Property Inventory

of the

U. S. Naval Observatory

History Committee

as of

September 26, 1996

by

Brent A. Archinal

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
26 SEP 1996	**N/A**	**-**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Property Inventory of the U.S. Naval Observatory History Committee	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **U.S. Naval Observatory Library 3450 Massachusetts Avenue, N.W. Washington, DC 20392-5420**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release, distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**UU**	**103**	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

Introduction

This document contains a listing of all historical property in the possession of the History Committee of the U. S. Naval Observatory.

Below, after a description of how information for this listing was collected, the list itself follows.

Acknowledgement is made of the work of Brent Archinal, Ian Jordan, Marie Lukac, Carl Lukac, and Steve Panossian in preparing this list, and of the various pieces of historical information provided by Steve Dick, Ted Rafferty, Rich Schmidt, and Jim DeYoung.

Background- Original "lens" inventories

At the January 27, 1989 meeting of the History Committee, Archinal had pointed out that many of the lenses in the History Committee's possession were in very bad condition and should be checked to see if they needed cleaned. Alfred Mikesell, on his visit here in September of 1988, had originally noted that many of the lenses were very dirty, and had mold on them which would eventually etch and ruin the lenses.

With this in mind, Archinal and Jordan did inventory a number of the lenses on February 23, 1989. At that time, the majority of the lenses were stored in a cabinet (one of 5, now labeled "Cabinet 1") in the basement of the library of Building 1 ("the History Committee's room") A quick search of the other cabinets was made at that time and no other large or obvious objective lenses were found, although quite a number of eyepieces and other telescope parts are stored in those cabinets. However only the one cabinet was inventoried.

That original list (dated 3/8/89 and revised 7/10/89) was used to form the beginning of the current inventory list appended below. The original inventory, for each item (or multiple items) found, usually included: a) a header, identifying the item, b) a list of any markings or identification with or on the item, c) a description, including measurements of the clear aperture, d) an appraisal of the condition of the item, and e) its location. Identification numbers have now also been added to most of the items on this list (see below).

In determining the condition of the items, 4 classes were used during the original work: a) good (clean or dusty), b) fair (only needs cleaned of dust or dirt), c) poor (should be cleaned of dirt and some mold), d) bad (very dirty and should be cleaned of

mold as soon as possible). It was pointed out at that time that almost all the lenses were in either poor or bad condition, most having mold spots or layers of mold covering one or more of the objective surfaces. In addition, none of the items were properly stored in protective material or boxes.

In addition to this original list, another "rough inventory" was made on July 18, 1989 in order to find all substantial objectives, mirrors, lenses, etc. that were not included in the first inventory, so that they could be considered if cleaning of the objectives was undertaken. The information from that "rough inventory" has been superseded by the information below.

History Committee Numbering

On June 9, 1992, Panossian and Archinal began serial numbering the items inventoried so far, with the near term intent of continuing the inventory to most if not all history committee property.

The "History Committee Property Stickers" apparently made some time ago were not located, but instead red labelmaker tape was used to print numbers which were attached to all the items and to any substantial containers (boxes, etc.). (Paper stickers with black marker, or blue labelmaker tape were also used for some items.) Although they should last quite awhile, it is realized (and if fact, hoped) that these stickers will not be permanent, and indeed should be easy to remove should any items be removed for display or cleaning. All of the numbers begin with "**HC**", and the numbering begins at 101 and currently (September, 1996) stops at 538 inclusive. (For some reason, the number 418 was not used.)

In the course of the inventory some of the old style stickers were found on various objects. A correspondence table between these few old and the new style numbers is given in Appendix 1.

In general, all items were given their own number, even when there were multiple nearly identical items. Substantial boxes for various items (or significant empty boxes) were also given their own number. However, in many cases, boxes of items (particularly less significant ones) were given one number and their contents roughly described in order to keep from being bogged down describing numerous small parts. It is hoped that for many of these items, individual numbers might be assigned in the future as time permits.

In addition, for the sake of completeness, some items have been included which probably will or should receive history committee

numbers soon, as well as some items which are currently (and likely to remain) under Astrometry Department control. The latter items include such things as the transit circle objectives, as well as even the 12-inch and 26-inch equatorial telescopes. These items are listed at the end of the current list.

Current Inventory Information

Following the pattern of the 1989 "lens inventory", the main items noted to be included in the written inventory (below) were: a) a general description of each item, its size, material used in its construction, and any text or serial numbers on or near the item, its box, or associated labels or signs (a "//" indicates a new line or paragraph in any quoted text.); b) general condition information for most (but not all) objects, particularly concerning optical surfaces; and c) the current location of the object, usually in the History Committee room, or elsewhere in USNO Building 1.

Some minor additional information and comments were added when this information was typed in by Archinal, but in all cases, the final version of the inventory was checked. Information included in brackets is unverified information, either added by Archinal or describing others' comments (written or verbal) on the items in question. Some of this information derives from the references cited below. The source of comments is given by initials (B.A. for Archinal, S.P. for Steve Panossian, T.R. for Ted Rafferty).

Future Work

A number of tasks remain as continuing or future work regarding the USNO History Committee collection.

Cleaning of the various optical components has always had a high priority, and as explained above was the primary reason this inventory was originally begun. During 1996, funds were made available to begin this work. A contract was let to Company Seven of Laurel, MD (Marty Cohen, President) to clean some of the lenses. This work began in June and is continuing. However only the most significant of the lenses and optical components will be cleaned under this contract. This work will either have to be continued under some future contract(s) or done (at least partially) on a volunteer basis.

In addition, the following steps are recommended (by Archinal).

1. This completed inventory should be studied by current History

Committee members and perhaps others (Smithsonian? Antique Telescope Society?) in order to determine which items should definitely be kept, and which items should be released (e.g. to the Smithsonian) or otherwise disposed of. With the limited resources available now and likely in the future to the History Committee, it is important to devote resources only to items of definite historical value to USNO.

2. Likewise the current inventory should be studied to see if additional historical information can be found for items on the inventory, particularly items currently classified as of unknown use, etc. In particular, the 4" by 6" cards from an earlier attempt at an inventory (see **HC 492** below) have much useful information on them that should be correlated with this inventory.

3. Items which it was already decided should be excessed, etc., should be properly disposed of.

4. All items should be moved off of the floor (in case of flooding - some of which has already occurred in the last few years). Adequate shelving and cabinets should be procured to store all items now sitting out.

5. Inventorying should continue of historic items not necessarily under History Committee control. This would include items such as paintings (like those in the Building 1 first floor hallway and the library), framed pictures and posters, 12-inch telescope accessories, and material stored by AD.

6. Boxes of miscellaneous items (of which there are several) should be inventoried further.

7. Beyond cleaning the optical surfaces of these items - which is still needed in a number of cases, some effort should be expended into cleaning other surfaces of these items, e.g. those with the worst problems such as rust or heavy dirt, and especially those with the most historic value. Special preservation is also needed for some of the wood, leather, or other fabric surfaces of these items.

8. Finally, steps should be taken to make sure that particularly significant items are well restored, e.g. for display here or at other sites, or in the case of some of the optical assemblies, for actual possible use. For example the 5-inch Clark refractor (Clark #856) has now been extensively restored by the USNO Instrument Shop. A number of other instruments would benefit greatly from similar treatment.

Summary

For the second time in the history of the USNO - and for the first time in nearly 100 years - the historic objectives and scientific instruments of the Observatory have been cataloged, as given below. Much work remains, both to preserve these items for the future, and to use them to obtain a greater understanding of the past of the USNO and the future that past leads us to.

References:

Archinal, Brent [1992]. Earth Orientation Parameters Division monthly report contribution. July 28.

_ (Panama Canal Review) [1952]. "Determination of Amateur Astronomers Is Reason For Miraflores Observatory," The Panama Canal Review, pp. 8-9, December 5.

Rafferty, Theodore [1981]. "Refurbishing the U. S. Naval Observatory's 1892 Saegmuller 12" Refractor," Telescope Making, **15**, pp. 24-29.

Skinner, Aaron Nichols [1898]. "Index to Schedule of Instruments in store and not in use," (U. S. Naval Observatory, Washington, D.C.) January 4. Manuscript in storage in (library) history collection of the USNO, Building 1 basement. Photocopy available from USNO Library as "QB 82 U7 S45 1898".

Smith, Neal G. [1991]. Letter to Stephen Dick. January 17.

Warner, Deborah Jean, and Robert B. Ariail [1996]. "Alvan Clark & Sons - Artists in Optics," (Willmann-Bell, Inc., Richmond, VA).

Appendix 1

Correspondence table: Old vs. New History Committee Numbering

Old numbers are engraved on blue metallic foil sticker. New numbers are usually embossed on red labelmaker tape. No "old numbers" other than those shown here were found.

Old Number	New number
HC 001	**HC 524**
HC 002	**HC 523**
HC 003	**HC 522**
HC 004	**HC 510**
HC 005	**HC 509**
HC 006	**HC 520**
HC 010	**HC 538**
HC 013	**HC 381**?

The Inventory

#101-156, June 9, 1992, S. Panossian, B. Archinal
#157-199, June 14, 1992, S. Panossian, B. Archinal
#200-216, June 16, 1992, M. and C. Lukac
#217-258, June 18, 1992, B. Archinal, M. Lukac
#259-261, June 20, 1992, B. Archinal
August 22, 1993, B. Archinal, reorganized inventory drafts. Entered some items.
August 28, 29, 1993, B. Archinal and S. Panossian.
September 4, 1993, B. Archinal.
#406-419, September 14, 1993, B. Archinal

June 26, 1996. B. Archinal. Some editing. Entered items **HC 262** to **HC 323** (some optics had already been entered). 2.5 hours.
July 1, 1996. B. Archinal. Entered items **HC 324** to **HC 400**.
July 10, 1996. B. Archinal. Entered items **HC 401** to **HC 405**. **HC 420** to **HC 440**.
July 24, 1996. B. Archinal. Entered items **HC 441** to **HC 524**. (Some optics had already been entered. Now at current end of numbering). 4 hours.
July 29, 1996. B. Archinal. Editing. Mostly in final format. Checked for addition of possible comments through **HC 200**. 4 hours.
August 7, 1996. B. Archinal. Adding information from Skinner [1898] inventory (to page 61 inclusive). Edited introduction.
August 14, 1996. B. Archinal. Checked **HC 101** to **HC 270** inclusive. 3 hours.
September 4, 1996. B. Archinal. Editing. 1 hour.
September 9, 1996. B. Archinal. Checked **HC 271** to **HC 330**, and **HC 504** to **HC 524**. Added **HC 525**.
September 11, 1996. B. Archinal. Checked remainder of inventory. Added **HC 526**.
September 19, 1996. B. Archinal. Editing. Adding **HC 527** to **HC 536**. 4 hours.
September 20, 1996. B. Archinal. Editing. Added **HC 537**. Adding information from Skinner inventory (to page 78 inclusive). 6 hours.
September 24, 1996. B. Archinal. Added **HC 538**.
September 25, 1996. B. Archinal. Handled return and pickup of lenses being cleaned by M. Cohen. Editing. 3 hours.
September 26, 1996. B. Archinal. Added information to **HC 134**.

==========
==========

HC 101: 7.5" triplet, f/104

"7 1/2 in Objective Triple Combination", "US Naval Ob'sy", "Washington, D. C.", "J. A. Brashear Co. Ltd., Allegheny, Pa" (on box). "7.5 in, 65 feet, 1905" (on paper)

brass cell, with plate "John A. Brashear Co, Ltd. Allegheny, Pa", leather lens cover.

In wooden box (**HC 102**), 14" x 14" x 5 1/2", padded with red carpet, wooden rack.

Condition: Fair; glass very dusty, some smudges; brass has some corrosion, leather has some mold inside.

Location: Cabinet #1, shelf 1 (bottom), right side rear.

==========

HC 102: box for above (see above)

==========

HC 103: portrait lens

"J. H. Dallmeyer", "29064 No 3.C. London" (engraved in script)

3.5" rear element, about 3.5" front element, 7 1/2" length

brass body, large rack and pinon (turns rough), back end has dent, heavy paper and leather felt-lined lens cover.

[Skinner [1898, p. 13] notes this lens was purchased on March 8, 1881 (the cost is not listed). It has a 6-inch back focus. He adds: "The two lenses above mentioned No. 4B and No. 3C have been each mounted on a Russia iron tube and each furnished with a finder; the two tubes have been yoked together by means of brass fittings with suitable arrangements for mounting the twin tubes on a five inch equatorial stand. These lenses have never been used." B.A. 96.08.07]

Condition: Poor; glass very dusty, heavy mold on back element.

Location: Cabinet #1, shelf 1 (bottom), center rear.

==========

HC 104: partial 4 1/2" lens cell

no lens, 4 1/2" i.d.

Location: Cabinet #1, shelf 1 (bottom), left front.

==========

HC 105: micrometer for 40 foot photoheliograph

"11/60 Gate // micrometer for // 40-ft. photohelio- // graph, 1874 tran- // sit of Venus exp." (on tag). "Fort Selden, N. U." "F. Thom" (?) "74", "72" (?) (written on bottom of box). "7" (stamped in brass on micrometer and extra part). Brass jaw micrometer, 2 knobs and brass piece separate.

[Skinner [1898, p. 62 and p. 70] mentions jaw micrometers for use with the transit of Venus photoheliographs.

The "Fort Selden" indicates this particular micrometer (or at least the box) was probably at Cerro Roblero, New Mexico during the 1882 transit of Venus. The "7" is clearly the identifying number (of 8 micrometers) - however Skinner does not list the observing locations of the micrometers by number.] [For information on the photoheliograph, see Warner and Ariail [1996, pp. 168-169].]

In wooden box (**HC 106**), 6" x 6" x 2.5", oak?, 2 clasps.

Location: Cabinet #1, shelf 1 (bottom), center front.

==========

HC 106: box for above (see above)

==========

HC 107: 6" Dallmeyer portrait lens

"J. H. Dallmeyer London 30850 6.A
June 11 Patent (U.S.) 1867" (engraved on cell)

13 1/2" tall with about 5 3/4" rear element, back half of tube threaded.

[Skinner [1989, p. 14] indicates this lens was purchased June 10, 1882 at a cost of $270. It supposedly has a back focus of 22 inches. He notes "This lens is mounted on a Russia iron tube with fittings for attachment to an equatorial head." He also notes "This lens was arranged to be mounted on a five inch equatorial stand for celestial photography. This outfit has never been used."

Note that this lens is apparently quite similar to the 6-inch Dallmeyer lens used by Alvan Graham Clark and A. N. Skinner to photograph the 29 July 1878 total solar eclipse. Six photographs of the corona were taken from one of the USNO 5-inch Clark telescope mounts, which were described by Edward S. Holden as "at least as extensive and as rich in detail as any ever taken". See Warner and Ariail [1996, pp. 38-39, 170] and Skinner [1898, p. 12].

Further, this lens may also specifically be one of the "twin 6-inch Dallmeyer portrait cameras" mounted on the salvaged USNO 26-inch Clark mount [Warner and Ariail, 1996, p. 167] Since Skinner notes [1898, p. 1] the 26-inch Clark mount was not in use at the time of his inventory, this lens may have been used on that mount at a later date. B.A. 96.08.07.]

Condition: Poor; dirty, front glass has some mold.

Location: Cabinet #1, shelf 1 (bottom), left rear.

==========

HC 108: Sight tube for "personal equation apparatus" (**HC 109**)

8" by 2" diameter brass drawtube, extends to about 13". Has eyehole with interior prism? at end. Eyepiece drawtube portion has "Spencer Browning & Co.; London; Improved; U.S. Navy" engraved on it.

Condition: [?]

Location: Cabinet #1, shelf 1 (bottom) right front, on top of **HC 109**.

==========

HC 109: "personal equation apparatus"

Has three 8 1/2" x 11" page description attached, photocopy from "Astron. & Meteorological Observations Made During the Year 1875 at the USNO", Rear-Admiral C. H. Davis, USN Supt., (Washington, GPO, 1878). [Moved to cabinet #1 from floor, May 28, 1992. See Jim DeYoung, who may have partially restored this, for more information.] [Skinner [1898, pp. 79-80] describes three different such machines, of which this is probably one. He lists Edward Kahler, Washington, D.C. as the manufacturer for no. 1 ("1875") and no. 2 ("about 1876"), and M. E. Kahler, Washington, D.C. as the manufacturer for no. 3 ("1893"), and the cost at about $75 each. He notes "The apparatus was devised by Prof. J. R. Eastman, U.S.N." B.A., 96.09.25]

Condition: [?]

Location: Cabinet #1, shelf 1 (bottom) right front.

==========

HC 110: micrometer with drawtube

brass, 9 1/2" in length, just over 2" o.d., 3 adjusting knobs on slide (turn rough).

eyepiece, threaded, 1 1/4" o.d.

Condition: Poor; eyepiece extremely dirty, micrometer crosshairs (spider web?) broken.

Location: Cabinet #1, shelf 2, center front.

==========

HC 111: unknown

glass cylinder ("jar") with brass end and interior parts, fittings for evacuation, misc. metal, crystal, wire, ceramic parts inside.

"Seal 5/11/43 with [indecipherable]... cement" (on sticker)

Condition: Glass dirty.

Location: Cabinet #1, shelf 2, center rear.

==========

HC 112: Prin Transit Micrometer

mostly brass, 6" x 4" x 5 1/2", electric motor attached, 7 vertical and 1 horizontal crosshairs, [for transit circle use?]. [Note from T. Rafferty: "Motor by C. B. Watts."]

threaded eyepiece, about 1" o.d.

Location: Cabinet #1, shelf 2, center.

==========

HC 113: partial 6" cell

outer part of 6" i.d. brass lens cell.

"B. H. Chatham Ltd" or "VII Chatham Ltd"? and illegible signature (script scratched on back). "3840" on side. [Probably refers to "Chatham Ild" (Island). B.A.] Same as front of **HC 118**.

Skinner [1898, p. 70-72] describes the eight Clark photoheliographs. It would appear that this cell was part of the lens no. "7", used to observe the 1874 transit of Venus from Whangaroa, Chatham Is., and the 1882 transit from Auckland, New Zealand.

Location: Cabinet #1, shelf 2, left.

==========

HC 114: 3 1/2" lens system

" 3 3/4" multiple lens system in brass cell, 17" fl f/5" (on card). "515" on side of tube. [Inscription not found 6/9/92, S.P. Inscription visible on outer rim, 95.10, B.A.] 3 1/2" aperture front lens.

Condition: Bad; glass very dirty, some mold on front lens, interior surfaces also mold covered.

Location: Cabinet #1, shelf 2, left rear.

==========

HC 115: 3 1/4" lens

3 1/4" lens and brass cell, 4 3/4" long, tapered to 3" diameter.

Condition: Bad; heavy mold on outer glass surface, back glass surface slightly better.

Location: Cabinet #1, shelf 2, left front.

==========

HC 116: 6 7/8" flat mirror for heliostat

6 7/8" diameter aluminized mirror (aluminized on both sides), in green painted brass cell with brass lever arm. 8 3/4" maximum extent across, with 7 7/8" outside diameter for cell and 1 1/2" height for cell. Brass arm (mounting bracket) extends out 4" tangent to cell, and extends height of cell to (maximum height of) 1 7/8". [A Clark lens from the transit of Venus expedition. Identical to one in heliostat **HC 515** on display in building 1 pier room. B.A.] Taken by Marty Cohen of Company 7 for cleaning, 96.09.25.

Condition: Fair; dirty, needs realuminized (front surface is flaking off).

Location: Cabinet #1, shelf 2 (was on 3), right.

==========

HC 117: 2" lens

achromat, 1 5/8" stop on back, 1 3/4" tall. Brass and aluminum?, silvery tarnished color.

Location: Cabinet #1, shelf 3, right rear.

==========

HC 118: 5" Clark heliostat lens

"5"-40' achromatic long focus lens or mark lens if longer focus" (on yellow paper) [not sure if this description goes with this or the next lens] 5" lens.

"6. 1A", "Pekin"(script) (engraved on back of brass flange), other illegible printing on brass. [Likely a transit of Venus Clark heliostat lens. B.A.] Cell front same as **HC 113**.

Skinner [1898, p. 70-72] describes the eight Clark photoheliographs. It would appear that this is the lens no. "6" which he indicates was used to observe the 1874 transit of Venus from Peking, China, and the 1882 transit from Wellington, South Africa.

Condition: Poor; dirty, some mold on glass, spacers are missing, elements are touching.

Location: Cabinet #1, shelf 3, right front.

==========

HC 119: 5" f/93 lens

"feet 38 63/100 Chem focus" (engraved on brass cell), "NZ" printed and engraved on back of cell.

5" lens, lens cell rotates inside of lens cell mount.

Condition: Poor; dirty, some mold on front surface.

Location: Cabinet #1, shelf 3, center rear.

==========

HC 120: 5" Clark heliostat lens

"back focal distance about 40 feet 2 inches" (scratched on cell).

5" lens, paper spacers, brass cell, thread inside and outside on middle, 3 small steel side screws. [Confirmed as a Clark lens, 95.11.01, T.R. Likely a transit of Venus Clark heliostat lens. B.A.] Taken by Marty Cohen of Company 7 for cleaning, 96.09.25.

Skinner [1898, p. 70-72] describes the eight Clark photoheliographs.

Condition: Fair; dusty, fingerprints, no mold.

Location: Cabinet #1, shelf 3, center front.

==========

HC 121, **HC 122**: 2 - 1 3/8" lenses, finder objectives for 5" Clark

1 3/8" lenses, achromatic, brass cell, 3/4" tall. Verified by comparison with extra complete 5" Clark finder. **HC 121** is shiny and **HC 122** is tarnished.

Condition: Good; dusty, pretty clean.

Location: Cabinet #1, shelf 3, right side front. (One was on shelf 4.)

==========

HC 122: See above

==========

HC 123: unknown

4" x 3/8" wooden square with 2" threaded brass hole. "74" stamped in wood, 5 screws in top fitting brass to wood.

