

KG
11365
277

M.30

*Memoranda
for
Observatory Report.*

TOMAS GROOM & CO.
STATIONERS,
(82 State Street)
BOSTON.

KG 11365.277

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Report - 1861.

1861 Jan. 7. Went to Clinton to test telescope - left Clinton for Cambridge Jan 11, 11^h P.M.

On 11th saw β Orionis through breaks in clouds - not clear, and air full of snow: the predominant color is red when at best focus instead of blue as with ours; image out of focus round and green outside when eye-piece is pulled out, and most of light is in outer circle, differing from ours. There is a long stria, say 3 inches, in crown many bubbles and scratches.

Jan. 15. To James Slade. City Engineer & Supt. Water-Works. Rain in 1860.

Jan. 17 Furnished Moon Culminations [Dec. 12. 1859 to 1860 June 25. dates in Reynold's list] to W. Reynolds, Sept. & Engineer, Commanding Exploring Expedition, Yellow Stone & Upper Missouri River. Ft. Benton.

Engraving of Galileo received from the Hon. R. C. Winthrop

Jan. 1st to 20. System of obs. of Transits with circum-
polar stars.

Jan 22. 1st Comparison of asteroids with fixed
stars near them of equal brightness, for magni-
tudes - propose to continue systematically.

Jan. 26. Rain in 1860 to J. B. French. Winnebago
Lake. Cotton & Woollen Manufac^t Co. Laconia N.H.

March 4. Senior class. 1st fourth came up -
others as follows 2^d on Tuesday 8.30 to 11.30
* 3^d Wednesday
4th Thursday

and if not clear on some day of fol. week.

Vide. Eq. Book (*missed & came March 20th)

Spiral of Orion.

March 2/3 Obs'd Occ. Antares - Last Occ. of
star of 1st mag. for several years.

March 21 Plates of Comet June 1860.

Obs. Tail Comet 1843 - Obs. of Nadir.

March 12 Communicated to Acad. account of Spiral character of Great Nebula of Orion.

Feb. 12 For magnetic intensity suspend bar of steel magnetized by knife edge as for invariable pendulum. 1st N pole down then S pole down & register vibrations.

March 21 Seniors finished tonight. The 3^d division failed by cloudy evg. March 5 & 12, and came up on first clear night after.

Feb. 12 Moon Cul. for 1860 Sent to Dr. Brünnow and to R. J. Ellery, Melbourne Austr. also observed & sent Cul. for Lieut Ives & occultations.

April 8. Comparisons of Mag. of asteroids with stars in Orion. — Began brick work of clock-room in cellar west wing.

April 9/10. Discovery of Planet (66) after 5 days regularly instituted search. by H. P. T.

April 10. From statement in N. Y. Herald

found and observed Comet described. Discovered Ths. Apr. 4th by A. E. Thatcher.

Copies of engravings Comet Sept. 29 distributed in America & in Europe.

Reports printed & distributed.

Sp. Gov. specimen sheet sent to Dr. Peters with Comet & Planet obs. of 1860. announcement of discovery of Planet (66) and Comet I

Notices of Planet and Comet discovery newspaper Boston, New York & Paris Bulletins. Elements Comet I Thatcher's, Hale & Safford.

Proc. Am. Acad. March 1861. Account of Spiral structure of great nebula in Orion.

April 26. Sent to R. L. Larrington account of spiral structure of great nebula in Orion. Abstract of Photometry of Sun, Moon, Jupiter, & Venus. Proof of Engraving Comet 1858 for himself and for Library Astr. Soc. - also Elements Comet I. 1861 by J. H. Safford

May 7th. 2^d Set Elements J. H. S.
Barn moved.

A.B. In June 1862 Seniors petitioned (2nd Division) for leave to visit Obs. as they lost their chance in 1861. They had June 18 & 19 assigned 5 a come up June 19th. Two evgs.

May 8. Junior Students finished. It took 18 days for 4 Div. of Seniors - 17 for 4 Div. Juniors - Condition 1st Div. on Monday 2^d on Tues & on no other days.

Weather was fair average. but they came up on two evgs. when there were some clouds.

See Eq. Book May 8

May 15. Naming of new Planet by Mr. Quincy - Maja - one of Pleiades.

Although a bright Comet. letter of Director announcing its discovery and that of Planet were first announcements of it in Europe & appear together in Circular of Astr. Nach. under date April 30.

May 30. Bust of Josiah Quincy erected in Library; pedestal from Miss E.S. Quincy
Distribution of Reports. Memoirs & Reports 1859 & 1860 - Spiral Neb. Orion. Catalogue. Memoir moon & Jupiter. Moon and Sun.

June 4 Communicated for publication to B. L. Carrington. 7th Saturday's investigation.

of discrepancies of Radcliffe Catalogue
To Astron. Nach. additional obs. & 2 sets
Elements by J.H. Safford - Comet I. 1861.

To Prof. Loomis. data respecting Comets &
asteroids

Moving of Barn. Fences set up. Drains-
front avenue hard & in good order.

June 7. Letter from M. Radan, Paris, re-
questing positions of 3 stars obs^d occulted by
M. Rappell at Massoua 1826 & 1827 for
"Geodesie d'Ethiopie par M. d'Abbadie".

Determination of magnitude of Maia
by comparison of light. assuming it to be
of 13th. mag. April 9th. $r = 0.470$ $\Delta = 0.300$

By Arg. formula A. N. 982 Diam = 19.1 Eng.
miles albedo same as Saturn & Uranus -

Diam = 65.2 Eng. miles albedo same as Moon.

Published in Astr. Notices No. 24 Disc.
New Planet & Elements Comet 1861 I T.H.S.
Ephem. Aglaya T.H.S. Comet III. 1860 A. Hall
Moon Cul. 1860.

Electric Register furnished to Obs. Cape of Good Hope.

Application from Dr. Williamson for plans for Observatory - shutters, etc.

June 11. Visit from M. Diaz Covarrubias on a mission from Government at Mexico to procure information relative to Observatories &c.

June 22 Sent to care of Mexican Legation Washington D.C. Copies of Occultations & Moon Culminations for 1857, 1858, & 1860 for F. Diaz Covarrubias, Mexico.

Piers set for remounting Magnetic Instruments.

Copy for printing Memoirs on
Light of Sun Moon Jupiter &c. Star Cata-
logues etc. first sent Dec 11th 1860

Subterranean Clock room built. depth
diameter - temporary piers

1861 July 15th Account great Comet ~~III~~ 1861
 sent to ~~Gellman~~ & Drunk - Several to
 News papers Elements by A. H. Allen & Saffers
 & Ephemerides by each - 750 copies for distr.

Spr. Gov Cape of Good Hope:

New plan for shutters -

3 1/2 x 5 1/2

2 1/2 x 3 1/2

Sky was clear enough to admit
 of obs. on the Comet from July 2 to 22 inclusive
 excepting 1 night. (July 14) cloudy - Obs. were
 taken on each.

July Requested communication of obs.
 on tail of Comet Responded to by
 mention names.

