly with pasted-on reference numbers and captions, together with a period Brumberger Stereo Viewer.

One of astronaut Dave Scott's tasks on the lunar surface was to capture photographic panoramas using a 60 mm focal-length Hasselblad camera. This allowed for the creation of stereo images, although relatively few were produced. Images include the hills around the Apollo Lunar Surface Experiments Package (ALSEP) site, approximately 400 feet northwest of the Lunar Module.

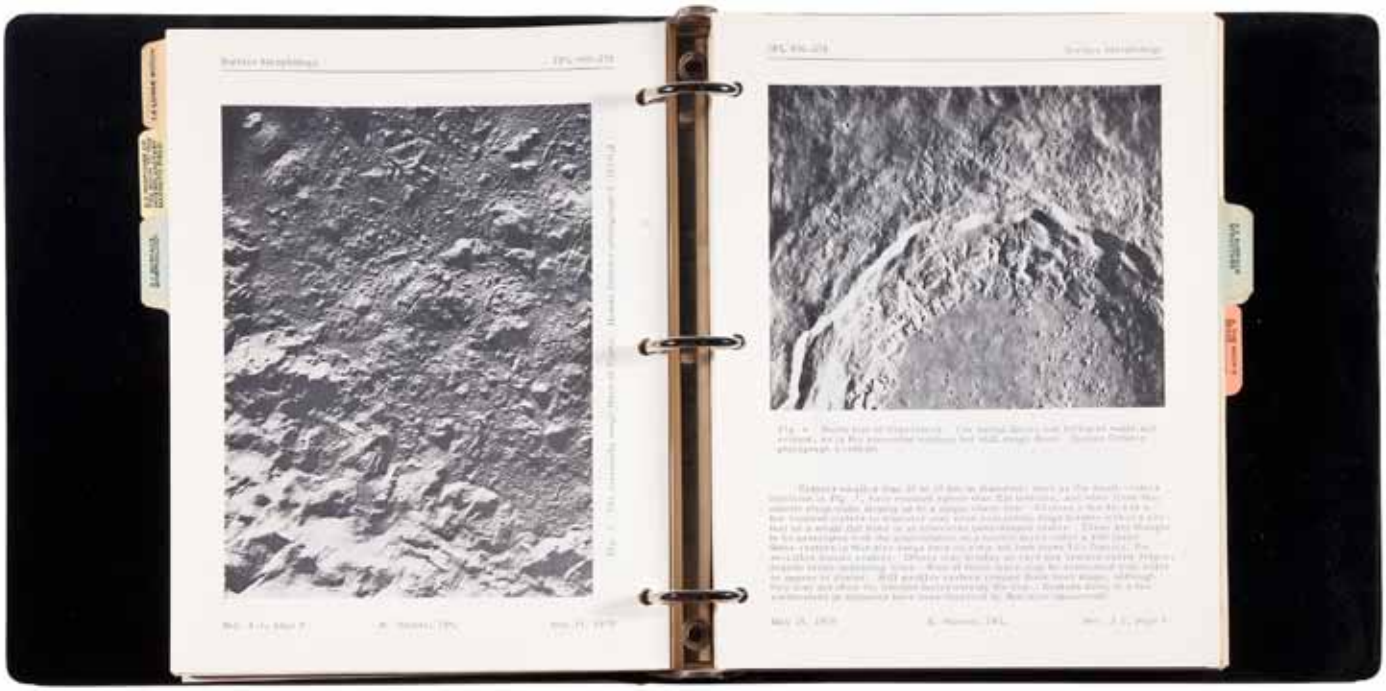
Provenance: Leon S. Kosofsky.
$300 - 500

107

109 (part)

108

110 (part)



111

107□
WEIGERT, FRANZ.
Bas relief reproduction of Moon rock no 15536 obtained during the Apollo 15 mission, manufactured by Franz Weigert, Neuberg, Germany, 1972, embossed paper, sight 100 x 135 mm, mounted within original board shadow mount, captioned lower left *"Moon Rock No. 15536"* and lower right *"Apollo 15 (July 26 - Aug. 7, 1971),"* original lucite cover, framed, printed caption on verso.

An unusual relic of the space age. *Dupont Magazine* published an article on what Weigert called their fossil "embossments," and explained, "Franz Weigert, Bavarian engraver, creates precision replicas of fossils as prints. A silicon rubber cast is taken from the original. Embossing dies are prepared from the resulting replicas. Color-separation sets are made from photographs of the original" (Kappler, abstract).
$500 - 700

108
DENOYER-GEPPERT.
Denoyer-Geppert Lunar Globe. [Chicago, IL]: Denoyer-Geppert, [c.1971]. Diameter 16 inches (406 mm). Scale 135 miles per inch. Metal stand.

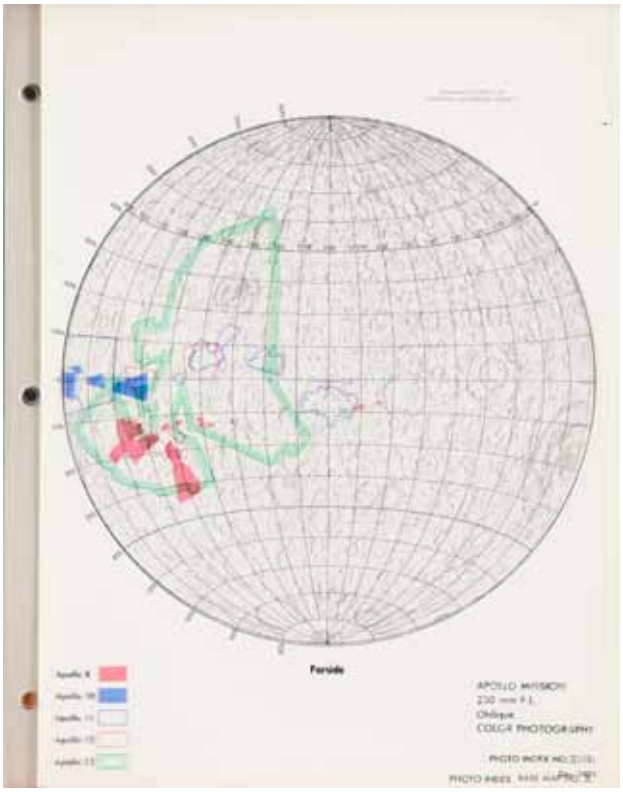
"In 1969, to commemorate the Apollo 10 mission, Denoyer Geppert designed a special lunar globe that the astronauts of the mission presented to President Nixon. Contracted by NASA, Denoyer Geppert created the first complete Moon globe, using the Apollo 10 film footage and photographs of the far side of 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). The present globe is a later edition, showing the landing sites for Apollo missions up to Apollo 15 (July 30, 1971) but not Apollo 16 (April 21, 1972).
$1,000 - 1,500

109
APOLLO 16.
Group of 41 photographs of the lunar surface taken by the Apollo 16 Fairchild Metric/Mapping camera, April 19-24, 1967, gelatin silver prints, 9 x 9 inches (228½ x 228½ mm), all with various points of interest circled and with reference numbers in negative, several with additional points circled in ink on the print and with pasted-on reference numbers, some underlining of references in yellow wax crayon.
Provenance: Merton E. Davies.
$600 - 800

110
APOLLO.
Collection of approximately 41 volumes related to photography and mapping involved in Apollo missions, including: NASA Special Publications 201, 214, 232, 235, 238, 246, 272, 284, 289, 315, and 330; MSC, *Apollo 11 Photographic and Scientific Debriefing,* August 12, 1969; *Apollo 11 Lunar Science Conference,* 5-8 January, 1970; National Space Science Data Center, *Apollo 12 Lunar Photography*; MSC, *Apollo 15 Index of Mapping Camera and Panoramic Camera Photographs*; ditto, Apollo 16 and 17; Weinstein, "Special Processing of Apollo 16 Pam Camera Film." For a full listing, please download the condition report for this lot from bonhams.com/20830.
$2,000 - 2,500

111
HAINES, E.L., editor.
Lunar Scientific Model. [Pasadena, CA]: JPL, August 27, 1969-December 7, 1971.
2 volumes. 4to. Numerous diagrams, charts, and illustrations, 6 folding maps in pockets. Tapped, punched, and in original 3-ring binders. A handful of leaves with slightly ragged punch-holes.

"The Lunar Scientific Model was conceived out of a need for a concise catalog of scientific information about the Moon" (preface).
$1,000 - 1,500



112

113

114

112¤
SCHIMERMAN, LAWRENCE A., editor.
Lunar Cartographic Dossier. St. Louis, MO: Defense Mapping Agency for NASA, [1973].
Volume 1 (all published, although loose-leaf revisions were issued until 1977). Includes Earthside and farside photo index base maps with 31 and 24 transparent color-printed overlays respectively, giving photo sites from each mission, 2 similar control index base maps with 5 and 2 overlays respectively, and 2 map index base maps with 9 and 3 overlays. Tabbed, punched, and in original vinyl 3-ring binder. Lightly rubbed.

"This book is concerned with recording the cartographic results and by-products of lunar exploration and study. It is an attempt to provide a vehicle for the continued accumulation and use of lunar cartographic knowledge" (Arthur T. Strickland, foreword).
$800 - 1,200

113
TURNER, RALPH. B.1935.
Contour diagram of Schröter's Valley, probably Tucson, AZ, 1974, ink, colored pencil and white-out on several sheets of paper, mounted on 2 sheets of board, coordinates and several topographical features labeled, inscribed *"Measurements from Relief model _ R. Turner, 1974"* at foot, overall 760 x 1670 mm, framed.

Turner made a relief model of Schröter's Valley in 1973.
$1,500 - 2,500

114
TURNER, RALPH. B.1935.
Shaded contour diagram of Schröter's Valley, probably Tucson, AZ, 1974, ink and white gouache on gray acetate, coordinates and several topographical features labeled, inscribed *"Measurements from Relief model _ R. Turner, 1974"* at foot, 550 x 1170 mm, matted, framed.

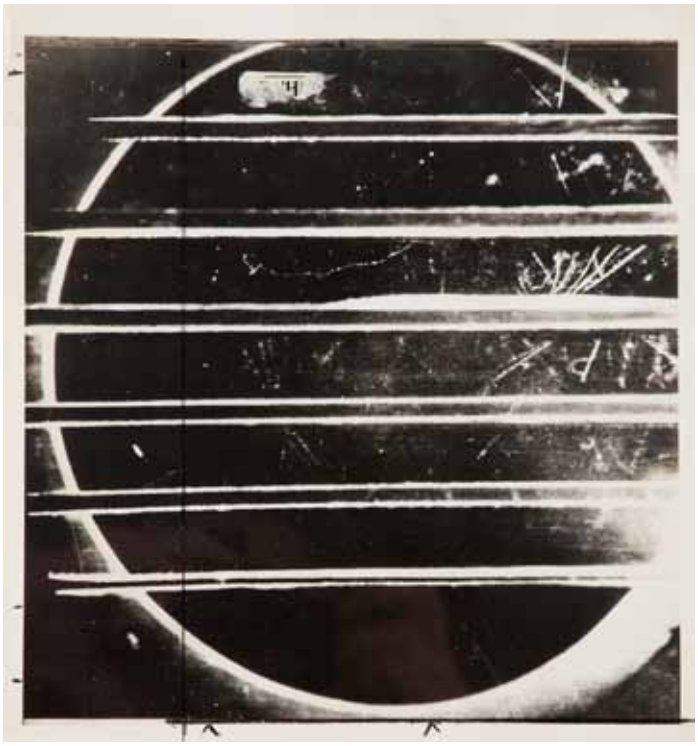
A striking image of this lunar feature, showing Turner's calligraphic skill, which he first developed at college. He has written, "the calligraphy experience lies behind several other things that I got involved with such as the Relief Contour method of expressing topography" (rockcreekexperiment.com).
$2,000 - 3,000

115

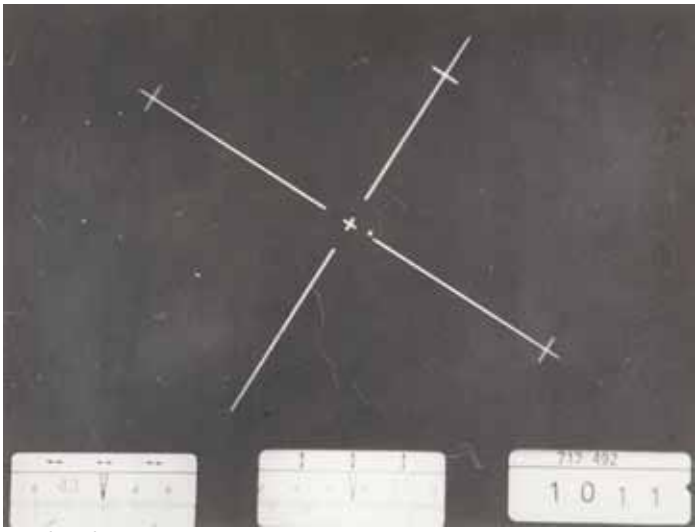
The Earth & Earth Orbit

115
GODDARD, ROBERT HUTCHINGS. 1882-1945.
Mount Ruidoso, New Mexico, August 12, 1940, oil on board, 420 x 600 mm, signed lower right "R.H. Goddard, 1940," annotations on back of frame in Esther Goddard's hand (*"Baldy, in the Sierra Blanca range,"* etc.), framed.

A PAINTING BY THE FATHER OF MODERN ROCKET PROPULSION. On March 16, 1926, at Auburn, MA, Goddard successfully launched the first liquid-fueled rocket, an event as significant to history as that of the Wright Brothers at Kitty Hawk. In 1929, Goddard equipped one of his rockets with a camera for the first time, in essence preempting by two decades photography from space.
Goddard relocated to Roswell, New Mexico, in 1930 after securing funding from the Guggenheim family that allowed him to continue his rocketry experiments. In 1937 one of his L-series rockets reached an altitude of over 8,000 feet. Goddard "delighted in the wonderful experience of painting," according to a friend (quoted in Clary p 172), and examples of his paintings are held by Clark University in Worcester, MA.
Illustrated: Papers of Robert H. Goddard, p 1348.
$20,000 - 30,000



116



118 (part)

119

117

116¤
COSMIC RAYS.
Cosmic rays, photographed through the opening of a magnetic "cloud chamber" aboard a B-29 "flying laboratory" and processed by the US Naval Ordnance Test Station near Inyokern, CA, December, 1946, gelatin silver print, 8 x 7½ inches (205 x 195 mm), black wax pencil crop marks, traces of photo agency's paper label to verso.

With a period newspaper clipping reproducing and explaining the photo: *"Scientists use the photographic negatives, rather than the finished prints, to study the rays. Bars across the picture are lead bars in the chamber apparatus. The ray paths leave white marks resembling scratches across the negative."*
$100 - 150

117¤
V-2 ROCKET.
2 strips of positive film reproducing photographs taken by a V-2 rocket, launched from White Sands, NM, April 5, 1950, one strip being 35 mm format, the other 16 mm, each with the same approximately 67 frames, headed by a title card reading *"Cameraman: Goerg* [sic] | *Date: April 5, 1950 ... 'Trip to the Moon,'"* geographical features labeled in the image, contained together in metal canister, lid with pasted-on label reading *"V-2 Aerial Photos." Provenance:* Frederick C. Durant, III.