Location: Cabinet #1, shelf 3, right rear.

==========

HC 124: 7 1/4" flat mirror

7 1/4" mirror, quartz or optical glass, flat by eye and ruler. [Another Clark flat for transit of Venus heliostat?]

Skinner [1898, p. 70-72] describes the eight Clark photoheliographs.

Condition: Poor; dirty, needs realuminized (if it ever was aluminized).

Location: Cabinet #1, shelf 3, right rear.

==========

HC 125: small empty brass tube

just a small empty brass tube, 3/4" and 1" high, end slightly bent.

Location: Cabinet #1, shelf 3, right rear.

==========

HC 126 and **HC 127**: 2 eyepieces

1 1/4", no markings, both brass, different f.l. **HC 126** is longer f.l., and **HC 127** is shorter f.l.

Location: Cabinet #1, shelf 3, right rear.

==========

HC 127: See above

==========

HC 128: 2" Dallmeyer portrait lens

"J. H. Dallmeyer", "No. 29972 12 x 10 London", "Rapid Rectilinear June 30 Patent. (U.S.) 1868" (all engraved in script)

2" front surface, 1 3/4" back, 2 lens system, brass cell, with removable slide. 3 3/4" tall.

[This particular Dallmeyer lens does not appear to be listed by Skinner [1898]. However, considering the Dallmeyer serial numbers and the dates and serial numbers of such lenses listed by Skinner, it would appear this lens was purchased between March of 1881 and June of 1882. B.A. 96.08.07]

Condition: Bad; front element molded, back very dirty. Some corrosion on brass.

Location: Cabinet #1, shelf 3, center front.

==========

HC 129: 5" lens (Clark?)

5" lens, 2 elements, foil spacing, in threaded brass cell, 1 1/2" tall, 3 large nickel plated screws on side of cell.

Condition: Bad; mold on all 4 surfaces, very dirty.

Location: Cabinet #1, shelf 3, left front.

==========

HC 130: 5" Clark lens

"VIII Nagasaki 1", "Fort Selden, N.M." (scratched on cell).

5" lens, apparently only 1 element, but two spacers present. Small screws on cell. Brass blackened in front (around lens). [Apparently a marker lens, or a partial Clark lens. Confirmed as a Clark lens, 95.11.01, T.R.]

Skinner [1898, p. 70-72] describes the eight Clark photoheliographs. This is obviously lens no. "8", which he notes was used to observe the 1874 transit of Venus from Nagasaki, Japan, and the 1882 transit at Cerro Roblero, New Mexico.

Condition: Fair; dirty.

Location: Cabinet #1, shelf 3, left front.

==========

HC 131 and **HC 132**: Two 5" Clark lenses

HC 131: "859" (engraved, stamped and scratched on cell!).

HC 132: "861" "VII" (scratched on cell).

2 elements, foil spacers, dark colored brass (discolored lacquer?). [Warner and Ariail [1996, page 170] note that David H. DeVorkin has the tube assembly 859. The 861 objective belongs to **HC 510**. B.A.]

Condition: Bad; very moldy glass surfaces.

Location: Cabinet #1, shelf 3, left rear.

==========

HC 132: See above

==========

HC 133: 4 1/2" lens

"4 1/2" objective lens coated with magnesium fluoride in brass cell" (on index card). Probably a triplet. "Price"? written on side of glass element.

brass cell, 2" tall. "474R" engraved on side.

Condition: Poor; some mold.

Location: Cabinet #1, shelf 5, center front.

==========

HC 134: 9" transit circle lens

9" lens, achromat, foil spaced, in brass cell. Weight is about 40 pounds total. [According to T. Rafferty, this is the 9" transit circle lens, once refigured by the Clarks. Warner and Ariail [1996, p. 165] indicate that the Clarks made two new transit circle objectives for USNO, including a 9.14-inch. Is this that objective? B.A.]

[Was cleaned by Marty Cohen of Company Seven, 96.06.05 to 96.09.25. Marty commented 96.09.25 that: a) the lens and cell are quite heavy for their size; b) much of the weight is in the extra outer covering of the lens cell. This cover is apparently to protect from tampering quite a complicated mechanisim that presses the glass elements of the lens to one side with an adjustable spring; c) he reused the original spacers, which are black on the inward facing side and shining facing out; d) the rear element is supported by three brass supports

machined out of the cell ring itself - these hold the element very tightly in place, which is unusual for an achromatic objective; e) the interference pattern between the elements is far off center to one side, but the lens is in correct alignment in this position; f) there is a small circular spot of wear - apparently from mold - at the center of the outward facing surface of the front element. Marty speculates this is because of pressure from a metal washer at the center of some lens cover used in the past; g) several of the metal screws in the exterior cover do not appear to be original; h) screws have all been returned to the settings they had when received by Marty. The spring loaded setting was reset to the original amount as measured by a torgue wrench; i) the lens would now be usable in a telescope; j) some etching of the glass surfaces had already taken place and cannot be fixed - fortunately the effect is fairly minor; k) he has thoroughly cleaned the glass and metal parts (except where there were markings) with solvent so that all traces of mold/fungus should have been removed; l) he recommends the lens not be returned to its previous position so that there is no mold/fungus contamination from other lenses; m) he also recommends it not be left in the current history committee room due to the high humidity there. Notes here from memory by B.A., 96.09.25. T.R. has indicated that the spot on the center of the front element is where a field illuminator prism was attached. Also, while the lens was being moved (today) one of the foil spacers shifted outward slightly from the edges of the lens. B.A. 96.09.26.].

Condition: Very good. Has been cleaned by M. Cohen. Former condition was bad; very dirty and moldy. Needs box.

Location: To be located in Building 1 first floor hall display. Was in cabinet #1, shelf 4, right. Now on top of Fitz box (**HC 167**).

==========

HC 135: 5" Clark lens

"857" "001464" (scratched on it). Similar in design to ones on shelf 3. In cardboard box labeled "Returned from Flagstaff by Harry Crull, 1988".

Condition: Poor; dirty, including interior surfaces, mold.

Location: Cabinet #1, shelf 5, right.

==========

HC 136 and **HC 137**: 5" Fecker f/36 lens

"F. W. Fecker Pittsburgh, PA 1939 Achromat 180" focus (complete cell)" (on box and partially engraved on cell).

5" lens in very nice brass cell weighing 10-15 pounds total, 2 3/4" tall.

In brass box (**HC 137**) with silver painted interior, 7" x 7" x 2 3/4".

Condition: Bad; heavily molded rear element and between lenses.

Location: Cabinet #1, shelf 4, center rear.

==========

HC 137: Box for above (see above)

==========

HC 138: 2 1/2" lens

2 1/2" lens, in brass cell, 1 1/4" tall. "1502" engraved on side. For Stackpole Transit telescope on display in pier room lobby of building 1.

Condition: Bad; very dirty and moldy.

Location: Cabinet #1, shelf 4, center front.

==========

HC 139: 8.52" transit circle lens

illegible marking on flange of cell, "X"s marked in flange.

8 1/2" achromat in brass cell, 12' outside diameter, 2 1/4" tall (including 1/4" for 3 screws on front), weighing 20-25 pounds total. Spaced with cork or wood. [Ian Jordan notes that either this lens or the 9" lens on the previous page could be from the brass transit circle. T. Rafferty later noted that this is the original (8.52") transit circle lens and was also refigured by the Clarks. Reconfirmed, 95.11.01. Warner and Ariail [1996, p. 165] indicate the Clarks reworked this lens (originally by Pistor & Martins) in 1865. Skinner [1898, p. 39] also describes this lens and instrument. He gives the focal length as 12-feet, 1.0-inches.]

Condition: Poor; dirty and a little mold, including between elements.

Location: Cabinet #1, shelf 4, left.

==========

HC 140: 4" lens

4" lens in brass cell, 1 3/8" high, foil spaced achromat. Wrapped in thick clear plastic bag.

[T.R. indicates this is the 4" lens of the University of Pennsylvania Transit Circle. We also have other parts which we plan to excess (the altitude axis/box, and the transit "circle"). B.A., 96.09.05.]

Condition: Fairly clean, but mold spots.

Location: Cabinet #1, shelf 4, center front.

==========

HC 141: 5" lens

5" lens in brass cell, 1 1/4" high, 3 collimation screws. Long focal length.

Condition: Bad; mold on both sides of lens, brass corroded (turning green). Glass chipped or mold formation near interior edge.

Location: Cabinet #1, shelf 5, left/center front.

==========

HC 142 and **HC 143**: Two 4" lenses

"Probably 2 collimator lenses from 9" transit units, 4" lenses, 48" f.l. S. Dick" (on card).

Flanged, brass cells, 1" tall. **HC 143** has noticeable stain on brass on front of cell.

Condition: Bad; both are moldy.

Location: Cabinet #1, shelf 5, right rear.

==========

HC 143: See above

==========

HC 144: 4" lens

badly corroded brass cell, "1" (scratched on cell between screw holes).

[Speculation: Could this be the lens for the 4.1-inch 1844 Troughton and Simms Mural Circle? See Skinner [1898, p. 19]. B.A. 96.08.07]

Condition: Bad; heavy mold and cobwebs, heavy corrosion of brass.

Location: Cabinet #1, shelf 5, center front.

==========

HC 145: 5 1/4" lens

5 1/4" measured lens, in brass cell, with some red paint on it. 6 collimation screws, 3 small nickel plated side screws. Similar to 5 3/4" lens on shelf 6 (top shelf).

Was in box that was too large for it and apparently for the 5 3/4" lens, so exchanged with that lens.

Condition: Fair; dusty.

Location: Cabinet #1, shelf 5, right.

==========

HC 146: micrometer

"Boff & Berger", "Boston" (engraved)

brass, 3" o.d. tube, 4 1/4" tall overall, eyepiece.

[Speculation: Perhaps this is part of the "mirror and shadeglass tester" described by Skinner [1898, p. 88] and made by Boff and Berger, Boston, Mass. In particular could this be part of the 3 1/4" aperture telescope? B.A., 96.09.25]

Condition: Poor; eyepiece moldy, one crosshair left.

Location: Cabinet #1, shelf 5, left rear.

==========

HC 147: 3 3/4" condenser lens

single element lens, 2 1/2" tall.

Condition: Fair; dusty, scratches, no mold.

Location: Cabinet #1, shelf 5, center rear.

==========

HC 148: eyepiece

2 1/2" o.d., brass with white paint on top. [Possibly and extra eyepiece for the 26" finder telescope? Paint and o.d. match. B.A. 96.08.14]

Condition: Poor; dirty and moldy.

Location: Cabinet #1, shelf 5, left.

==========

HC 149: 5" mark lens

"5" Mark Lens" (on yellow paper)

single element, in brass cell, 1 3/4" tall, 3 collimation screws.

Condition: Poor; dirty and moldy.

Location: Cabinet #1, shelf 5, left rear.

==========

HC 150: Spherometer in box

Spherometer, brass and steel, 2 3/8" diameter dial, and 3" high. [According to T. Rafferty, made by the Clarks for transit of Venus expedition. Moved to cabinet #1 from floor, May 28, 1992.]

In wooden box (**HC 151**), with sliding top panel. 4" high x 4" x 3 1/4".

Condition: Excellent. Box is worn, sliding top slightly warped.

Location: Cabinet #1, shelf 4, center rear.

==========

HC 151: box for above (see above)

==========

HC 152 and **HC 153**: 6" Fecker f/30 lens

"6" Fecker lens, 1930, 15 foot focus" (on card). "Photo lens 15 feet focus" "6 inches aperture", "Made by Fecker, 1930", "Flint glass should be toward the stars", "Good field 10-12" diameter" (in pencil on box and tag). "J. W. Fecker", "Pittsburgh PA 1930" (engraved on cell).

3 2 cent postage stamp spacers, brass cell 2 3/4" tall. Stored in pine box. 6 push-pull collimation screws wrapped in paper included. Same cell type and lacquer as lens in brass box on shelf 4.

Box is **HC 153**.

Condition: Poor; dirty, some light mold.

Location: Cabinet #1, shelf 6 (top), center/lower.

==========

HC 153: box for above (see above)

==========

HC 154: PZT #3, 8" f/20 PZT lens

"8 inch objective lens f/20", "Perkin Elmer Corp Norwalk CONN" (engraved on plate on cell).

8" measured lens, in aluminum-steel cell. Probably apochromatic. 3 3/4" tall. [This has been identified as the PZT #3 lens (from building 69) by Dennis McCarthy. It was in use from May 1, 1954 until the early 1980's.]

Condition: Poor; back element dusty, front element moldy and with dead bugs.

Location: Cabinet #1, shelf 6 (top), left.

==========

HC 155: Micrometer for alt/az.

Brass micrometer for alt/az, with steel base. [Identified by T. Rafferty, with "same design as 6". Moved to cabinet #1 from floor, May 28, 1992.]. "Warner & Swasey Cleveland, Ohio" engraved on top.

Condition: [?]

Location: Cabinet #1, shelf 6 (top), right rear.

==========

HC 156A, HC 156B, HC 156C: 3 brass weights

2 1/2" diameter x 1/4", slotted (for balance beam). Tied together with pipe cleaner. **HC** numbers written on them in blue pen, with **HC 156** sticker on **HC 156A**.

Location: Cabinet #1, shelf 6 (top), left front.

==========

HC 157: opaque projector

27" high x 9 1/2" across. 3 3/4" diameter projection lens on top, 4 1/4" diameter condenser lens on front. 5" x 10" (detachable) flat front surface mirror on top above projection lens. Weight approximately 40 pounds. "Bausch & Lomb Optical Co, Rochester, NY, Combined Balopticony [?]". Serial # and patent info unreadable. "Pat Feb 11, 1911, Pat Feb [?] 1915"? "172-USN001141".

Location: On top of **HC 160**, on top of cabinet 6.

==========

HC 158, HC 159, and HC 160: K & E level tier, box

Apparently for calibrating levels. Two part, cast iron, painted green, with various parts and level bubbles attached. Top part is **HC 158**, 23" x 7", bottom piece is **HC 159**, 22" x 7". "Keuffel & Esser, NY". Label containing calibration information on left inside of box lid.

Box is **HC 160**, 28 1/2" long x 10 1/2" wide x 7" deep. 2 black steel handles, missing nameplate.

Condition: Excellent.

Location: On top of cabinet #6.

==========

HC 159: With **HC 158**, see above

==========

HC 160: Box for **HC 158** and **HC 159**, see above

==========

HC 161 and **HC 162**: pendulum astrolabe and box

"Corps of Engineers, Purchase Order No 23-3914, Pendulum Astrolabe, Serial No. 11, David White Co., Milwaukee, Wis. No. 29492" Tag found on box reads "6655-664-4654 Astronomic Position Set. Astronomic Observation R-4 127.861-5089". Many small parts included (brushes, spare bulbs, etc.). 1964 service card included. [Used for determining astronomic latitude, longitude, to an accuracy of about 0.2" - B.A.]

Box is **HC 162**, green painted wooden, 12 1/2" wide x 10" deep x 18 1/2" wide.

Condition: Excellent.

Location: On top of Fitz box (**HC 167**), in front of air conditioning.

==========

HC 162: Box for above

==========

HC 163: 5" finder telescope for 26" Clark

A Clark? telescope, possibly with Clave? eyepiece. Couldn't reach objective, but appears to be a 5" lens. Entire tube assembly, 8 feet in length, including 16" x 6 3/8" o.d. brass dewcap. Tube appears to be brass, painted white. Dew cap obviously not original, held in place by 3 screws and paint - could not be removed due to paint. Eyepiece has 1" diameter eye lens, also could not be easily removed. [This appears to indeed be the original Clark finder to the 26-inch. It is described as one of two finders, "one by Clark 5 in. aperture, 72.5 in focal length;" in Skinner [1898, p. 1]].

Condition: Tube is dirty, paint chipped [probably should be striped of paint]. Objective at least dusty and cobweb covered, eyepiece also needs cleaning. Optics should be covered. *** Should be raised off floor. ***

Location: On floor in front of window.

==========

HC 164: 4' clock pendulum, spare, in box

Pendulums, 4 feet in length, one outfitted with 2 glass(?) empty cylinders for Mercury weight. Also weighted 3" wide scale for bottom of clock. In box, 53" x 6 1/2" x 4", missing lid. Other obviously unrelated junk cleaned out of box.

Condition: Poor, box dirty.

Location: On top of cabinet 3.

==========

HC 165, **HC 166**, and **HC 167**: 3" Fitz objective/box, tube assembly, and box

3" refractor tube assembly, **HC 166**. Mahogany stained tapered tube, 48" long, 4" o.d. brass objective cell. Brass tailpiece with single screw focuser. Finder missing. Two 2" wide brass plates on tube for holding finder rings, one of which has fallen off and is in box. Small box, **HC 165**, with handle and two clasps, contains objective lens (no room to tag objective itself), a 3 1/8" achromat with no spacers, dusty and moldy. 4 brass eyepieces, all dirty, only 1 marked with a "II". Label on main box gives eyepiece table: "I 55x 1[degree] 7.8', II 70x 36.9', III 135x 17.9', IV 175x 14.8'". ? marked "Used for finder on polar axis at Limission, Ma [? not clear, "Mo"?] 1932". Overall wooden carrying box is **HC 167**, 5' x 1' x 9", with key lock (no key), marked (all that was legible) "The Superintendent, Naval Observatory, Washington". Missing second

piece of wood to brace above lower part of tube. Total weight about 50 pounds. [Possibly appears with Asaph Hall in photo showing preparations for transit of Venus expedition. - B.A. Probably a Fitz refractor from very early in observatory's history. - T.R. Confirmed as a Fitz, 95.11.01, T.R.]

[This is almost certainly the telescope Skinner [1898, p. 45] refers to. He indicates the following information (B.A. 96.08.07):

Maker: H. G. Fitz New York (Wash. Obs. 1869 App II pg. 99.)
Stand by Alvan Clark and Sons (Wash. Obs. 1876 App III pg. 317)
Date of purchase and cost unknown; it is possible this is referred to in the following record: "Bought from H. P. Tuttle Dec. 1865 Portable telescope $93."

Description: Aperture 3.25"; Focal length 48.5". The mounting by Clark has a substantial wooden tripod to support a conveniently arranged and solidly built equatorial mounting.

Present Condition: Fair; Some of the eyepieces are missing.

Present location: Room P. 1 packing box for tube and 1 box for tripod.

Approx. value. $100.

Availability for use: available when missing parts are supplied. an excellent instrument.

History: Used at Des Moines Iowa August 7, 1869 by Prof. J. Eastman U.S.N. and party to observe total solar eclipse. Used at Syracuse Italy, Dec. 22, 1870 by Prof. J. P. Eastman U. S. N. and party to observe total solar eclipse. Used by Assistant astronomer U. M. Paul at West Las animas, Colorado to observe total solar eclipse July 29, 1878. It has been used at the old observatory at various other dates for observing celestial phenomena.]

Condition: Objective dusty and has mold spots. Tube relatively beat up, needs cleaned, brass polished, wood oiled. Main box has terrible insect damage to leather padding used to hold objective box and other accessories. Main box exterior also very bad.

Location: On top left of main 5" Clark box (**HC 184** below), in front of A/C.

==========

HC 168 and **HC 169**; finder rings for 26" finder

Two white painted finder rings for holding 26" finder (**HC 163**). Larger is **HC 168**, 16" high x 9 1/2" wide base x 2" thick. Smaller is **HC 169**, 14" high x 9 1/2" base x 2" thick. [Note that the 26" tube is tapered, which is why they are different in size. - B.A.]

Condition: Paint chipped, dirty.

Location: On top right of Fitz box (**HC 167** above), in front of air conditioning.

==========

HC 170: 5" Clark tube assembly, no. 858

5" Clark brass tube assembly, 68" long x 6 1/8" o.d. (front cell). No objective or lens cover. Tapered tailpiece engraved "A Clark & Sons. Cambridgeport, Mass. 1874" and "858". Has two focuser screws - one for each focuser sleeve. Rear counterweight rod attached, 12" in length.

Condition: Good. Lacquer worn off in spots, could use some polishing.

Location: In box **HC 184** (below), in front of A/C, on floor.

==========

HC 171: Clark split-image micrometer no. 863

7" tall, brass split-image micrometer, with 3 1/2" diameter p.a. circle, and 4 1/2" screw box. "863" engraved.

Condition: Good.

Location: In box **HC 184** (below), in front of A/C, on floor.

==========

HC 172, **HC 173**, and **HC 174**: Clark finder, lens, lens cap

21" long Clark finder, 2 1/4" o.d., **HC 172**. Objective attached, 2" diameter lens, **HC 173**. Brass lens cover, **HC 174**. No Clark serial number, but with #858 (**HC 170** above).

Condition: Good. Lens dusty, moldy, fingerprints.

Location: In box **HC 184** (below), in front of A/C, on floor.

==========

HC 173: See above

==========

HC 174: See above

==========

HC 175: Clark finder eyepiece, solar filter

3 3/4" long x 1" o.d. Clark finder eyepiece for **HC 172** above. Also has solar filter screwed over eye lens.

Condition:

Location: In box **HC 184** (below), in front of A/C, on floor.

==========

HC 176: declination slow motion control rod for 5" Clark

Brass rod (with some steel pieces) for declination slow motion control for a 5" Clark. 2 pieces, 17" long, and 10" long, attached with a universal joint. 1 3/4" knurled brass knob on end. No Clark serial number, but with #858 (**HC 170** above).

Condition:

Location: In box **HC 184** (below), in front of A/C, on floor.

==========

HC 177: long eyepiece extension tube

Clark? brass eyepiece extension tube, 7" long x 1 1/4" i.d., one end inside threaded.

Condition:

Location: In box **HC 184** (below), in front of A/C, on floor.

==========

HC 178: medium eyepiece extension tube

Clark? brass eyepiece extension tube, 2 1/8" long x 1 1/8" i.d. Interior and exterior threads, eyepiece holder.

Condition:

Location: In box **HC 184** (below).

==========

HC 179: short eyepiece extension tube

Clark? brass eyepiece extension tube, 1 3/4" long. (Same as **HC 178** above, only shorter.)