Engraving: Comet 1860.

1861 July 30.

3rd Catalogue Benoit Stars to Lieut Juss 66 Stars

1861 Aug 16 Invoice of old Books received from Westermann
Astr. Jahrbuch. Bode

Donation Books from
Greenwich Observatory Gen
Carpenters letter June 28 1861

1861 Sept 2

New Dip Circle.

T.H.S. investigation of proper motion
of Sirius in Dec.

Comet was first seen by Capt Cook of ship Irish Swift
May 18th (reported by watch - by himself May 25)
May 26 Tail 15° long & curved round side
to N.E. in mag. (avg?) Gen Ship.

Part of Port Dunny placed in the Library
in compliance with the wishes of the late
Director & may now continue as usual
to receive Mif. 2. 3. Dunny

1861 Sept. 6th began reduction of last obs
about 17 1861. Nautical computing chart.

Tangent cylinder on circle at $280^{\circ} \times 200^{\circ}$
including $\alpha 100^{\circ} \delta + 35^{\circ}$ $\alpha 280^{\circ} \delta + 10^{\circ}$
for June 30th & July 1

Also another chart tangent cylinder
great circles $\alpha 270^{\circ} \delta = 0^{\circ}$ $\alpha 180^{\circ} \delta + 65^{\circ}$

Projections line from centre of sphere upon cyl-
inder Not Mercator.

1861 Sept 23 Monday Visit of Prince Napoleon
& with Prince Clotilde

1861 Oct 11 Notes on expenses of Obs to
Hon A. A. Lawrence -

Statement of expenses of Greenwich
Poulkova. Dudley & Washington.

Oct 11 Mene time Clock cleaned.

Oct 8 1861 Presented to Am. Acad. diagram
of outline of Comet 1858 compared with a
Parabolic Catenary & Parabola having nucleus
at focus published

List of works recd from Royal Obs. Greenwich

Harvard (U.S.) Observatory

Bradley's Observations Vols 1 & 2 ✓
Poussé Catalogue of 1112 stars. ✓
Astronomical Results 1846 to 1858 ✓
Magnetic & Meteor. Results 1848 to 1858 ✓
Misp Herschel's Catalogue ✓
Reports to Visitors. 1836 to 1860 ✓
MacBryne's Ledgers of Stars ✓
Tables of Refraction ✓
Six-year catalogue ✓
Diffe. and Molynaux on Chronometers

Oct New Catalogue Zenith stars for Cape
Meade

Quicker from Scientific school

Oct 24 Painting begins

Oct 8 1861 Presented to Am. Acad. diagram
of outline of Comet 1858 compared with a
Parabol Catenary & Parabola having nodes
at focus published

Oct 21 Searching for Encke's Comet. waiting
for Moon to leave sky at ev'g. Ephemeris
not published in Europe in season to allow
us to see the comet before moonlight interferes

Found Oct. ~~21~~ 23

Oct New Catalogue Zenith stars for Capt
Meade

Quickerion from Scientific school

Oct 24 Painting begins

1861 Oct 23 Eucke's Comet found.
just a perceptible hurried arrest, the
eye in one quarter of the field,
2' or 3' S. of computed place.

Oct 31 Barometer moved to
Transit room Cistern $\frac{3}{4}$ placed
at 7^{ft} 3ⁱⁿ above former position
or 74^{ft} 3ⁱⁿ above sea level in its
new position

By Mr. Burdwell's Obs. March 1857
Cistern in new position is 78.96 above mean between high & low water
Sandwich & Thompson Jan. 1850 78.63
Clark's Great object glass Adopt 78.80

aperture 18 $\frac{1}{2}$ in
focus 23 ft.

Nov. 2nd Obs. Eucke's Comet sent to
Gillisp, Astr. Nach. ^{Gillisp's Journal} Brünnow, Leverrier
Obs on New Nebula discovered
in Sept. 1859 by H. P. F. sent to
Astr. Nach.

Article on Figure of Head of Comet
Donati 1858 to Astr. Nach. (This article
is not the same with that in Proceedings)

1861

Nov 2 (continued) Sent to Astr. Nach.
 Elements Comet 11 1861 Elliptic by
 T. H. Dafford. Parabolic by H. P. T. ^[to 4"]

Period 398 years. Date of perihelion Nov

Nov 5 Saw Clark's great object glass
 of $18\frac{1}{2}$ in diam - 23 ft focus -

Price named to Dr Barnard \$11,000
 in coll -

Mainy bubbles - no strice.

Standard Clock - 6 Pendulums -

Nov 13th Saw the double companion
 of α^2 Capricorni 2" S Aquarii & other
 stars - excellent - color red predom-
 inates. (under corrected?)

I should think material of glass
 remarkably good as well as figure
 though the red is rather prominent
 at best adjustment.

1861 Nov. 12

Map of Neptune by T.H.S. from
perturbations of Uranus

$$\frac{1}{20\,039 \pm 295}$$

G.P.B. Satellite

$$\frac{1}{19400}$$

A. Strom

$$\frac{1}{14\,491 \pm 352}$$

Pirer

Map of Neptune by T.H.S.

Communicated to

Astr. Nachr. - Braunschweig

1690	F 1	-5.3	-5.0
1712	F 1	+14.8	+18.1
1715	F 2	+2.2	+5.9
—	F 1	-3.2	+0.8
1750	L 1	+4.7	+4.0
—	L 1	-0.3	-1.6
1753	B 1	+1.6	+0.2
1756	M 1	+1.5	+0.9
1764	L 1	+0.4	-0.4
1768	L 2	-2.0	-2.3
1769	L 6	-4.9	-5.3
1771	L 1	+5.4	+5.0

Final comparisons with the

$$\frac{1}{20\,039}$$

F = Flamsteed

To have books not shelved. piled up on
Library floor. at meeting of Council to
show increase

Nov 1861 Pier in north room
for trial of Clock.

Dec 1 Library arranged in subjects.
1000 bound volumes

Prof. Loomis Letter Dec 1861 requesting
Mag. results.

Mention Comets secondary Tails

Mr. Obs. Comet 1843. Wimmer's remarks
G.P.B. 1st obs.

Number of Stars observed in Zones

Use much of Loomis Astr. Notes - 1335

The Obs. is much in need of a fund
for contingent expenses such as

& general purposes

Past experience proves
that this can be only expected
from individual liberality to
which the institution owes its existence
& continual support

No of Stars in Zones

Clarke Spect. glass.

Mention want of Magnetic Tent.
Instruments of best Construction.

Catalogue of selected stars for Transit.

To show to the Committee Drawing of Spiral Nebula.

Expenditures on Observatory

1247 84

Mem. from Treasurer's Books. Oct & Dec 1860 83.75Total Jan 1 1861 to Aug 31 1861 = 116 ~~54~~ 09

Dumries Aug 31 to Jan 1 1862 : 43

Printing &c 276Total Jan 1 1861 to Jan 1st 1862. 1247 7.09Comet discovered Dec 28 1861
by H. P. Tuttle.~~By Memo. of H. P. Tuttle of Stars for the Catalogue~~

0.4 0.1 . . .

