M.16

1859-60

COMET-SEEKER

December 1 to Sept 11
1860

Sold by T. Groom & Co., Stationers, India Building, 82 State St., Boston.

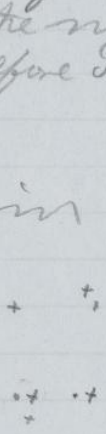
November 30. The sky was clear during the first part of the night, but the moon was very bright, and being very unwell I did not sweep. The sky was clear for some time on the morning of Dec 1, but I could not work

December 2 Evening rainy Morning of the 2 was rainy

December 12 Evening clear First clear night for nearly three weeks
Commenced sweeping as soon as dark; swept from the west round to the north. The seeing was good
It was the most windy and cold evening I ever worked
By the time I reached the north, the moon came up, It was full, and therefore I could not work after that
Thermometer = +11°

A faint object in about AR XX Dec = +7

It is very near a star of about the 8 M.
and would easily be taken for a star



There is no large stars near it, and it quite difficult to find, but there is some small stars forming a curve, and have the nebula in its centre

The Director made an observation of it and said it was probably a cluster

December 13 Tuesday Evening, sky very clear, commenced in the west and swept round to the south The seeing was good. Saw many nebula, but know them all except the one spoken of above. Swept for nearly two hours in the S. West

After finishing in the South west, I began sweeping about 10° west of north and swept as many degrees east of it, when the moon came up.
The seeing was good, tho high up, but near the horizon there was some Aurora

Thermometer about 12°

December 14 Snow storm

Dec 15 Evening clear

The object on the other page is a nebula

A nebula (?) near the stars δ^1 δ^2 δ^3 in the left hind foot of Lyra
A known nebl

A nebula (?) about 2° south of the stars 51 and λ in Gemini

It is near a star which is at right angles with three other stars nearly

To the right is 4 stars – one brighter than the other three and forming a North Crown towards the center is a small star

Dec 15 Every clear commenced sweeping as soon as dark, in the north. and swept round to the South East used the high mort all the time found several objects but all proved to be nebula. The seeing was not very good except in some few places swept nearly or about four hours, or till the moon came up

Nermuth = 15°

December 16

58' in AR + 6'

Dec 16 Evening clear. Commenced sweeping as soon as dark, in azimuth along the north west horizon, and continued to sweep in that manner till I reached the zenith

The seeing was pretty good. Having other things to attend to I could not get ready to begin to sweep the second time until towards midnight and then it had clouded up

Saw nothing but clusters and nebula

Dec 16 Chart for Mnemosyne G. R.

AR = 5h 8'
Dec = 6'

× 0h 1m 42s
Dec = -5'.1

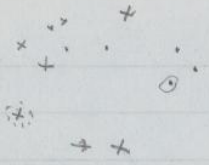
This chart was made with the great refractor; the planet is supposed to be one of the three, a-b-c

At the time the chart was made, the stars were more than three hours past the meridien and the seeing not good

December 17 Saturday night stormy-rain

18-19-20 Nights cloudy

The star c in the above diagram proved to be Mnemosyne, as I expected. The first clear night after the 16 was the 21st



Map for plot Thursday night

There are no stars in the square and the planet will be in there tomorrow night

Dec 21 found Neptune with the G. R. having followed it up with the aid of an Ephemeris

Mr G. P. B. observed it with the G. R. = 12 May

Commenced sweeping late in the evening a little east of the head of Aries, swept round to the east, mostly with the high power The seeing was not good, and after I had got round to the east a lot of clouds began to spread about and I slept till 2 o'clock Then, as the seeing was bad, I slept till after five and then swept with low power from the horizon to about 35° in

altitude and from north to south, nearly

Reading of the Transit circle when position to observe
Mnemosyne 312° 5' .3
Planet will transit at $0^h 4^m 11^s$ by clock

The clock is 39^s fast

Dec 23 Today evening Luncpt over the S. West

24 Evening very cold and high wind did not sweep

25 Evening cloudy

Thermometer = + 3°

Dec 27 Evening clear, but a devil of a high wind

Commenced sweeping a little after dark, along the north-western horizon, and continued to sweep in azimuth till I had nearly reached the zenith, when owing to the great wind. I had to give up, but not without regret.

The wind continued to blow from, and to every direction and I did not sweep any more during the evening

28 Morning Got up about one o'clock

The wind was very high and the thermometer -3°

Commenced sweeping at the north, and swept round to the east, used the low powers. Then begun in the south and swept round to the east
Then swept in azimuth along the north east horizon

The weather was very cold, and every few minutes the frost would congeal on the eye-piece of the Comet Seekers, Comma Bronices and Virgo were high up in the east when I began, and I paid but little attention to comets in their their respective bodies
In many other places I saw nebula which I had not seen before for a year Swept nearly five hours, in meantime I made some some coffee which kept me awake more than other drink

During this forenoon the Visiting Committee, consisting of

Dr H.C. Perkins of Newburyport Dr Sparks of Lamb. Dr. Lurmey

Mr. Paine Hon. David Sears of Boston, and Mr Bowditch of

Brookline paid their visit to the Observatory

29-30 Evenings cloudy Morning of the 31st clear but did not get because the cold was intense.