Condition:

Location: In box **HC 184** (below).

==========

HC 180 and **HC 181**: two Herschel wedges

Two Clark [identified by B.A.] Herschel wedges, 7 1/4" long x 3" tall eyepiece holder, with prisms. **HC 180** has shinier tube with masking tape at end, and **HC 181** has tarnished tube.

Condition: **HC 180** good, **HC 181** needs relacquered or polished.

Location: In box **HC 184** (below).

==========

HC 181: See above

==========

HC 182: variable density eyepiece filter

Variable density eyepiece filter. Clark? 1 1/4" diameter with 3/4" wide slide containing variable density glass filter across top.

Condition: Dirty.

Location: In box **HC 184** (below).

==========

HC 183: Gartner micrometer

Steel micrometer, 3/4" x 3/4" x 1 1/2", 3/4" o.d. tube. Illuminated reticle. "Gartner Scientific Corp, Chicago, USA". [It is not clear why this is included with other apparently Clark accessories.]

Condition: Good.

Location: In box **HC 184** (below)

==========

HC 184: wooden crate for 5" Clark tube assembly

Wooden crate, 80 1/2" long x 15" wide x 10 1/2" high, painted grey, key lock (no key). Marked "860 Box 1". Shipped from Richmond, 9/27/74. Contains photocopy of photo of complete 5" Clark [i.e. "directions"!] (8" x 10" glossy of this photo is in **HC 234**).

Condition: *** Should be raised off the floor.

Location: In front of A/C on floor.

==========

HC 185: wooden crate #2 for 5" Clark

Wooden crate, 44" long x 17 1/2" wide x 17 1/2" high, painted grey. Filled with packing material. Marked "860 Box 2". Shipped from Richmond, 9/27/74. [for pier?]

Condition:

Location: To left of A/C on floor.

==========

HC 186: wooden crate #3 for 5" Clark

Wooden crate, 26 1/4" long x 16 3/4" wide x 10" high, painted grey, key lock (no key), two metal handles, one wooden insert. Marked "860 Box 3". Shipped from Richmond, 9/27/74. [for pier legs?]

Condition:

Location: Behind cabinet #5, top of pile of boxes.

==========

HC 187: wooden crate #4 for 5" Clark

Wooden crate, 22" long x 16" wide x 12 1/2" high, painted dark grey, key lock (no key). Some packing material, wood blocks. Marked "860 Box 4". Shipped from Richmond, 9/27/74. [use unknown]

Condition:

Location: Behind cabinet #5, middle of pile of boxes.

==========

HC 188: wooden crate #5 for 5" Clark

Wooden crate, 30 1/2" long x 16" wide x 12 1/2" high, painted grey, key lock (no key), two metal handles. Some packing material, wood blocks. Marked "860 Box 5". Shipped from Richmond, 9/27/74. [for mount?]

Condition:

Location: Behind cabinet #5, second from top of pile of boxes.

==========

HC 189: box with a Moon camera and misc. parts

Not examined/inventoried in detail at this time.

Box is 25 3/4" x 16 3/4" x 17 3/4" deep, with no lid, with handles. Has return address of "Rota, Spain" and "IGY" use marked. Returned "5/21/61", weight of "73 lbs". [Should be inventoried further.]

Condition: [?]

Location: Behind cabinet #5, second from bottom of pile of boxes.

==========

HC 190: 1 3/8" finder(?)

1 3/8" coated lens, on aluminum tube, 14 1/2" long x 2" o.d. No tailpiece.

Condition: Lens dirty, some mold. Tube clean.

Location: In **HC 189** box (above), behind cabinet #5.

==========

HC 191: Moon camera

About 11" diameter x 14" high. Marked "TS" in red.

Condition: Dirty.

Location: Sitting out (not in box) beside **HC 189** (above), behind cabinet #5.

==========

HC 192 to **HC 199**: Japanese WWII aerial camera lens, aperture stops, and box

" "Captured Enemy Equipment" Lens - Japanese - Aerial Type - Serial #1 TOKYO 1000(40") Focal Length. f/4.5 APLD Local Stock # VLB677TOKUN0451000BMAC" on card on lens cover. Also "Recd at USNO 22 Sept. 1958 65 lbs without cap[?]" written on same card in pencil. Box marked: "Date PKD 9/17/58," from "S.O. NAMC, U.S. Naval Base, Phila, PA." and "Attn: Dr. Markowitz, OP-262". Box has S.N. plate in Japanese.

Lens itself numbered **HC 192**. 8 3/4" clear aperture. Several elements. Dusty, otherwise in remarkably good condition. Possible minor edge chips at edge of one element. Assembly is 9" high, x 13" o.d. of flange (which rotates). Two side mounting/carrying "T" bars. Black painted metal.

Condition: Lens is dusty.

Location: In box **HC 199** (below), on floor behind cabinet #5.

==========

HC 193: F:25 aperture stop for **HC 192**

"F:25" engraved in white paint on black painted metal aperture stop for **HC 192**. 9 1/2" diameter x 1" high.

Condition: Dusty.

Location: In box **HC 199** (below), on floor behind cabinet #5.

Special note: *** This is currently mislabeled **HC 194**! ***

==========

HC 194: F:18 aperture stop for **HC 192**

"F:18" engraved in white paint on black painted metal aperture stop for **HC 192**. 9 1/2" diameter x 1" high. Aperture itself now taped, and stop being used as lens cover for **HC 192** itself.

Condition: Dusty.

Location: In box **HC 199** (below), on floor behind cabinet #5.

==========

HC 195: F:12.5 aperture stop for **HC 192**

"F:12.5" engraved in white paint on black painted metal aperture stop for **HC 192**. 9 1/2" diameter x 1" high.

Condition: Dusty.

Location: In box **HC 199** (below), on floor behind cabinet #5.

==========

HC 196: F:9 aperture stop for **HC 192**

"F:9" engraved in white paint on black painted metal aperture stop for **HC 192**. 9 1/2" diameter x 1" high.

Condition: Dusty.

Location: In box **HC 199** (below), on floor behind cabinet #5.

==========

HC 197: F:6.3 aperture stop for **HC 192**

"F:6.3" engraved in white paint on black painted metal aperture stop for **HC 192**. 9 1/2" diameter x 1" high.

Condition: Dusty.

Location: In box **HC 199** (below), on floor behind cabinet #5.

==========

HC 198: lens shield for **HC 192**

Black metal lens shield for **HC 192** aerial camera lens. Has card described under **HC 192** taped to it. 10 1/4" o.d. x 14 1/4" high.

Condition: Dusty.

Location: In box **HC 199** (below), on floor behind cabinet #5.

==========

HC 199: box for Japanese aerial camera lens (**HC 192** to **HC 198**)

Wooden box, marked as described under **HC 192**. 37" x 17 1/4" x 15 1/4" high. Top half was lid, but hinges now broken. Keyhole (no key). Two metal handles.

Condition: Hinges broken, much water damage and mold on bottom of box.

Location: On floor behind cabinet #5, should be moved off floor.

==========

HC 200: mechanical calculator

Coxhead-Mercedes calculator, Ralph C. Coxhead Corp., New York. 19" long (with metal handles) x 13" wide x 14" high.

Location: Cabinet #5, shelf 1 (bottom), right side.

==========

HC 201: chronograph

Chronograph [from transit of Venus expedition?]. 25" x 12" x 14" high, brass, steel, glass enclosed works at left, glass enclosed governor (6 1/2" dia. x 5") on top. Has 14" long x 7 1/2" dia. brass recording drum. Weight with hook may be part of device, weight is 4 3/4" long x 3" dia. Laying on top are: a) solenoid assembly, and b) double pulley assembly.

Location: Cabinet #5, shelf 1 (bottom), left side.

==========

HC 202 and **HC 203**: box and 6" lens

HC 203 is 5 3/4" lens, 104" focal length. In 8 1/4" dia. flanged brass cell. Some red paint on one side of flange. ``6" f20...fl'' and "4/5/66" written on cell in black. Air spaced, 3 foil spacers. In wooden box (**HC 202**), 11 1/2" x 11 1/2" x 4 1/4", with lid, has recessed bottom for cell. Marked "Lens // 104 inches focus // 5 3/4" aperture". Also has yellow sticker "original 6" lens?" and "probably not, B. Archinal + I. Jordan, 2/23/89."

Condition: Poor; lens dirty and moldy.

Location: Cabinet #5, shelf 3, left side, on top of **HC 204**. (Was on shelf 4 of cabinet #1, exchanged with similar 5" lens in box - that it fit better - on shelf 6.)

==========

HC 203: see above

==========

HC 204 and **HC 205**: box and 6" Fecker lens

6" lens (**HC 205**) in pine box (**HC 204**), marked "6[-inch] Objective by Fecker". Foam rubber packing.

6" measured objective, in steel cell, with flange diameter of 8", 1 3/8" in height, about 10-15 pounds in weight overall. 7/8" mirror and cell cemented to front of lens and facing back. Magnesium fluoride coating on lens. Wooden box is 11 1/2" x 11 1/2" x 5 3/8", with lid.

Condition: Poor; dirty, some mold, mirror needs realuminized, foam disintegrating.

Location: Cabinet #5, shelf 3.

==========

HC 205: see above

==========

HC 206: top of Rutherford measuring engine

Top of Rutherford measuring engine [as noted by T. Rafferty, May, 1990]. 13 1/2" x 13 1/2" x 5" high. Painted black. Eyepiece holder, (broken) bubble level on top. Motor/gear assembly attached by a wire.

Location: Cabinet #5, shelf 3, center.

==========

HC 207: optical bench optics rectangular holder?

Optical bench optics rectangular holder (?) with adjustable set screws. 9" x 9" x 5" dia. base, iron, painted black, brass, brass screws.

Location: Cabinet #5, shelf 3, right side.

==========

HC 208: plate box from transit of Venus expedition

Empty wooden box 8" x 15 1/4" x 7 3/4", with lid, two hooks. Has label "China Box 3 (Duplicates 1,2,3,4),...[more numbers]". Interior number 1 through 150 for plates. Lid has engraved "No. 3" on interior. "Wet side" printed at one end of box interior. Brass exterior fittings, screws.

Condition: Good, except some of interior slotting is broken off and missing.

Location: Cabinet #5, shelf 4, right side.

==========

HC 209: light box

Metal light box for editing/cutting film (possibly 16 mm film) with electrical cord. 11" x 6" high x 5" wide, brass, ivory? button.

Location: Cabinet #5, shelf 4, right center.

==========

HC 210: 12" telescope finder dewcap

Dewcap for 12" telescope finder [identified by R. Schmidt, 5/24/92]. 10 3/4" long x 5" o.d. Painted white, black interior, aluminum. "Doesn't fit with current lens cap."

Location: Cabinet #5, shelf 4, center.

==========

HC 211: misc. brass parts and eyepieces in box

Wood box, 11 1/2" x 13" x 5 1/4", no lid, labeled "Nautical instrument repair shop sextant use only". Box has various parts of eyepieces, metal fittings, etc. Includes: a) 3 3/4" x 5" x 2 1/2" binocular viewer [for comparator?], b) 16 1/2" telescope/microscope? with eyepiece and micrometer, c) 16" long right angle viewer of some sort, d) 7" brass drawtube and micrometer (stage only), e) 7" telescope, measuring arc attached, and approximately 100(!) other eyepiece parts.

Location: Cabinet #5, shelf 4, left side.

==========

HC 212 and **HC 213**: box and experimental azimuth instrument

Metal box is **HC 212**, 9 1/2" x 13" x 5 3/4", with handles and two part folding lid, labeled "German - azimuth instrument // experimental". Box bottom interior dated "22.7.42". Azimuth instrument is **HC 213**, inside box. Instrument label: "Libellen - Oktant // mit Mittlungseinrichtung // Bauart C. Plath - De Te We // Ger[umlaut]at - Nr. 127-134B1 // Werk - Nr. 44919 // Anforderz. Fl 23750 // Hersteller: C. Plath". Has several attachments, eyepiece, lighting equipment, etc. in box. Both relabeled, 96.09.09.

Location: Cabinet #5, shelf 5 (top), left side.

==========

HC 213: see above

==========

HC 214: five microscope cameras from 6" transit circle, and box

Metal green "ammo" box is **HC 214**, 11" x 5 3/4" x 7 1/4", labeled "420 cartridges ["+" in circle] 7.62 mm...[more]". Box contains "Five microscope cameras // from 6" TC // Designed by Watts // 1941." on card on exterior. 5 cameras, 3 brass tubes inside. Individual camera pieces not labeled with **HC** numbers.

Condition: Has strong chemical smell.

Location: Cabinet #5, shelf 5 (top), right center.

==========

HC 215 and **HC 216**: box and sextant

Wooden box is **HC 215**, 11 1/4" x 11 1/4" x 5 3/4", with lid. Tag on box says "DD491 H6605-223-7735 Sextant Ser. #5273 2 of 3". Brass fittings, keyhole (no key), brass handle, 2 hook clasps, one missing. "N[in

circle]5273" on brass plate on box. Contains sextant, **HC 216**, marked U.S. Navy, Bu. Nav. Mark II [circle with "N"], 5273-1941 David White Co., Milwaukee.

Condition: Sextant fairly dirty, stored in various pieces in box, with box internal supports broken. However, sextant appears fairly serviceable, nearly in working condition.

Location: Cabinet #5, shelf 5 (top), left center.

==========

HC 216: See above

==========

HC 217 and **HC 218**: two brass controls of unknown use

Brass and steel "controls" of some sort, 8 1/2" long x 1 1/4" diameter, 1 1/2" diameter dials on end. One dial (on **HC 218**) broken. Both stored in thick cardboard sleeves. With 2 airmail envelopes of small (related?) parts.

Location: Cabinet #5, shelf 5 (top), left side.

==========

HC 218: see above

==========

HC 219: 1 1/4" eyepiece holder

1 1/4" eyepiece holder, brass, 2 slots in eyepiece end, threaded 2 3/8" diameter at other. 2 1/8" high.

Location: Cabinet #5, shelf 5 (top), left side.

==========

HC 220: eyepiece extension tube?

Eyepiece extension tube?, brass[?], 2 1/2" diameter x 3" high. Has threaded 1 3/8" top hole, 1" stop, and threaded bottom.

Location: Cabinet #5, shelf 5 (top), left side.

==========

HC 221: eyepiece

Eyepiece, 1 1/2" x 2 1/2", brass, field lens very convex from bottom, 1 1/4" diameter, eye lens 3/4" diameter. Fits **HC 222**.

Condition: Optics are dirty with mold spots.

Location: Cabinet #5, shelf 5 (top), left side.

==========

HC 222: eyepiece extension tube

Eyepiece extension tube, 4" long x 1 3/8" i.d., threaded top and bottom interior, flanged thread halfway up outside. Lacquered brass.

Location: Cabinet #5, shelf 5 (top), left side.

==========

HC 223: large bolt!

Large bolt, 13" long x 1 3/8" diameter shaft, 2 1/2" hexagonal top, with some holes on sides of top. Brass, weighs about 5 pounds. [Has fallen on R. Schmidt's foot at least once!]

Location: Shelves #1, top shelf, left side.

==========

HC 224 and **HC 225**: 10" mirror and box

Box labeled "11/60 Mirror for Gaertner Coelestat", "10[-inch] mirror", "#3 aluminized Mar-Apr. 1938", and "10[-inch] mirror, unmtd." on side. Mirror is 10 1/16" clear aperture x 1 1/2" thick, Pyrex(TM), aluminized. Box (**HC 225**) is 12" x 12" x 3", pine, with lid.

Condition: Mirror - surface dusty, many minor scratches, a few short noticeable scratches, aluminizing old.

Location: Shelves #1, top shelf, left.

==========

HC 225: box for **HC 224**, see above

==========

HC 226: 5" Clark counterweight

Declination axis counterweight. 4 3/8" diameter x 2". Cast iron or lead. Painted light grey. Bolt on side, 1 3/8" hole on 1 flat side, 1 1/8" broken metal surface on other.

Location: Shelves #1, top shelf, center.

==========

HC 227, **HC 228**, **HC 229**: three footpads for 5" Clark pedestal

Three footpads for 5" Clark pedestal legs, 3" diameter x 1" high. 1 3/8" diameter raised center. Painted

light grey.

Location: Shelves #1, top shelf, center.

==========

HC 228: see above

==========

HC 229: see above

==========

HC 230: cradle and declination axis for 5" Clark

Steel declination shaft, other parts brass. Shaft 1" diameter x 28" long (to top of cradle). Cradle 11" x 7 1/2" for 5 1/8" diameter tube.

Location: Shelves #1, top shelf, right rear.

==========

HC 231, HC 232, HC 233: 5" clark finder: lens, lens cap, tube assembly

Lens (**HC 231**) 1 3/8" diameter, in cell. Lens cap (**HC 232**), brass, top corroded, 2 1/4" diameter x 3/4". Overall finder (**HC 233**), 20 1/2" long, 1 1/8" i.d. eyepiece end, 2 "stands" to attach to tube. All brass.

Condition: Lens - dusty, etched (with colors actually visible).

Location: Shelves #1, top shelf, on top of **HC 225**.

==========

HC 232: see above

==========

HC 233: see above

==========

HC 234: misc. 5" Clark parts in cardboard box

Cardboard box includes a) 8 1/2" x 11" envelope with misc. parts [included were a clock drive cover and cover knob, 3? knurled screws to hold the cover on, and a few other clock drive parts, 96.09.19, B.A.], b) glossy 8" x 10" photo of 5" Clark [in New Zealand], c) 5" lens cap, d) finder lens cap, e) 5" tube rings (e.g. to attach to **HC 230**), f) small counterweight, g) dec (RA?) circle, h) chain (for drive?), i) other. All will need numbered eventually.

Items "a" and "d" above were temporarily transferred to T.R., so they could be cleaned by the USNO Instrument

Shop and possibly installed on the 5" Clark telescopes **HC 504** (Clark #860) and **HC 528** (Clark #856). B.A., 96.09.19.

Location: Shelves #1, top shelf, right front.

==========

HC 235: 2" diameter (eyepiece) Herschel wedge?

Apparent Herschel wedge to fit 2" diameter eyepieces (not sure of optics). "T" shaped brass tube, 2 way mirror for filter? 2" i.d. top, 2 1/8" o.d. bottom, except for telescope end. Painted black.

Condition: Glass dirty.

Location: Shelves #1, second shelf down, left front.

==========

HC 236: large barlow lens

Large barlow lens, possibly used on 12" or 26". Brass, 19" long x 2 1/4" eyepiece diameter. 2 7/8" telescope tube (o.d.). Screwed flange/collar in middle with (bent) tightening screw. Field lens is achromatic, with 3 foil spacers, about 2 1/2" diameter lens. 2 stops in interior. About 8 pounds. Masking tape with "0431" written on it on side.

Location: Shelves #1, second shelf down, on **HC 237**.

==========

HC 237 and **HC 238**: level trier and base

Level trier and base for level calibration. 18 1/2" long, brass?, 2 1/2" dial at end. On oak trapezoidal platform (**HC 238**) 24" long x 8 3/4" wide x 4 1/2" wide x 1 3/4" high.

Condition: Dirty.

Location: Shelves #1, second shelf down, right side.

==========

HC 238: see above

==========

HC 239: striding level

Striding level, 15" long, 9 3/4" long x 1 1/2" diameter tube, 2" wide base (at ends). With linear scales on both sides reading 0-70. Black knob on top.

Condition: Still works, brass about average corrosion.

Location: Shelves #1, second shelf down, center front.

==========

HC 240, **HC 241**, and **HC 242**: three collimator telescopes?

HC 240 has lens, 1 5/8" diameter, and brass lens cap 2 1/8" diameter x 3/4" (with rings engraved on top, unlike the Clark finder lens caps). Main tube is brass, 19" long x 1 5/8" i.d. rear. Has 2 short mounting flanges (of different color brass) with 2 1/4" base x 2 1/4" high. Stop inside.

HC 241 is the same as **HC 240**, but with no lens or cap.

HC 242 is the same as **HC 240**, but with no lens or cap. Tube is more corroded (getting green).

Condition: **HC 240** (lens) has dust and mold.

Location: Shelves #1, second shelf down, on **HC 245**.

==========

HC 241: see above

==========

HC 242: see above

==========

HC 243: 2" telescope

Telescope with 2" diameter coated lens. Tube is brass, 26" long, all same 2 1/2" o.d. 2 3/8" i.d. rear with knurled brass knob tightening screw. Interior coated with black flocking paper.

Condition: Lens is dirty, with minor scratches.

Location: Shelves #1, second shelf down, on **HC 245**.

==========

HC 244 and **HC 245**: three arm metal protractor and box

On factory sticker on box interior and engraved on instrument: "Warren Knight Co. No. 7253." Also engraved "U.S. Navy Ships. Protractor, 3 Arm, metal, Left-handed [circle with "N" inside] 899, 1942". **HC 244** is 6 1/2" diameter protractor with three 18" arms, and three 15" arm extenders. 7 misc. screws pivots. Magnifier on circle. Good condition. **HC 245** is box, 22 1/2" x 8" x 3", blue felt lined, nice mahogany?, 2 hook closure, Navy metal tags. A new label was made for **HC 245**, 96.09.09.

Location: Shelves #1, second shelf down, right side.

Special note: Label is loose for **HC 245**.

==========

HC 245: box for **HC 244**, see above

==========

HC 246: cesium? sidereal clock for transit circle?

Apparent early cesium standard sidereal clock. Marked in various places: "Model 25 Sidereal Clock", "Sulzer Labs Inc.", "SULZER 2" (on labelmaker sticker), and modern USNO property sticker "USNO 62285 002503". 19" x 7" "electronics rack" front panel, x 19" deep. Painted light grey. Weighs 40-50 pounds. A new label was made 96.09.09.

Location: Shelves #1, second shelf down, center.

Special note: Label is loose for **HC 246**.