Memoranda for- Report

Dec 30th 1861 to Dec 26/1862

Eclipse of Sun Dec. 31st

Obsd by Mr. Paine.

At Harvard College Observatory, Cambridge.—
Lat. $42^{\circ} 22' 48''$, Long. $71^{\circ} 7' 39''$.

	h.	m.	sec.	A.M.
Sun's centre rises (neglecting refraction) about 17 min. after beg.	7	34	00	"
Greatest Obscuration.	8	8	54	"
Eclipse Ends.	9	6	59	"

Digits Eclipsed, $4^{\circ} 21'$, or about a third.

At Boston the end will take place a few seconds later.

Hansen for Hansen

Leavenworth Sun.

Visit of Committee Jan 2 1862.

Elements Comet 1861. III ~~(1862 I?)~~

Obs. by T.H.S. & Ephemeris

Sent to R.C. Carrington Esq
for Astr. Soc. Notices - Paris Bulletins
& Smithsonian Journal. Elements by A. Hall to
Br. Notices. H.P.M. to Paris Bulletins.

Rain in 1864 To City Engineer
Boston. & Minneapolis Lake Cotton
& Woolen Manufacturing Co.

To Prof. Loomis mean. ^{5^m} of indications
of Magneti. Declination. Term days
1841 April 21 To 1842 Sept 21. for
24^h each.

Notice & Obs of Encke's Comet pub-
lished in Silliman's Journal Jan 1862

Tail & physical aspect of Encke

1862 Jan. 28th T. H. S. while re-
ducing Planet & Comet Obs of 1861 came
upon an ~~instance where~~, in an Obs upon
Maja made May 28th. There was a doubt to
be settled by reference to Mr Hall's Ephemeris
This led to a comparison of the Ephemeris
with Dr Peters Observations in Astr. Notices
No 27 He found ~~Dr Peters~~ Obs of May
9 - 11 & 12 accordant with Ephemeris

but the remainder, 8 in number, from May 29 to June 13 inclusive - seemed to belong to a different object - surmised to be a new asteroid - The Obs. on May 29, 30, & 31. June 1st are only approximately published. & it will be necessary to get them more precisely from Dr Peters but T. H. S. is now trying an orbit which if asteroidal settles the question.

(See next page)

1862 March 8th Mr Hall's examination of the Level & Collimation errors tending to show that by renewing the oil frequently on the pivots irregularities are avoided.

BOSTON

A NEW ASTEROID.

TO THE EDITORS OF THE BOSTON DAILY ADVERTISER:

It will be remembered that in April last an asteroid (to which the name of Maia was given by Hon. Josiah Quincy) was discovered at this observatory by Mr. H. P. Tuttle. It was at the time observed here both by Prof. Bond and myself; the only other observations made were by a very diligent and careful observer, Dr. C. H. F. Peters, Director of Hamilton College Observatory, Clinton, N. Y. Both there and here cloudy weather and moonlight interfered with the observations, so that there was much difficulty in keeping hold of it.

I found when revising some of my own observations, that Dr. Peters and myself had been (at the last) observing different bodies, under the impression that each of them was Maia. Calculation at once showed that the Dr. had found a new one, not knowing it; and the elements which were derived from his observations showed with much probability that this new asteroid was quite a remarkable one, being in fact nearer the earth than any other yet known. This conclusion may be modified when more details of the observations are published. It seems that the original Maia must have become too faint for the Hamilton College telescope (which is somewhat smaller than the Cambridge) and that the stranger was picked up as being near the same place. This is the fourth or fifth instance in which small planets have been discovered by accident, and the second in which the discovery has been shown only by calculation. The known asteroids are now seventy-two in number.

TRUMAN HENRY SAFFORD.

Observatory of Harvard College, Jan. 29th, 1862.

1861phae proj. 277B

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EXTRACT FROM THE PROCEEDINGS OF THE
BOSTON SOCIETY OF NATURAL HISTORY, FEB.
5, 1862. [Reported for the Transcript by Dr. S.
Kneeland, Jr., Recording Secretary.] At the reg-
ular meeting of the Council of the Boston Society
of Natural History, Feb. 5, 1862, Prof. Jeffries
Wyman in the chair, Charles W. Tuttle, a mem-
ber present, at the request of Dr. Jackson, made
some statements concerning the great refracting
telescope recently constructed by Mr. Alvan
Clark at Cambridge.

Mr. Tuttle said that it might seem a little out
of place, in a society where a branch of science
so little kindred with astronomy was almost ex-
clusively cultivated, to indulge in any remarks on
astronomical subjects; but as he had been re-
quested by the Vice President to make known to the
members present the result of an hour's in-
spection of an instrument in which all intelligent
persons now felt a common interest, and toward
which public attention henceforward would be
directed, he would briefly relate what he had seen
with others. Having been invited, some weeks
since, by Mr. Clark, to witness the performance
of his recently constructed great telescope, he
had availed himself of this evening, and the
company of several members of this society, as
well as other distinguished gentlemen, to visit
Mr. Clark's residence, at Cambridge, where he
had had the pleasure of viewing a few celestia
objects through the largest refracting telescope in
the world, so far as he knew, certainly the largest
in this country. The evening was one of unusual
serenity. The sky was everywhere free from
clouds, and the atmosphere so tranquil as to al-
low the images of stars to remain nearly steady
and unruffled. Nothing but the bright radiance
of the moon, now in the first quarter, prevented
the night from being a rare one for astronomical
observation.

The giant telescope, twenty-three feet focal
length, with an object glass of eighteen and a
half inches in diameter, was placed in a tempo-
rary tube, and by means of ropes and pulleys at-
tached to the summit of the Observatory tower,
was hoisted into mid air, where a limited range
of the starry heavens was had. This view embrac-
ed the glorious constellations of Orion and Canis
Major. Mr. Clark at once adjusted the telescope
on the celebrated nebula in the sword handle of
Orion. With a far less powerful telescope than
this, this most wonderful of all nebulous objects
presents a spectacle surpassing all description; but
the view which this telescope revealed was gor-
geous and striking far beyond any view ever be-
fore obtained of it. Stars of every conceivable
telescopic magnitude were scattered over the bril-
liant mottled nebulous mass, and blazed upon the
eyes with great distinctness and splendor. The
remarkable sextuple star, Theta 1 Orionis, dis-
closed to view its two minutest members, which
stood out clear and prominent. Herschel regards
the perception of both of these faint stars as the
severest test which can be applied to a telescope.
How many of the innumerable stars in the field
had been before noted by astronomers, it was im-
possible to tell from so general an observation.

The grand nebula was most admirably defined,
and the luminous ridges of its granular structure
seemed almost ready to bloom into swarms of in-
dividual minute stars, and especially so in that
part where its form assumes a kind of rude re-
semblance to the head and yawning jaws of a
monster. Time did not admit of any inspection
of the wonderful outlines of this great nebula,
which are known to extend over a considerable
space.