The first V-2 launch in the US took place in April 17 of 1946. A rocket launched later that year contained a motion picture camera in its nose cone, which took a frame every second and a half. That rocket took the first image of Earth from beyond the atmosphere, and an article in the October, 1950 issue of *National Geographic* published V-2 shots showing "how our Earth would look to visitors from another planet coming in on a space ship."
$200 - 300

120 (part)


121

118¤
SPUTNIK.
A small archive of photographs and documents relating to US observations of Sputnik satellites, 1957, comprising: 8 photographs of Sputniks 1 and 2, gelatin silver prints, 8 x 10½ inches (200 x 265 mm); a mimeographed inter-office memo from Floyd W. Stoller, 1 p, 4to, JPL, November 22, 1957, referencing the photographs and giving relative asimuths and elevations of Soviet *"Satellites Alpha I and Beta ... as photographed by the JPL Contraves Cine-theodolite Installation,"* many pencil annotations; a mimeographed report by Paul E. Sandorff, Associate Professor, Aeronautical Engineering, Massachusetts Institute of Technology, entitled *"A Study of the Soviet Satellite Program,"* 8 pp, 4to, with transmittal notes from J.C. Hunsaker of MIT (December 17, 1957), from P.E.H. Leroy to Knowles, and from Knowles onwards (December 20, 1957) apparently to H.L. Flowers (January 2, 1958).
Provenance: Albert R. Hibbs.

PERIOD PHOTOGRAPHS OF THE FIRST ARTIFICIAL EARTH SATELLITE.
Sputnik 1, referred to by US authorities as "1957 Alpha I," went into orbit on October 4, 1957. Sputnik 2, "1957 Beta," carrying the dog Laika, was launched on November 3. JPL was involved in tracking the two satellites, using a device known as a cinetheodolite.
$300 - 500

119
TAUB, WILLIAM PAUL. 1923-2010.
2 contact prints of the Mercury Seven, around April 9, 1959, gelatin silver prints, each 4 x 5 inches (100 x 125 mm), together on one 8 x 5-inch (200 x 250 mm) sheet.
Provenance: William Paul Taub.

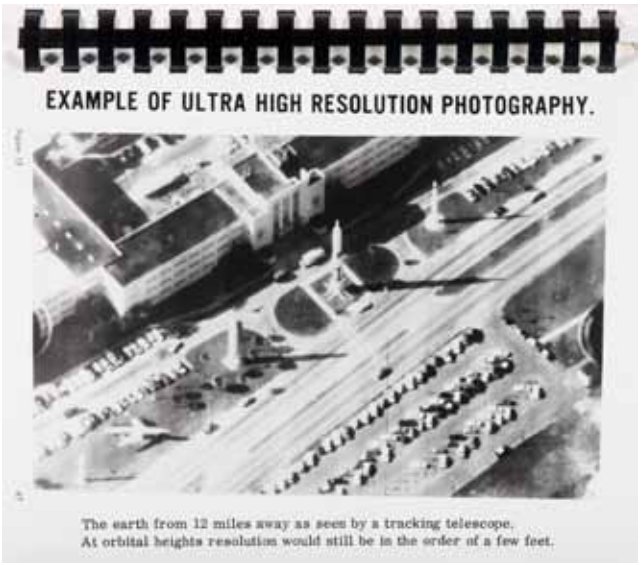
The original seven Project Mercury astronauts pose with an Atlas model, in unpublished out-takes from NASA's first publicity shoot for the Mercury Seven.
$1,500 - 2,000

120
TAUB, WILLIAM PAUL. 1923-2010.
A large group of photographs and contact sheets of Mercury-era NASA astronauts, c.1961, comprising 5 contact sheets of 2¼ x 2¼-inch roll film negatives, 7 contact sheets of 2¼ x 3½-inch (57 x 94 mm) negatives, and 13 contact sheets of 35 mm negatives, all gelatin silver prints on 8 x 10-inch (200 x 250 mm) sheets, together with 19 enlargements of individual images, gelatin silver prints, mostly 8 x 10 inches (200 x 250 mm) or slightly smaller.
Provenance: William Paul Taub.

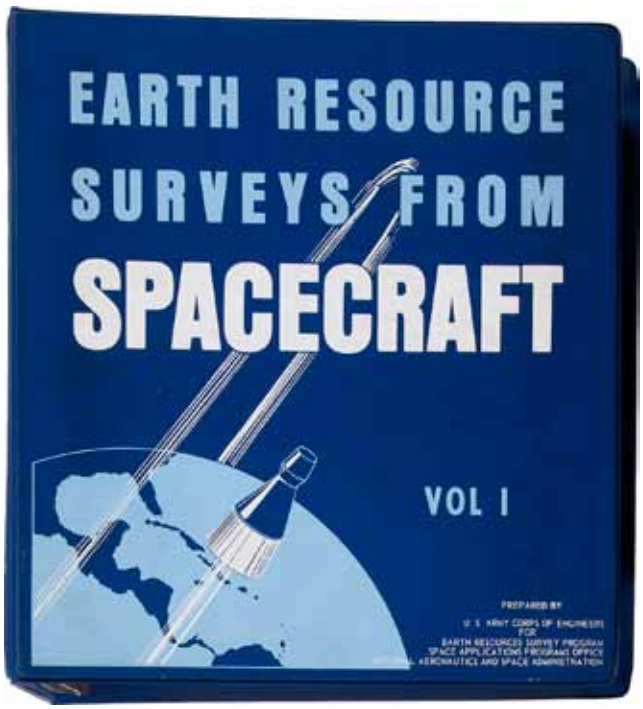
Bill Taub took nearly every official NASA picture of the Mercury, Gemini and Apollo astronauts from 1958 to 1975. Alan Shepard remarked, "we were really pioneering in so many ways, even the training exercises, there was tension—and I think Bill captured that" (quoted in obituary, *Washington Post*, March 14, 2010). Taub was often one of the last people to see the astronauts before liftoff, earning the nickname "Two More Taub" for his insistence, always, on snapping just a couple more shots. Images include: Gus Grissom and John Glenn inspecting the Mercury capsule; astronauts' dorm room; a smiley Alan Shepard; Mission Control including Gordon Cooper; trying out the space suit and couch; astronaut lunch time. With inevitable out-takes that were not publicly released by NASA, this group offers an unusual fly-on-the-wall insight.
$1,000 - 1,500

121¤
COSMONAUTS.
View upwards inside a Soviet radio antenna, signed by 30 cosmonauts and astronauts, 1962-1975, gelatin silver print mounted, 9½ x 11¾ inches (240 x 300 mm).

Includes signatures, some dated, of Gagarin, Titov, Nikolaev, Popovich, Leonov (twice), Tereshkova, and Stafford, Slayton and Brand (the crew of the joint Soviet-American Apollo-Soyuz Test Project).
$600 - 800



122



123

124 (part)

125

122□
US ARMY CORPS OF ENGINEERS.
Multisensor Imagery Collection. [Fort Belvoir, VA]: US Army Corps of Engineers for the Earth Resources Survey Program, Space Applications Programs, NASA, December, 1965.
4to (255 x 205 mm). vi, 207 pp. Illustrated with 53 gelatin silver and 24 chromogenic prints. Original spiral binding. Covers worn.
Provenance: Ira C. Bechtold, Consultant (inkstamp inside upper cover).

While the use of satellites for classified reconnaissance gave additional impetus to the US space program, those behind the classified activities were resistant to allowing civilian Earth observation. Nevertheless, in 1965, NASA started exploratory research on remote sensing of Earth resources, with contracts granted to the US Geological Survey and the Army Corps of Engineers for research using sensors flown in NASA aircraft (Mack p 237).
$500 - 700

123
WHITE, RICHARD A., editor.
Earth Resource Surveys from Spacecraft. Fort Belvoir, VA, and Houston, TX: US Army Corps of Engineers, and Earth Resources Group, NASA, February 15, 1967.
2 volumes. xliii, several accompanying caption pp. 69 gelatin silver and 119 chromogenic prints, many with transparent overlays. Punched, in original pictorial 18-ring binders. One leaf loose.
$800 - 1,200

124□
CONESTOGA I.
21 photographs of the Conestoga I launch, Matagorda Island, TX, September 9, 1982, gelatin silver prints, 5 x 7 inches (125 x 180 mm), together with media pass badge for Mark Chartrand of *Space World* magazine.

Documenting the launch of the first privately funded rocket to reach space. The company behind the launch was Space Services Incorporated of America, their rocket the *Conestoga.* After a test pad explosion on August 5, 1981, the company's CEO David Hannah, Jr., hired Deke Slayton, one of the original Mercury Seven astronauts, who had recently left NASA. 57 investors put up $6 million in total, and on September 9, 1982, a crowd of 200 spectators watched the new rocket reach an altitude of 313 km.
Images include: the rocket on its launch pad (7), launch site facilities, guests and staff members, Slayton speaking, SSIA founder Hannah.
$100 - 200

125
SHUTTLE STS-27.
Large format photograph of the south Persian Gulf, from the orbiting Shuttle Atlantis, December 2-6, 1988, chromogenic print on film, 61½ x 47¾ inches (1565 x 1210 mm) overall.

The mouths of both the Tigris and Euphrates Rivers can be seen, as can nearly all the country of Kuwait, in this image taken by a member of the crew with a hand-held camera. STS-27 deployed a classified surveillance satellite, Lacrosse 1, which was used during the first Gulf War.
$1,000 - 1,500

126
GALILEO.
The limb of the Earth, looking north past Antarctica, December 8, 1990, chromogenic print mounted, 24 x 12½ inches (610 x 320 mm).

This color picture is a mosaic of 11 images taken during a ten-minute period by Galileo's imaging system. The South Pole is out of sight below the picture; the visible areas of Antarctica are those lying generally south of South America. At lower left, the dark blue Amundsen Sea lies to the left of the Walgreen and Bakutis Coasts. Beyond it, Peter Island reacts with the winds to produce a striking pattern of atmospheric waves.
$1,200 - 1,800

Mars

127
FLAMMARION, CAMILLE. 1842-1925.
Globe géographique de la planète Mars d'après Camille Flammarion.
Paris: E. Bertaux, [1884].
Diameter 4¼ inches (110 mm). 12 lithographed gores and 2 polar calottes laid on a hollow plaster sphere, the equatorial and meridian graduated in degrees labelled in 10° intervals with no subdivisions, the cartography shaded with gray stippling and showing place names. With turned brass finial and lower fitting, raised on a turned ebonised wood column and circular plinth base. 220 mm high.

THE EARLIEST GLOBE BY FLAMMARION, published two years after the construction of his observatory at Juvisy just outside Paris. It is smaller than the more common 6-inch globe issued in the 1890s. As with all Mars maps published before the 1960s, this globe has Mars' south pole on the top, as this is the common way in which the planet is viewed in astronomical telescopes from the northern hemisphere.
$8,000 - 12,000


126

127

128

128
FLAMMARION, CAMILLE, AND EUGENE ANTONIADI.
Globe géographique de la planète Mars d'après CAMILLE FLAMMARION par E. Antoniadi. Paris: E. Bertaux, [c.1897].
Diameter 6 inches (1530 mm). 12 lithographed gores and 2 polar calottes laid on a hollow plaster sphere, the equatorial and meridian graduated in degrees labelled in 10° intervals with no subdivisions, the cartography shaded with gray stippling and showing place names, some with dates. With turned brass finial, raised on a simple turned and ebonised wood column and circular plinth base. 310 mm high.

Flammarion's 6-inch globe was published in Brussels in 1892 by Louis Niesten, in the present edition in around 1897, and again in 1903 in Berlin by H. Albrecht. Bertaux was a prolific manufacturer of globes. Eugène Michael Antoniadi [1870-1944] was born in Turkey, but spent most of his life in France, initially assisting Flammarion. He became an authority on Mars and the canal phenomemon, and published in 1930 his magnum opus, entitled *La planète Mars* (a signed and inscribed copy of which appears in the Ritchey archive, lot 15).
$5,000 - 7,000

129
BRUN, EMMY INGEBORG. 1872-1929.
[Inscription on base:] *Mars efter Lowell's Glober* [sic]. Denmark, c.1905-1909.
Diameter 8¼ inches (210 mm). In manuscript, ink and body color, varnished. Raised on a patinated bronze column and circular plinth base. Further inscriptions on base reading *"Free Land ° Free Trade ° Free Men; Thy will be done on earth, as it is in heaven."*
WITH: A photograph of Camille Flammarion with one hand raised, gelatin silver print, 7 x 5 inches (180 x 125 mm), stamped on verso *"H. Malorey, reproduction interdite,"* and captioned in pencil *"A Jurisy, la main de Camille Flammarion."*

A HAND-PAINTED GLOBE, MADE BY A DANISH LADY ASTRONOMER.
Ingeborg Brun was bed-ridden, and produced a small number of hand-painted Mars globes based on the work of the American astronomer Percival Lowell [1855-1916]. Inspired by the suggestion of the Milanese astronomer Giovanni Schiaparelli that there were artificial canals on the planet—an optical illusion, as it turned out—Lowell had studied Mars from his Flagstaff observatory, and published *Mars* (1895), *Mars and its Canals* (1906), and *Mars as the Abode of Life* (1908). "Free Land, Free Trade, Free Men" was a popular socialist slogan, inspired by the writings of the political economist Henry George; socialist utopians of the period hoped that Mars could be the ideal place for a new, free society.
Brun is known to have presented Flammarion with one of her globes, and it can be seen in the background of the photograph included in this lot. Fewer than ten of Brun's Mars globes appear to have been recorded.
$25,000 - 35,000

129

132 (part)

130

133

The Mariner Program

Of the ten Mariner probes launched between 1962 and 1973, seven carried cameras on board. Like Ranger, Surveyor, and Lunar Orbiter, the Mariner Program used a television-based imaging system.

130¤
MARINER IV.
A reel of magnetic tape containing photographic data returned by Mariner IV, July 15, 1965, Scotch brand, labeled *"CXCM25 Mariner 4 Picture Data Tape, 1 file, 19 pictures, line by line format, 1 picture = 102 lines (0-191), 1 line - 192 elements (11-202), 9 track 360 single precision real* [sic]," in plastic case, 295 mm diameter, 40 mm high.