==========

HC 247 and **HC 248**: 7 1/4" mirror and box

7 1/4" aperture plate glass mirror, 3/4" thick, with beveled front and 7 1/2" o.d. Surface very dirty, aluminization poor and with holes. "wrong side" and "back" etched on back. **HC 248** is box, marked "Mirror + cell 11/60" (but no cell now). Also, "Mikesell" and "...W. Kong" on paper tag. In pencil "7[-inch] wedge shaped mirror. Not aluminized. Both front + rear surface slightly astigmatic. The 'right' surface a little better. No arm - no collar." Box is 10 1/2" x 10 1/2" x 3" pine, including lid.

Location: Shelves #1, third shelf down, on top of **HC 250**.

==========

HC 248: box for **HC 247**, see above

==========

HC 249 and **HC 250**: Prin transit micrometer drive and box

Prin transit micrometer drive, about 18" high x 14" across x 7 1/2" deep. Mostly cast iron or steel with a number of brass gears, etc. and small electric? motor. 2 other loose pieces fitted to box. **HC 250** is box, 22" x 15" x 9 1/2" high, with lid and two (broken) hinges, keyhole (no key). Also on masking tape on outside of box: "11/1/6... ... rin Transit micrometer drive" and "Store attic Bldg. 1 (for museum)." A new label was made for **HC 250**, 96.09.09.

Location: Shelves #1, third shelf down, left.

Special note: Label is loose for **HC 250**.

==========

HC 250: box for **HC 249**, see above

==========

HC 251: new/old? version of "Amy"?

[Check with T.R. for description.] 12" x 18" steel base, with numerous optical, brass, electric parts. Also "172-USN 001215" plate.

Location: Shelves #1, third shelf down, right.

==========

HC 252: part of new? "Amy"?

Check with T.R. for description. 17" x 10 1/2" x 12" high. Black metal base, misc. optical, electrical parts. Goes into cabinet to left of window?

Location: Shelves #1, fourth shelf down, left.

==========

HC 253: recording thermometer

Dark green metal case, 9 1/4" x 5 1/4" x 7 1/4", with two glass panels on front, metal handle on top. Wind up motor for chart holder - wound up already (i.e. broken?). Has placque reading "Signal Corps U.S. Army / Thermograph ML-77 / Serial No. 109 Order no. 3590-WF-43 / Made by / Julien P. Friez & Sons / Baltimore Maryland / SC1374A" Also has tag labeled "Return to maintenance division, U. S. Naval Observatory".

Location: Shelves #1, fourth shelf down, center front.

==========

HC 254, **HC 255**, and **HC 256**: 2 Prin transit mark lenses and box

Two 3 1/4" lenses, each mounted in heavy cast iron, 3 pronged base. Marked (in red) "East" (**HC 254**) and "West" (**HC 255**). Box (**HC 256**) 14" x 8" x 8" high, with lid. "Prin Transit Mark Lenses" etched on side.

Condition: Lenses dirty, mold spots. Mounts and box interior very dirty.

Location: Shelves #1, fourth shelf down, center rear.

==========

HC 255: see above

==========

HC 256: box for **HC 254** and **HC 255**, see **HC 254**

==========

HC 257: (nearly) empty wooden box for surveying instrument of some sort

Box, 10" across x 11" deep x 16" high, front door with keyhole and key(!), top metal handle. Some loose parts, including several eyepieces and filters in boxes in top, including a) Bausch & Lomb "5.5 mm 0.65", b) B&L "10.25 mm", c) B&L "12.5x", and d) Spenser Lens "8mm". B&L registration card says "Registration No. 79829, model 31-21-66-17, ser. no. 103775". Metal tag on top says "172-U.S.N. 000305".

Location: Shelves #1, fourth shelf down, left back.

==========

HC 258: metal box with misc. parts

Green painted metal box (army green ammunition type box), no top, 17 1/2" x 8 1/2" x 6 1/2". Contents include: a) box of hundreds of small mirrors!, b) striding level, c) Fauth altitude circle, 6 3/8" diameter, d) brass tube with windows at ends, 1' long, e) 8" x 1" diameter telescope tube, marked "[circle with "N"]. 2112", f) 7" x 5" periscope? with eyepiece.

Location: Shelves #1, fourth shelf down, right side.

==========

HC 259: PZT #3 rotating head

"PZT 3 // plate holder + lens cell holder // B.A. 7/18/89." on notebook page. 12" o.d. head and appendages, about 12" high overall. Lens is **HC 154**. Weight about 50 lbs.

Condition: Dirty, but in good shape.

Location: Shelves #1, bottom shelf, left side.

==========

HC 260: computer card box with misc. parts

Misc. parts in computer card cardboard box: a) 2 small brass eyepieces, b) 2 1/2" high x 1 7/8" i.d. brass extension tube, c) 6 - 2 1/4" diameter washers, d) 5" x 1/2" dia. brass bar, e) 2 clamp laboratory pipe clamp, f) 4 3/4" bolts, g) bag of bolts wired together, h) 1 1/2" long x 3/4" i.d. brass tube.

Location: Shelves #1, bottom shelf, right front, on stack of plastic sheeting.

==========

HC 261: 5" Clark telescope "harp" (drive, polar axis, etc.)

20" x 14" high x 8" wide assembly. "Harp" for latitude adjustment, polar axis (tapered, about 19" long), 7 1/2" x 5/8" worm wheel. Harp is 2 3/4" wide. 6 1/2" dia. brass hour circle with double pointer. 1800 rpm electric motor, 116 vac "Bodine Electric // Company // Chicago, U.S.A. // Speed Reducer Motor // ..." Output is 10 rpm. 4 wires attached. Total weight about 100 lbs.

Location: Shelves #1, bottom shelf, right rear side.

==========

HC 262: Howard pendulum clock

Pendulum clock, mfg. E. Howard & Co., #626, for 1874 transit of Venus. Cabinet appears to be pine, with walnut or oak veneer. Tag at bottom of lower door reads "172-USNO // 001307". Cabinet is 18" wide by 57" tall by 10 1/4" deep. Has two front doors. Upper lock works, lock below missing. Top door has 12 1/2" diameter glass window, over 12' dial. Bottom door has 8 1/2" by 4 1/2" window. Has lead counterweight #626, mercury filled pendulum 46" in length, brass workings, and key with wooden handle to wind clock.

5" by 7" typewritten card reads: "This clock was purchased from the E. Howard & Company of Boston, Massachusetts in 1874 at a cost of $310. It is number 626 and was one of eight purchased for use at the different stations occupied for the observation of the transit of Venus of December 8-9, 1874. However, it was found that more accurate performance could be expected from first class break circuit chronometers properly protected than from clocks such as the Howard temporarily mounted; consequently only break circuit chronometers were used for the 1882 transit of Venus. // The Howard clocks have gravity escapements and are supplied with mercurial compensation pendulums which contain about 45 pounds of mercury. All were intended to be used as sidereal clocks. Number 626 was used at Queenstown, New Zealand for the 1874 transit of Venus. // - 29 August 1973 (RWR)" and also reads in printed letters "It was first mounted in the west room of the clock house on 29 August 1899, when it was used as a counting clock."

Skinner [1898, p. 75-76] describes the eight Howard clocks. Much of the material in the above description probably originates from Skinner. He lists #626 as having been used to observe the transit of Venus from Queenstown, New Zealand, and notes that it was (in 1898) "Stored in the Chronometer room." This is also crossed out and a note has been added "Now (Feb. 1965) in west room of clock house. - RWR".

Condition: Clock still runs!

Location: By entry door, facing door.

==========

HC 263: 12" mirror, flat (one of two)

Marked "12" plaine x 2"". Weight about 40 pounds.

Location: In box **HC 264**.

==========

HC 264: box (one of two) for 12" mirror, **HC 263**

Box marked "Ser No. G[?]650-NSN // 08-07-003589".

Location: On pile of boxes behind Howard clock (**HC 262**), second box down.

==========

HC 265: 12" mirror, flat (two of two)

Marked "12" plaine x 2"". Weight about 40 pounds.

Location: In box **HC 266**.

==========

HC 266: box (two of two) for 12" mirror, **HC 265**

Box lid marked "C-3849-72".

Location: On top of pile of boxes behind Howard clock (**HC 262**).

==========

HC 267: Transmitting Clock Assembly #8

Brass plaque on box: "Transmitting Clock Assembly #8. Mfg. US Navy Navigational Instrument Repair Facility, Naval Observatory, Wash, DC."

On clock plate: "TD-31/FSM-5 // clock // Serial 9 // A Unit of Time Standard AN/FSM-5 // Manufactured For Navy Dept. - Bureau of Ships // by // US Naval Observatory Washington DC".

11" dial with glass cover. 19" across by 21" high by 10" deep. Metal box inside labeled "Clock Oils & Tools // Spare Fuses".

New label added 96.09.09.

Location: In box **HC 268**.

==========

HC 268: box for transmitting clock assembly #8, **HC 267**

box, 21 1/1" across by 15" deep by 24" high. Contains **HC 267**.

Condition: Right latch broken.

Location: In pile of boxes behind Howard clock (**HC 267**).

==========

HC 269: Transmitting Clock Assembly #9

Clock, similar to **HC 267**. [Not checked, 96.09.09.]

Condition: Glass cracked.

Location: In box **HC 270**.

==========

HC 270: box for transmitting clock assembly #9, **HC 269**

box, 21 1/1" across by 15" deep by 24" high. Contains **HC 269**.

Location: In pile of boxes behind Howard clock (**HC 267**).

==========

HC 271: Saegmuller micrometer

Micrometer by "Geo. N. Saegmuller Washn DC 1902".

12" tall, ivory dials, mostly brass, electrical contacts. 2 1/2" by 2 1/2" extension tube. Accepts 7/8" eyepieces. New label made, 96.09.09.

Condition: Top cover loose. Green grease on side of tube. Greasy spring inside box.

Location: In box **HC 272**.

==========

HC 272: box for **HC 271**

box for **HC 271**, 13 1/2" square by 16" high. New label made, 96.09.09.

Condition: Badly damaged by water. Very moldy.

Location: In front of **HC 268**.

==========

HC 273: box for Wild T-3 Theodolite

Labeled "Surveyor's Surface Co. // George A. Greenewald // Instruments, Repairs, Equipment // Los Angeles"

Box is a 4-sided pyramid shape, 23" high by 20" square base by 8" square top. Two handles. [Theodolite was loaned to Don Hutter for use on USNO optical interferometer project some time ago. B.A.] New label made, 96.09.09.

Location: Top of middle pile of boxes, behind Howard Clock (**HC 267**).

==========

HC 274: Clark heliostat base

Clark heliostat base for 1874 transit of Venus. Green counterweight. Ser. no. "172-USNO 001460". Brass and cast iron. Missing mirror holder. 15" wide by 18" long by 16" high. Box contains custody receipt signed by C. B. Watts, loaned for ~ 6 months, 13 Aug 1953. **HC 116** is probably the mirror for this as it is painted the same color. [Not checked, 96.09.09.]

Skinner [1898, p. 70-72] describes the eight Clark photoheliographs.

Location: In box **HC 275**.

==========

HC 275: box for Clark heliostat **HC 275**

Box for Clark heliostat **HC 275**. 21" by 16 1/2" by 18 1/2" high. Wood, light grey paint. Two latches, handles. [Returned by G. Abell to T.R., B.A., 96.09].

Location: Third box up in middle pile of boxes behind Howard Clock (**HC 267**).

==========

HC 276: striding level

Striding level. Brass, leather covered, with two walnut knobs. 20" long, 1 1/2" diameter, 7" long level. In box **HC 277**. Box also has two 18" by 4" by 4" walnut level holders (hangs on wall). [This appears to be for the Stackpole transit #1502 on display in the USNO Building one pier room. B.A.] [Not checked, 96.09.09.]

Condition: Level bubble intact, but glass cover broken. One of level holders is broken at end.

Location: In box **HC 277**.

==========

HC 277: box for striding level, **HC 276**.

box, 34" across by 28" by 16" high. Labeled "1 of 4 from Univ of Calif to Sci Dir USNO". Box still has wooden inserts. [Not checked, 96.09.09.]

Location: Second box up in middle pile of boxes behind Howard Clock (**HC 267**).

==========

HC 278: Moon camera

Moon camera. 14" high by 10" diameter. Aluminum and steel. Decaying plastic vinyl cover. Box contains letter of 19 December 1986 from J. D. H. Pilkington, Head of Time Department, Royal Greenwich Observatory, to "Mr. Smith", Mail Room, US Office of Naval Research, Edison Hous, 223 Old Marylebone Road, London NW1, which reads: "Dear Mr Smith // We spoke by telephone on December 10. // This box contains a dual-rate Moon camera, the property of US Naval Observatory, which has been on loan to the Royal Greenwich Observatory since 1958 and was last used in 1961. The Naval Observatory has asked us to return it, and I would be grateful if you could arrange for its shipment. It is of no commercial value. // If you need more information contact either me or Ms. Laura Charron at USNO. // Yours sincerely"

Location: In **HC 283** below.

==========

HC 279: misc. items

Cardboard box of misc. items. 12" by 8 1/2" by 6 1/2" box. Label remade, 96.09.09.

Location: In **HC 283** below.

==========

HC 280: 7" square mirror

7" square mirror in 8 1/4" square wooden holder. Label remade, 96.09.09.

Location: In **HC 283** below.

==========

HC 281: electronics box, unknown use

Metal electronics box, 2 wires coming out, 12" by 7" by 4".

Location: In **HC 283** below.

==========

HC 282: finder rings

Pair of aluminum finder rings. 8" high by 4 1/2" wide by 3/8" thick.

Location: In **HC 283** below.

==========

HC 283: box

Box, 30" long by 15 1/2" wide by 15 1/2" deep. Two brass handles on side.

Condition: Damage on bottom. Lid now detached.

Location: Across from Cabinet 1 on floor.

==========

HC 284: 10" Cook triplet

From tape on tube "Cook Triplet, made by Peters, refigured 1935 Carl Lundin // used on WS 15" Mtg, 1941-1949 // 11-1-65"

10" clear aperture, achromat in front, second lens 18" down, third lens 30" down. 32" long with flange diameter of 16" overall. Steel with brass collimation holders for central lens. In box **HC 286** (with broken lid).

Condition: Bad, very dirty or mold growing on lens interior, extremely moldy on surface of third lens.

Location: In box **HC 286**.

==========

HC 285: lens cover for **HC 284**

Lens cover for **HC 284**, brass with wooden support/handle. 11" outside diameter.

Location: In box **HC 286**, on **HC 284**.

==========

HC 286: box for **HC 284**

Box for **HC 284**. 38" by 18" by 17 1/2" high.

Condition: Lid broken into two pieces.

Location: In front of pile of boxes behind Howard Clock (**HC 267**) on pallet.

==========

HC 287: Kern tripod

Kern tripod. 39 1/2" high, legs are 61" high when extended. Metal head cover with leather carrying strap. Head has centering mechanism. Two small levels.

Condition: One leg has fallen off, needs reattached.

Location: On box (**HC 277**?) on middle pile of boxes behind Howard Clock (**HC 267**).

==========

HC 288: Stackpole transit circle #1508

Stackpole transit circle. "Stackpole & Bro. // New York // 1508". All brass. Two counterweights. Brass clamp in box, 11" long by 4" wide. No lens. Beam splitter at bottom. Filter wheel. Extra 4" diameter filter wheel. Central telescope 17" high by 3 1/4" outside diameter. 26 1/2" across bottom. Regular level intact but no bubble.

Skinner [1898, p. 68-69] describes these transit circles and notes that "#1508 was sent to Mare Island Navy Yard, July 1884." He indicates that #1508 observed the 1874 transit of Venus at Vladivostok, Siberia, and the 1882 transit at San Antonio, Texas.

Location: In box **HC 291**.

==========

HC 289: striding level for **HC 288**

Striding level like **HC 276**. [Not checked, 96.09.09.]

Condition: Upper glass broken by bubble level intact. Leather is peeling.

Location: In box **HC 291**.

==========

HC 290: illuminator lamp for **HC 288**

Illuminator lamp for **HC 288**. 11 1/2" high by 2 1/2" diameter. Brass. [Not checked, 96.09.09.]

Condition: Brass is green from corrosion.

Location: In box **HC 291**.

==========

HC 291: box for **HC 288, HC 289, HC 290**

Box, 36 1/2" by 27" by 16". Labeled "2 of 4 from Univ. of Calif". [Not checked, 96.09.09.]

Location: Bottom of pile (on pallet) behind Howard Clock (**HC 267**).

==========

HC 292: Rutherford measuring engine, etc.

Rutherford measuring engine, with Watts measuring engine on top. (Two USNO Hist. Committee cards). 7 1/2" square plexiglass plate holder. 12" diameter engraved circle. 12 3/4" by 19" poster nearby with photo.

Location: On top of left pile of boxes behind Howard Clock (**HC 267**).

==========

HC 293: Rutherford micrometer

Rutherford micrometer. 11" by 11" by 2" (overall).

Location: On top of **HC 292**.

==========

HC 294: box for base of Stackpole transit #1502

Box for the base of Stackpole transit #1502 (in the pier room of USNO Building one, first floor). Empty. 22" by 32" by 20". [Not checked, 96.09.09.]

Location: Second box up, in left pile of boxes behind Howard Clock (**HC 267**).

==========

HC 295: Stackpole transit #1508 base

Stackpole transit #1508 base. Painted blue. Cast iron with brass fittings. 24" wide by 18" across by 17" high. Paper sticker inside box reads "001472". [Not checked, 96.09.09.]

Location: In box **HC 296**.

==========

HC 296: box for base of Stackpole transit #1508, **HC 295**

Box for the base of Stackpole transit #1508, **HC 295**. 32" by 22" by 20". [Not checked, 96.09.09.]

Location: Bottom (on pallet) of left pile of boxes behind Howard Clock (**HC 267**).

==========

HC 297: brass tube for lens?

Brass tube for some sort of camera/projection lens (no glass). "No. 13428[?] Patent" and "[illegible] M\:{u}nchen" and "Reproduction" engraved in script on sides. 6" high by 5 1/1" outside diameter of flange halfway up, 3 3/4" outside diameter of top and bottom.

Condition: Dirty, covered with remains of black tape.

Location: Shelves #2, shelf 5 (second from top, top empty), back center.

==========

HC 298: level assembly

Level, brass dial, black painted steel, glass vial. "Davis Level & Tool Co", "Pat. SEP 17. 1867" 6" by 5/8" base, 5/8" high, 2" diameter dial. Relabeled, 96.09.11.

Condition: Good. Works!

Location: Shelves #2, shelf 5, back left.

==========

HC 299: time clock

Steel, glass window to clock face, leather (brown) cover, strap. "Detrex Patrol" on plate on cover. "Detrex Watch clock Corporation // Made in U.S.A. // Trade Mark Reg. // New York-Chicago // Houston-Atlanta". "1274" on back. 5 3/4" diameter by 2 1/2" deep by 1 3/4" face. "...January 1960" on inside back. "clock No // 29677 // Patented // June 9, 1914 June 20, 1916 // SEPT. 19. 1916 JULY 16 1923 // OTHER PATENTS PENDING" on inside. Paper disk with record included. "3914" "Time Detector // No 174047" also engraved on inside back cover.

[Used by USNO guards making rounds until circa 1988. B.A.]

Condition: Good, probably works.

Location: Shelves #5, shelf 5, right rear.

==========

HC 300: 10" flat mirror

10" flat mirror. Pyrex? 10 1/8" clear aperture, 10 1/2" diameter. Box says "11/60 10-in. mirror for Gaertner Coelostat" and on paper "This mirror aluminized // May 1962 by the // National Environmental // Satellite Center". Securely held in box by wood blocks and screws.

Condition: Dusty, otherwise very good. A few minor scratches. Aluminization looks good.

Location: Shelves #2, shelf 5, right front, in box **HC 301** (below).

==========

HC 301: box for **HC 300**

Box for **HC 300**. Wooden, painted grey. 15" square by 4" high (including 3/8" thick lid). Has writing indicated above and "OPEN THIS SIDE". Plastic sheet between mirror and lid.

Condition: Good.

Location: Shelves #2, shelf 5, right front.

==========

HC 302: manual IBM card punch

Manual IBM (style) card punch. Steel, painted black or silver, plastic keys. ("0" to "12" and "S"). 28" by 5" by 3 1/2" high. Includes detached plastic tray for hole punches (about 3 1/2" by 2 1/4" by 1 1/2"). "Wright Punch // Model 2600" "Wright Line // Worchester, Mass - USA".

Condition: Good.

Location: Shelves #2, shelf 5, front center.

==========

HC 303: chronometer box

Chronometer box. Mahogany, brass fittings, glass interior cover. Ivory plaque says "A. Johannson & Co. // London. // 4598". Brass ring still inside as well as loose brass chronometer base. 7 1/4" square by 7 1/2" high. Key hole (no key), mounting handles, etc. in brass on exterior.

Condition: Okay, exterior brass starting to corrode.

Location: Shelves #2, shelf 5, left front.

==========

HC 304: recording barometer

Recording barometer. 21" by 13" high by 6 1/2" deep overall. Black painted steel and brass parts, brass 7" high by 5" diameter recording drum. Cover missing.

Condition: Poor, but possibly could work.

Location: Shelves #2, shelf 4, left side.

==========

HC 305: unknown, part of measuring machine?

Unknown item, possibly part of some measuring machine? 21" by 7 1/4" wide by 9" high. Black painted steel has 3 1/2" diameter by 5 3/4" tube on stage with 9" eyepiece tube and eyepiece. Two long electrical cables.

Condition: Poor.

Location: Shelves #2, shelf 4, left center.

==========

HC 306: 2 RA course motion gears for 12" refractor

Two right ascension course motion gears for the USNO 12" Clark/Saegmuller refractor. 12" diameter by 1 1/2" high and 6 1/2" diameter by 1 1/2" high. Painted light yellow, with grease. [Identified by R. Schmidt, 92.05.24]

Condition: Okay.

Location: Shelves #2, shelf 4, rear.