The telescope was then directed to the bright
star Sirius, the most brilliant star in the whole
heavens. All eyes now eagerly sought for the mi-
nute companion star which Mr. Clark had discov-
ered on the previous Friday evening, on the occa-
sion of his first directing the telescope to that star.
It required but little time for those accustomed to
look at minute telescopic objects to discern the
little stranger hovering close within the rays of
the brilliant Sirius. Its minute twinkling light,
when once caught by the eye, was easily kept in
view, and as the star ascended in altitude became
still easier seen. In point of brilliancy it does not
differ greatly from the well known "sixth star in
the bipezium" of Orion.

This discovery must be regarded as one of the
very highest interest in sidereal astronomy at this
time. But whether this newly discovered minute
star is physically connected with Sirius or whether
its proximity to that star results solely from the
small angle under which it appears, and the
smaller star is far more remote or even still much
nearer us than Sirius, remains to be determined.
In case it is physically connected with Sirius, it is
of the highest astronomical interest to know
whether it is the non-luminous body about which
Sirius has been supposed to revolve. That the
deviations in the proper motion of Sirius indicate
its connection with some body hitherto undiscover-
ed, is clear from the independent deductions of
Bessel, Peters, and more recently those of Mr.
Safford of the Cambridge Observatory. The two
latter astronomers have concurred in assigning a
period of fifty years to Sirius. Further observa-
tion and calculation will be necessary to make out
the full character of this little star.

From so slight an examination of this great
telescope it would be impossible to declare its
highest capacity, or the limit beyond which it
becomes powerless. Its career has gloriously be-
gun. Before its vast eye has fairly risen half
way up the celestial vault, in very narrow azi-
muthal limits, and before it has been placed in a
final tube having sidereal motion given it, and
any provision for convenient observing, it has
opened to the view of astronomers at least a de-
cidedly important and interesting object. The
spherical and chromatic aberration appears to
have been skilfully drawn, and the images of the
stars are round uniform discs, without any wings
or wisps of light distorting their aspect. When
the appointments of the instrument shall have
become complete, and it is directed to some of
the most delicate and refined objects in astron-
omy, it will undoubtedly accomplish wonders.

Mr. Tuttle closed his remarks, in saying that it
was a matter of just national and individual pride
that our countryman, struggling under adverse
circumstances, had at length rivalled the best
opticians abroad, and had succeeded in building
so noble an instrument.

MAPLEWOOD SEMINARY. This old and suc-
cessful school at Pittsfield suffers no diminution

me that a com-
discovered last
Object glass. 10"

Collyer p. 14 published

Vadiv daily
Obs of catalogue

et of Dr. by

instrument in
Parten's & State
Tube Works Co

of Sirius with

stars.

unity

1862 Feb. 1

A. Clark jr. tells me that a companion of Sirius was discovered last evg. with the $18\frac{1}{2}$ in. object glass. $10''$ dist. & following in R.

N.B. See Report President Harvard College p.14 published in Daily Advertiser Jan 31st?

Feb 4. Examination of Vachir daily shutters repaired. Obs of catalogue begun.

Re Discovery of Comet of Dec by Minnick. Jan 9.

Sale of right & interest in Telegraph Line Portland to State St to American Tube Works Co
Dorchester \$150

Feb. 7 Duo companion of Sirius with Great Refractor.

Catalogue of Twin stars.

Mr Hall on Transits

Feb Division of duties

Computing Fundamental
time catalogues
1862 Feb. 12

To Prof. Loomis for Dilliman's Journal
Article on Discovery of Asteroid
(92) see prev. page

Observations on Comparison of
Sivius.

Published. Sivius
On same subject to Astr. Nach.
& Notice of Clark's ~~Notes~~ Object glass.

Feb. 18 To Dilliman's Journal
Comp. of ^{Sivius} ~~Journal~~
Discovering Comet III 1861
Elements & Ephemeris by T.H. Saffers
" by H.P. Tuttle
Physical aspect Encke's Comet

Proposition to purchase Clark object glass

1862 March 27 To Astr. Nach

Observations with final reductions

On Echo (61) Melpomene (18) Mnemosyne (57)

Lactitia (39)³⁴ Comet 1861 I. Maya (66)

Angelina (64) Urania (30) Ansonia (63)

Comet 1861 II - Encke's Comet.

1862 April 4 Last night finished
Observations on Orion -

The whole ~~winter~~^{season} after arduous
watching for every favourable
chance has not afforded a
single really fine night & scarcely half
a dozen of passably good definition.
Within a fortnight past I have
succeeded in finishing comparison
of engraved chart of Orion stars with
the heavens.

1862 April 7th between 12 & 15^h New
Planet discovered by H. P. Tuttle near
 β Virginis ^{while revising chart made for planet discovery} 13th mag. Has searched
about 12 nights requiring 2 hours

for each revision.

Could get only 3 obs of its position up to April 26th owing principally to Moon light & cloudy weather which endangered its being lost. for 10 or 12 days.

It was in a region barren of comparison stars which caused much trouble in reduction - at last 2 stars were observed in its vicinity to furnish stars.

1862 May 4

Name Clytie proposed by Mr. Bowditch for (73)

Obs'd by Dr. Peters.

Catalogue of Standard Polar & Clock Stars was put in service for reduction of Transits prior to May 1st 1862.

April 25. 1862.

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Observations of Comets and Planets communicated
to Astronomische Nachrichten.

Echo -

Maja -

Melpomene -

Angelina -

Mnemosyne -

Urania -

Laetitia -

Ausonia -

Comet, 1861. I -

Comet, 1861. II -

Encke's Comet -

1862 May 18 Disap. Saturnus Ring by
Sun passing plane -

June 10 Mr Safford computed
Elements by Gauss's Method for 4 places
for Clytie - with Ephemeris

Mr Hall computed Elements
from 4 Places. Both represent middle
places to $< 1''$

June 11 Eclipse of Moon lost by clouds.

1862 June 19. Reckoned up whole cost
 of 1227 trees planted in 1861 - 62 and
 now alive (out of 2542 planted),
 \$19.10 + \$4.00 Total cost \$23.10

Left them 20.00 apiece

June 16 Mr Hall sent to Astr. Nach. His
 4 place Elements of Clytie. (73)

Search for Clytie (73) after Moon left
 evg sky Took Mr Hall 3^h G.P.B. 1^h &
 after all wrong star was obsd. next evg.
 G.P.B. 2^h T.H.S. 3^h Mr Hall 1/2^h
 besides 2^h or 3^h for reduction.