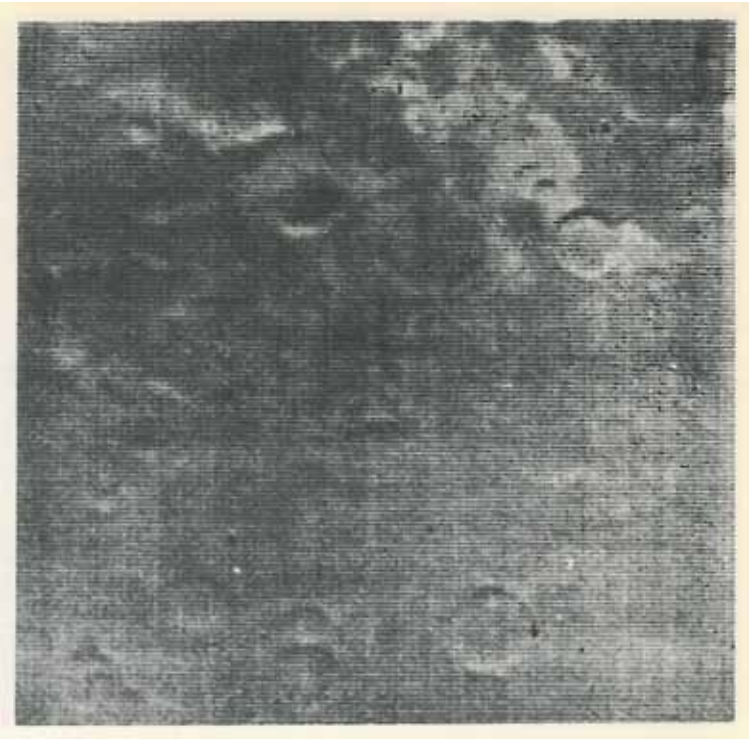
Mariner IV performed the first ever flyby of Mars, and returned the first close-up images of the planet's surface. 22 photographs were taken by Mariner IV's television camera, the data being stored on tape onboard the spacecraft while it was in the shadow of Mars. Once radio contact was reestablished, the data was transmitted back to Earth. The numerical data for each picture was recorded on standard 7-track ½-inch magnetic computer tape. Processing was performed on an IBM 360/75 computer, and the original tapes were written by standard IBM tape drives. Duplicate copies such as the present example were then made on 9-track tape.
$400 - 600

131¤
MARINER IV.
22 views of Mars, being every image captured by Mariner IV, July 14, 1965, gelatin silver prints, 8 x 10 inches (208 x 256 mm), printed captions taped to versos. Together with a JPL "DISCREET" interoffice memo, July 22, 1965, from W.H. Pickering, JPL Director, stating that *"There will be no further release of Mariner IV photographs until all photographs are processed into their final form,"* contained together in original envelope.
$300 - 400

132
MARINER IV.
Collection of approximately 46 bulletins, reports, and memoranda related to Mariner IV, including: 31 issues of JPL's *Mariner Mars Bulletin*; "Mariner 64 Encounter Playback Data," July 16, 1965; "Mariner Mars 1964 Handbook" (Technical Memorandum 33-265); "Mariner IV Handbook" (Technical Memorandum 33-406); "Mariner IV Pictures of Mars" (Technical Report 32-884); "The Voyage of Mariner IV" (Technical Report 32-958). For a full listing, please download the condition report for this lot from bonhams.com/20830.
$800 - 1,200

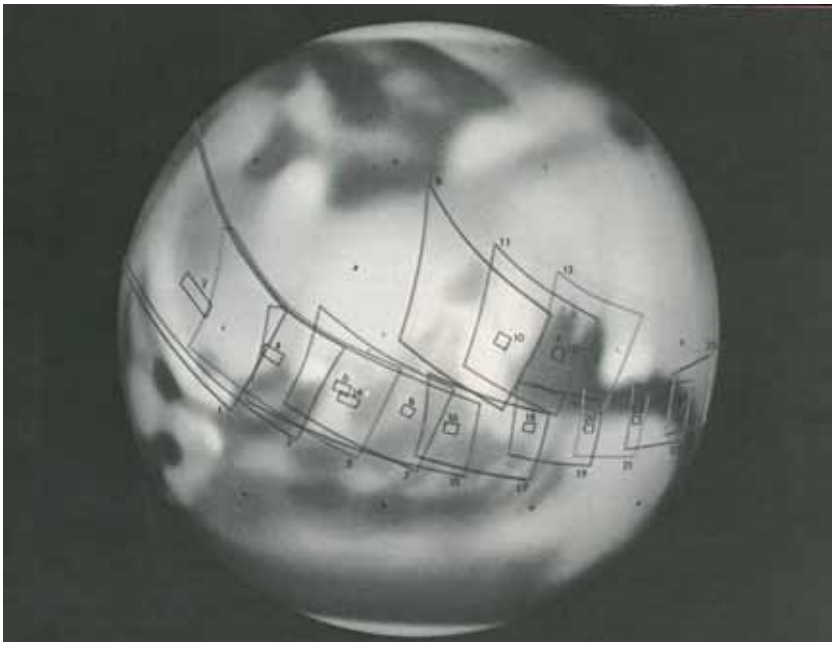
133
MARS SCIENTIFIC MODEL.
Mars Scientific Model. JPL Document No. 606-1. Pasadena, CA: JPL, July 15, 1968.
4to. Several folding plates, some printed in color with transparent overlays. 2 folding charts in pocket at front. Tabbed, punched, and in original vinyl 3-ring binder.

"Our aim in this document is to present an up-to-date scientific model of the planet Mars, with data values, limitations and sources, and with a limited amount of interpretation where appropriate" (Preface). The title on the binder states *"Volume 1,"* but the work appears complete and we have not been able to locate a second volume in institutions.
$800 - 1,200

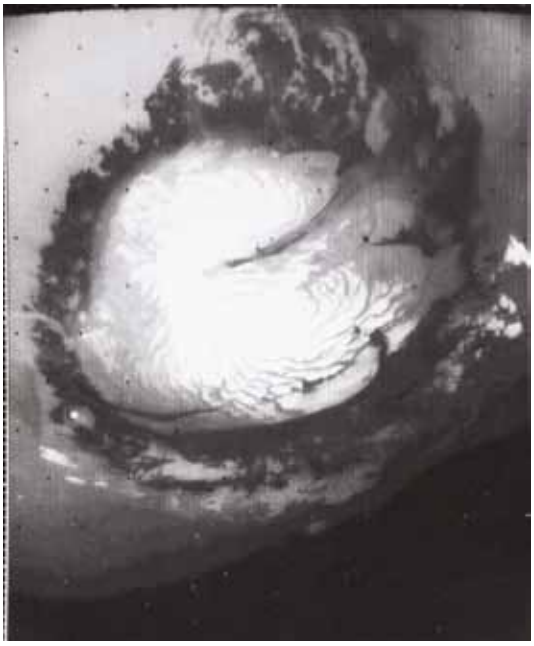


131 (part)

135



134 (part)

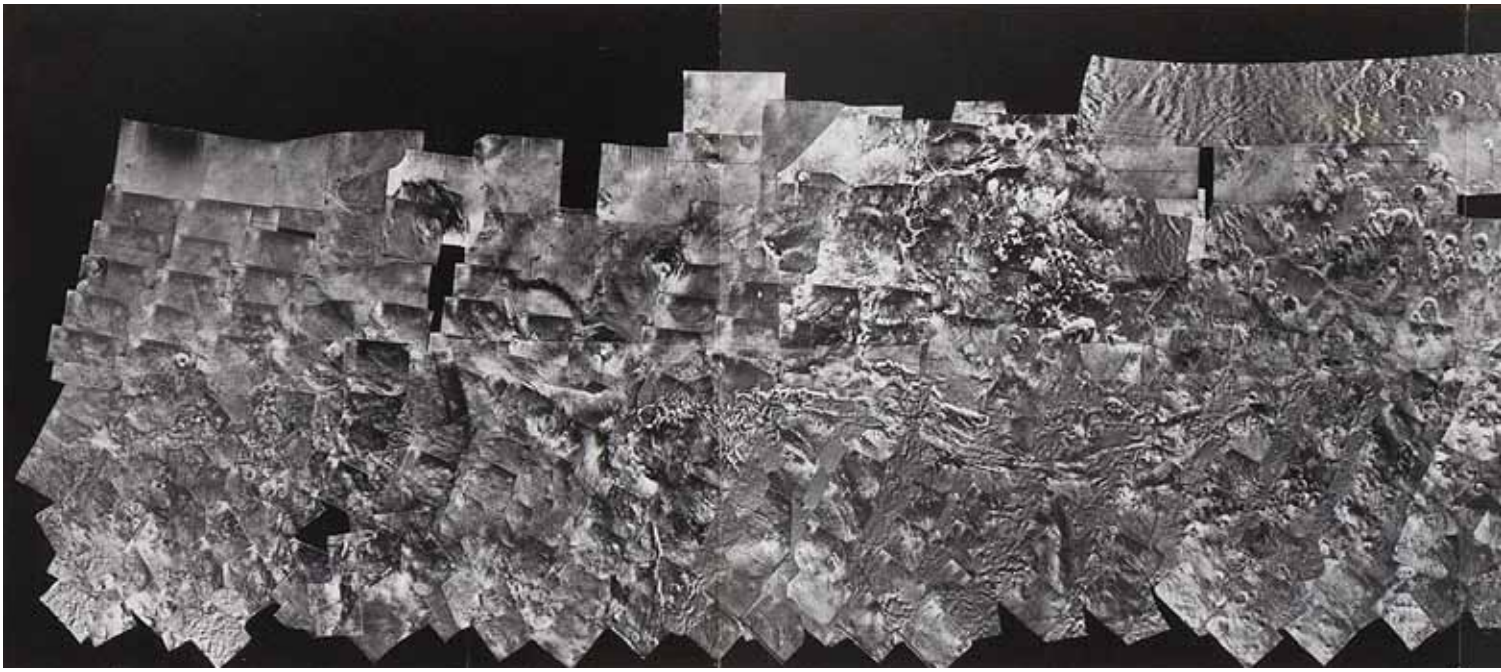


135

134□
MARINER VI & VII.
Collection of approximately 60 bulletins, reports, and memoranda related to Mariners VI and VII, including: 30 issues of JPL's *Mariner Mars Bulletin*; approximately a dozen 1967-1971 articles, memoranda, etc. sent by Charles F. Capen of JPL's Table Mountain Observatory to Robert Steinbacher, pertaining to Mars observations; Campbell, "Mariner Mars 1969, Simulated TV Pictures (Final)"; NASA Special Publications 225 and 263; National Space Science Data Center, "Mariner 6 and 7 Photographic Data, Data Users' Note." For a full listing, please download the condition report for this lot from bonhams.com/20830.
$500 - 700

135
MARINER IX.
2 views of the north pole of Mars, around October 12, 1972, gelatin silver prints mounted, 20 x 24 inches (505 x 610 mm).
Provenance: Robert H. Steinbacher.

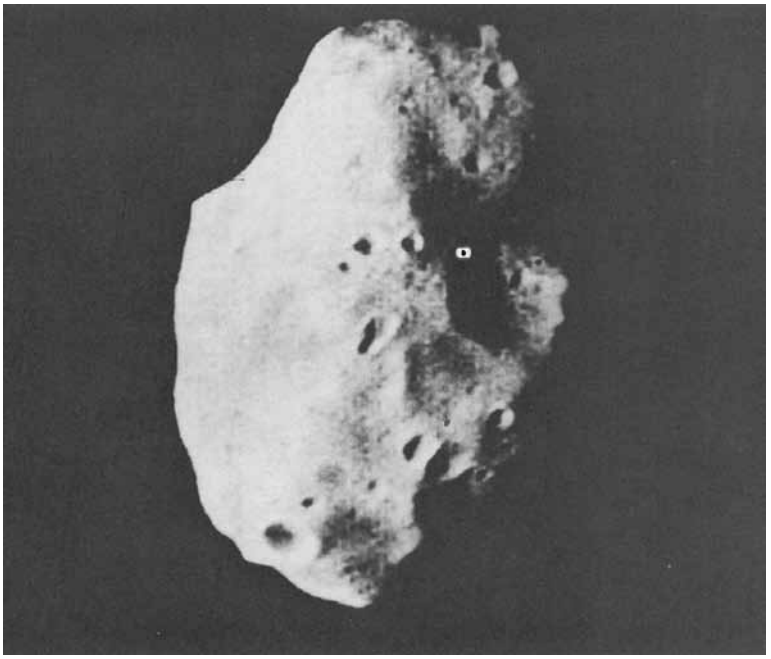
Mariner 9 images revealed the north polar cap, composed of water and carbon dioxide ice.
$2,000 - 3,000



136

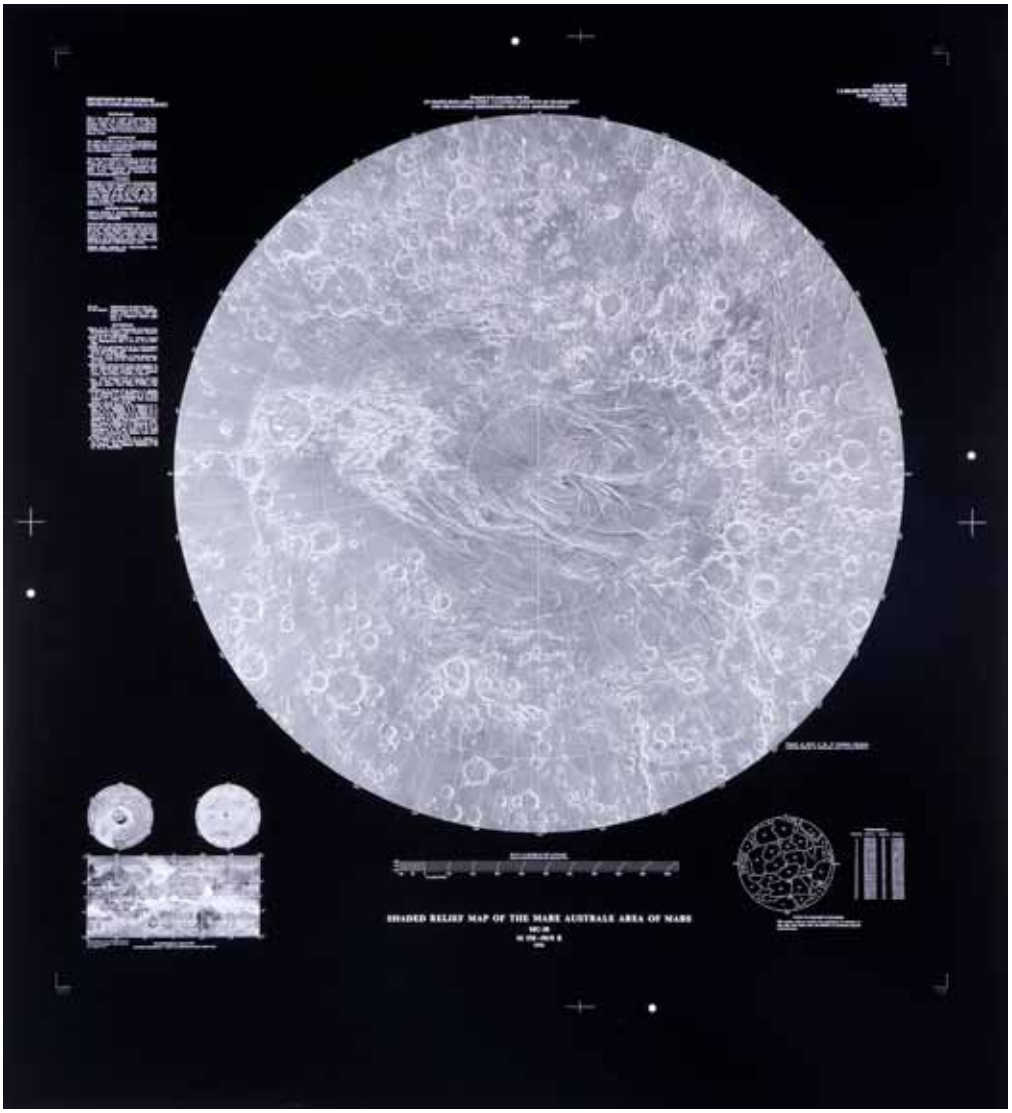
136
MARINER IX.
The equatorial belt of Mars, with Olympus Mons visible towards the upper left, November 14, 1971-October 27, 1972, 4 gelatin silver prints of a hand mosaic, mounted together, 17¾ x 80 inches (450 x 2020 mm), framed.
Provenance: Robert H. Steinbacher.