==========

HC 307: photometer with 1P21 tube

Photometer with 1P21 tube (tag w/#25 [?]). Steel and brass boxes. 6" by 5" by 3 1/2".

Condition: Poor.

Location: Shelves #2, shelf 4, front center.

==========

HC 308: photometer head

Photometer head. 8" by 6" aluminum telescope plate. 8" by 7 1/2" by 5 1/2" box, black painted steel. 2" wide field eyepiece. Microscope eyepiece. Filter wheel set.

Location: Shelves #2, shelf 4, front center.

==========

HC 309: bubble sextant

Bubble sextant. Plate reads "VZ4716 Mfg. Bausch & Lomb Optical Co.". Marked "Overhauled at Norfolk May 7, 1949". 7 1/2" by 5 1/2" by 4 1/2". Two D cell battery pack. Aircraft condition equipment tag Dec 9, 1953.

Location: Inside **HC 310** bag.

==========

HC 310: bag for sextant **HC 309**

Green plastic bag for **HC 309**. "Downes Tag" [?]. 13" by 9" by 10".

Condition: Poor, dirty.

Location: Shelves #2, shelf 4, right rear.

==========

HC 311: photometer head

Photometer head. All aluminum. 10" circular telescope back plate. 10 1/2" by 3" by 4 1/2" box with extensions. X-Y stage in rotation with respect to the telescope. Large eyepiece similar to **HC 308**. Eyepiece ser# 763-8223. Microscope eyepiece.

Location: Shelves #2, shelf 4, front.

==========

HC 312: box for prism, **HC 313**

Box for prism, **HC 313** (below). Pine, 14" by 9 1/2" by 8". Two latches and two handles.

Location: Shelves #2, shelf 3, left front.

==========

HC 313: Zeiss prism

Zeiss prism, #6573 (on box). Tag on box says "90[degree] Zeiss Prism in Metal Frame". Bottom of base of prism inscription reads "12.5 cm prism" and "Zeiss Jena". Base is 9 3/4" by 7 1/4". 5 1/2" hole diameter and 6 3/4" hole diameter. Weighs 15-20 pounds. Tag in box says "Captured equipment 7/23/56" with an illegible name.

Condition: Very good optical condition. Somewhat dusty.

Location: In box **HC 312**.

==========

HC 314: Zeiss prism

Zeiss prism, #6578. Same as **HC 312**.

Condition: Has fingerprints, needs cleaned.

Location: In box **HC 315**.

==========

HC 315: box for prism, **HC 314**

Box for prism, **HC 314**. Pine, 14" by 9 1/2" by 8". Two latches and two handles.

Location: Shelves #2, shelf 3, left rear.

==========

HC 316: artifacts from USNO grounds

Cardboard box containing artifacts from USNO grounds. [These were probably collected by Gail Cleere of the Public Affairs office. - B.A.] Includes: a) 6 clear bottles, b) 1 blue bottle neck fragment with cap "WYETH COLLYRIUM", c) 5 nails, d) 7 porcelain fragments, e) 1 glazed brick fragment, f) fragments of cork. Also two display notes, pennies & horseshoes missing.

Display notes read:

a) "These bottles were dug up along the southwestern perimeter of the Naval Observatory grounds. The same area is used as a dump site by the Observatory today, much as it was in the very early year of Observatory occupation when these bottles were probably thrown there. During the 19th century, this particular area was occupied by slaughterhouses and tanyards, owned by Theodore Barnes."

b) "The Barber estate was one of the largest working farms in Georgetown in the mid-19th century. This Civil War penny, minted in 1862, was found in the ground behind the present-day Quarters E & F. On the old maps, this area was the site of the Barber chicken coops. (The government minted millions of these pennies. To a collector, it is probably worth under a dollar.)" [The penny was not in the box.]

c) "These horseshoes were found by the gardeners on the grounds of the present-day home of the Vice-President (Quarters A). This badly corroded Indian-head penny, dated 1885, was found in the soil near the foundations of the Library. In all likelihood, it was dropped by a construction worker." [Not in box (8/28/93 - B.A.]

Location: Shelves #2, shelf 3, center rear.

==========

HC 317: quartz clock oscillator

Quartz clock oscillator. Marked "Early Quartz Oscillator ~ 1934 from Germany" by Steve Dick. 7 1/4" by 1 1/2" diameter. Glass, quartz bar with steel interior. Packed in cardboard box, 13" by 4 1/4" by 6 1/4".

Location: Shelves #2, shelf 3, center, on **HC 318**.

==========

HC 318: galvanometer

Galvanometer #449. Mfg. Queen & Co Phila // Finished Feb 23, 1892 // Overhauled Aug 15, 1911. 15" by 6 1/2" by 7 1/2". Keyhole, no lock. Two clasps.

Location: Shelves #2, shelf 3, center front.

==========

HC 319: 8" by 10" plate holder

Plate holder for 8" by 10" plates. Wood, 10 1/4" by 12 1/4". Marked "Photo lab". Imprinted "Scovill & Adams Co. NY".

Location: Shelves #2, shelf 3, left front, on **HC 312**.

==========

HC 320: Moon camera lens, 8" f/20 Perkin Elmer, 3 element

11" diameter by 4" high aluminum and steel cell. In box **HC 321**. [Taken out for cleaning by Marty Cohen of Company 7, 96.06.05. Cohen reports (96.09.25) that is having trouble replacing felt spacing around lens elements that has now deteriorated completely. 96.09.25, B.A.]

Condition: Okay, starting to get moldy.

Location: Shelves #2, shelf 3, right rear, in box **HC 321**.

==========

HC 321: box for Moon camera lens **HC 320**

Box for Moon camera lens **HC 320**. 13 1/2" by 15" by 12", no lid. Box also contains 2/8" gears and two other small parts. Marked "Box 6 of 15". [Missing? 96.09.09.]

Location: Shelves #2, shelf 3, right rear.

==========

HC 322: 8" lens

8" diameter lens, 11 1/2" diameter x 4 1/2" tall steel cell. In box **HC 323**.

Condition: Very bad, lens has rust and mold on front/back surfaces.

Location: Shelves #2, shelf 2, right front, in box **HC 323**.

==========

HC 323: box for 8" lens, **HC 322**

Box for 8" lens, **HC 322**. 16 1/2" square by 6" high box with lid.

Location: Shelves #2, shelf 2, right front.

==========

HC 324: box of about 50 assorted eyepieces, etc.

Box of about 50 assorted eyepieces, eyepiece tubes, illumination tubes, extension tubes, etc. Including two 2' 14" objectives in brass tubes, one large 2" eyepiece. Box says "Nautical Instrument // Repair Shop // Sextant Use // Only".

Condition: All very dirty.

Location: Shelves #2, shelf 2, right front.

==========

HC 325: comparator

Comparator. Steel base, 13 1/2" by 10 1/2". Overall dimensions about 15" by 16" by 15" high. 13 1/2" brass position angle ring. Box with two light bulbs for backlit illumination.

Condition: Poor.

Location: Shelves #2, shelf 2, right rear.

==========

HC 326: 3 3/4" telescope tube assembly

3 3/4" refractor with tube assembly. Ser. No. 34867. Tube is 47" long including 6" long sunshield and 4" diameter periscope view finder with 1 1/2" objective (3/4" diameter eye lens). Painted black, with "crinkle" finish, steel or brass. Metal decorative rope lashing near front end of tube. [Speculation: Does the sign **HC 493** apply to this telescope? B.A.]

Condition: Very dirty and moldy objective lens.

Location: Shelves #2, shelf 2, on top of boxes.

==========

HC 327: Moon camera polar axis

Moon camera with polar axis, apparently from Hawaii. 33" long, 13" diameter base, 9" diameter top assembly. Interior 4" is hollow. Hand painted light green. Too heavy to lift.

In wooden crate (missing lid) 41" by 14 1/2" by 16". Marked "3 of 15" on side.

Condition: Good.

Location: On floor in front of shelves #2.

==========

HC 328: Brunson transit

Transit built by Brunson. 11-7-1960. #71 Jig Transit according to paper documentation. Purchase price: $15,250, 4-13-1961. Checked 11-20-87. Ser. # 617244. 20 1/2" high by 11" wide by 6" deep. 40-50 pounds weight. Gray paint. In box **HC 329**.

Location: Shelves #2, shelf 1, right side, in **HC 329**.

==========

HC 329: box for **HC 328**

Fitted box with leather strap. Plate marked "USAF Property 339286. 22" by 13" by 8 1/2".

Location: Shelves #2, shelf 1, right side.

==========

HC 330: prime vertical circle

Prime vertical circle. Steel, gold engraved inlaid scale. 24" diameter, 1/4" thick at edges, 1" thick at center.

Condition: Very poor.

Location: Shelves #2, first shelf, left rear.

==========

HC 331: boxed scales

Boxed scales: One 1 meter, two 2 feet, two 18". All say "D.B.&.S. Prov. RI". In box, 40" by 4 1/2" by 3 3/4".

Location: Top of HC cabinet #2.

==========

HC 332: brass or bronze bar in fitted box

Brass or bronze bar in fitted box. Bar is 37 1/2" by 1 3/8" by 3/4". Has two spacers about 22" apart. About 25 pounds weight. Box is 44" long by 3 3/4" by 3" deep.

Location: Top of HC cabinet #2.

==========

HC 333: 26" scale with two brass knobs

26" scale with two brass knobs. 26" by 1 1/2".

Location: Top of HC cabinet #2.

==========

HC 334: 36" scale

36" scale, 37" long by 2 1/2" wide. "Keuffel & Esser, NY". Walnut fitted case, 38" long by 3 1/2" wide by 1" deep.

Location: Top of HC cabinet #2.

==========

HC 335: block and tackle

Block and tackle. 15" long by 5" by 4" (including hook). Metal and wood. Attached (badly damaged 8 1/2" by 11") note from Dr. Gart Westerhout reads: "History Committee Brenda Corbin 31 Dec' 86 // During inventory, a block and tackle was // found that looks like belonging to old telescope. // Also hinges labeled: "original hinges front dr Bldg 1". // For PW Store room! // [signed] G Westerhout". [Photocopy of note and note itself placed in plastic sleeve, 96.09.19, B.A.]

Location: Cabinet #2, top shelf, right side.

==========

HC 336: block and tackle

Block and tackle. 8" by 3" by 2". No hook. Green paint on metal and wood. "4-PB" engraved in wood. UW on side [??].

Location: Cabinet #2, shelf 1.

==========

HC 337: original hinge from Building 1

Original hinge from Building 1 (one of two). Brass, 7" by 7" opened. See information under **HC 335** above.

Location: Cabinet #2, shelf 1.

==========

HC 338: original hinge from Building 1

Original hinge from Building 1 (two of two). Brass, 7" by 7" opened. See information under **HC 335** above.

Location: Cabinet #2, shelf 1.

==========

HC 339: inclinometer or theodolite base

Inclinometer or theodolite base. Two brass footpads. 5" diameter steel azimuth circle. Total dimensions of 8" diameter by 4" high. Same as base for **HC 352** and **HC 354**.

[See identification note under **HC 354** below.]

Location: Cabinet #2, shelf 1.

==========

HC 340: eyepiece focusing system

Found on card near item: "Eyepiece focusing system with rotation and movement for full field focusing. Unknown origin." Brass. 10 1/2" by 2" by 2 1/2".

Condition: Poor.

Location: Cabinet #2, shelf 1.

==========

HC 341: lens holder

Lens holder. 8 1/2" steel pad with two moveable lenses attached. Chipped 1 1/4" lens, and 2 1/2" lens. In brass. Relabeled, 96.09.11.

Condition: Dirty.

Location: Cabinet #2, shelf 1.

==========

HC 342: chart recorder drum

Chart recorder drum. 10 1/4" by 1 1/2" diameter.

Location: Cabinet #2, shelf 1.

==========

HC 343: level calibration platform?

Unknown item. Possible a level calibration platform? 4" brass square with three two inch dials.

Location: Cabinet #2, shelf 1.

==========

HC 344: planimeter

Planimeter, (#6?). Chrome-plated steel. 8" by 3" by 1 1/2" folded. In fitted box, 9" by 5" by 2 1/2". Box is in bad condition with hinges missing.

Location: Cabinet #2, shelf 1.

==========

HC 345: field illuminator for 26"

Label says "#2 field illuminator for 26", used w/ Repsold micrometer [circa] 1900?" 19" long, 4 1/2" flange diameter, prism, brass.

[The Repsold micrometer referred to here apparently belonged to the transit circle purchased October 5, 1850 by USNO for the U. S. Naval Academy. This instrument was in storage at USNO in 1898, and sent to another (undecipherable) site on July 17, 1903. [Skinner, 1898, p. 11; with note added].]

Condition: Prism dirty, poor condition overall.

Location: Cabinet #2, shelf 1.

==========

HC 346: box #1 of small parts

Box #1 of small (unknown) parts. Yellow "Kodak" box, 5" square by 1 3/4".

Location: Cabinet #2, shelf 1.

==========

HC 347: box #2 of parts

Box #2 of parts. Orange. 4 1/2" by 5 1/2" by 2 3/4".

Location: Cabinet #2, shelf 1.

==========

HC 348: box #3 of parts

Box #3 of parts. Containing two 2 1/2" diameter glass indicators, one tube marked "Mean Feb 14, 1957". Box is 5" square by 1 3/4" (bottom to box #1, **HC 346**).

Location: Cabinet #2, shelf 1.

==========

HC 349: envelope of brass plaques

9 1/2" by 13" envelope of assorted brass plaques.

A) One 8 1/2" by 6", white oak. Inscription reads: "This is a section of the Great White Oak of the Naval Observatory that sprang from an acorn before the birth of our nation and flourished for over two centuries until 1973. The tree's lush and bountiful foliage served a valuable scientific purpose by stabilizing the atmosphere in the area north of the transit houses thereby making astronomical work more exact. // At the time of its removal, the Great White Oak had reached a height of 104 feet, a girth of 16 feet 4 inches, and a spread of 135 feet. // At the site where the Great White Oak once stood, a sapling of the same species, Quercus alba, was planted and dedicated by Mrs. E. R. Zumwalt, Jr., wife of the Chief of Naval Operations, on Arbor Day 1974."

B) One 5 3/4" by 1 3/4" Warner & Swasey. Inscription reads: "WARNER & SWASEY, // CLEVELAND, OHIO."

C) One 2" by 5 1/4" Polaris Chronometer. Inscription reads: "POLARIS CHRONOMETER, // NEGUS 1366. // This Chronometer was saved from the wreck of the U. S. S. POLARIS in 1872, after the death of CAPTAIN HALL, and was cached in the snow and abandoned at NEWMAN'S BAY, GREENLAND. Four years later it was found by CAPTAIN NARES, R. N. and returned by the BRITISH ADMIRALTY."

D) One 3 1/2" by 2" Distinguished Service. Inscription reads: "IN RECOGNITION OF // DISTINGUISHED SERVICE // AND PROFOUND DEVOTION // WHICH HAS CONTRIBUTED // SIGNIFICANTLY TO THE MISSION // OF THE // UNITED STATES NAVAL OBSERVATORY"

E) Twelve 2" by 3" blanks.

Location: Cabinet #2, shelf 1.

==========

HC 350: surveyor's level, Stackpole #1487

Surveyor's level, Stackpole & Bro., NY, #1487. 1 1/2" lens, 16" by 5" by 3" level dimensions, 5" by 5" by 7" base. Ryhnsberger's handwriting thought to be on cards and box, T.R., 92.10.

"172-USN-001502" on box. Also Engineer's level, K & E No. 15348. Keyhole (no key). 21 1/2" by 7 1/2" by 9" high.

Skinner [1898, pp. 77-78] provides details on the 8 Stackpole levels purchased for observing the transits of Venus. He lists level #1487 as "Engineer's level; In use by Foreman of Grounds.".

Condition: Lens is moldy. Box in poor condition.

Location: Cabinet #2, shelf 2.

==========

HC 351: Hamilton Chronometer, Ser. No. 2E11010

Hamilton Chronometer, Ser. No. 2E11010. "US Maritime Commission" on clock face. Box says USNO 62285-USN-002321. History committee tag (blue foil) 011. Rated Jan 26, 1967 by JEB & PE. Has electrical contacts. "This chronometer was used to make eclipse tape at Choun, Mauritania 6/73." 7 1/2" square on top. Box 8 1/4" square by 10" high

Condition: Works?

Location: Cabinet #2, shelf 2.

==========

HC 352: #4 Inclinometer

#4 Inclinometer. See **HC 339** for description of base. 12 1/2" high, 6" vertical dial. 8 1/2" by 3" box.

[See identification note under **HC 354** below.]

Location: Cabinet #2, shelf 2.

==========

HC 353: brass theodolite cradle?

Brass theodolite cradle? 6 1/2" by 3" by 2".

Location: Cabinet #2, shelf 2.

==========

HC 354: Inclinometer #3

Inclinometer #3. See **HC 339** for description of base. Transit of Venus expedition. Dover, Charlton, Kent Circle 93. [??]

[Skinner [1898, p. 36] apparently lists this (or **HC 339** or **HC 352**) as a "Dip Circle", with the following information:

Maker: Dover, Charlton, Kent, England No. 84.
no record of purchase or cost.
Description: Horizontal circle. 5" in diameter read by 1 vernier to 1'.
Vertical Circle 5" in diameter read by 2 verniers to 1'.
...
History: nothing known.

B.A., 96.08.07]

Location: Cabinet #2, shelf 2.

==========

HC 355: Hagner [spelling?] Averaging Sextant

Hagner [spelling?] Averaging Sextant. Mfg. USNO Mar. 1, 1943. Prototype? 1" diameter FOV [??] main telescope. Aluminum, brass, plastic. 11" by 10" by 5". Three additional eyepieces. Label on box reads: "This instrument contains the basic features and is the forerunner of the Navy Mark I, Mod 0 Ball Recording Sextant. Obsolete." Has 15" by 11 1/2" by 7" fitted box. [Sextant itself removed by S. Dick for possible use in Building one lobby display. August 22, 1996. Box removed later for temporary examination.]

Condition: Box needs cleaning.

Location: Cabinet #2, shelf 3.

==========

HC 356: #10 later generation transit circle camera

#10 later generation transit circle camera. 5" by 9 1/2" by 4" with 9" tube extending.

Location: Cabinet #2, shelf 3.

==========

HC 357: [Prin??] 5.3 transit circle micrometer

From 5.3 transit circle, according to T.R. Micrometer, 10" diameter brass plate on back. Motors on both sides. 11 1/2" by 8 1/2" by 2 1/2".

Location: Cabinet #2, shelf 3.

==========

HC 358: film strip viewer

Film strip viewer for transit circle film. Steel and brass. 7" square base, 12" high.

Location: Cabinet #2, shelf 3.

==========

HC 359: film canister

Film canister, brass, labeled "6" exposed". 3 1/2" by 2 1/4" diameter. Empty. Two rolls of developed film sitting next to canister.

Location: Cabinet #2, shelf 3.

==========

HC 360: #9 circle camera

#9 circle camera, designated 4B on back. Black, steel, brass. 6 1/2" by 2 1/2" by 3", 3 1/4" tube extension.

Location: Cabinet #2, shelf 3.

==========

HC 361: micrometer

Micrometer. Steel, brass. Transit of Venus? 3 1/2" outside diameter draw tube. Top assembly 10" by 4 1/4" by 2". Two eyepieces. Fitted box, 12" by 8" by 7".

Location: Cabinet #2, shelf 4.

==========

HC 362: #11 tape reader

#11 tape reader, for transit circle photographic tape. Tape included. Brass, 10" by 3" by 4" high.

Location: Cabinet #2, shelf 4.

==========

HC 363: transit circle photographic tape

Transit circle photographic tape. 9" by 14" sheet of paper, with tapes mounted vertically. Nov. 1938.

Location: Cabinet #2, shelf 4.

==========

HC 364: 5" f/5 telescope tube assembly

5" f/5 telescope tube assembly. "Site Testing Telescope". Aluminum tube with eyepiece holder. Main tube 20" by 5 1/2" diameter. Tailpiece 5 1/2" for 2" outside diameter eyepieces. Currently has 5 1/2" diameter brass 1 1/4" eyepiece holder at end of tube. In box **HC 365**.

Condition: Lens is dusty.

Location: Cabinet #2, shelf 5, in box **HC 365**.

==========

HC 365: box for 5" f/5 telescope tube assembly, **HC 364**

Box for **HC 364**. Plywood, painted gray. 29 1/2" by 9 1/4" by 8 1/2". Handle on top.

Location: Cabinet #2, shelf 5.

==========

HC 366: split ring telescope holder?

Split ring telescope holder? 6 1/2" outside diameter, 5 1/2" inside diameter, 3/4" thick.

Location: Cabinet #2, shelf 5.

==========

HC 367: surveyor's transit instrument, Stackpole #1522

Surveyor's transit instrument. Mfg. Stackpole & Bro., NY Ser. No. 1522. 6" long telescope, 3/4" lens. 7" tall. Two extra eyepieces in top shelf. Fitted box with two shelves. Lock, but no key. Box is 11 1/4" by 8 1/2" by 11". Says "Japan" on box.

[Skinner [1898, pp. 81-82] provides details on the 10 Stackpole theodolites purchased for observing the transits of Venus. He notes that #1522 is one of the 3" theodolites purchased for $215 each for the 1874 transit of Venus. In 1898 it was listed as: "Basement all but striding level which is in Room H." and also adds "... a striding level in in Room H. in use in Sextant testing. This stiding level is not adapted to its present use and should be returned to its proper place in case of 3" theodolite #1522 a suitable level for sextant work should be provided." B.A., 96.09.20.]

Location: Cabinet #2, shelf 5.

==========

HC 368: white marble chunk

White marble chunk [from Building 1?]. 5" high by 3 1/4" by 5" triangular base.

Condition: Poor?

Location: Cabinet #3, shelf 1, left.

==========

HC 369: drum chronograph governor

Drum chronograph governor (like that in **HC 201**). Marked "#12 from drum chronograph" 5 1/2" by 4" by 2", brass and steel.

Condition: Poor.