June 20th Last revise sent to printer for Vol. III -

By Schmidt
 at Athens 2 of impal July 2nd
 also at Dudley Obs. July 8th 22 Report
 by Thos. Simons G. W. Hough

1862 [II]

Discovery of Comet 1 July 2nd 1862.
 at 11^h P.M. Seen by G.P.B. from west
 balcony of Dome with naked eye, but not
 recognised as a comet till an hour later
 Was searching with Mr Hall for Great
 Comet II of 1861 & went out to see

how the sky looked in that quarter - near the Pole. I noticed a hazy object, like the cluster in Perseus, in R. 21^h Dec. $+77^\circ$, but as the sky was not clear suspected it might be only a group of stars obscured by clouds - but on pointing the Comet seeker upon it an hour later its character was instantly seen -

Its motion was very rapid - moving towards the pole $22'$ an hour in Dec and diminishing its R by 1.08 sec. of hourly. Light traced about $20'$ in diameter -

Central condensation $20''$ in diam. with bright point next the sun which could be observed to $\pm 1''$ or $\pm 2''$.

On July 3^d 4th & 4th 5th

Compared its place carefully by angles of pos with numerous stars in its path -

When near them say within $1'$ it



could be seen to move. The intention
was to get a very exact path of the Comet
in case corresponding obs. in Europe or
elsewhere may have been made - for Deni's parallax
& Earth's mass.

Between July 3 & 4 it moved just 24°
of a great circle. & through 5^h to 6^h of R.

It was nearest the earth between
the 3rd & 4th & a very little $< 1/10$

See article for Daily Advertiser.

Arago states that Comet 1462 had largest
motion on record viz $12''$ daily ??

June 15? Mr Hall sent elements to A. H.

1862 July 8 Sent for publication

To Paris Bulletin

Elements & Eph. of Clytie (73) by T. H. Safford

Elements Comet III 1861 A. Hall

" " T. H. S.

Naming of Clytie & Fronia (72)

Sweeping Ephemeris for Fronia (72) T. H. S.

Elements of Maja (66) & Eph. for 1862. A. H

Obs. on Companion of Sirius G. P. B

Notice of Discovery of Comet 1 1862 "

Obs. "

Elements & Ephemeris A. H

Elements H. P. Tuttle.

To Astr. Nach.

On the Figure of the Head of the
Great Comet 1858 (2nd article on influence
of perspective mainly change of scale)

G. P. B

Observations of Cyclic

Elements & Eph "

J. H. S.

Sweeping Eph. of Teronia

"

Elements & Eph of Magna

A. H.

Obs. Comp. of Sirius in full

G. P. B

12 nights result Dist 10".07

Feb 7 to Apr. 12 incl.

Notice Discovery Comet 1 1862

G. P. B

(On deter. of Solarparallax & Earth's mass)

Obs Comet 1 1862

Elements & Eph "

A. H

Elements

H. P. Tuttle

Am. Tube Works Co bought Telegraph
Line from Somerville to Boston
in June 1861

Price paid	150.
Cost of papers &c	<u>6</u>
Bal to Ph Fund	144

July 18th At a little past 10 P.M.

Mr H. P. Tuttle discovered a telescopic
Comet 1862 III. <sup>seen by Thos. Simons same night 14th
at Dudley Obs. - Silsbee Sept.</sup>

Mr Halle's notice of quitting.

By Lewis Swift "Marathon Courtland Co. N.Y."

July 15 but not recognized as new - thought to be

Comet II. By E. M. Hough in Report of Obs. in Charge to
Board of Trustees of Dudley Obs. it is reported that this Comet ~~was~~ first observed
published from Dudley Obs.

Aug. 3 Mr Halle. left Obs see note Aug 3

Parallax of Sun by Comet II 1862 to $\frac{2}{85}$ See
Letter to Hing Aug 7 1862

Aug. & Sept. phenomena of Tuttle's Comet
 "Aufstrimmung like Halley's Tail 15°
 H. P. T reports 25°

H. P. Tuttle left Observatory before Sept. 1st
 a few days - enlisting in 4th Battalion 44th
 Regt.

T. H. Safford only remains as assistant.

Aug 30th 1862 Judge Hour's letter
 communicating ~~letter of~~ Corporation.
 on the subject of vacation

Sept. 2 1862 Treasurer (Mr. Silsbee)
 & Mr Francis Crowninshield, ^{Committee} of the
 Corporation. visited the Observatory.

Period of Comet 1862 - III -

T. H. S. Article in Astr. Nach Comet III -

Sept Interruption of Met. Record.
 New system of Met. Obs.

Latter part of Sept. 1862. Revision of
Magnitudes of Zones Completed.

Continuation of Series IV.

Astr. Nachr 1379 contains notice by D'Arrest
of variable nebula discovered by H.P. Gauthier
in 1859.

Sept 27 1862 9 A.M. New system of Meteorolog-
ical registry adopted & provision made for
a comparison of instruments.

Distribution of Vol. III. Annals Opportunity
taken to distribute with it disposable copies

of Annals Vol I Parts I & II Vol II Part I

Occultations & Eclipses Obsd at Dorchester & Camb
On the Occ. Comet of 1844-45

Wilmot's Comet Astr. Jour No 13

On the Rings of Saturn Vol II No 1 & 2 Astr. Jour.

Observ. Cul. ~~and~~ Astr. Jour 1859

Comp. of Sirius
on the Outlines of the Comet of Donati
Account of Comet II 1861

"

(Continuation)

Reports on Observatory 1859

" " 1860

" " 1861

A Catalogue ^{of the} Dec of 562 Stars ^{near the zenith of N. H. C.}

On the Rel. Brightness, Sun & Moon
on the results of Phot. Exp. upon the Light of the planet Jupiter
Jupiter and Moon

On the Spiral ^{Character of the Great} Nebula in Orion

Use of Equiv. Nos. Meth. Least Squares
Stellar Photography

Oct. (25?) 1862

Obs. on Comet 1862 III (II) and late obs
on Feronia sent to Astr. Nach. Oct

Oct 25

Suggested appointment of T. H. S. as
1st Asst. Dir. 1000. to Treasurer

Mr Corey came about Oct 23rd 1862.

" first work reading zone " 22

Reason of neglecting diap. of Saturn, Ring
& obs at Mars opp.

1862

Change or extension of plan of Catalogue
by having two ~~Shadows~~ ^{near Equator} and inserting
intermediate small stars. Nov. 1862.

From superfluous stars it is
proposed not to attempt drawing off
than once & to reduce them by
nightdrawing catalogue stars

Somerville election disputed on
account of time of sunset Nov 4
Time sent was 4^h 50^m

Notes. Fundamental Catalogue & Com-
parisons with Coast Survey Catalogue.
See paper on file Dec 9th 1862.

Dec. 3 Telescope cleaned.

New Battery -

Dec Letter to Mr Mitchell respecting
Dates of Comet Discovery.

Dec. 9th Communications to Mr. H.
respecting Star Catalogue.

Cataloguing Library

1862 Dec 19

Letter of Col. J. D. Graham Dec 15th re-
specting position of stars for Lake Survey to
be redetermined. - Obs begun Dec 20

To have inside of Mer lamp. painted white

Dec 22 Clock pier packed at base with
saw mill - refuse to prevent temperature
changes

1862 Dec 31st Appointment for visitation
of Committee -

Snow Storm. present R V Parson Esq
Hon. R. C. Winthrop Dr Perkins.