PHOTOGRAPH OF A MOSAIC INCLUDING THE AREA BEING EXPLORED BY THE CURIOSITY ROVER. The image shows a belt completely encircling Mars, and covering about half of the planet's surface. Gale Crater, where the Curiosity rover landed, is towards one corner.
$25,000 - 35,000



137 (part)

138



139

140

137
MARINER IX.
Large collection of approximately 180 volumes, documents, periodicals and memoranda related to Mariner IX, some being rare internally-circulated items from JPL, including: binder of 7 Mariner 1971 Project Principal Investigator Memoranda of Agreement; R.H. Steinbacher, "Science Management Plan," Project Scientist Steinbacher's working copy with manuscript notes; *Tracking and Data System Support*, 4 volumes; *Television Picture Catalog*, 2 volumes; *Project Final Report*, 5 volumes; minutes of 2 Mars Planning Coordinating Group meetings; 48 *Status Bulletins*; 2 folders of manuscript notes by Steinbacher and printed memoranda and lists; "Wind Tunnel Studies of Martian Aeolian Processes," May 1973; NASA Special Publications 239, 337; approximately 48 published journals, reports, and offprints.
$2,500 - 3,500

138
DENOYER-GEPPERT.
[Label on base:] *Visual-Relief Mariner 9 Mars Globe.* Chicago, IL: Denoyer-Geppert Co., 1973.
Diameter 16 inches (406 mm). Color lithographed globe. Simple wood base. With original printed booklet and plastic wrapping.
Provenance: Robert H. Steinbacher.

Produced by J. Inge of USGS, based on data provided by JPL. The first edition to incorporate Mariner IX imagery.
$600 - 800

139
US GEOLOGICAL SURVEY.
A set of 31 large film negatives probably used in the offset printing of the USGS's *Atlas of Mars,* published in 1976, being shaded relief and *"controlled photomosaic"* negatives, various sizes, most approximately 940 x 800 mm, together with several smaller negatives or parts of negatives.

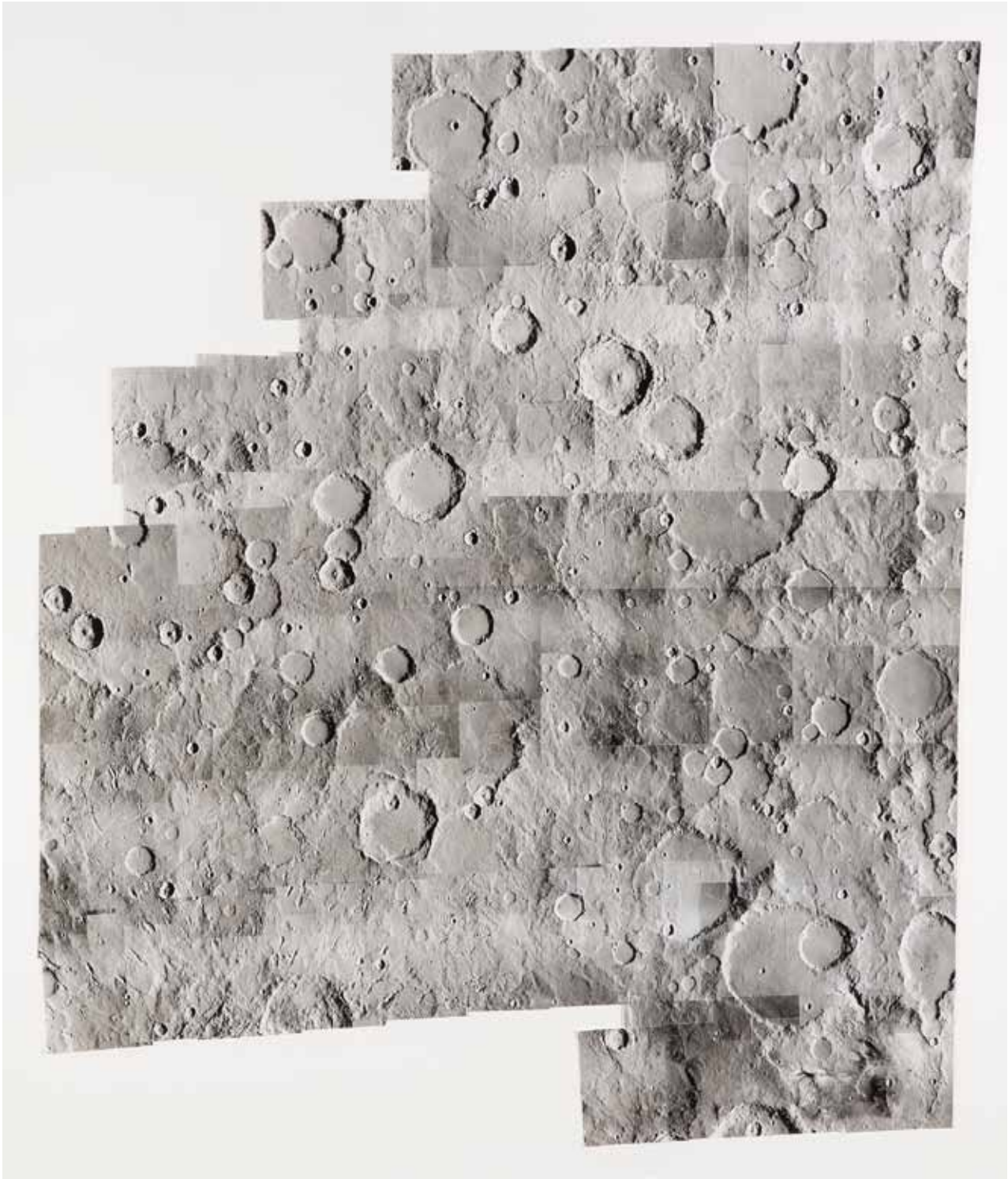
The *Atlas of Mars* consisted of topographic and geologic maps derived primarily from data returned by Mariner IX in 1972. The maps were published at four scales: single-sheet maps cover the entire planet at 1: 25,000,000; a set of quadrangles covers the entire planet at 1: 5,000,000; and several sheets at 1: 1,000,000 and 1: 250,000 were made of selected areas for special studies.
$3,000 - 5,000

The Viking Program

Running from 1976 to 1982, the Viking Program involved two probes, each of which was composed of two parts: an orbiter and a lander. The orbiters each carried two television cameras; acquisition and storage of each frame took nine seconds, so a frame was captured on alternate cameras every four and a half seconds. This alternating pattern, coupled with motion along the orbit, combined to produce a swath of pictures (noticeable in lot 144, for example). The images were recorded onto magnetic tape on board the orbiter until there was an opportunity to transmit the data to a receiving station on Earth. Similarly, each lander had two cameras mounted thirty inches apart and thus capable of producing stereoscopic images.

140
VIKING I LANDER.
Panorama of Chryse Planitia, July 23, 1976, gelatin silver print on textured paper, laid over board, image 220 x 970 mm, sheet 380 x 1010 mm, framed.

This image was taken three days after Viking I landed. The meteorology boom is at the center of the image and to the left is the support for the high-gain dish antenna. The dark rock at the center of the frame, nicknamed "Big Joe," is about 3 meters across and 8 meters from the Lander.
Exhibited: Cosmos: from Romanticism to the Avant-Garde, Palazzo Grassi, Venice, March 25 to July 23, 2000.
Illustrated: Clair p 243.
$6,000 - 8,000



141

141
VIKING ORBITER.
Hand mosaic of Memnonia quadrangle, c.1978, 123 silver gelatin prints mounted, 29¼ x 35¼ inches (745 x 895 mm) overall, matted and framed.

A DETAILED HAND-MADE PHOTOGRAPHIC COLLAGE OF THE MARTIAN SURFACE. Memnonia, a highly cratered highland region, includes Arcadia Planitia, Amazonis Planitia, Lucus Planum, Terra Sirenum, and Terra Cimmeria. Recently, evidence of water was found in the area.
$20,000 - 25,000

142

143

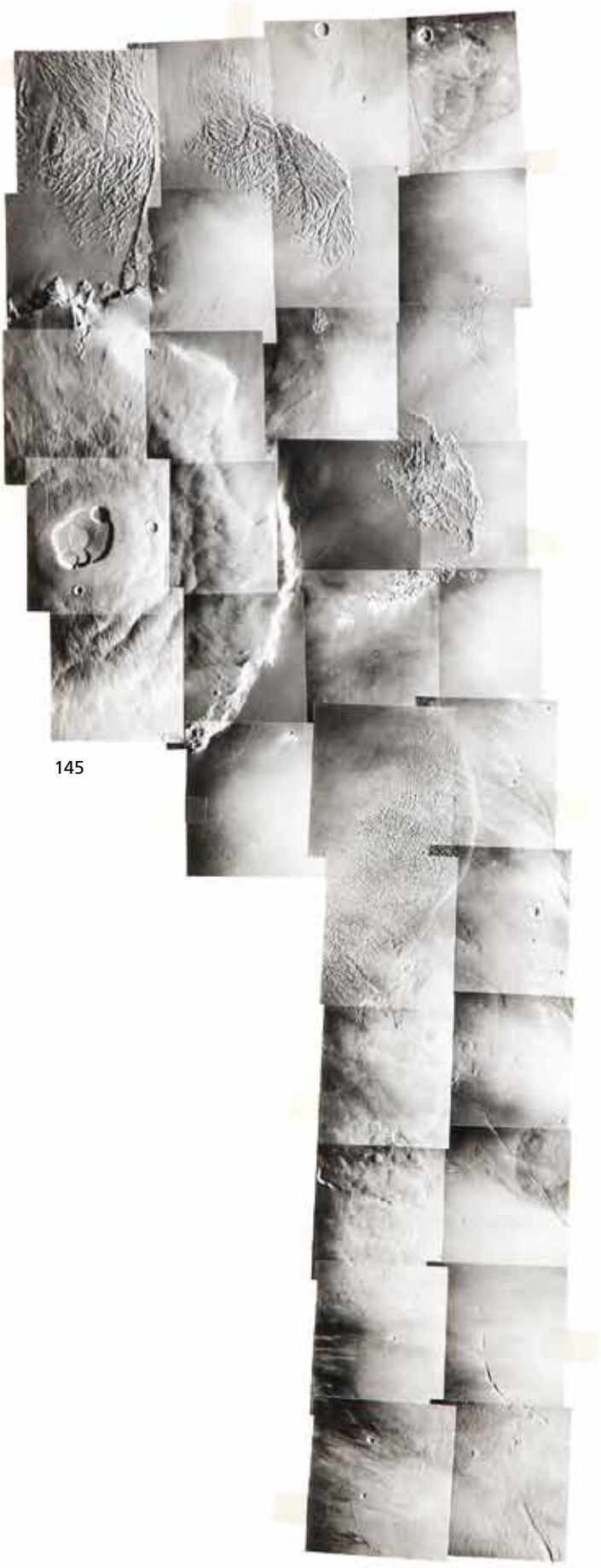
142
VIKING ORBITER.
Hand mosaic of an overview of the caldera of Olympus Mons, c.1979, 20 gelatin silver prints mounted, 15¼ x 7¼ inches (385 x 185 mm) overall.
$4,000 - 6,000

143
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 70 gelatin silver prints mounted, 11¾ x 52 inches (300 x 1320 mm) overall.
$10,000 - 15,000

144

144
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 47 gelatin silver prints mounted, 7¾ x 63¼ inches (195 x 1610 mm) overall.
$10,000 - 12,000

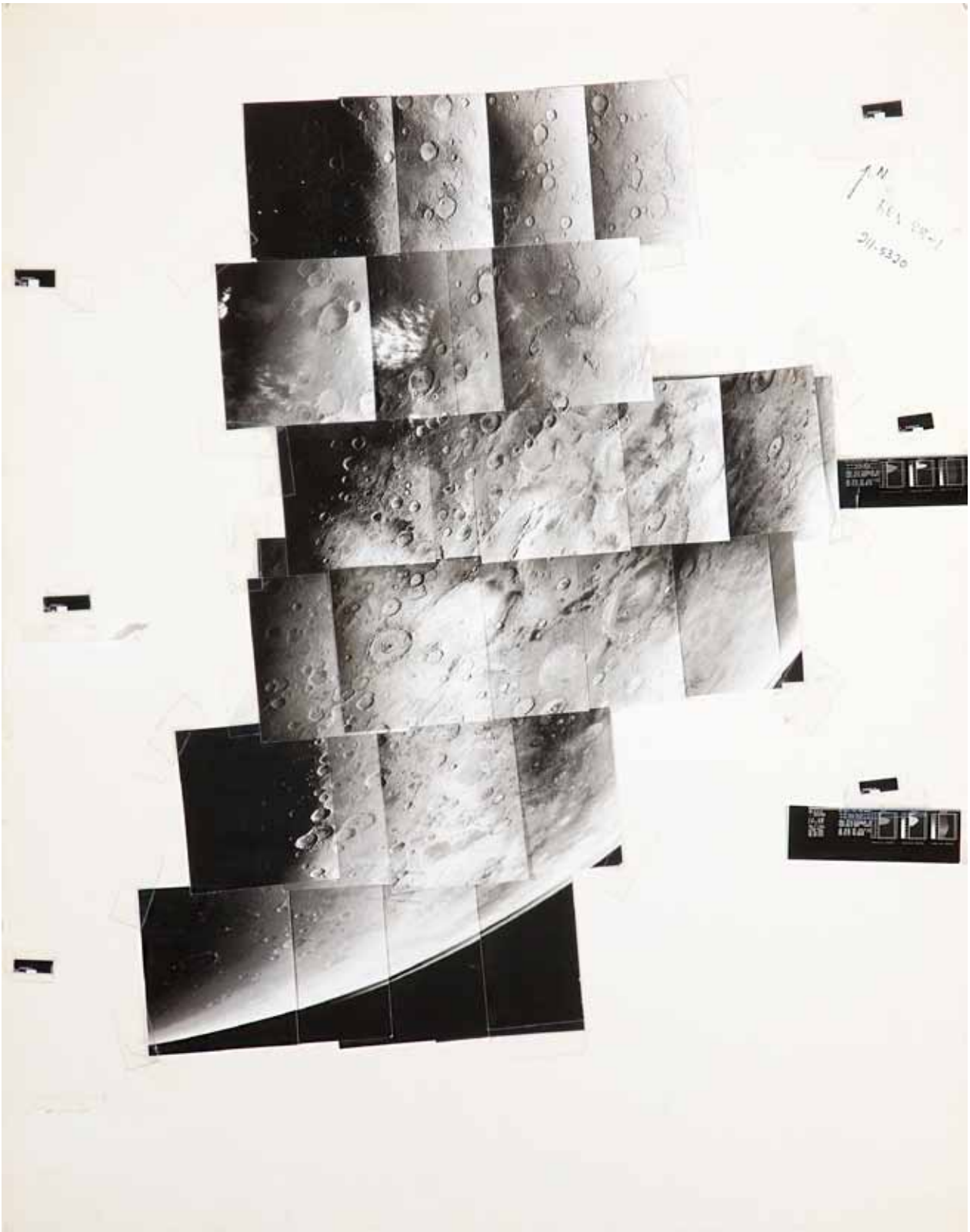
145
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 33 gelatin silver prints mounted, 14 x 36½ inches (360 x 925 mm) overall.
$8,000 - 12,000



145

146

146
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 45 gelatin silver prints mounted, 7½ x 50¼ inches (190 x 1280 mm) overall.
$8,000 - 10,000