Location: Cabinet #3, shelf 1, left.

==========

HC 370: unknown

Unknown. 7" long thin aluminum rod, flanges at end. 28" of yellow/blue two line bell wire attached.

Location: Cabinet #3, shelf 1, left.

==========

HC 371: unknown

Unknown. 3 3/8" top diameter, tapered to 3 1/8" bottom diameter, by 1 1/8" high; wood (walnut?), with five approximate 1" diameter holes. [Speculation: Possibly a jar stopper, with room for 5 smaller stoppers? B.A.]

Condition: Poor.

Location: Cabinet #3, shelf 1, left.

==========

HC 372: 5 5/8" retaining ring.

Brass 5 5/8" outside diameter retaining ring from lens cell. 4 7/8" inside diameter, 1/2" high.

Condition: Okay.

Location: Cabinet #3, shelf 1, left.

==========

HC 373: unknown

Small "gearbox" with dial and switch, also 5 pin plug on three wire 34" long cord (green, brown, red). 2 3/4" by 2 1/4" by 3" overall. Brass, plastic?, and ivory.

Condition: Okay.

Location: Cabinet #3, shelf 1, left.

==========

HC 374: embosser with observatory seal

Embosser with observatory seal. Embosses "UNITED STATES NAVAL OBSERVATORY" in ring. 8" long by 2 1/2" wide by 7" high overall. Black painted cast iron base, steel (chromed) handle.

Condition: Poor, dirty.

Location: Cabinet #3, shelf 1, center.

==========

HC 375: date stamp with observatory seal

Date stamp with observatory seal. Stamp has "U.S. Naval Observatory Washington D.C." on ring, "Library JUL 10 1940" in center. Uses 1 1/4" wide ink ribbon. For 1936-1940! 7 1/4" high by 5" by 3 1/2" overall. Cast iron painted black, steel handle. Handle says "The American Dater // Jul 4 1876" and "Nov 19 1879".

Condition: Poor, rusty.

Location: Cabinet #3, shelf 1, center.

==========

HC 376: embosser with U.S. Navy seal?

Embosser with U.S. Navy seal. Embosser reads "DEPARTMENT OF THE NAVY" on outer ring, with (apparent) Navy seal in center. 7" high by 5" long by 2" wide overall. Brass with cast iron base.

Condition: Okay, bottom poor.

Location: Cabinet #3, shelf 1, center.

==========

HC 377: relay

Relay. "WUTCO // 4 OHM SIGNAL RELAY 3C". Has yellow tag "#13 e-m relay". 5 1/2" by 2 1/4" wood base. Brass and steel parts. 2 1/2" high overall.

Condition: Poor.

Location: Cabinet #3, shelf 1, center.

==========

HC 378: optical galvanometer

Tag says "optical galvanometer" [in B.A. handwriting, probably was identified by T.R. in 1990?] Sticker says "5-11-70 A + A Div.". Also metal tag: "Leeds & Northrup Co. // Philadelphia Pennsylvania // Made in U.S.A. // Cat. No. Serial No. // 2420A 518350". 4 1/4" by 8 1/4" by 5 1/2" high walnut box, top opening, 3 1/2" by 1" frosted glass scale on end. Four black terminal screws on one side. Has 5" by 3" by 1 1/2" horseshoe magnet inside.

Condition: Good, but dusty.

Location: Cabinet #3, shelf 1, right.

==========

HC 379: part of inclinometer

Circle reading part of inclinometer (e.g. larger version of part of **HC 354**). Has index card: "Parts of Device for Measuring Magnetic Incl." 8" by 6" by 1" overall, with intact 4 1/2" long by 1/2" diameter glass bubble vial; mostly steel.

Condition: Poor, very dirty.

Location: Cabinet #3, shelf 2, left.

==========

HC 380: right angle optical sight?

Right angle optical sight? Device with eyepiece ("Orthoscopic // Guertner 14x"). 3/4" outside diameter barrel, prism, and extension tube, on aluminum holder. 5" by 1 3/4" by 6" high overall.

Condition: Good.

Location: Cabinet #3, shelf 2, left.

==========

HC 381: aircraft octant

"aircraft octant" written on index card. Has old style "HC 013" metallic sticker nearby. "Aircraft Octant // Mark III Mode 3 // ... Ser. No. 69-34 Order No. 34954 // Pioneer Instrument Company // Brooklyn New York". 7" by 4" by 5" overall, black painted crinkle finish steel.

Condition: Okay, bubble not visible, rubber eyecup solid.

Location: Cabinet #3, shelf 2, left.

==========

HC 382: 9" level

"broken 9" level" and "tested June 3, 1910" on index card. 14 3/4" long , 6 1/2" opening for glass tube, glass broken. Has tag: "Old 9" level // Oct. 4, 1911". In box **HC 383** below.

Condition: Broken, poor.

Location: Cabinet #3, shelf 2, right, in box **HC 383**.

==========

HC 383: box for 9" level, **HC 383**

Pine box, 16" by 4 1/4" by 2 1/2" high. Sliding lid top, one groove partially broken. In pencil "New Level Tested June 3, 1910" and "Spare", other illegible writing.

Condition: Poor.

Location: Cabinet #3, shelf 2, right.

==========

HC 384: 3 1/4" achromat, unmounted, coated

3 1/4" diameter by 1/2" thickness. "336" and "369" on glass side in pencil. Has 3 3/8" brass black painted cell ring.

Condition: Poor, scratches, dust, mold.

Location: Cabinet #3, shelf 2, right.

==========

HC 385: eyepiece adaptor?

1 1/8" slip fit to 1 1/2" threaded eyepiece adaptor? Brass, 1 5/8" by 7/8" high overall, knurled ring, 1/2" aperture stop.

Condition: Poor.

Location: Cabinet #3, shelf 2, right.

==========

HC 386: 2" lens cover with assorted hardware

2" lens cover, with assorted hardware. Brass lens cover, like that on **HC 240** [apparently not Clark]. 2" outside diameter by 3/4" high. With three 1/2" diameter thumbscrews, one 1 1/4" by 3?4" rod holder, one large, and eleven small screws. All but one screw brass.

Condition: Poor.

Location: Cabinet #3, shelf 2, right.

==========

HC 387: focuser?

Yellow tag says "#14 focuser". 7 3/4" high brass tube on two point/one screw pedestal, 1 1/2" outside diameter main tube, 3/4" o.d. eyepiece. Has crosshairs and adjustment screws, field lens and adjustment thumbwheel. All in lacquered brass, steel. Box is **HC 388** below, and has card with calibration information.

Condition: Fairly good, some minor spots on brass.

Location: Cabinet #3, shelf 3, left, in **HC 388**.

==========

HC 388: box for **HC 387** focuser

Varnished mahogany or walnut box for **HC 387**. 5" by 8 1/2" by 4" high, top half opens, two hinges, two hooks (brass). Interior has chip loose.

Condition: Okay, but dirty.

Location: Cabinet #3, shelf 3, left.

==========

HC 389: "#17 goniometer - angle measuring"

Yellow tag reads "#17 goniometer - angle measuring". Same as **HC 244**, but also reads "Keuffel & Esser Co. // New York // 2761". Center blade says "U.S. Navy, [encircled N] No 3."

Condition: Okay, but dirty.

Location: Cabinet #3, shelf 3, center.

==========

HC 390: slide rule in case

Slide rule in case, from 5" altazimuth. 22 1/4" slide rule, 20" long scales: K, A, B, S, T C1, D, L on one side, DF, CF, C1F, C, D on other. "Keuffel & Esser Co. N.Y. PAT. JUNE 5 '00 DEC 22 '08 MADE IN USA". Center rule has "<N4088-5>" on end. "White" plastic sheathed wood. In 22 1/2" long tapered brown leather case, "K & E POLYPHASE DUPLEX SLIDE RULE" and "5" ALTAZMUTH [sic]" written on it.

Location: Cabinet #3, shelf 3, center back.

==========

HC 391: unfinished prism (one of two)

Unfinished prism, one of two (blanks). Binocular style? 2 1/4" by 1 1/8" (oval) base, 1 1/4" high, 1 1/8" by 1 3/8" faces. Has "3347" on base.

Condition: Poor, small chips on edges.

Location: Cabinet #3, shelf 3, left front.

==========

HC 392: unfinished prism (two of two)

Unfinished prism, two of two (blanks). Binocular style? 2 1/4" by 1 1/4" (oval) base, 1 1/8" high, 1 1/4" by 1 1/2" faces. Has "A317331" on base.

Condition: Poor, small chips on edges.

Location: Cabinet #3, shelf 3, left front.

==========

HC 393: prism

Prism, 2 1/2" by 1 1/8" rectangular base, 1 3/16" high, 3/4" by 1 5/8" faces. Slot cut across base center.

Condition: Bad, several large chips, dirty, moldy.

Location: Cabinet #3, shelf 3, left front.

==========

HC 394, HC 395, HC 396, HC 397: prisms

All 2 1/4" by 1 5/8" bases, 1 3/4" high, 1 7/8" by 2 3/16" faces.

HC 394: Has "3", and "60[degrees] 3' 40" // Determined by H. Arnony." (?) Also "Obsy." on other end.

HC 395: Has "4" at both ends, "Crown." on one end.

HC 396: Has "5" at both ends, "feels dense // flint" on one end, "49[degrees] 55' 8" // Determined by H. Arnony".

HC 397: Has "Fel's light // flint".

Condition: Poor. All have minor chips and are dirty.

Location: Cabinet #3, shelf 3, center.

==========

HC 395: see above

==========

HC 396: see above

==========

HC 397: see above

==========

HC 398: eyepiece or sight tube

Eyepiece? or sight tube? No optics. 3 1/4" long by 3/4" o.d. brass tube, 1/16" eye hole, 3/8" end stop, 1" threaded flange halfway up. Lacquered brass.

Condition: Okay.

Location: Cabinet #3, shelf 3, center.

==========

HC 399: eyepiece

Eyepiece. 4" high by 1 1/2" o.d. brass tube, 7/8" eye single lens, 3/16" stop close below. Lens holder unscrews from top. Top exterior threaded.

Condition: Poor, glass dirty.

Location: Cabinet #3, shelf 3, center.

==========

HC 400: "#14 circle ready micrometer - 9"?"

Yellow tag reads "#14 circle ready micrometer - 9"?" Micrometer from 9" transit circle? 4" by 1 1/2" by 2" overall, brass. Accepts 13/16" eyepiece, fits 13/16" holder, crosshairs in place.

Condition: Okay but dirty.

Location: Cabinet #3, shelf 3, front center.

==========

HC 401: micrometer

Micrometer. Partial assembly, brass and lacquered brass, heavy. 4 1/2" by 2 1/4" by 1 1/4" high (micrometer circle diameter). No eyepiece or eyepiece holder obvious.

Condition: Okay.

Location: Cabinet #3, shelf 3, right center.

==========

HC 402: variable aperture

Variable aperture. 3/4" glass window, with sliding "< >" openings allowing continuously variable aperture. Brass with 3/4" thumbwheel. 1 1/8" by 2 3/8" by 1 1/4" overall. 3/16" o.d. of holder.

Condition: Poor.

Location: Cabinet #3, shelf 3, right center.

==========

HC 403: part of micrometer

Part of micrometer. 3" by 2" by 1" overall, brass, 7/8" diameter micrometer wheel, 13/16" diameter hold in center.

Condition: Poor.

Location: Cabinet #3, shelf 3, right center.

==========

HC 404 and **HC 405**: two 6-inch micrometer cameras

6-inch micrometer cameras. Yellow tag says "#15 micrometer cameras". Green IBM cards says "Used to photog // 6" micrometer". 2 5/8" diameter film holder, 7 1/2" by 3 1/4" by 2 1/4" overall. Black painted brass, steel.

Condition: Bad, interiors showing corrosion (green powder). **HC 405** exterior in worse condition - also has exposed film inside.

Location: Cabinet #3, shelf 3, right side.

==========

HC 405: See above

==========

HC 406: Ammeter

7 1/4" x 4" high overall, black painted metal. "Weston Ammeter // Weston Electrical Instrument Company, // ...[various patents] Mar. 22, 98 // No. 62039 // Newark, N.J., U.S.A." Scale reads 0-300 milli-amperes. 3" x 5" card reads "Electric Amp-meter // Weston Instrument Co., // unknown date", and in other writing "Used in Time Service // circa. 1895?".

Condition: Dirty, worn.

Location: Cabinet #3, shelf 4, left side.

==========

HC 407: box of misc. parts

wooden box, open, 12" x 10" x 2" high. Contents include:
- two circle micrometers (steel, brass, 7 1/2" long),
- small box of about 40 brass eyepiece (solar?) filters,
- 7 3/4" glass scale,
- about 100 other misc. brass and glass parts. Eyepieces, eyepiece filters, brass tubes, sleeves, rings, a few small lenses, diagonal or beamspliter eyepieces, prisms, glass,
- one sliding eyepiece filter, no glass left. Possibly a Clark? (Compare with that on Panama Clark.)

Location: Cabinet #3, shelf 4, center.

==========

HC 408: box of misc. parts

wooden box, open, 12" x 10" x 2" high. Contents include:
- five circle micrometers,
- small box of misc. parts, gears, etc. for unknown mechanism,
- about 100 misc. parts, mostly eyepieces. Some brass sleeves, filter wheels (small), eyepiece holders, etc.

Location: Cabinet #3, shelf 4, right center.

==========

HC 409: 1 1/4" eyepiece holder

brass, 2 3/4" dia. x 1 1/2" high overall, 1 1/4" i.d. top. 2" threaded o.d. bottom, knurled flange ring. Top has three expansion slots.

Condition: Dirty.

Location: Cabinet #3, shelf 4, right.

==========

HC 410: small box of unknown parts

wooden box, 4" x 3 1/4" x 2" high, with 3 cent stamp on side! Has several small brass parts of unknown use. "Clark" possibly written on side in chalk, as well as "6" in pencil.

Location: Cabinet #3, shelf 5, left.

==========

HC 411: "Pocket Bubble Sextant"

from Bureau of Aeronautics, U.S.N., 1944. "FSSC No. 88-S-340". Has instruction booklet prepared by NAO, USNO. "NavAer 05-35S-40". Sextant consists of two 4 5/8" plastic disks, one clear, and offwhite plastic sights and brackets. "6. Felsenthal & Sons Chicago". Booklet is 4 1/2" x 6 1/4", two staples, US GPO, 1944. All in green canvas pouch, front torn, 6" x 9".

Condition: One small piece of plastic is broken off.

Location: Cabinet #3, shelf 5, left.

==========

HC 412: unknown, electrical box

steel box (partial), 12" x 7" x 4", with about 38 bell wire terminals, two relays, and motorized 6 eccentric wheel switch. Motor has label "INSTALLED 11 JAN 1968".

Condition: Dirty.

Location: Cabinet #3, shelf 5, center.

==========

HC 413: camera lens

"Kodak Ektar 63 mm. EM205". Steel, brass, glass, 2" o.d. x 1 3/4" to 2 1/4" high. Has 3" x 5" card "35 mm camera // Used for inverting into // focuser // unknown date // origin." This doesn't seem to go with the lens

however.

Condition: Dirty.

Location: Cabinet #3, shelf 5, right.

==========

HC 414: eyepiece

brass, 4 1/2" high, 3/4" o.d. top eyepiece portion, 1 3/8" bottom, has mirror on side (3/8" dia.) to illuminate single metal pointer reticle.

Condition: Dirty.

Location: Cabinet #3, shelf 5, right.

==========

HC 415, HC 416, HC 417: two Brashear 3.5" lenses/cells in box

Box says "Brashear, April, 1900 // Quartz lenses // 50-inch focus // 3 1/2" aperture // cut 90 [degrees] to axis" in pencil, and "Quartz" in red marker. 3" x 5" card says "Two 3 1/2" inch lens // 50 inch focus // Quartz // Brashear, 1900 // use unknown."

HC 415 is 3 5/8" clear aperture, 4" o.d. on bottom, 1" high. Brass cell engraved "Made by J Brashear Allegheny Pa USA April 1900 Quartz lens cut at night [sic] Angle to Axis 50 [superscript "in'] focus."

HC 416 is 3 1/2" clear aperture, 3 3/4" o.d. on bottom, 5/8" high, same inscription.

HC 417 is wood (pine?) box, with sliding top. 5 3/4" x 4 1/4" x 5" high.

Condition: Both lenses are dusty with some mold spots.

Location: Cabinet #3, shelf 8, right.

==========

HC 416: see above

==========

HC 417: see above

==========

HC 418: [THIS NUMBER APPEARS TO HAVE BEEN SKIPPED.]

==========

HC 419: large box of misc. parts

wooden box, 28" x 7" x 4". Marking tape on end says: "MKII 16 y spyglasses // #11021 // 1 pcs INR Wolf[?]".

Contains:
- lens blank, 3 5/8" dia. x 1/2" high, beveled top, very dirty, moldy, black paint on edges.
- brass lens cover, as on **HC 240**, but very dirty,
- matchbox marked "Burroughs" with many small metal pieces,
- 10 eyepieces, with solar filters (screw on), 1 1/8" o.d., about 4" high, brass tubes "night" engraved on sides,
- two brass eyepieces?, 1 5/8" o.d. tube, simple lens filling end,
- one 2" x 2 1/4" high steel eyepiece? assembly, with 2" x 1 1/2" x 1" prism,
- one binocular? eyepiece, knurled sides, 1 1/4" dia. x 2 1/4" high overall,
- one right angle prism? eyepiece ("L" shaped), 4 1/2" long, 3/4" tubing,
- 31 misc. long eyepieces (2"-6"),
- 17 small eyepieces/filters,
- 11 misc. drawtubes, empty eyepieces,
- one eyepiece with filter wheel,
- one eyepiece with rotating lever on bottom (?),
- one brass bracket, 2 1/2" square,
- one 8" long circular brass spring.

Location: Cabinet #3, shelf 6. [Shelf 6 also has 12 large wingnut bolts that were not numbered.]

==========

HC 420 and **HC 421**: two pieces, eyepiece holder parts?

Two pieces of eyepiece holder parts? Possible Clark? Brass.
HC 420 is 3/4" i.d. eyepiece holder, with 1 3/8" threaded base. "867" scratched on top, 1" high. **HC 421** is 1 3/8" thread top with three centering screws, and 2 3/4" i.d. internal threaded bottom. 3/4" high.

Location: Cabinet #3, shelf 7, left.

==========

HC 421: See above

==========

HC 422: empty steel "bomb" chronometer case

Empty steel "bomb" chronometer case. Painted army green, 8" diameter by 5 1/2" high overall. 5 1/2" diameter steel cover over 4 1/2" diameter glass cover, foam inserts in interior, two black electrical terminals on exterior. 18" long by 1 1/4" wide leather handle. "2E12455" on label taped to top and in writing on top. "29E-86" on red labelmaker label. Stamped "U.S." on top. Base plate says "Chronometer Carrying Case // Moisture Proof // Magnetic Shield // Precision Manufacturing Company // Tecumseh, Michigan." Brass pressure release screw on bottom.

Location: Cabinet #3, shelf 7, left.

==========

HC 423: box of weights

Wooden box of weights. 8 1/2" by 2 1/2" by 2 3/8" high, two brass hinges, two hooks. Weights are: "20 02.T", "10", "10", "5", "2", "2", "1", and "1.0 DWT". Approximately 5 weights are missing.

Location: Cabinet #3, shelf 7, center left.

==========

HC 424: recording thermometer

Recording thermometer. 13 1/2" by 5 1/2" by 6 1/2" high overall. 3 3/4" windup recording cylinder. Brass and steel, cast iron frame. "Made in France", "RF Paris" trademark, "336DR" stamped in brass base plate. Label corrected 96.09.11 (was **HC 425**).

Condition: Very dirty, rusty, top missing.

Location: Cabinet #3, shelf 7, center.

==========

HC 425: micrometer box

Micrometer box, with label which reads "No. 436 Micrometer Starrett // without ratchet // 1 inch // The L. S. Starrett Co. Anthol, Mass. U.S.A." 5 1/2" by 2 1/2" by 1 1/4". Missing lid.

Location: Cabinet #3, shelf 7, right side.

==========

HC 426: box of brass weights

Box of brass weights. In grams: 200, 100, 100, 50, 20, 10, 10, 5.

Location: Cabinet #3, shelf 7, right side.

==========

HC 427: box of metal weights

Box of metal weights. In milligrams: 500, 200, 50, 2/20, 10, 5, 3/2. Weights located beneath sliding panel.

Location: Cabinet #3, shelf 7, right side.

==========

HC 428: transit of Venus plate box

Transit of Venus expedition plate box. 8" by 4 1/4" by 8", with brass clasp and two hinges. Holds plates 7" square. "2 146-179" on label on lid. Yellow tag says "#8 for ready circle films. T.R. says it's a transit of

Venus plate box.

Location: Cabinet #3, shelf 7, right side.

==========

HC 429: mechanical adding machine

Mechanical adding machine. Walnut base, 18 1/2" by 8" by 1". Calculator 16" by 5 1/2" by 4". Heavy steel. Engraved on calculator "No. 5641". Yellow tag says "#5 Mechanical Calculator preceding/possibly(?) Monroe". On base in pencil "2 // HG // 50".

Location: Cabinet #4, shelf 1, left side.

==========

HC 430: brass micrometer with box

Brass micrometer with box. 4 1/2" by 1 1/2" by 2" overall dimensions, 1 3/8" micrometer wheel, accepts 3/4" o.d. eyepieces. Double image micrometer. Includes photocopy of page explaining micrometer from book, Challis, "Lectures on Practical Astronomy".

5 1/2" by 2 1/4" by 3" pine box, two hinges and clasp. Label on inside of lid reads: "EDW. KAHLER // Manufacturer of // Optical, Mathematical and // Philosophical Instruments // 1807 K St. NW // Washington, D.C."

Condition: Eyepiece missing.

Location: Cabinet #4, shelf 1, right side.