Letter Lt Col J. D. Graham

Out of the list sent there are 21 stars
which must be rect'd & 48 more
would be improved by rect's. Some
of them now culminate at sunset &
we must wait 6 mos. to obs. them.

1863 Jan. 8th Received from
J. Driggers old Bowditch. acknowledgments
of receipt of \$16.00 in trust for
benefit of Observatory. printing transactions.

Letter of acknowledgment.

1863 Jan. Observing Zones & Orion - Catalogue
Star Fr. Circle & Stars for Lake Survey.

Mr Safford Lake Catalogue preliminary examination
Zone & transit reductions. Examination of Gould's
C. S. Catalogue - Examination, at Mr Airy's

request, of Pond, Maskelyne & Piazzi's early
obs of Sirius

Reduction of 2g. Obs in 1862.

McCort reducing magnitudes of old zones
to common standard-

G. P. B. reducing Orion Obs for press.

Article Prof Gauthier on Nebulae. Translated
in Dilliman's Journal. Jan. 1863-

Use of Catalogue of Standard Polar & Clock Stars
began for reduction of Transits prior to
May 17th 1862

1863 Jan. 29 Visit of Maj. Gen. McClellan to
Obs.

Acknowledgments of receipt of Vol III Annals

Jan & Feb. Zone Obs. Obs. of comp. stars for comet
& planet Obs of 1862 - Preparation & printing of
Standard Star Catalogue by T. H. S. in Mem. Am. Ac.
Form of printing in Annals of Obs. H. C.

Orion - Examination of Chart & correction of proofs
of engraving - last sent to Mr Watts Feb 27.

1863 Jan. & Feb. Magnitudes of Stars in Orion
 Correction & comparison of engraving
 preparations of copy for positive representa-
 tion of nebula from drawings of 1859 - 1863 -
 1863 Mar 10

Object-glass removed see Ey. Book

Up to this date since Jan 17 have
 observed Orion frequently especially
 with regard to variability of stars

1863 March 1st Appointment
 of T. H. Safford by Corporation as
 Assistant Observer 'to hold for 3 years
 unless otherwise ordered' confirmed
 by Overseers

12. For Visiting the Observatory.—Hon. Wm. Mitchell, A. M., Hon. Josiah Quincy, LL.D., Hon. Edward Everett, LL.D., Hon. Jared Sparks, LL.D., Robert Treat Paine, esq., Hon. Robert C. Winthrop, LL.D., J. Ingersoll Bowditch, esq., Henry C. Perkins, M.D., David Sears, jr. esq., Rev. Baron Stow, D.D.

13. For Visiting the Divinity School.—Rev.

Also a vote appointing Truman Henry Safford assistant observer at the observatory, to hold office for three years unless otherwise ordered, and to receive a salary of \$1000 to be taken from the Phillips Fund. Confirmed under a suspension of the rules.

Sturges Fund - 1st article printed
Journ. Vol IV part I - Catalogue
of Polar & Clock Stars Part II to be
transits.

March & April 1863 Obsd stars
in Orion Nebula for variations of
Magnitudes on every opportunity
from Feb 13. & often previously.

Engraving of Nebula in Orion &
corrections by reference to nebula
itself. Mr Watts saw it several times.

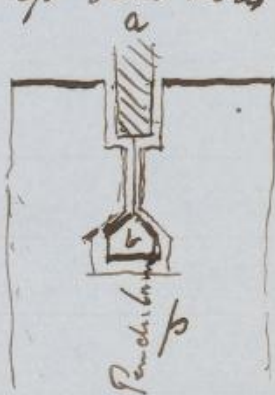
In Europe May & June 1863

Distributed Stereoscopes of Moon. to Lord Rep.
Engravings of Orion.

Clock

To support block of stone for pendulum let the
size be equal through entire length. Near the top bore holes
say 1 to 2 in. deep on each side.

a is support of pendulum suspension
spring b a solid block attached to
bottom of spring & resting on inverted
Y cut out of pendulum. the block
b being let into the pendulum on each side



When face is covered the spring will take
nearly the temperature of the pendulum

June-July 1863

Distribution of Annals Vol. IV. Part 5
& Report. Through Mr Parker. Rec'd ack-
nowledgments from England about a
month later & from continent in Aug.

1863 July 18 Distributed Annals & Reports
second issue to H. T. Parker - see letter
to him with order for books & arrange-
ments made for transmitting publication
of foreign observations.

July 20 Order for Books made out for
186 bills amounting to about \$200 in
gold. To H. T. Parker.

Mr Cory drafted & was absent 4 to 6
weeks.

Work on Lake Survey Catalogue. July 1863
Transits coming in morning hours.

Efflorescence of object-glass - mention
of instances seen in Europe.

Aug. 1863 Mr Safford's article in Proc. Am. Acad.
on identity of companion of Sirius & disturbing
body.

1863 Aug 14 Break occurring in galvanic
connections. after troublesome examination
found it in cellar under dome - Owing
to very damp weather & moisture collecting
the iron staples had acted on copper wires &
destroyed it at contact points in many places
All this part of system of connections is ruined.

1863 Aug 17 Collection of positions of nebulae
for Dr Schonfeld.

Letter to Mr Bowditch on manu-
facture of spirit-galves.

Repairs necessary in dome & lantern
reported to Treasurer

As finally arranged, the Lake Survey list⁴⁵
of this year, ^{taken together} containing 141 stars, were
^{re} ~~sub~~divided into two lists of 93 and 48
stars respectively.

Of these latter lists the first contains
those stars whose positions for 1862 could
be securely derived from earlier catalogues.
These catalogue-places have been reduced
to 1862 with a single exception, α Cephei,
which is to be treated in another way; and the compu-
tations are now undergoing revision preparatory
to adopting final results, when also α Cephei will be
^{on} ~~of~~ the 48 stars of the second list above³
alluded to, it is estimated that 3 obser-
vations, ^{on the} ~~on~~ average, will be required
for each star; about 97 have already
been made, leaving about 47 to make.
The beginning of reduction has been made, although
not ~~as far~~ carried very far.

Obs. in morning twilight could be carried
Aug 7 1863. to within 50^m of end of list -
Aug 7th 1863 -

1863 Sept. 3-4 T. H. S. engaged on Lake Survey
Catalogue computing & observing - G. P. B.
Lake S. Cat. Obs. = and writing Memoir
on Nebula of Orion.

Col. Graham writes for places of 6
new list of stars for Lake Survey see his letter

1863 Sept 10 Observed new nebula near Orion

Computing prob. error of some obs. in connection
with reduction of Orion zones.

Obs. of Orion stars for magnitude

Observing Lake Survey Catalogue stars in
the morning G. P. B. & T. H. S. since June.

Hinkley's Comet - quite faint.

Trans. eng. Sept. 8 Am. Acad. read notice
of new form of Object glass. by Steinheil on
Gauze's plan. Also Oct 13. Article written

Printing T. H. S. Article on identification of
companion of Sirius with disturbing body.

1863 Sept 7 Ed. Harris began Catalogue of Library.

Repairs. ~~Funeral~~ - ~~Anniversary~~

Drum etc

Sept & Oct 1863

^{ent} Refitting of Mason Telegraphic communications injured by rust in the past moist summer refitted with copper.