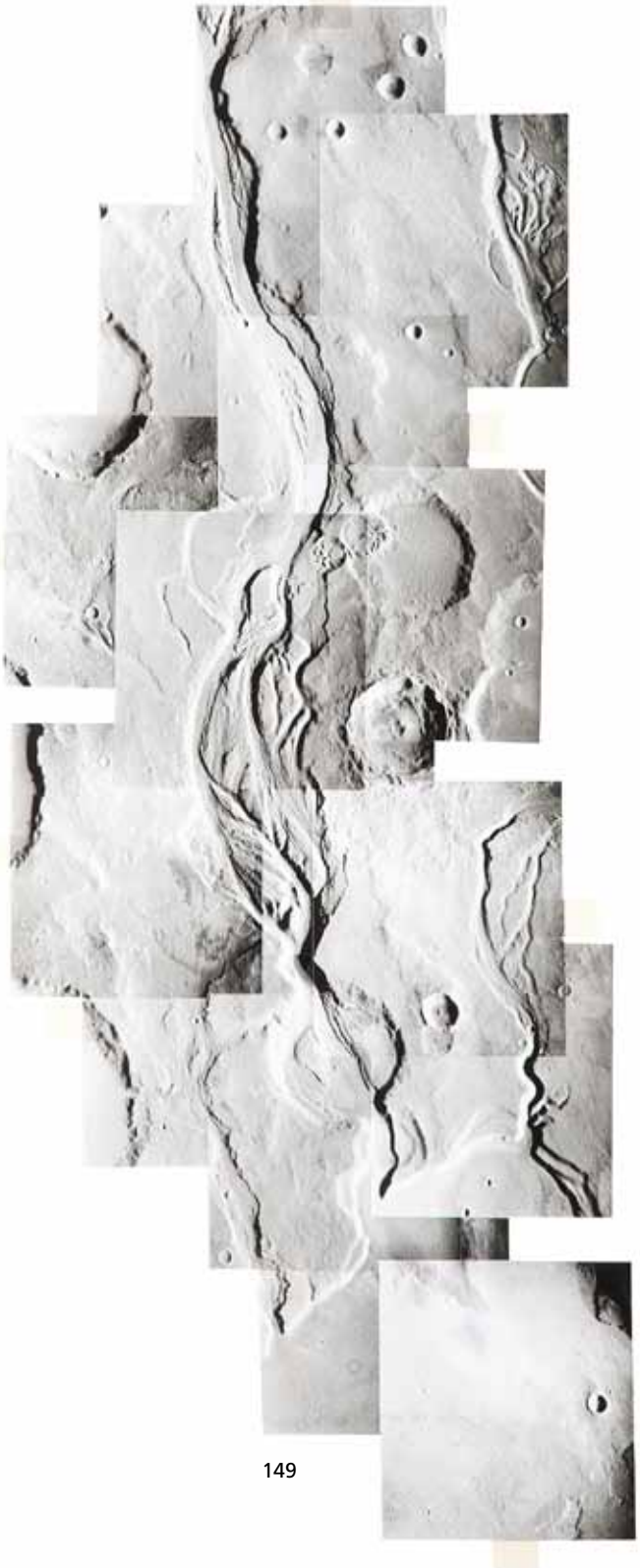


147

147
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 28 gelatin silver prints mounted, 16 x 21½ inches (410 x 550 mm) overall, mounted, together with an 8 x 10 inch gelatin silver print of the hand mosaic.
$8,000 - 12,000

148

148
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 48 gelatin silver prints mounted, 9¾ x 56¼ inches (250 x 1430 mm) overall.
$8,000 - 10,000

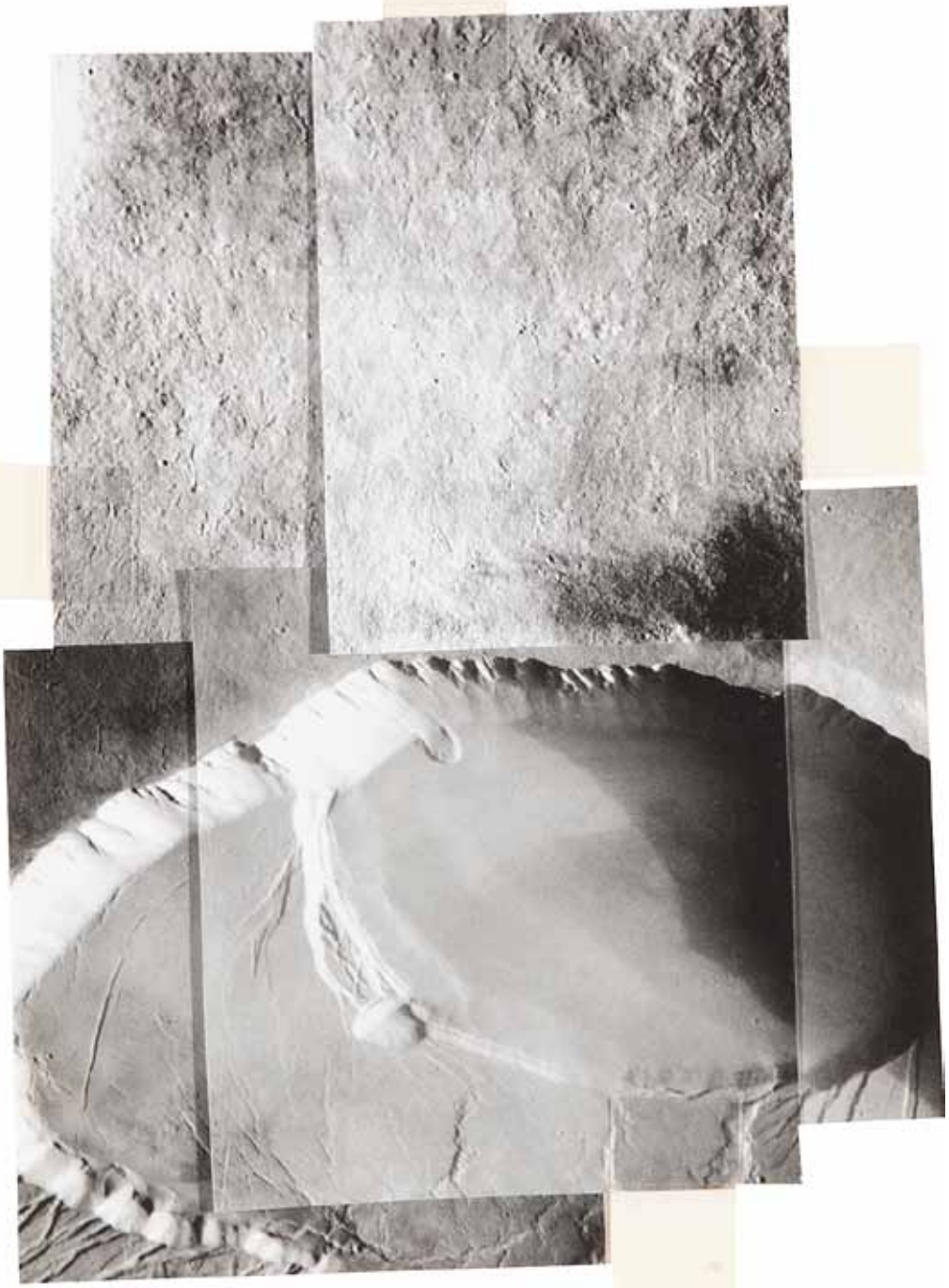


149

150

149
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 15 gelatin silver prints mounted, 13 x 31¾ inches (330 x 805 mm) overall.
$7,000 - 9,000

150
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 10 gelatin silver prints mounted, 6 x 18 inches (155 x 460 mm) overall.
$5,000 - 7,000



151

152

151
VIKING ORBITER.
Hand mosaic of the caldera of Olympus Mons, c.1979, 5 gelatin silver prints mounted, 7½ x 5½ inches (190 x 140 mm) overall.

Olympus Mons at two and a half times the height of Mount Everest is the tallest structure in the solar system.
$1,500 - 2,000

152
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 9 gelatin silver prints mounted, 3½ x 27¼ inches (90 x 695 mm) overall.
$5,000 - 7,000

153

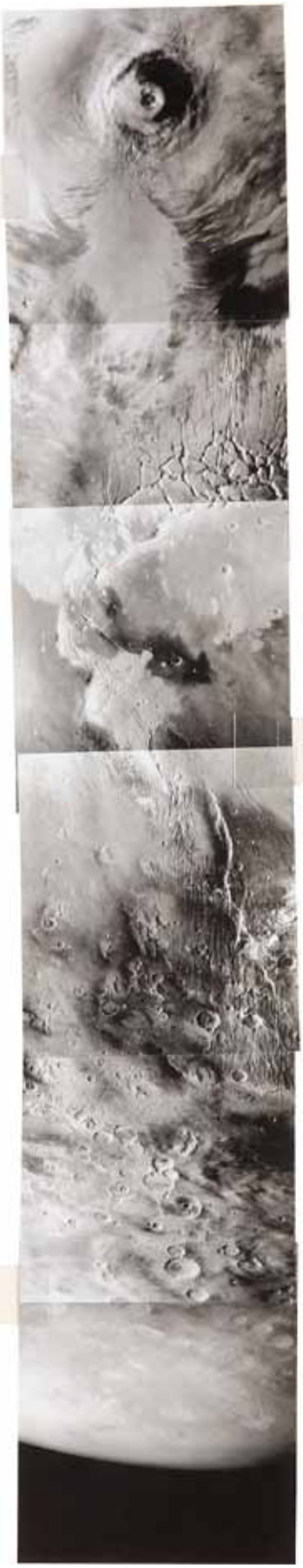
154

153
VIKING ORBITER.
Hand mosaic of the Martian polar cap, c.1979, 12 gelatin silver prints mounted, 7½ x 18 inches (190 x 460 mm) overall.
$6,000 - 8,000

154
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 6 gelatin silver prints mounted, 3¼ x 19 inches (85 x 485 mm) overall.
$3,000 - 5,000

155

157



156

159

159

158 (part)

159

155
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 6 gelatin silver prints mounted, 7¼ x 8½ inches (185 x 220 mm) overall.
$1,500 - 2,000

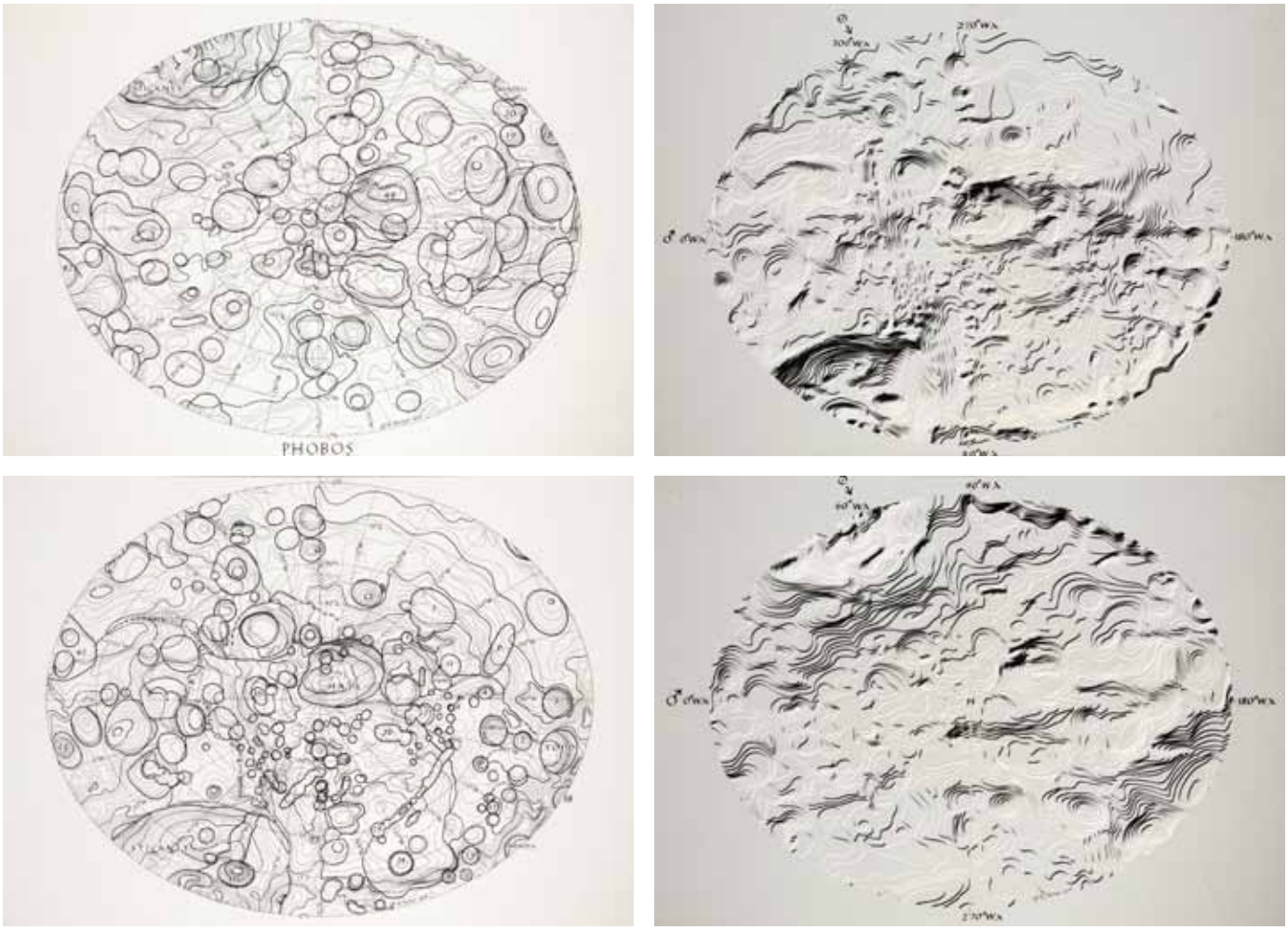
156
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 6 gelatin silver prints mounted, 3¼ x 18¾ inches (85 x 480 mm) overall.
$3,000 - 5,000

157
VIKING ORBITER.
Hand mosaic of Mars, c.1979, 8 gelatin silver prints mounted, 6¾ x 10½ inches (175 x 270 mm) overall.
$1,500 - 2,000

158
VIKING.
Collection of approximately 180 volumes, documents, bulletins, newspapers, and memoranda related to Viking missions, including: G.P. Wood, "Selection of a Site for a 1976 Unmanned Landing on Mars," November 9, 1970; 86 issues of the *Viking Science Newsletter*; 31 issues of the *Mission Operations Status Bulletin*; NASA Special Publications 334, 408, 425, and 441; *Viking Mosaic Catalog*, 2 volumes; *Viking Lander Atlas of Mars*; USGS "Rectified Mosaics" from Viking Landers 1 and 2, 35 sheets; several press releases and ephemera from Martin Marietta and TRW Systems; 11 sundry periodicals and books. For a full listing, please download the condition report for this lot from bonhams.com/20830.
$2,000 - 3,000

159
TURNER, RALPH. B.1935.
4 models of the Martian moon Phobos at different stages of development, Sheridan, OR, c.1976-1978, comprising:
1. Initial tri-axial ellipsoid, the surface white with triangular grid in black lines, with raised wire mesh suspended over part of the model, and transparent plastic overlay.
2. Topographically accurate model, gray, with lines of latitude and longitude and features labeled in black.
3. Another model similar to the above, but unmarked.
4. The finalized model, correct in topography and color.
Various media including fiberglass, resin, plaster, paint. Dimensions irregular but around 380-440 mm. Scale 1:60,000.