==========

HC 431: box of unknown parts

Box of unknown parts. 12 1/2" by 4 1/2" by 5" pine box. Illegible writing on lid, something like [?] "xxxxxx Polardscope // Measured". Tag on one piece says "Howard // No 434". Looks like governor with clock parts, numerous brass and steel parts. One piece later numbered **HC 526** (below).

Location: Cabinet #4, shelf 1, right side.

==========

HC 432: box of miscellaneous brass parts

Box of miscellaneous brass parts. 14 1/2" by 2" by 9". Label on lid says it's a box for 6 thermometers w/o cases. Negretti & Zambra, 11 Hutton Garden, London. Box contains about 100 miscellaneous brass parts including gears, clock parts, micrometer parts, and eyepiece parts.

Location: Cabinet #4, shelf 1, right side.

==========

HC 433: chronograph part?

Possible chronograph part. Steel, brass. Two electromagnets. 5" by 4" by 4". Yellow tag says "for carrying chronograph pen".

Location: Cabinet #4, shelf 2, left side.

==========

HC 434: two unidentified parts

Two unidentified parts. Labeled **HC 434A** and **HC 434B**. 9 3/4" long, 1 3/8" diameter, 3/4 turn plastic sleeves. Each sleeve has two 2" brass brackets.

Location: Cabinet #4, shelf 2, left.

==========

HC 435: cardboard box with miscellaneous eyepiece parts.

Cardboard box with miscellaneous eyepiece parts. 9 1/2"by 4 1/2" by 4". 42 pieces, assorted eyepiece tubes, eyepiece parts, lens, one mirror. [One part appears to be the eyepiece fitting for a Clark sliding glass solar filter. There is a similar part in **HC 447**. B.A., 96.09.11.]

Location: Cabinet #4, shelf 2, left.

==========

HC 436: "Electric Protector"

"Electric Protector". Made by Brown Electric Protector Co., 228 Dock Street, Philadelphia. Patented Nov. 9, [18]86. 6" by 1" by 2" overall. Brass and wood. Pine box with sliding lid, 7" by 1 3/4" by 2 3/4", includes two pages flyer from manufacturer.

Location: Cabinet #4, shelf 2, center.

==========

HC 437: brass eyepiece assembly

Brass eyepiece assembly. 8" long by 1 1/4" o.d., with center scale portion that turns around tube. Detachable 1" o.d. eyepiece.

Condition: Lens is dirty.

Location: Cabinet #4, shelf 2, center.

==========

HC 438: bubble level

Bubble level. Brass, 9 1/2" by 1" rectangular tube. "F.E. Brandis, Sons, & Co., Brooklyn, NY" stamped on bottom. Brass portion similar to **HC 526**.

Condition: Glass still intact, bubble still present, generally okay.

Location: Cabinet #4, shelf 2, right front.

==========

HC 439: bar magnets in box

Bar magnets in custom box. Yellow tag says "Transit of Venus - bar magnets for calibration of instruments". Two bar magnets, 11" long by 3/4" by 1/4" iron labeled 439A & 439B. Two keepers, 2 1/4" by 3/4" by 1/4". Box is 13 1/4" by 3 1/4" by 1"

Location: Cabinet #4, shelf 2, right, on top of **HC 440**.

==========

HC 440: split image micrometer (heliostat)

Split image micrometer (heliostat). Mostly brass. 8 1/4" long, 2" diameter at one end (attaches to either eyepiece), 2 3/4" diameter at other. One eyepiece has rotating filter wheel. Engraved on end in script "Edw. Kahler, Wash. DC." Labeled instrument #3. Instrument calibration on inside cover of box (**HC 442** below).

Location: Cabinet #4, shelf 2, right, in **HC 442**.

==========

HC 441: Extra eyepiece for **HC 440**

Extra eyepiece for **HC 440**. 5" long by 1 1/2" diameter.

Condition: Very moldy field lens.

Location: Cabinet #4, shelf 2, right, in **HC 442**.

==========

HC 442: box for **HC 440** and **HC 441**

Custom pine box for **HC 440**. 9 1/2" by 5" by 3 1/2". "3" on lid.

Location: Cabinet #4, shelf 2, right.

==========

HC 443: old record samples of 6-inch

Cardboard box of (reading on side) "Old Record Samples of 6 inch". 15" by 7 1/2" by 3". Two IBM card decks, several rolls of film, many rolls of paper, 6" square, plastic, scale and dial. Cards for "Gillis' Meridian

Observations".

Location: Cabinet #4, shelf 3, left side.

==========

HC 444: Transit circle observation book

Transit circle observation book. Blank, 120 pages. 6" by 9 1/4" by 1/2".

Location: Cabinet #4, shelf 3, center.

==========

HC 445: circle camera - first generation

"Circle Camera - First Generation" indicated on yellow tag. Mostly brass. 9 1/2" by 6" by 4" overall.

Location: Cabinet #4, shelf 3, right.

==========

HC 446: unknown optical assembly

Unknown optical assembly. Brass. Two tubes on ends. 6" by 3" by 3 1/2" overall.

Location: Cabinet #4, shelf 3, right.

==========

HC 447: box of miscellaneous eyepiece parts

Box of miscellaneous eyepiece parts. 7 3/4" by 7 1/2" by 1 1/2", missing lid. About 50 miscellaneous pieces, eyepiece parts, including possibly Clark sliding filter assembly missing glass, 2 1/2" micrometer dial, several small mirrors and filters.

Location: Cabinet #4, shelf 4, left.

==========

HC 448: small box of miscellaneous eyepiece parts

Small box of miscellaneous eyepiece parts. Cardboard box 5 1/2" by 4" by 2". 15 eyepiece parts, usually with glass. Two large brass thumbscrews. Four 1 3/4" brass screws. Four 1/2" brass screws. Five miscellaneous parts.

Location: Cabinet #4, shelf 4, left.

==========

HC 449: large eyepiece

brass, 3" bottom diameter, 1 1/2" top diameter, 2 3/4" high, 1 1/2" diameter field lens.

Condition: Field lens quite dirty.

Location: Cabinet #4, shelf 4, left.

==========

HC 450: bubble level

Bubble level. Same as **HC 438**, except on striding level platform. Platform dimensions 11" by 1 1/2" by 3 1/2".

Location: Cabinet #4, shelf 4, right side.

==========

HC 451: large striding level

Large striding level. Black with bubble level mounted, level larger than **HC 438**. 20" by 2 1/4" by 8". Bubble level 10" by 1" by 1", glass intact, bubble present. Two wooden knobs (knob at each end).

Location: Cabinet #4, shelf 4, right side.

==========

HC 452: striding level bar

Striding level bar (missing level). Red leather cover.

Condition: Leather is dried and cracking.

Location: Cabinet #4, shelf 4, right side.

==========

HC 453: telescope assembly

Telescope tube with lens; tapered brass tube, 36 3/4" long by 2 1/8" clear aperture lens; 2 3/4" diameter lens cell; tapers to 3" diameter at center, 2 1/2" diameter at back; 3/4" eyepiece hole; 6" long drawtube in back; 2 3/4" o.d. lens cap, 1" in height. 3" x 5" card says "Portable Transit".

Condition: Lens is dirty, has moldy spots; brass tube is badly corroded, especially its interior, with spider webs present.

Location: Cabinet #4, shelf 5.

==========

HC 454: electric bell

Electric bell. 3" bell, 1" high. 6" by 3" assembly, metal mounted on wood, 7 1/2" by 3 1/2" by 2" high. Detachable wooden box cover. "Novelty Electric Co. // Phila. // Approved C J Miller" stamped on back.

Location: Cabinet #4, shelf 5, right.

==========

HC 455: 5" telescope tube assembly

3" by 5" card says "5 inch tube missing lens assembly. Optical assembly near eyepiece end. Possibly motor use for focusing internally. Unknown use." 24" long tube, 5" o.d. 5" aluminum back plate of 1 1/2" brass optical assembly motor and limit switches (two) mounted on side. [Apparently is a "Polaris monitoring telescope" as it was sitting with and probably belongs with lens **HC 527** below. B.A. 96.09.11]

Condition: Very poor.

Location: Cabinet #4, shelf 5 (bottom).

==========

HC 456: miscellaneous parts

Miscellaneous parts in cardboard box. Box is 4" by 2 1/2" by 1 1/4", wrapped in plastic bag. Contains: two eyepieces, 2 1/2" long, 1" top, in 4" brass brackets; four 1" by 1 1/4" mirrors; two pieces of glass, one red; vernier scale from theodolite; eyepiece, 2 1/4" long by 3/4" diameter top.

Location: Cabinet #4, shelf 5 (bottom), left.

==========

HC 457: History Committee cabinet 6

History Committee cabinet 6. Wooden box, 29" by 25 1/2" by 12". Two doors, lock (key missing). Eight internal shelves, divided into three compartments each. [Probably original shipping box for eight 5" Clark lenses!] Engraved on shelves: "1 Chatham Island; 2 Queenstown; 3 Campbell Town; 4 Hobart Town; 5 Kerguelen Island; 6 Peking; 7 Nagasaki; 8 Wladivstok [top]." Also says "Rec'd Jan 26 1877 Wm. Harkness".

Location: Cabinet 6 itself!

==========

HC 458: 5" lens cell

5" lens cell, brass, 5" i.d., 7 3/4" o.d., 1 1/4" high.

Location: Cabinet 6, shelf 8, left side.

==========

HC 459: telegraph key

Telegraph key, walnut and brass, 7" by 2" by 1 1/2".

Location: Cabinet 6, shelf 7, center.

==========

HC 460: micrometer tube assembly

Micrometer tube assembly, brass, 11 1/2" long, 1 3/8" diameter bottom with lens. 3 1/2" by 1 1/2" micrometer head.

Location: Cabinet 6, shelf 7, right.

==========

HC 461: right angle eyepiece assembly

Right angle eyepiece assembly. [Use unknown.] Brass, 3 1/2" by 2 1/4" by 1" overall.

Location: Cabinet 6, shelf 7, right.

==========

HC 462: 7 3/8" double convex lens

7 3/8" double convex lens, plate glass. 1/2" thick at center.

Condition: Very dirty, moldy.

Location: Cabinet 6, shelf 6, right.

==========

HC 463: 4 1/4" lens cell

4 1/4" brass lens cell, 4 1/4" i.d., 5 1/2" o.d., 3/4" high.

[Speculation: Could this be the cell for the 4.1-inch 1844 Troughton and Simms Mural Circle? See Skinner [1898, p. 19]. B.A. 96.08.07]

Location: Cabinet 6, shelf 6, center.

==========

HC 464: box of glass

Box of glass: 3" by 3 3/4" by 1/2" plate glass, possible flat; 3 3/4" by 4" exposed plate; four 2" square exposed plates; nine 2" square pieces of glass, one marked "July 7, 1961". [Box size?]

Location: Cabinet 6, shelf 6, right.

==========

HC 465: three screws and eyepiece holder

Three screws, all brass, 2 3/4" long, 1" diameter tops. Eyepiece holder for 3/4" i.d. [o.d.?] eyepieces. 1 1/2" diameter bottom, 1" high. Wrapped in plastic.

Location: Cabinet 6, shelf 6, right.

==========

HC 466: 7 1/4" diameter concave glass plate

7 1/4" diameter concave glass plate, 1/4" thick at edge. Has photographic emulsion on surface. [Perhaps a USNO 40-inch plate?? B.A.]

Location: Cabinet 6, shelf 5, left.

==========

HC 467: 3 3/4" lens in steel cell

3 3/4" (clear aperture) lens or optical window in steel cell. 6" o.d., 1/2" high. Appears to be two airspaced glass flats sealed with rubber gaskets in steel cell.

Condition: Very dirty.

Location: Cabinet 6, shelf 5, right.

==========

HC 468: brass eyepiece

Brass eyepiece, 3/4" o.d. eyepiece. Holder 1 1/2" diameter bottom by 1" high.

Location: Cabinet 6, shelf 5, right.

==========

HC 469: 7 3/8" double convex lens, same as **HC 462**

See **HC 462**.

Location: Cabinet 6, shelf 4, left.

==========

HC 470: 3 7/8" lens in steel cell

3 7/8" lens or optical window in steel cell. Similar to **HC 467**, but smaller. Sealed with rubber gaskets.

Location: Cabinet 6, shelf 4, center.

==========

HC 471: polished steel plate

Polished steel plate, 6 1/4" by 3 1/2" by 1/2", slightly concave.

Location: Cabinet 6, shelf 4, right side.

==========

HC 472: polished steel plate

Polished steel plate, 5" by 2 1/2" by 1/2", slightly concave.

Location: Cabinet 6, shelf 4, right side.

==========

HC 473: glass reflector

Glass reflector, 5 3/4" diameter by 1 1/4" deep. Appears to be blown glass, aluminized on inside. Label on back center: "Made in the // Trademark // ACME // lead flint // US of America".

Location: Cabinet 6, shelf 3, right side.

==========

HC 474: three screws for lens cell

Three screws for lens cell. Steel, 2" long. Attached to card "Screws for lens".

Condition: Very rusty.

Location: Cabinet 6, shelf 1, left side.

==========

HC 475: brass bracket

Brass bracket of unknown use. 5" by 1 1/2" by 3/4".

Location: Cabinet 6, shelf 1, left side.

==========

HC 476: receipt for coeleostat mirror

Receipt for coeleostat mirror. Three pages dated 19 November 1948, from T. E. Turlington, Army Map Service to Dr. Lyman Briggs, US Bureau of Stds.

Location: Cabinet 6, shelf 1, center.

==========

HC 477: polished steel plate, same as **HC 472**.

See **HC 472**.

Location: Cabinet 6, shelf 1, right side.

==========

HC 478: box of miscellaneous items

Box of miscellaneous items. Cardboard box, open top, 12" by 17" by 10".

Location: On pile of boxes in SW corner of room, to left of Howard Clock (**HC 267**).

==========

HC 479: box of gears, miscellaneous items

Box of gears, miscellaneous items. Cardboard box, 6 1/2" by 8 1/2" by 7". With many brass gears, gear assemblies, switches, and two "pistol" switches.

Location: In box, **HC 478**.

==========

HC 480: box of miscellaneous glass tubing

Box of miscellaneous glass tubing. "Kodak", 5" by 5" by 1 3/4" box.

Location: In box, **HC 478**.

==========

HC 481: box of miscellaneous brass parts, switches

Box of miscellaneous brass parts, switches. Same box type as above.

Location: In box, **HC 478**.

==========

HC 482: box of miscellaneous brass parts

Box of miscellaneous brass parts. Same box type as above.

Location: In box, **HC 478**.

==========

HC 483: box of four lenses, miscellaneous parts

Box of four lenses, miscellaneous parts. Same box type as above. Includes: 1 7/8" aperture achromat, in brass cell, 2 1/4" diameter, dirty with mold spots; 2 1/4" plano-convex lens, dirty; Two 1 7/8" lenses, one plano-convex, one convex-convex, in paper, dusty; metal pointers; miscellaneous small parts.

Condition: See just above for lenses.

Location: In box, **HC 478**.

==========

HC 484: 3 1/16" lens in steel cell

3 1/16" clear aperture lens or flat in steel cell. 3 1/4" o.d. by 1" high cell. In box as above.

Location: In box, **HC 478**.

==========

HC 485: box of miscellaneous brass gears

Box of miscellaneous brass gears. One gear is 3" o.d. by 1" high assembly. Six parts total. In box as above.

Location: In box, **HC 478**.

==========

HC 486: brass chain

Fine brass chain [for 5" Clark clock drive?]. 1/4" wide, 1/8" thick. 38" loop; 164" length; etc. In box as above.

Location: In box, **HC 478**.

==========

HC 487: carton of miscellaneous lenses

One quart plastic carton of 20-30 miscellaneous lenses, some in cells, some achromats. Marked "Stephen Dick 653-0145".

Location: In box, **HC 478**.

==========

HC 488 and **HC 489**: two similar engraving devices?

Two pantographs, possibly engraving devices? 4 1/2" by 8 1/2" by 1 1/2" high overall, with 3" diameter brass dial, numbered "0" to "30" by 2. Rest aluminum and brass.

Location: In box, **HC 478**.

==========

HC 489: See above

==========

HC 490: copper sphere

Copper sphere of unknown use. 4" diameter copper sphere, with six semicircular "airholes". Hangs on copper wire, with 4" long copper tubes at bottom. Marked "11" with labelmaker tape. [Some sort of meteorological device?]

Location: In box, **HC 478**.

==========

HC 491: brass square

Brass square, 2 1/4" by 2 1/4" by 1/4". Part of a plaque, now reads only "Invented by // Prof. F.[?] Lock... // Howard & Da... // Manufacturers // Boston, Mass..."

[This plaque apparently applies to the Howard and Davis "electo chronograph", designed by Locke. Skinner [1898, pp. 21-24] describes this clock at length. The Skinner ms. also says "Note added by Rhysburger on 10 May 1973 - This Locke Electo Chronograph was located in the center room of the Clock House (Bldg # 3) in the 1950's when that room served as a visitor center. In the 1960's this chronograph was given to the Smithsonian Institution, where it is presently on display in the Museum of Science and Technology." B.A. 96.08.07]

Location: In box, **HC 478**.

==========

HC 492: History Committee inventory, description cards

Stack of 6" by 4" notecards for "Naval Observatory History Committee". Also miscellaneous note cards describing History Committee items, but misplaced from items. Added to cabinet #1, September 26, 1993 by B.A. [Cards contain many useful comments and should be correlated with current **HC** numbers.]

Location: Cabinet #1, shelf 6, right front.

==========

HC 493: board with sign

Board with sign, 23 1/2" by 7 1/2" by 3/4". Sign says: "TELESCOPE WITH RANGE FINDER // CIRCA 1874 // FROM FLAMENCO ISLAND SIGNAL STATION // USED FOR CONTROL OF ANCHORAGES". [Speculation: Could this be for the telescope **HC 326**, which has periscope style view finder - a range finder perhaps? B.A.]

Location: Shelves #2, top shelf.

==========

HC 494: Nautical Almanac proof sheet box

Nautical Almanac proof sheet box, 22" by 15" by 2 1/2", wooden, bottom very warped, marked "A". One page from 1949 inside, looks like star table.

Location: Shelves #2, top shelf. (This is temporarily on top of the front of the pile of boxes behind the Howard Clock (**HC 267**)).

==========

HC 495: Nautical Almanac proof sheet box

Nautical Almanac proof sheet box, 22" by 15" by 2 1/2", wooden, bottom very warped, marked "B". One page from 1949 inside, positions of Moon table.

Location: Shelves #2, top shelf, on **HC 301**.

==========

HC 496: measuring engine for PZT plates

Measuring engine for PZT plates. 15" by 10" by 16" overall dimensions. Brass, steel, glass, ivory, lead.

Location: Mounted inside **HC 497**.

==========

HC 497: glass window box mounted on table

Glass window box, 19" by 14" by 16", wood with glass. Ser. No.: "172-U.S.N. 001095". Mounted to table, 39" by 22" by 29". 27" by 3" deep drawer. Drawer contains: 6 calculator rolls of paper; stack of IBM cards; PZT plate holder backing (brass); microscope mirrored illuminator; PZT plate envelope rubber stamp; two glass copies of PZT plates; spare light bulb.

Location: Left of window against wall.

==========

HC 498: 4" transit circle collimator telescope

4" transit circle collimator telescope. 40" long aluminum tube, with 5" o.d. brass flanges; steel lens cell; 3 1/8" aperture lens; 4" x 2 1/2" lens cover, plexiglass and copper; brass tailpiece with micrometer. (**HC 499** is the same, but is missing lens).

Condition: Bad, lens dusty with mold spots.

Location: Resting on supports of table **HC 497**.

==========

HC 499: 4" transit circle collimator telescope tube

4" transit circle collimator telescope tube. Same as **HC 498** but missing lens, lens cover, and micrometer. 37" long.

Location: Resting on supports of table **HC 497**.

==========

HC 500: pendulum

Pendulum, 46 1/2" long, 4" o.d. by 9 1/2" weight. Steel, steel springs at top.

Location: In box **HC 502** below.

==========

HC 501: weight

Lead weight, 4" o.d. by 5 1/2" high.

Location: In box **HC 502** below.

==========

HC 502: pendulum box

Pendulum box. Wood. 6 1/2" by 6 1/2" by 69".

Location: Between Shelves #2 and Cabinet 5.

==========

HC 503: toolbox

Toolbox, painted green, steel, with one tray, 14" by 7 1/2" by 6". Contents include (among other things): pliers; needle-nosed pliers; 9" long flathead screwdriver; 12" long flathead screwdriver, 3/8" wide blade; hex wrench set; 12 1/2" by 1" file. [History Committee toolbox.]

Location: On pile of boxes to right of Shelves #1.

==========

HC 504: 5" Clark refractor #860

Brass. **HC 504** label placed on pedestal.

A description of the eight 5" Clark equatorials is given by Skinner [1898, pp. 65-66]. He notes that #860 was in Campbellstown, Tasmania for the 1874 transit of Venus, and in Santiago, Chile for the 1882 transit.

Condition: Only apparent damage is that declination slow-motion is broken and clock drive cover is missing.

Location: Moved to Instrument Shop for repairs, 96.09.10. Was located in building 1, main lobby, lobby center!

==========

HC 505: finder telescope for **HC 504**

Finder telescope for **HC 504**. Finder lens cap is **HC 507**.

Location: On **HC 504** above.

==========

HC 506: lens for finder telescope for 5" Clark refractor no. 860

Finder telescope itself is **HC 505**, main telescope is **HC 504**. Finder lens cap is **HC 507**, but is marked "858", i.e. is not for this telescope.

Condition: Dusty with mold spots.

Location: On **HC 504** above.

==========

HC 507: lens cap for finder telescope, **HC 505**

Has engraving "858", i.e. is not for this telescope (**HC 504**).

Location: On **HC 504** above.

==========

HC 508: lens cap for telescope, **HC 504**

Has engraving "863", i.e. is not for this telescope.

Location: On **HC 504** above.