Last Observations of Comet II 1863. Prediction Pap. in April.

Oct 15 Obs'd New Planet discovered by Prof. James C Watson Ann Arbor on morning of Sept 15 1863.

Aug? & Oct. Obs of variable stars of Orion

Oct 16 Distribution of T. H. S. article on Sirius. Preparing article on obj. & telescopes. Mr Cony Mrs Gray & Mrs R. F. French on Lake Catalogue Obs of latest Catalogue

were finished in September

Lists of nebulae discovered since
1848 made out for Dr Schöenfeld
& Kricheldorf.

Aug. Sept. & Oct. Reobservation of Nebulae.

Optical glass. In letter to J. G. B. Aug 1863.

Chambers' Flint most troublesome. Mars crown is
"rammollir"ing

Efflorescence

Faraday

Composition lead say 33 per cent

Silica 52

Potash 14

Great danger is from moisture
to which glass is exposed according to the
quantity of alkali which being highly
hygroscopic & not strongly combined - at-
tracts moisture which ^{always atmospheric} turns into oxide
of lead. Sulphuretted hydrogen is det-
rimental especially if moisture be present
forming sulphate of lead.

Minute vegetations or crystallizations
are due to some other cause

1863 Oct. 22 Reobservation of ~~Solar~~ Stars for Zone-Catalogue.

1863 Oct 24 List of new Nebulae sent to Sir J. Herschel. Answer - Acknowledged & Copy for publication in Am Ac. 34 in all of which 7 are considered more or less doubtful.

Oct 21 about sent to Silliman. Journal short notice of Gauprian Object glass. Revision of Translation of Gaup's article Gaup's article on Nebulae

Oct. Wrote out for publication in Proc. Am. Ac.

"Notice of a new form of the Achromatic Object glass constructed by Steinheil." with Plate of Curves Copper transferred to Stone.

1863 Nov 16. J. H. S. & Mr Conroy & Mrs R. F. B. working for some time past mostly on the Lake Survey catalogue

Notice of Major Sidney C. Lacey.

1863 Nov. 27th Annual Visitation of Observ-
atory by Committee of Board of Overseers.
Present all members (see p. 40) excepting
Mr. Everett & Baron Stew.

Fine pleasant day.

Dec 4 T.H.S. engaged on Lake Survey
Catalogue with Mrs R.F.B. & Mrs Gray.
Mr Cory Sick. in Connecticut

Dec 8 Request for Obs. on Lincathene
from Prof. Warlock Supt. Nant. Al.

Completion of Lake Survey Catalogue Dec 31 1863
Has Taken T.H.S. $\frac{2}{3}$ of time since July 1. with
1 or two assistants.

1863 Dec 30 Received invoice of Books from
H. T. Parker. value \$31

Mr Waitt oiling shutters.

Reappearance of β variable star in Orion.

1864 Jan 5 to 14 At Jaffrey resumed work on Orion

1864 Jan 15 Mr Cory returned after absence of two months from sickness.

1864 Jan. Letter from Capt. Gillip & in reply undertook to observe

(35) = *Leucothoe* (47) *Aglaia* - (72) *Feronia*

Saw his letter in reply Jan. 11th 1864 -
stating number of asteroids undertaken at
different Observatories.

Feb 11 Have instituted new series of zones
between C & Orionis - Reduction
of Orion work going on Search
for *Leucothoe*. *Aglaia* observed

Articles published & distributed on
Objekt-glases - New Nebulae.
in Am. Ac. & Astr. Nach.

Continuation of reduction of Luke
Survey Catalogues

Mr Rogers - Temp. Cor. of Micra scale
in Orion Zones. Instrumental error
of Great Equatorial.

1864 Feb. 18th Recd from Office.
 Prof. J. Winlocks Dupt. Astr. Eph. & Naut. Al.
 Set of Naut. Al. publications. including
 all the Almanacs.

At work on ~~new~~ reductions C & Orionis.

1864 March & Feb - Jan. Chart of Stars near
 C & Orionis. & drawing nebulae.
 Fine nights - Comparison of magnitudes -
 Sirius.

Fortunate occurrence of three fine
 nights March 2 3 & 9 allowed
 of completion of drawing of nebula
 about C & Orionis arch from
 40. Magnificent view & new feature in arch towards
 Orionis.

1864 March 12 Reduction of old Transit obs.
 Catalogue of Low Stars for Lons. resumed.
 Catalogue I had been previously reduced
 by Mr. Hagg. This with obs. of 2nd Cat-
 alogue to be reduced by following process.

1st The reduction already made of Catalogue I, by Mr. Flagg, will be retained excepting as to the positions of fundamental stars (whether Nautical Almanac or those adopted by him from other sources) which are to be revised as follows.

2 A catalogue of clock stars between 0° & 2° must be formed including only such as have been well determined. Using positions in Paris Obs. (Lalande stars), Robinson, Arago's later catalogues, & any other authorities available. Mr.

Safford also proposes a new reduction of Piazzi stars from 0° to $2^{\circ} 3'$

The Paris obs. of Lalande stars will be particularly useful as they will fall not far from epoch of Zones

3) Reduction of 2nd Catalogue Zone stars will be on plan of 1st in all respects.

4) Later obs at H.C. obs. may be found.

1864 March. 15 Mr Rogers came as asis-
tant vide correspondence on file.

March 15 Standard Zone Catalogue
Mr Safford selecting fundamental stars
for special reduction of "Corri" of Piazzi's
Observations as published in Vienna In-
ternals. Dec 0° to $+3^{\circ}$

Mr. Rogers is interpolating to 1800.0
positions of fundamental stars from Piazzi's
'Fundamenta' and Ponce or Argelander.
(56.2 stars). To be afterwards re-
duced to epoch of obs.

Mr Cory since March 12 has been
selecting from Paris observations the
Lalande stars between 0° & $+3^{\circ}$ N Dec.

1864 March 17 Zones to be supplied

Dec $+1^{\circ}00$	2 $+1^{\circ}10$	$6^h 31$ to $7^h 13^m$
$+1 10$	$+1 20$	$7 1$ $8 20$

Filled up in }
Apr. 1864.

1864 April 1st Have succeeded with difficulty in filling in small stars by supplementary or 'revision' zones among the principal stars observed in Jan & Feb. about C & ϵ Orionis.

3rd Catalogue of Stars near ^{the} Zenith of the Obs. H.C. - Completed

Includes original obs. of α & Dec. ^[Summary]
1864 April 4 copy of above sent to Detroit to Col. Graham Supt. ^{of} ~~Obs.~~

Mr Cony zick - Mr Safford & Rogers on Piczri's Catalogue new reduction for zones.

G.P.B reduction of Orion zones.

1864 April 13 Remarkable continuance of Easterly winds storms & clouds - No favorable opportunity for observing for several weeks. By dint of much trouble have succeeded in finishing work of preparing necessity on the Nebula of Orion. Have extended the

revision for small stars to limit $2^m 15^s$
on each side of θ Orionis including
also zones observed in 1857.