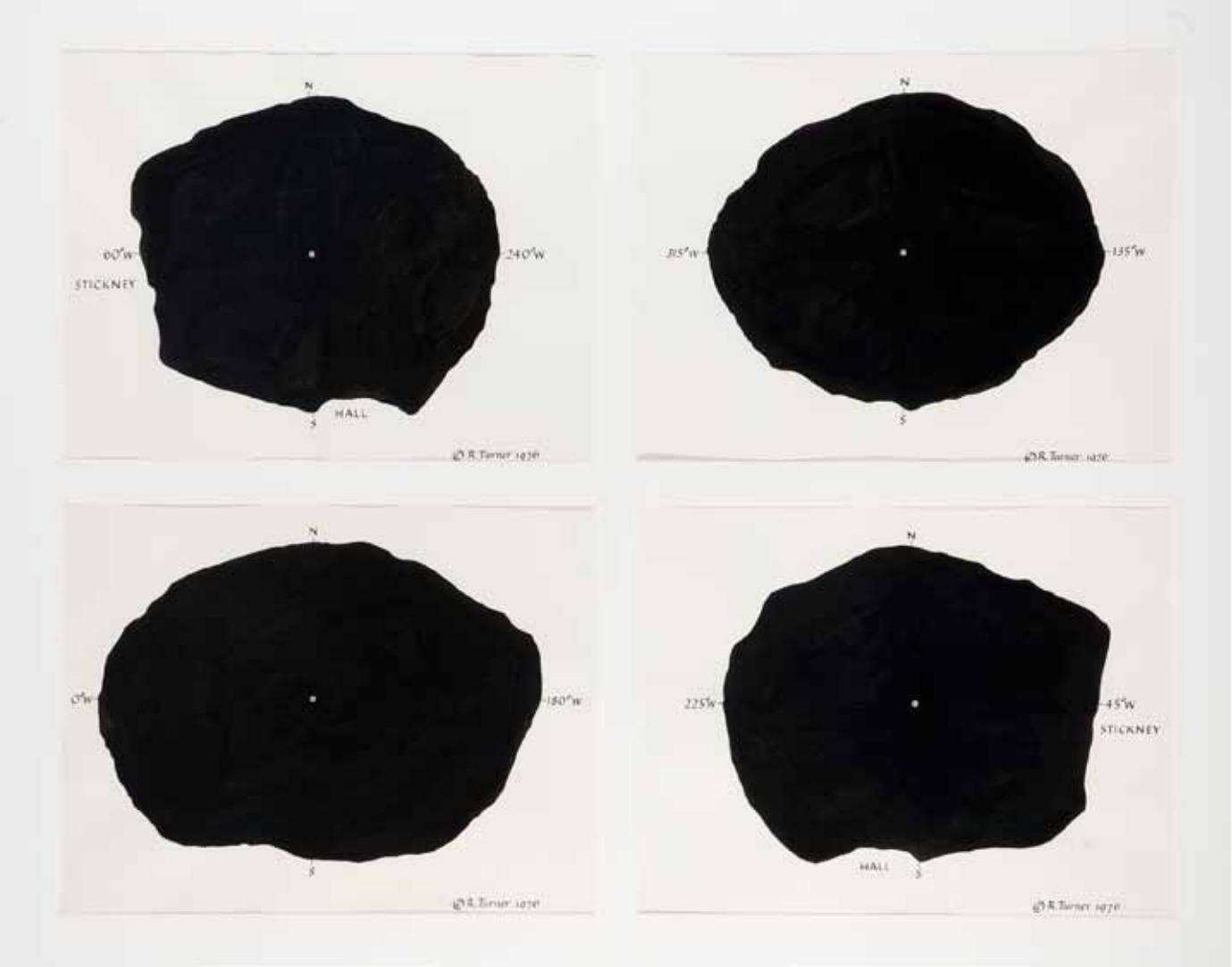
"My scale model of Phobos, developed using the special analog lighting system developed at the [Lunar and Planetary] Lab remains the only serious model of that celestial body. The work was published in *Icarus* in 1978 and several casts were sold internationally, including Japan and Germany as well as nationally. This activity changed my outlook on the future, on what was art, and encouraged me to pursue science to some extent" (biography on fineartamerica.com). The model is based on photographs from Mariner IX. A total of ten casts of the final version were made in plaster, among which were two for JPL, one for the Smithsonian Institute, one for Cornell University, and some for private persons such as Carl Sagan (Corneille p 192).
Illustrated: Turner 1978; *Register-Guard*, Eugene, OR, July 21, 1977, p 3D; Corneille p 193.
$4,000 - 6,000



160

160
TURNER, RALPH. B.1935.
4 large calligraphic renderings of Phobos's northern and southern hemispheres, probably Sheridan, OR, 1976, 2 being contour diagrams, and 2 being shaded contour diagrams, ink and white gouache, each on 2 joined sheets of acetate, overall 1000 x 1500 mm to 1060 x 1440 mm, signed *"R. Turner, 1976,"* framed.

Phobos is the larger and closer of the two natural satellites of Mars, and was discovered in 1877. Turner has a degree in calligraphy from Reed College in Oregon. These were the first accurate cartographic depictions of Phobos.
$20,000 - 30,000

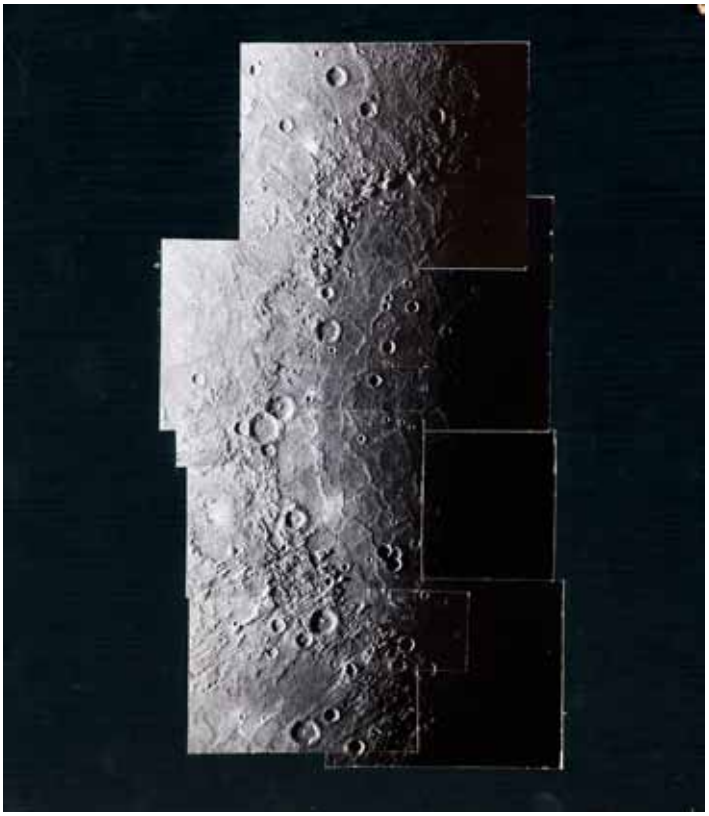


161

161
TURNER, RALPH. B.1935.
4 cross-section silhouettes of Phobos, Sheridan, OR, 1976, ink on paper, each approximately 400 x 500 mm, signed and dated lower right *"R. Turner, 1976,"* framed together.

Silhouettes taken directly from Turner's Phobos model.
$3,000 - 4,000

163



164

162

165 (part)

162¤
TURNER, RALPH. B.1935.
Model of a section of Olympus Mons, probably Tucson, AZ, 1989, painted resin mounted on hollow lucite base, initialed and dated on one face, 450 x 350 x 215 mm high at highest point.
$400 - 600

Mercury

163
MARINER X.
Hand mosaic of Mercury, 1974, 5 gelatin silver prints, 5¾ x 9½ inches (145 x 240 mm) mounted together with gelatin silver print of a hand mosaic of spectrograph data, 5½ x 9½ inches (140 x 240 mm).
$800 - 1,200

164
MARINER X.
Hand mosaic of Caloris Basin, April 17, 1974, 12 gelatin silver prints mounted, 20 x 11¾ inches (510 x 300 mm) overall, gelatin silver print of graphs and data pasted on verso.

Caloris Basin is the most prominent feature discovered on Mercury.
$1,500 - 2,000

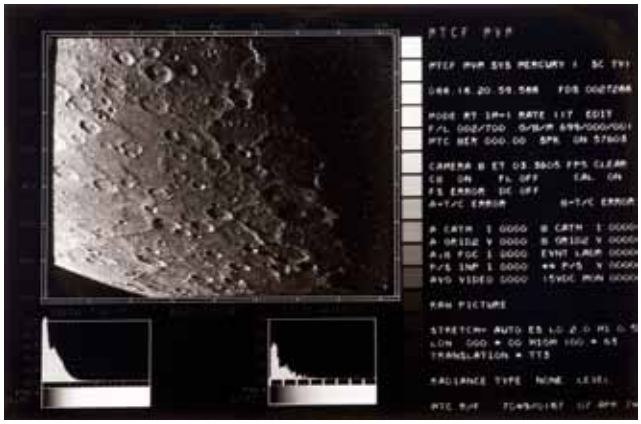
165
MARINER X.
3 photographs of hand mosaics of Mercury, including 2 of limbs, March 29, 1974-March 16, 1975, gelatin silver prints on acetate, each 16 x 20 inches (405 x 510 mm) overall.
$700 - 900

166¤
MARINER X.
Data package assembled by the Imaging Science Team at JPL, March 17, 1975, comprising: introductory letter from Stephen E. Dwornik, Chief, Planetology Program, Office of Space Science, NASA (*"Dear Colleague: I was thumbing through these pictures and I thought back to how much we know about a planet which was only a fuzzy disc in a telescope two years ago"*); photocopied explanatory essay and list of Geometric Parameters, 10 ll, recto only; "Acquisition and Description of Mariner 10 Television Science Data at Mercury," printed article by Danielson, Klaasen and Anderson, [ii], 26 ll, recto only; 36 printed reproductions of Mariner photographs, and diagrams; approximately 150 gelatin silver prints, each with image of Mercury and accompanying data. 4to. Punched, in original 3-ring binder with folding chart of Mercury tucked into lower cover. A few leaves bumped or with slightly ragged holes, binder discolored.
$500 - 700

167
MARINER X.
DAVIES, MERTON E., AND OTHERS. *Atlas of Mercury.* [Washington, DC?]: Office of Space Sciences, NASA, December 1976.
Oblong folio (280 x 340 mm). iv, [1], 19 pp, 100 gelatin silver prints numbered 20-120, [1], 121-127 pp. Punched and in original 12-ring cloth binder. Tear to upper margin of title, holes slightly ragged, binder lightly rubbed.
Provenance: Merton E. Davies.

"Of all the firsts, undoubtedly the outstanding achievement of the Mariner 10 mission was the spectacular unveiling of the planet Mercury.... Using a narrow-angle television camera, it could take only postage-stamp-size pictures of the surface. But it could flash them back to Earth with such rapidity that it was possible to map the entire lighted portion of the planet with excellent resolution" (Robert S. Kraemer, introduction). Believed to be one of only 250 copies printed.
$1,500 - 2,500

168¤
MARINER.
10 reports and memoranda relating to Mariner Missions II, V and X to Mercury and Venus, comprising: "Radar Exploration of Venus," 1962; "4 Ways To Venus," in *Scientific American,* 1963; "Photochemical Problems of the Venus Atmosphere," 1963; "Mariner Mission to Venus," 1963; "Mariner-Venus 1962 Final Project Report," 1965; "Mariner V Handbook," 1968; "Return To Venus," 1968; "Mariner-Venus 1967, Final Project Report," 1971; "Mariner Venus-Mercury 1973 ... Encounters," 1976; "Mariner Venus-Mercury 1973 Project Final Report, Extended Mission," 1975. For full bibliographic details, please download the condition report for this lot from bonhams.com/20830.
$400 - 600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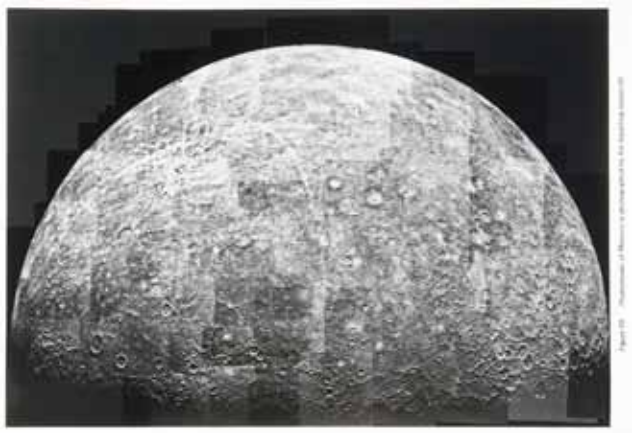
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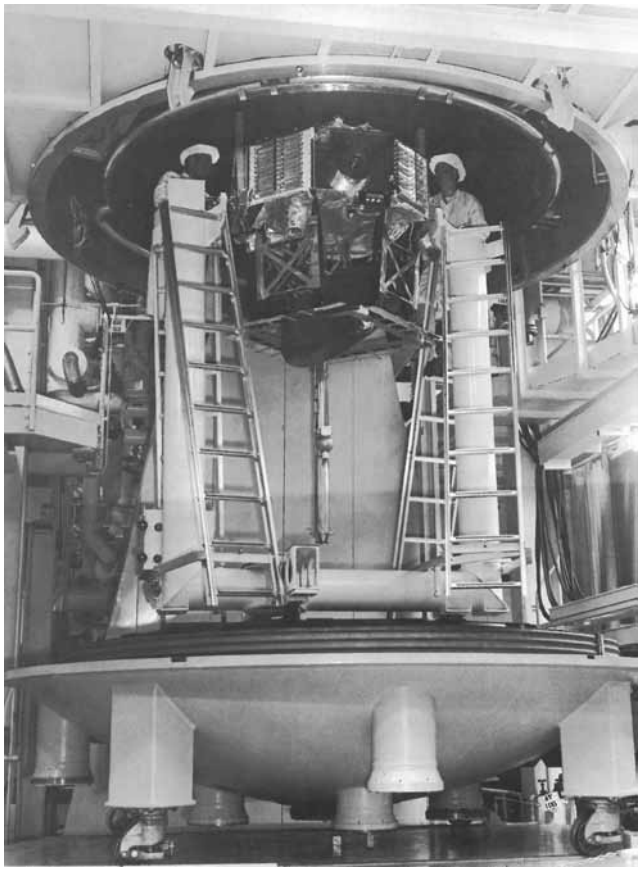
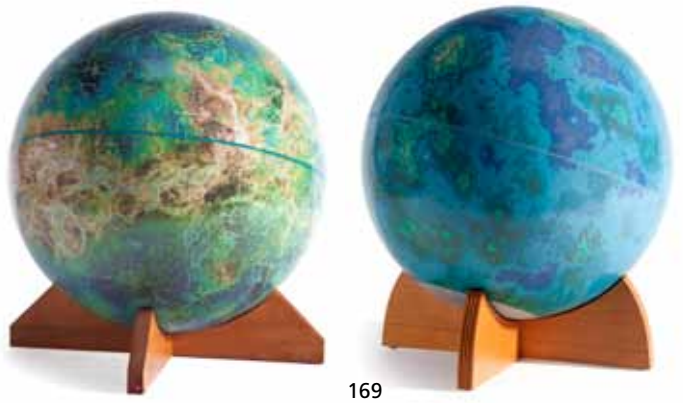
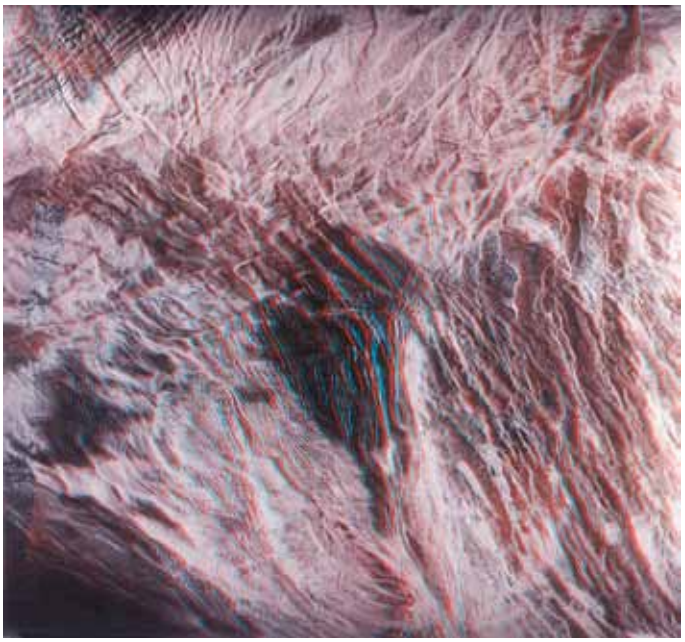