==========

HC 509: 5" comet seeker telescope

5" clear aperture, 31 1/2" long tube, 41" focus. 54" from ground to wooden declination wheel. Has old style "HC 005" metallic sticker on pier. Relabeled, 96.09.09.

Condition: Lens is very dirty, waterstains, mold, and dirt present. Eyepiece is very dirty. [Note: Optics (lens and mirror?) were cleaned by QMC Patrick McCarthy, March, 1996, for public observing of Comet Hyakutake.

B.A.] Wood on hand rail ring found to be very loose, 96.09.09.

Location: USNO Bldg 1, main lobby, under stairs.

==========

HC 510: 5" Clark refractor #861

Brass. "172-U.S.N. 001468". Has old style "HC 004" metallic sticker on pier. The objective for this is apparently **HC 132**.

A description of the eight 5" Clark equatorials is given by Skinner [1898, pp. 65-66]. He notes that #861 was in Whangaroa, Chatham Is., for the 1874 transit of Venus, and in Auckland, New Zealand for the 1882 transit.

Warner and Ariail [1996, pp 169-170] note this telescope "was used for many years at the Mare Island Naval Observatory located in a shipyard in San Francisco. This observatory rated chronometers and supplied standard time to the West Coast. After the demise of the observatory in 1930 the telescope was returned to the Naval Observatory in Washington, D.C." An included photo [ibid, p. 168] may be of this instrument. Label added (to tube middle) 96.09.09.

Condition: Legs supporting pier are missing. Objective lens is not in place. Declination slow-motion linkage is missing.

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 511: finder telescope for **HC 510**

Finder telescope for **HC 510**. No lens.

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 512: lens cap for finder telescope **HC 511**

Lens cap for finder telescope **HC 511**, on main telescope **HC 510**. Has engraving "857", i.e. is not for this telescope.

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 513: lens cap for telescope **HC 510**

Main lens cap for telescope **HC 510**. Has engraving "860", i.e. is not for this telescope.

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 514: 5" Clark heliostat lens

5" clear aperture Clark heliostat lens. 8" o.d. brass cell. 9" high by 4" deep steel holder, two 18" long steel guides.

Skinner [1898, p. 70-72] describes the eight Clark photoheliographs.

Condition: Dusty, possible small defects in glass.

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 515: 6 7/8" Clark heliostat flat

6 7/8" clear aperture heliostat flat mirror. 8" o.d. brass cell, by 1 1/2". Glass has "wrong side" written on edge. Identical to **HC 116**.

Skinner [1898, p. 70-72] describes the eight Clark photoheliographs.

Condition: Glass is loose, dusty.

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 516: Clark heliostat

Clark heliostat. [Only mirror support is labeled **HC 516**, 96.09.09.]

Skinner [1898, p. 70-72] describes the eight Clark photoheliographs.

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 517: Stackpole Broken Transit Circle

Stackpole Broken Transit Circle ["broken" is the type, not the condition!]. Engraving reads: "STACKPOLE & BRO. // New York // 1502".

Skinner [1898, p. 68] describes these transit circles and notes that "#1502 is in use at new Naval Observatory." He indicates that #1502 observed the 1874 transit of Venus at Hobart Town, Tasmania, and the 1882 transit at Washington, D.C.

Condition: No lens. Glass bubble is still intact.

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 518: lens cap for **HC 517**

Lens cap for **HC 517**. [Size?]

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 519: kerosene lamp for **HC 517**

Kerosene lamp for **HC 517**. [Size? Condition?]

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 520: Frodsham sidereal pendulum clock

Sidereal pendulum clock. Mfg. by: "Charles Frodsham, 84 Strand, London" (on clock face). Burled walnut case. 17 1/2" by 11" by 76". 12" diameter face, 12 1/2" diameter glass face cover. Brass pulley assembly. Mercury/glass weight, 7 1/2" by 2 1/2" wide. Loose, filled brass weight, 8" by 2". Has old style "HC 006" metallic sticker. Sign reads:

"THIS CLOCK WAS MADE BY CHARLES
FRODSHAM OF LONDON AND PURCHASED
BY THE NAVAL OBSERVATORY IN JANUARY
1845, FOR $315. IT WAS USED AS THE
OBSERVING CLOCK FOR THE MURAL
CIRCLE AND THE 5.3-INCH TRANSIT
INSTRUMENT AT THE OLD NAVAL
OBSERVATORY, 24TH AND E STREETS, N.W.
IT KEPT THEN, AS NOW, SIDEREAL TIME,
WHICH THE ASTRONOMER USES IN
MAKING OBSERVATIONS."

Not checked, 96.09.09.

Condition: Glass clock face cover is loose, needs repair. Mercury droplets in bottom of weight.

Location: As of 96.09.09, apparently has been repaired and moved to the Oceanographer of the Navy's office, USNO Building 1, second floor. Was located in USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 521: Howard sidereal pendulum clock

Sidereal pendulum clock. "E. HOWARD & CO. BOSTON." on face. 12" diameter clock face (roughly circular). Mercury filled weight, 9 1/2" long by 4" diameter. Winding key inside. 18 1/4" by 57" by 10 1/4". 11 5/8" glass cover for clock face (beveled opening). Engraved on back of upper door is "628". USNO Minor Property #62285504471.

Skinner [1898, p. 75-76] describes the eight Howard clocks. He lists #628 as having been used to observe the transit of Venus from Peking, China, and notes that it was (in 1898) "In use as Transmitter #2 at new Naval Observatory. In the chronometer room."

Condition: Appears to run. Lock in upper door needs to be unlocked.

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 522: Molyneux sidereal pendulum clock

Sidereal pendulum clock. "Robt. Molyneux & Sons, London". 72" by 16" by 11". 12" clock face protected by 14 1/2" by 14" detachable door (missing lock). Door has 12 1/4" glass plate held in by beveled brass ring. Mercury weight, 7 3/4" by 2 1/2". Winding key inside (appears to be made out of a screwdriver). Pendulum missing pointer on bottom. Second hand moves but doesn't advance. Counterweight, 6" by 2" diameter, filled brass. Has old style "HC 003" metallic sticker, above "172-U.S.N. 001152". Left eye hook is loose on both doors. Accompanying plaque reads:

"THIS ASTRONOMICAL CLOCK WAS MADE BY ROBERT MOLYNEUX
& SONS AND PURCHASED BY THE NAVAL OBSERVATORY FOR
LT. J. M. GILLISS' OBSERVING EXPEDITION TO SANTIAGO, CHILE,
IN 1850-52. IT IS KEEPING EASTERN STANDARD TIME AT
PRESENT."

Location: USNO Bldg. 1, main lobby, west side. As of 96.09.19, has been removed for repairs.

==========

HC 523: Frodsham sidereal pendulum clock

Sidereal pendulum clock. "Charles Frodsham 84 Strand. London" 17" by 10" by 76". Burled walnut. 12" face. 12 1/2" glass face cover in beveled brass ring. Filled weight, 8 3/4" by 2 1/4" diameter. Brass counterweight, filled, 7" by 2" diameter. 5" by 10" wood inlays on right and left sides of clock box. Has old style "HC 002" metallic sticker. "USNO Minor Property #62285504470".

Condition: Runs, but doesn't advance.

Location: USNO Bldg. 1, main lobby, east side. As of 96.09.19, has been removed for repairs.

==========

HC 524: Kessels sidereal pendulum clock

Sidereal pendulum clock. "Kessels. Altona." #1524. Winding key inside. 8" square clock face. 8" square glass cover. 7" diameter pendulum weight. 7 1/4" by 1 3/4" filled brass counterweight. 1/2 dram, 1 dram weights. 12" by 8" top, 18" by 11" bottom, 73" tall. Three glass doors, all with key locks and one key [photocopy of key made]. Has old style "HC 001" metallic sticker. Also "172-U.S.N. 001317". Plaque reads:

"THIS CLOCK WAS BUILT BY KESSEL OF ALTONA, GERMANY,

AND PURCHASED BY THE NAVAL OBSERVATORY
SOON AFTER ITS FOUNDING IN 1842.
IT WAS THE STANDARD SIDEREAL CLOCK
AT THE OLD NAVAL OBSERVATORY UNTIL 1881.
IT IS NOW KEEPING EASTERN STANDARD TIME."

Condition: Runs.

Location: USNO Bldg. 1 library. Has been removed for repairs.

==========

HC 525: Eggert pendulum clock

"EGGERT & SON NEW YORK," black engraving on silver face, 11 1/2" clear diameter glass cover in wood, with key and keyhole. Face numbered 5 to 60 by 5. Larger door with 6 1/2" by 27" tall glass, curved at top, including key and keyhole. Winding knob in box on left side of clock face box, possible ivory handle. Box is burled walnut. 7 feet tall overall, 17' across base, 11' deep. 12 1/2" across center, wood columns to left and right of main door. Wooden scrollwork on top, with wooden shield (13 "stars", 12 vertical stripes). Pulley/cable still in place for weights. Pendulum scale still in place (reads to ".2" on both ends). Inventoried 96.09.09, B.A.

Condition: Pendulum and weights missing!

Location: USNO Bldg. 1, "pier room" (i.e. "Louis M. Goldsborough Museum").

==========

HC 526: brass level vial container

brass container for glass (missing) level, 9" long for 7" long glass vial. Same as **HC 438** above, except (besides missing glass vial) no manufacturer name given. Also has "Cape Town // 1497" (or "497") scratched on bottom. Number "1" to "4" scratched on sides by clips to hold in glass. [Speculation: transit of Venus equipment?] Inventoried 96.09.11, B.A.

Condition: Poor.

Location: Cabinet 4, shelf 1, right side, in box **HC 431**.

==========

HC 527: 4-inch f/6 triplet lens

4-inch f/6 triplet lens. Brass cell (4 1/2" top o.d., 5 1/2" bottom flange o.d.). No markings. Has brown heavy paper (and black tape) cover, which reads in marker "Navy Yard Shop // 1958 - Polaris // Monitor" and "10/27/65 f:6 special // photo triplett [sic]". Small light bulb in center of cover with several feet of wire attached. [Not noticed in earlier inventory as it was in rear of the lowest shelf of the most difficult to reach cabinet.] Inventoried 96.09.11, B.A.

Condition: Lens is dirty, has mold spots on most surfaces, needs cleaning. Cell colored black from corrosion but in okay condition.

Location: Cabinet 1, shelf 6, on top of box **HC 153**. (Was with **HC 455** in cabinet 4, shelf 5 (bottom).

==========

HC 528: 5" Clark telescope #856

5" Clark telescope. Tube is marked "No. 856". Tapered tailpiece marked "A. Clark & Sons // Cambridgeport, Mass. // 1874". Similar to **HC 504** and **HC 510**.

A description of the eight 5" Clark equatorials is given by Skinner [1898, pp. 65-66]. He notes that #856 was in Vladivostok, Siberia for the 1874 transit of Venus, and in San Antonia, Texas for the 1882 transit.

This telescope was returned July 16, 1992 [Archinal, 1992] from the Panama Canal Zone after being on loan there for some time. See [Panama Canal Review, 1952; Smith, 1991] for additional information. This is noted in Warner and Ariail [1996, p. 170]. The entire telescope was restored by the AD Instrument Shop during the summer of 1996. Inventoried 96.09.19, B.A.

Condition: Main objective (**HC 529** below) is dirty, with light mold/dirt on rear element. Finder lens (**HC 530**) is very dirty, with mold spots on rear (no lens cover). Both need cleaned.

Location: Placed in USNO building 1, main lobby center, 96.09.12. Objectives, eyepieces, and partial eyepiece solar filter holder stored in basement history committee room, Cabinet 1.

==========

HC 529: 5" Clark lens

5" Clark lens for **HC 528** above. Brass cell. "856", "VI", and "Hall[?]" scratched on side. "845" stamped on side. "856" penciled(?) twice on front brass ring at edges of glass. 5" clear aperture, 6" outside diameter, 1 3/8" high. Wrapped in pink 1/8" foam sheet. Inventoried 96.09.19, B.A. Taken by Marty Cohen of Company 7 for cleaning, 96.09.25.

Condition: Dirty, mold on rear element at least. Needs cleaned. Many bubbles on glass front element at edges (covered).

Location: Cabinet no. 1, shelf 4, right.

==========

HC 530: finder lens for **HC 528**

Clark finder lens for **HC 528** above. Brass cell. No markings. 1 7/16" aperture, 2" outside diameter, 7/8" high. Inventoried 96.09.19, B.A. Taken by Marty Cohen of Company 7 for cleaning, 96.09.25.

Condition: Glass very dirty, covered with mold and stain. Brass black from corrosion.

Location: Cabinet no. 1, shelf 4, right.

==========

HC 531: finder for **HC 528**

Clark finder for **HC 528** above. Accepts 1 1/16" outside diameter eyepieces. Note that there is no finder lens cover. No **HC** label attached for fear of damaging newly polished tube. Inventoried 96.09.19, B.A.

Condition: Very good. Cleaned by USNO Instrument Shop, summer, 1996.

Location: On **HC 528**.

==========

HC 532: 5" lens cover for **HC 528**

5" lens cover for **HC 528**. Brass, edges obviously bent. Inside reads in pencil: "9 - 00 - 15 N // 79 - 35 - 51 W" (the Panama location of the telescope when in use there). Inventoried 96.09.19, B.A.

Condition: Good. Outside cleaned by USNO Instrument Shop, summer, 1996.

Location: Cabinet no. 1, shelf 4, right.

==========

HC 533: eyepiece for **HC 528**

Eyepiece for 5" Clark telescope, **HC 528**. 7/16" eye lens, 1" field lens, 1 1/4" maxim diameter, 1 1/8" outside tube diameter. "4" scratched by eye lens. Has screw-on bracket for sliding solar filter (solar filter missing). "B" scratched inside bracket. Brass tube. Brass surrounding eye lens polished (presumably just done by USNO Instrument Shop). Inventoried 96.09.19, B.A.

Location: Cabinet no. 1, shelf 4, right.

==========

HC 534: eyepiece for finder **HC 531**

Eyepiece for Clark finder **HC 531**, on telescope **HC 528**. Brass tube. 1/8" eye lens, 5/8" field lens. Finely grooved (circular) top. 1 3/8" maximum diameter, 1 1/16" tube outside diameter. Inventoried 96.09.19, B.A.

Location: Cabinet no. 1, shelf 4, right.

==========

HC 535: spectroscope

Spectroscope. Plates read: "GAERTNER // Scientific Corporation // CHICAGO // PAT. NO. 1715030 // SERIAL NO. 184" and "U. S. N. PROP. // 000318 // 91703". Painted black. Main box is 8 1/2" by 6 1/2" by 5". On one side is 12" long by 2" diameter tube with eyepiece (3/4" tube outside diameter), and 7" diameter enclosed rotating wavelength scales. On another side is a 10" by 2" diameter tube with slit box and micrometer. On the bottom is a 6" high by 5 1/2" diameter tube. [Original use unknown, but used by Jerry Josties for demonstrations of the solar spectrum during daytime observatory open houses in late 1980's and early 1990's. B.A.] Inventoried 96.09.19, B.A.

Condition: Good, but very dusty.

Location: Shelves no. 2, shelf 5 (down), right side. (Moved there.)

==========

HC 536: mirror on stand

2" diameter mirror , flat on one side, concave on other. On two clamp ("Fisher" and "Castaloy" clamps) arrangement attached to laboratory stand. 15" tall, 3 1/2" by 5 1/2" black crinkle finish cast iron base. [Used to direct sunlight into spectroscope, **HC 535** above. B.A] Inventoried 96.09.19, B.A.

Condition: Very dusty.

Location: Shelves no. 2, shelf 5 (down), right side. (Moved there.)

==========

HC 537: 26-inch refractor photometric screen

26-inch refractor photometric screen, used to measure the brightness of Sirius B. This work done by Irv Lindenblad in early 1970's. 33" diameter, 1/2" thick. Apparently plywood. Painted black. 13" hexagonal aperture. Numerous screws and eyebolts holding thin wire (only a few of which still cross aperture). Two handles. [This was left behind upon Lindenblad's retirement, and the late Bob Harrington confirmed (to B.A.) it was no longer needed at the 26-inch.] Inventoried 96.09.20, B.A.

Condition: Most of wires broken, dirty.

Location: USNO building 52, room 224.

==========

HC 538: Frodhsam chronometer

Chronometer. Face reads: "Charles Frodsham // 27 South Molton St. LONDON // No. 10064." Glass covered 4 3/4" diameter metal face. Labeled "I" to "XII". Upper dial labeled "DOWN UP" and "WIND", "0" to "56" by 8. Lower dial labeled "10" to "60" by 10. Glass cover was unscrewed and "A.P.145" and "495" found in tiny writing at bottom of face.

Well laquerered brass case. Brass support 5 1/2" diameter ring, other fittings. Black painted brass fittings on case.

Brass winding key, 3" long. Clock wound (from "56" to "40" setting) but doesn't run.

Mahogany box, 7 1/4" by 7 1/4" by 7 1/2" high. Brass corners, side connectors, and two inset swing-out brass handles. Top lid has brass "shield" (worn, with no markings). Inside has card in brass holder, reading: (printed) "Issued from // Royal Observatory, Greenwich. // [pencil:] "C" [stamped:] 18 MAR 1919". Upper section of box (2 3/4"high) has glass cover and opens at chronometer level. Front has button with brass "starburst" around it for opening lid. Below that is 2 3/8" by 1 1/8" ivory panel (lower left corner chipped) reading "Chas. Frodsham. // London. // 10064 // [up arrow]". Below that on box bottom section is keyhole (no

key). Below that is decal reading "248 // U.S. Navy // 104534". Green fabric glued to very bottom of box. Upper box section has on inside old style HC sticker no. 010 on upper left. Below that is red paper sticker, reading in part: "Geo. E. Butler Co. // Chronometer Makers // 356 California St. DAvonport 5888 // San Fransicso, California." The last cleaned date on this sticker has been scratched off.

Inventoried 96.09.24, B.A.

Location: To be located in Building 1 first floor hall display. Was located in Building 1 second floor superintendent's office. Currently in S. Dick's office.

==========

(no **HC** number yet): PZT No. 2 objective, 7 3/4 inch aperture

7 3/4 inch clear aperture lens; steel cell, 11 1/4" flange diameter by 4 3/4" height. Has 8.6" diameter plexiglass cover (with currently detached central knob for removal). Currently in cardboard box, set in wooden frame with one foot square wooden cover. [PZT No. 2 objective, manufactured at USNO, 1940's. Supposedly an 8-inch f/19 objective. In operation in Richmond (Miami, FL) station, November 4, 1949 to November 15, 1954, and (after being moved slightly), November 15, 1954 to June 24, 1987. Objective (only) returned to Washington by James Martin, 1988. - B.A.]

[Was cleaned by Marty Cohen of Company Seven, 96.06.05 to 96.09.25. Marty commented 96.09.25 that: a) he reused the original spacers; b) the lens would now be usable in a telescope; c) he has thoroughly cleaned the glass and metal parts (except where there were markings) with solvent so that all traces of mold/fungus should have been removed; d) he recommends the lens not be returned to its previous position so that there is no mold/fungus contamination from other lenses; e) he also recommends it not be left in the current history committee room due to the high humidity there; f) he notes that there was a large amount of tape residue on the cell which he attempted to clean off, but was not completely successful at removing. Notes here from memory by B.A., 96.09.25.].

Condition: Very good. Has been cleaned by M. Cohen. Former condition was "objective front element very dirty, other surfaces good. Plexiglass cover badly scratched, dirty." Cardboard box, wood frame, cover now missing (which is probably good considering their likely contamination). Still needs box.

Location: On top of Fitz box (**HC 167**).

==========

(no **HC** number yet): Wild T-3 Theodolite

Wild T-3 theodolite. Loaned to Don Hutter for use on optical interferometer project in early 1990's. Box for this is **HC 273**.
[Note: In the early 1980's the value of such a theodolite was about $20,000. B.A., 96.09.25].

Condition: Excellent. Was missing eyepiece.

Location: Unknown. [Possibly at Optical Interferometer site, Anderson Mesa, AZ?]

==========

AD (no **HC** number): original 6" transit circle lens

original 6" transit circle lens, in box with lid.

Location: Building 1, room V, T.R. office. [May be used for new Building 1 hallway display. 96.09.19, B.A.]

==========

AD (no **HC** number): 6" transit circle Brashear lens

6" Brashear lens, currently in USNO transit circle, Washington. [From 1897. Noted by T.R., 95.11.01]

Location: Building 3, currently in USNO transit circle.

==========

AD (no **HC** number): 7" transit circle lens

7" transit circle lens. [From 1949. Was in Black Birch, New Zealand. Noted by T.R. 95.11.01. Now in Washington, Building 1 basement, 96.06]

==========

AD (no **HC** number): 12" Clark/Saegmuller refractor

In operational use in dome on building 1, USNO Washington. Placed in operation December 3, 1895, replacing the 9.6-inch Merz and Mahler refractor, which had been on the Saegmuller mount (since July 12, 1893) [Skinner, 1898, p. 9]. Removed during the 1950's (and replaced by a Markowitz Moon camera) and placed in the 40-inch (now 24-inch) dome. Removed during the early 1970's upon the installation of the 24-inch. Reinstalled on Building 1, in approximately 1980 and in operation at present (96.09) For information on the restoration of this telescope, see Rafferty [1981]. This telescope is also noted in Warner and Ariail [1996, p. 167].

Location: Building 1, dome.

==========

AD (no **HC** number): 26" Clark/Warner & Swasey refractor

In operational use in building 2, USNO Washington. [1893 to present (96.09)]. See description and photos in Warner and Ariail [1996, pp. 162-167].

Location: Building 2.

==========

AD (no **HC** number): 24" Boller & Chivens Cassegrain reflector

In operational use in building 39, USNO Washington. [mid 1970's to present (96.09)]

==========

Flagstaff (no **HC** number): 5" Clark lens and tube assembly

[Possibly used as finder on USNO 40-inch at USNO Flagstaff. Noted by T.R., 95.11.01]

Location: [?] USNO Flagstaff Station. 40-inch telescope dome?

==========
==========