1864, April 19th J.H.S. examining Paris Obser-
vations for Lalande stars redetermined
between Equator and $+3^\circ$.

We propose to form a working list
of stars to 8.5 mag. between equator &
Dec $+3^\circ$ taken from Sternverz. Lalande
stars to be excluded because they are
in process of observation at Paris. but
those observed also by Piazzi will be
retained. It is estimated that this list
will comprise about 1200 stars - To be
observed separately in R & Dec.

5 New cannon balls 70 lbs each - part of
monitor gun casting. set under dome
About May 7 1864. 3 old balls in
good condition left under dome 3 sent to
Alger's & 2 retained.

To write to Augustus McConnel

Almira N.Y.

on subject of coming to Observatory.

April & May 1864 Vacancy in last series of zones filled up. See Obs. Report 1863. Finished May 5. Concluding 4th series

Up to May 3 Weather has been very bad for observing Wind has been from NE then further of the time since middle of March. & it was only with the greatest difficulty that I was able to finish observations upon Orion. Eurygnome could not be observed & in general all obs were interfered with

1864 May 7 Finished revision of "Remarks upon the statements of Alfred Stone & Carpenter relating to Sir John Herschel's figures of the "Sinus magnus in the Nebula of Orion"

Sent to Mr Carrington same day. for publication in M.N. & R. Astr. Soc.

1864 May 11th Augustus McConnell came to
Obs. as assistant

May 10th 1st Div. of Juniors came up

11 Cloudy 2nd Div. missed

12 " 3rd " "

13 " 4th " "

2nd Appointment

May 17 2nd Div Cloudy - missed

18 3rd " Came up

19 4th " "

June 14 2nd Div.

May 30 Addition to Rent of House on acct. of Juniors
\$5 per quarter.

1864 May 13 Obituary notice of Plana
in Proc. Am. Acad.

May 30 Mr Rogers has spent since March 15
in observing ~~245~~²⁴⁶ in Comp. 245. Observing 88

May 27 to June 4 1864

Determination of instrumental errors of Great Equatorial.

1864 June 1 to 7th Mr Rogers & Mr McConnell
begin obs on Prime Vertical.

Inst

June 6. 7-8 New Micrometer graduated. G.P.B.
with Duplicate. Reine error.

5th Russian Admiral & Date.

1864 June Notice remarks of Mr Hough of Albany Obs.
on Safford's Star Catalogue & insert Mr Safford's
comparisons.

Zones recommenced in June. with New Scale

Prime Vertical Obs. by Mr Rogers & Mr McConnell
June & July 1864.

In list of acknowledgments for books
in art R. T. Paine.

Honorable Quincy
Died July 1st 1864
Notice on file.

1864 July 19th Prime Vertical transits by
W. A. Rogers & A. McConnell.

Mr Rogers has computed a part of his
obs. One set giving $\Delta\phi = -0''.9$ and
another $\Delta\phi = -0''.5$ $\Delta\phi$ being cor. of
Lat. in Mem. Am Ac. 3rd set - 0.7

He thinks that a revision of Declinations
of stars in Memoir cited would tend to ^{diminish} reduce
the ϕ . thus derived. by 0''.5 to 0''.9

See Dec. 31

1864 July 19 Orion. Have revised values
 of $\frac{dx}{dt}$, $\frac{dx}{ds}$, $\frac{dy}{dt}$, $\frac{dy}{ds}$ for all zones near
 θ Orionis

Mr P. F. B. is computing tables from the above
 & will proceed with applying the corrections
 1st in red on old reduction sheets -
 2nd on "Duplicate" sheets

N.B. No correction has yet been introduced
 for effect of instrumental errors in changing the
 angle & zero of position.

1864 July Old Chronograph apparatus
 bought by W. A. Rogers. \$250

1864 July 25 Ring at upper end of coun-
 terpoise-bars of Great Refractor loosened
 by draught. was screwed firm - See Eq Book
 1864 July 25

Mr Rogers states that the reading
 of eight full Chronograph sheets
 (containing 200 to 300 transits) is
 a forenoon's work for himself &
 Mr McConnell.

Dr Peters in letter of July 23 says
 the the reading from Krillie's reg-
 ister of 4 transits requires 1 hour -

1864 July 28 Mr Rogers reports that the
 discription of his Prime Vertical Observation
 for Latitude during the summer with
 the old W.C. P. Transit gives
 1st set cor. of Lat. See 1 page back.

1864 Aug. 3 W.A. Rogers paid on account
 for Spring Governor Chronograph 1st
 \$125.00

Break circuit Key 1.00
 Aug gave his notes for

Aug 5? Mr. Rogers left. Prime vertical obs con-
 cluded. Mr Rogers took copies to compute.

Aug 8. Lenses Photographic. Dr. L. R.

1864 Aug 26 Mr McConnell has finished copying
 Stars from Histoire Celeste between $\delta=0$ & $\delta=+9^\circ$
 and has reduced them to 1860.0 They
 will be used for recognising the same stars in
 the Paris Obs.

Comet I 1864 was observed in Aug.
 The predictions respecting brightness of this comet
 signally failed. as it was manifest they
 must have done

1864 Sept. Request from Col. J. D. Graham for copy of
 Lake Survey Catalogue.

Letter recd Oct 4 1864 from R. L. J. Ellery - opinion
 expressed by Dir. Fraser McClean respecting Chrono-
 graph.

Continuation of Zones.

Oppolzer Untersuchung Bahn Clytie /p 8
 refers to Harvard Zones "die ausgezeichnete
 Schärfe und Sicherheit dieser Zonenbeobachtungen"

1864 Oct. 7 Clytia found by Mr Dafford

1864 Nov. 7 Copies of Standard Catalogue in Mr.
requested by Col. Graham

Between the limits 0° + 3° N Dec.
the examination of the Paris Annals has
furnished 1500 or 1600 observations,
mostly of Lacaille stars. equivalent
to 750 or 800 individual stars determined
both in Nov & Dec. The mean
epoch of observation is about 1859.0

Advantage of a fund for repairs & general

Dr Winnecke's letter - controversy with Schmidt
Show Schmidt's volume. Struve's letter.

Hough's Report - Gillis's letters relative
to asteroids Jan 1864

Show to Committee Computations on Orion.

Photographs

Notice decrease of Mr Dummer

1864 Dec 19 Communicated to Capt Gillis
our proposal to observe the following
asteroids in 1865.

For JNS Proserpine
Doris
Leucothea
Aglaja
Melpomene
Calliope
Nysa
Icarus

For SN. ~~the~~ Masilia
Flora
Iris
Mr Connell

Dec 31 1864 Mr Safford finds by applying
systematic corrections & combining later ob-
servations that the Latitude by Prime
Vertical Obs. made by Bond & Graham
becomes

$42^{\circ} 22' 48''.33$

And his revision of Mr. Rogers article gives
 $42^{\circ} 22' 48''.3$