168 (part)

171



169



172

Venus

169¤
GLOBES—REPLOGLE.
2 editions of Replogle globes of Venus. Chicago, IL: Replogle, 1981 and 1995. Diameters 15¾ inches (400 mm) and 16 inches (405 mm). On wood bases. Printed caption pasted on bases.
$500 - 700

170¤
KOTELNIKOV, V.A., editor.
[In Russian:] *Atlas poverhnosti Venery.* [Atlas of the Surface of Venus.] Moscow: Head Office of the Geodesic and Cartographic Ministry, 1989. Folio (500 x 345 mm). 328 pp. Numerous color and monochrome illustrations including approximately 360 half-page reproductions of photographs of the surface. Original cloth, dust-jacket.
$50 - 70

171
MAGELLAN.
Radar image of volcanic "pancake" domes in Tinatin Planitia, September 15, 1990-September 13, 1992, gelatin silver print mounted, 23½ x 15¼ inches (600 x 385 mm).

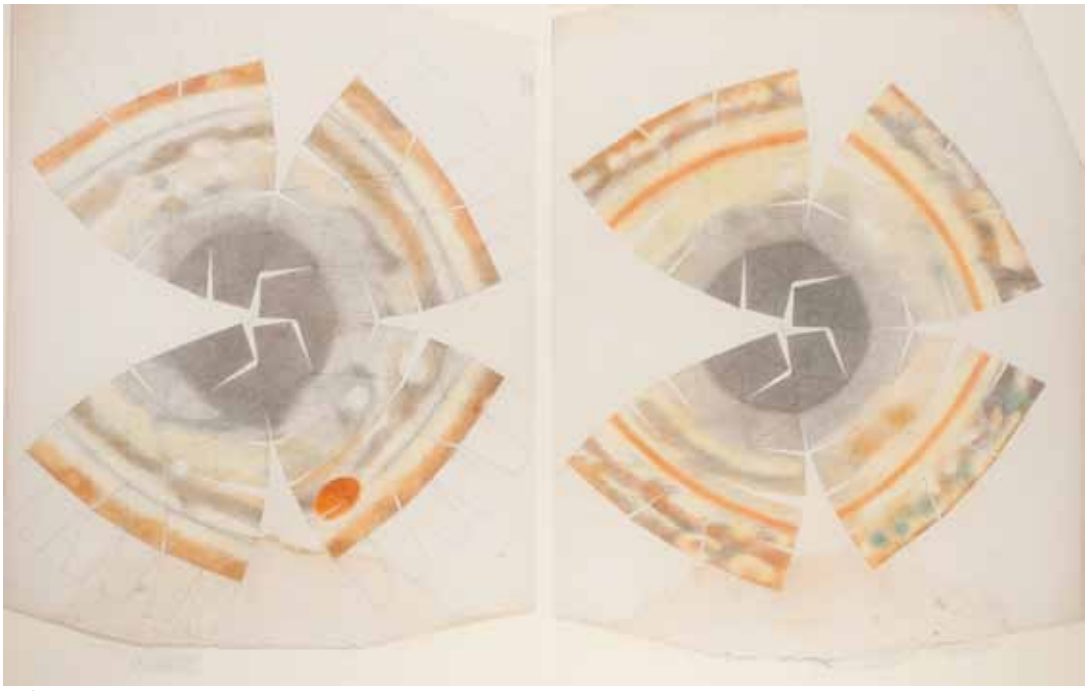
The Magellan spacecraft, also referred to as the Venus Radar Mapper, was launched by NASA on May 4, 1989, to map the surface of Venus using Synthetic Aperture Radar and to measure the planetary gravity. It was the first interplanetary mission to be launched from the Space Shuttle.
$1,000 - 1,500

172¤
MAGELLAN.
Large anaglyph (stereoscopic) view of the northwestern flank of Maxwell Montes, September 15, 1990-September 13, 1992, transparency on film, 47¾ x 47¾ inches (1215 x 1215 mm).

Maxwell Montes is roughly 12 km high and is the highest mountain range on Venus. The eastern flank of Maxwell Montes slopes gently, but the western flank, part of which is shown here, consists of a number of steep cliffs and dropoffs.
$300 - 500

174

174



173

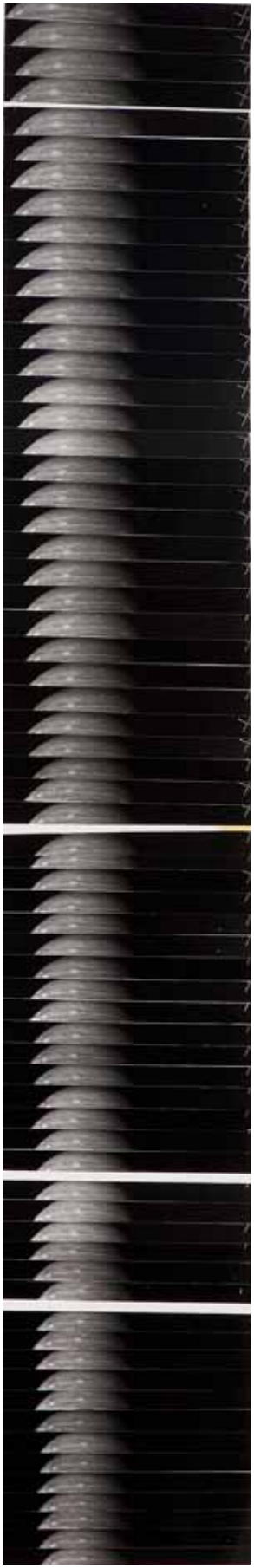
Jupiter

173
TURNER, RALPH. B.1935.
Turner's original drawings for his fold-up model of Jupiter, probably Tucson, AZ, around June 1, 1971, pencil and crayon on paper, each hemisphere on a separate sheet, each 980 x 800 mm, two paper labels pasted onto one margin, inscribed in ink *"These polyhedron studies made from original Jupiter globe (June 1, 1971),"* framed together, waterstains.

Turner's fold-up Jupiter globe was influenced by Buckminster Fuller's geodesic form, albeit adjusted to the oblate form of the planet. The drawings were reproduced by lithography and made available to the public.
$5,000 - 7,000

174
TURNER, RALPH. B.1935.
A pair of Jupiter globes, probably Sheridan, OR, 1974, airbrush and pastel on fiberglass cast globe, diameter 18 inches (460 mm), both signed *"RT 1974"* at north pole, one with triangular grid in black ink, metal loops for hanging at top.

AN IMPOSING PAIR OF HAND-PAINTED GLOBES, developed using photographs from Pioneer IX.
$4,000 - 6,000



175

The Voyager Program

The probes Voyager I and II were launched in 1977. Both probes are still in operation. The Voyager I spacecraft has traveled further from Earth than any other manmade object; it is very close to becoming the first manmade object to leave our Solar System. The Voyager Imaging Science Subsystem is a modified version of that used in the earlier Mariner flights. The system consists of two television-type cameras, a high resolution narrow angle camera and a lower resolution, more sensitive wide angle camera.

175
VOYAGER I.
Sequence of time-lapse photographs of Voyager I's approach towards Jupiter, January-February, 1979, 67 gelatin silver prints mounted, 9¾ x 60½ inches (250 x 1540 mm) overall, framed.

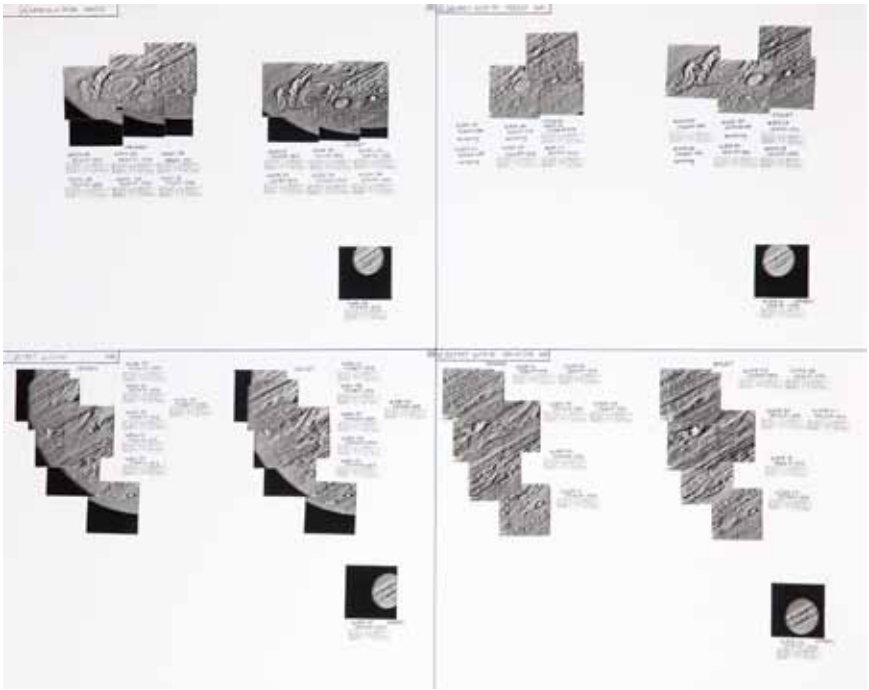
THE LARGEST PLANET IN OUR SOLAR SYSTEM, photographed by a Voyager probe in a manner reminiscent of Eadweard Muybridge.
$15,000 - 25,000

176

177

176
VOYAGER I.
8 hand mosaics of Jupiter together on one sheet, January-April, 1979, each comprising 9 gelatin silver prints mounted, each mosaic 4 x 4¾ to 4½ x 4¾ inches (100 x 120 to 115 x 120 mm) overall, ink and printed pasted-on captions below, overall sheet 565 x 715 mm.
$2,000 - 3,000

177
VOYAGER I.
11 hand mosaics of Jupiter together on one sheet, January-April, 1979, each between 4 and 9 gelatin silver prints mounted, each mosaic 3 x 3 to 4 x 4 inches (80 x 75 to 100 x 100 mm) overall, ink and printed pasted-on captions below, overall sheet 560 x 715 mm.
$2,000 - 3,000



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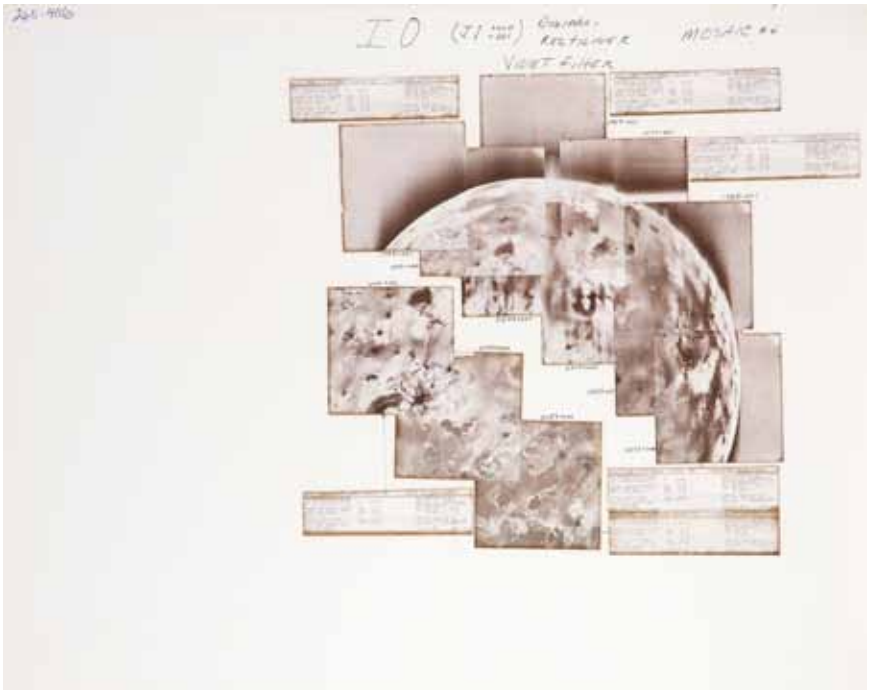


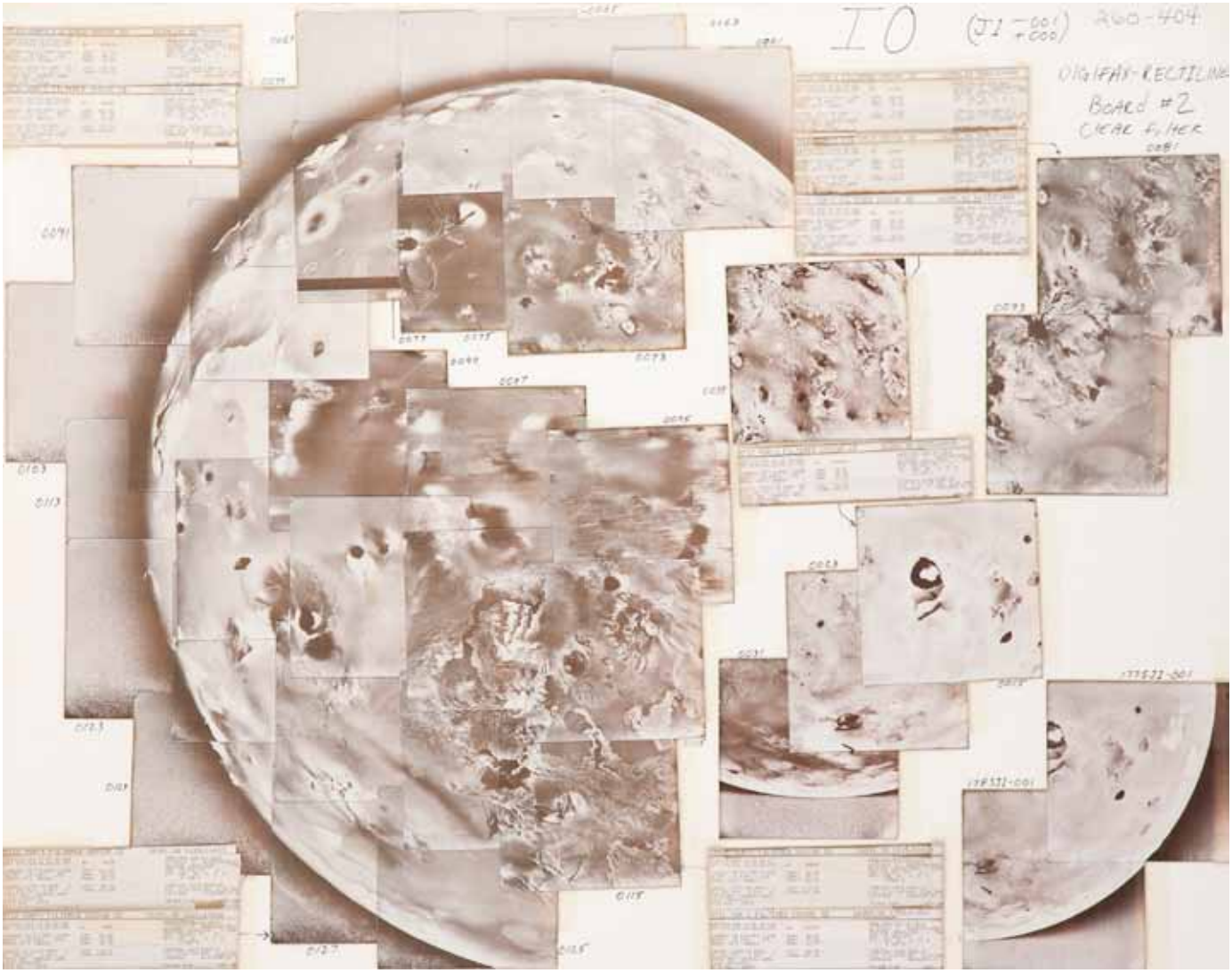
180

178
VOYAGER I.
8 hand mosaics of Jupiter together on one sheet, January-April, 1979, each between 3 and 9 gelatin silver prints mounted, each mosaic 2½ x 4 to 5¼ x 4 inches (65 x 105 to 135 x 105 mm) overall, ink and printed pasted-on captions below, overall sheet 570 x 710 mm.

Including views of the Great Red Spot.
$2,000 - 3,000

179
VOYAGER I.
Hand mosaic of Io, around March 5, 1979, 36 gelatin silver prints mounted, 21¾ x 28 inches (555 x 710 mm) overall, ink and printed pasted-on captions surrounding.
$10,000 - 12,000

180
VOYAGER I.
Hand mosaic of Io, around March 5, 1979, 12 gelatin silver prints mounted, 15¼ x 14¾ inches (390 x 375 mm) overall, ink and printed pasted-on captions surrounding.
$7,000 - 9,000



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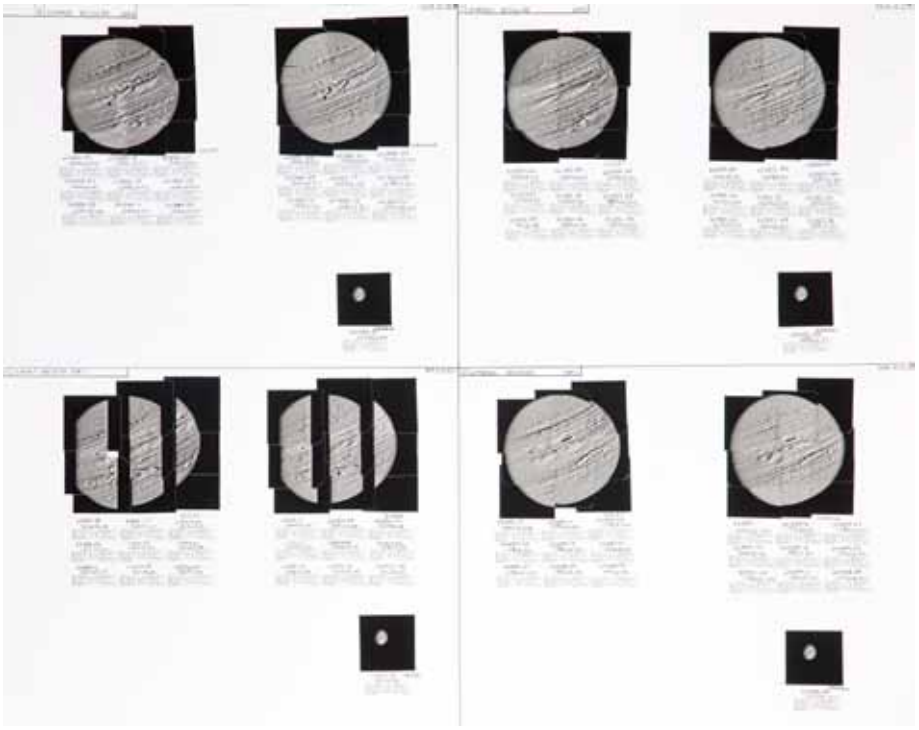


182

181
VOYAGER I.
Hand mosaic of a limb of Callisto, around March 6, 1979, 9 gelatin silver prints mounted, 17 x 16½ inches (435 x 420 mm) overall, ink and printed pasted-on captions surrounding, with printed diagram pasted at upper right corner.

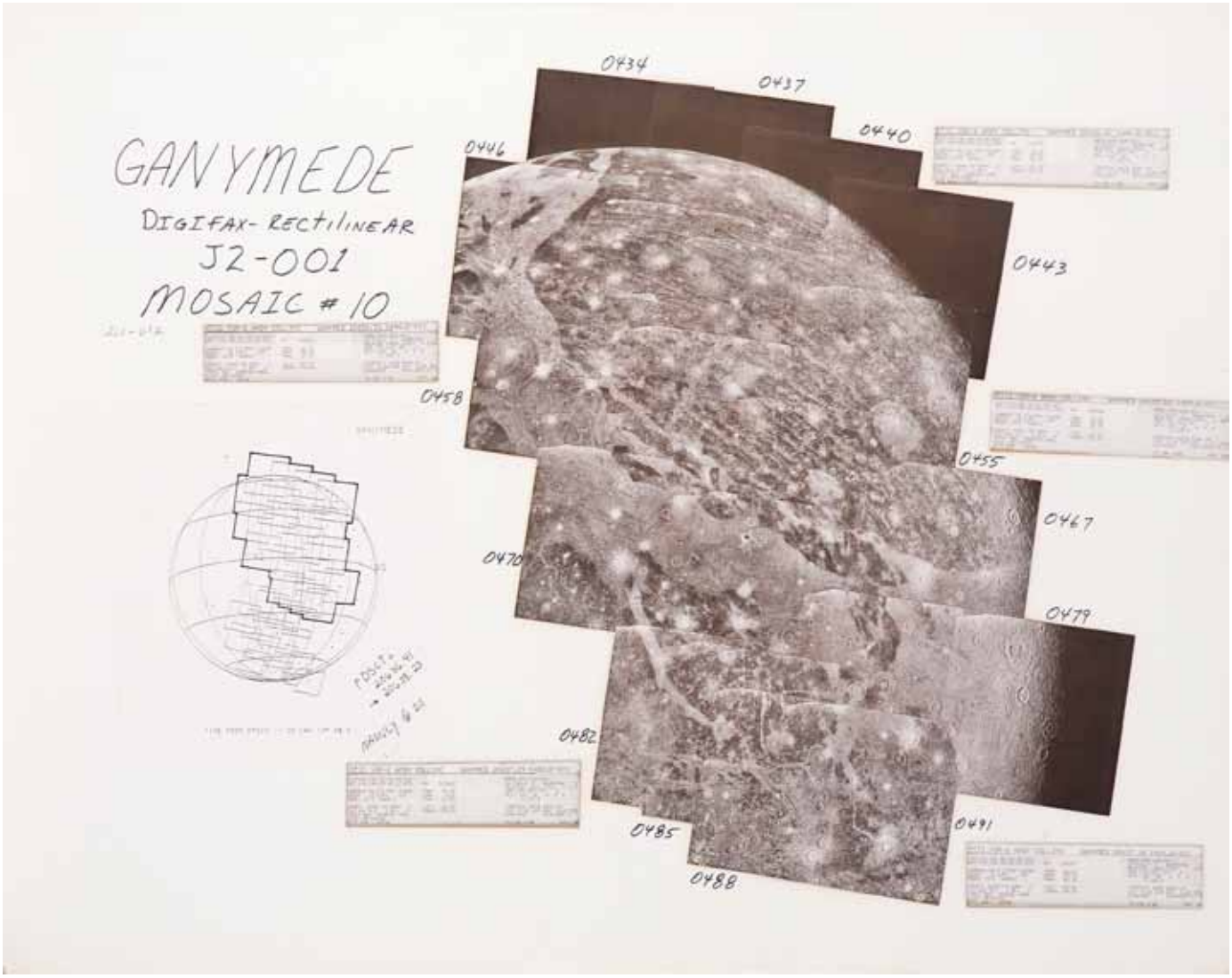
The concentric rings from the impact crater Valhalla are visible towards the lower right.
$7,000 - 9,000

182
VOYAGER II.
8 hand mosaics of Jupiter together on one sheet, June-August, 1979, each comprising 9 gelatin silver prints mounted, each mosaic 4 x 4 to 4¼ x 4¾ inches (105 x 100 to 110 x 120 mm) overall, ink and printed pasted-on captions below, overall sheet 600 x 720 mm.
$2,000 - 3,000

183

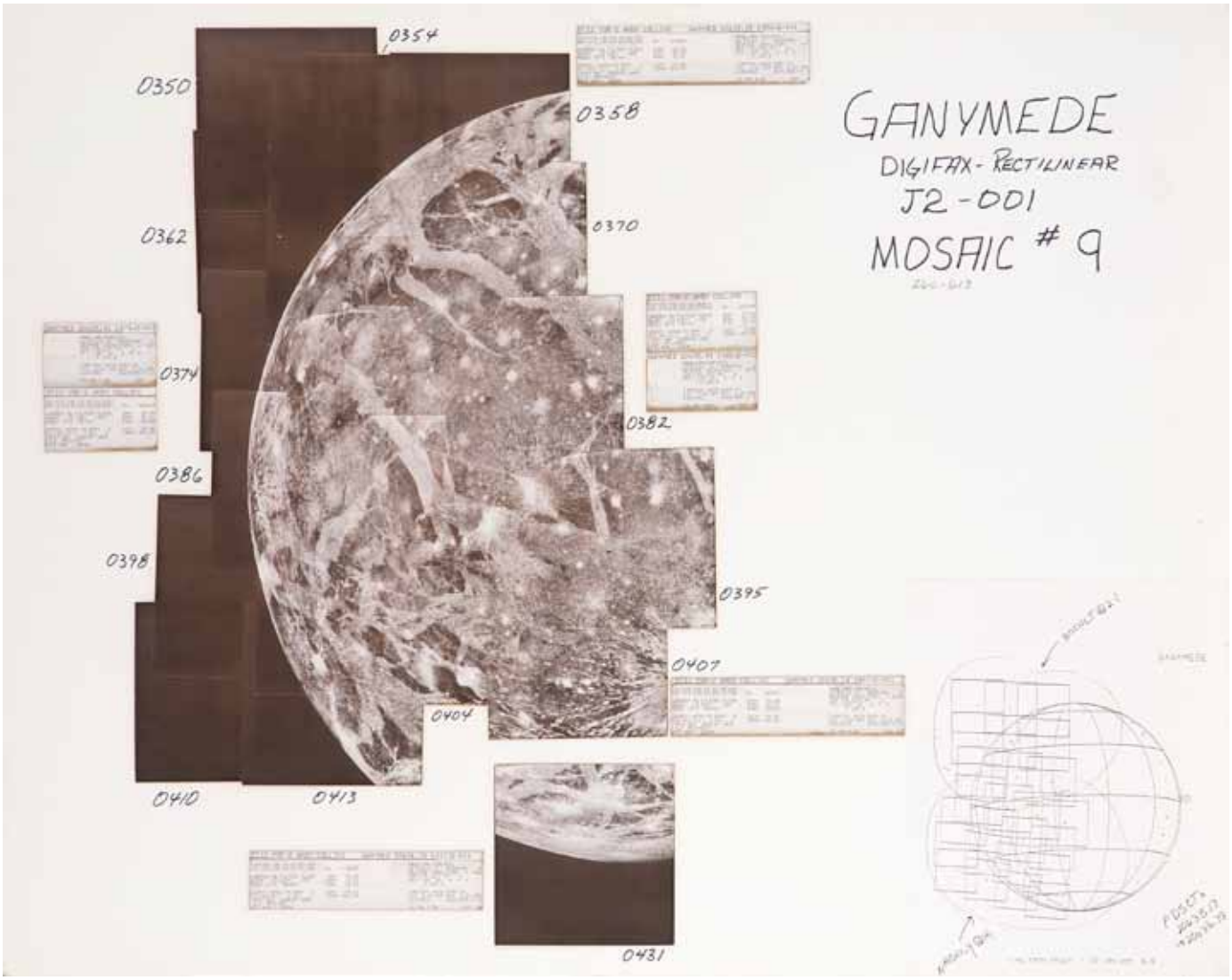
183
VOYAGER II.
The Great Red Spot, around July 3, 1979, 2 very large chromogenic prints mounted together on wood board, 71½ x 71½ inches (1820 x 1820 mm) overall.

THE BACKDROP FOR JPL PRESS CONFERENCES FROM THE LATE 1970S TO THE EARLY 1980S. This photograph hung at JPL in Pasadena for many years, a symbol of their achievements. Jupiter's best-known feature, the Red Spot is a storm known to have been in existence since at least 1831 and possibly since 1665. Even before Voyager proved that the feature was a storm, there was strong evidence that the spot could not be associated with any deeper feature on the planet's surface, as the Spot rotates differentially with respect to the rest of the atmosphere, sometimes faster and sometimes more slowly.
$15,000 - 25,000



184

184
VOYAGER II.
Hand mosaic of a limb of Ganymede, around July 9, 1979, 20 gelatin silver prints mounted, 17½ x 17 inches (445 x 435 mm) overall, ink and printed pasted-on details surrounding, with printed pasted-on diagram.
$8,000 - 10,000



185

185
VOYAGER II.
Hand mosaic of Ganymede, around July 9, 1979, 19 gelatin silver prints mounted, 21 x 13 inches (530 x 340 mm) overall, ink and printed pasted-on details surrounding, with printed pasted-on diagram in lower right corner.
$8,000 - 10,000

186

187

186
VOYAGER II.
Group of 4 hand mosaics of Europa, around July 9, 1979, each comprising 5 gelatin silver prints mounted, each mosaic 10 x 8½ to 11 x 8¾ inches (250 x 215 to 280 x 220 mm) overall, with ink and printed pasted-on details surrounding, centering a pasted-on printed diagram.

Europa, seen through violet, ultra-violet, orange and blue filters.
$6,000 - 8,000

187□
VOYAGER.
1. "Voyager to Jupiter." [Probably Pasadena, CA: JPL, c.1979.] 3 printed contents leaves, and 21 chromogenic and 18 gelatin silver prints each with facing printed description leaf. Loosely inserted in sleeves contained in original 3-ring binder.
2. "Voyager to Saturn." [Probably Pasadena, CA: JPL, c.1980]. 6 printed contents leaves, 35 chromogenic and 22 gelatin silver prints, and 26 photocopied leaves. Some of the gelatin silver prints with mimeographed captions on verso.

Volumes 3 and 4 of Voyager photographs.
$300 - 500

End of Sale

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INDEX OF PROVENANCE

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