January 1860 morning cloudy

1-2 cloudy

3rd As soon as the moon had set, about ½ 2, I began in the north and swept round to the South-East. The sky was not clear at first, but by 4 o'clock it was very much so. I used the low power, and my progress was slow at that, for I was more than 3 hours in sweeping round to the S.E. Every few minutes the eyepiece would have to be taken off and the frost wiped off. When I reached the S.E the twilight was getting pretty strong, and I swept in azimuth along the horizon from W. to East. I intended to do the same in the SE, but the light was too great

Evening cloudy 4th Morning cloudy

Looking forward to have been cloudy since Wednesday

The weather has been bad during that time

Remarks on comet sweeping during the year 1859

The year 1859 was more favorable for astronomical observations than 1858. Nevertheless, there was only one comet and one planet discovered. There was scarcely a favorable night, when I did not work more or less. Some nights when not having to assist the other observers I have swept for 9 hours!

I have confined my search to within 110° of the sun in R, but have sometimes swept further

As the north has always been the most fruitfull region for comets, I have swept more frequently over that than any other portion of the heavens than any other

Daily Evening Traveller.
THURSDAY, JANUARY 12, 1860.

PERIODICAL COMETS.—The celebrated astronomer, Encke, in a recent account of the Comet which bears his name, designates the following eight Comets as permanent members of our system, their times of revolution round the sun being now definitely established: Halley's in 76 years; Tuttle's in thirteen and a half years; Faye's in seven and a half years; Biela's in six and three quarter years; D'Arrest's in six and a half years; Brorsen's in five and a half years; Winnecke's in five years, and Encke's in three and a third years. All of these comets, except Halley's and Tuttle's, will re-appear again within the next six years.

Jan 12 The sky was cloudy in the early part of the evening but soon cleared up

Commenced sweeping in azimuth near the horizon and swept to the zenith. Then swept from the north round to the N. E., the ☽ soon came up. The seeing was quite good, but saw nothing but nebulae. The preceding nights have been cloudy

Sunday January 15 There has been no clear night since the 12th

Sunday Evening Jan 15 The sky was covered with flying clouds in the first part of the evening, and I did not go to work on this account till an hour later than I should otherwise. Commenced sweeping along the south western horizon for a little while and then swept in altitude ~~along~~ it over the whole south west Then from the north window swept from the north west to the north east

Monday Jan 16 Swept along the north western horizon, and then over most all of the north west Then slept till half past 12 and then went up in the dome with the intention of sweeping in the east, but the sky was quite cloudy, and I did not sweep

Albireo = β Cygni appears red, and a companion appears blue

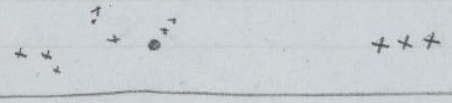
Tuesday morning Jan 17 commenced sweeping about 1 o'clock in the north and swept round to the east; and then along the zenith swept till 5 o'clock. Some clouds in the south east prevented me from sweeping there

Evening cloudy 18 Morning & evening cloudy

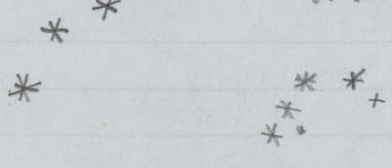
19 Evening clear swept over the South west very bad seeing

20 Evening cloudy

A small and bright nebula between δ Coma and χ and ψ virginis



$12^h\ 4^m\ 5^s$ A pretty bright nebula between
Dec = −14° χ virginis and ψ It can be easily found by a * of the 7 Mag at little above it and three stars 7-8 11 forming a curve at the left



A small nebula 3 or 4° west of ~~α~~ μ & Centauri

*7

*7

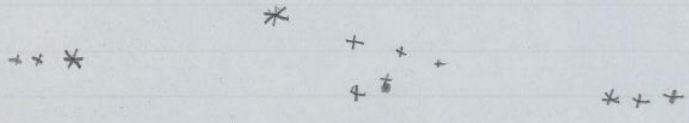
January 20 Evening cloudy

21 Morning clear commenced sweeping at 2 o'clock, in the south, and swept till 6. The sky was not very clear till after 4 o'clock, when the seeing became excellent. Swept round to the east, and then in azimuth along the north eastern horizon for half an hour; then swept along the southeastern horizon through Scorpio etc

Found 3 nebula which are figured above
22 Evening cloudy 21 Morning cloudy

A small and bright nebula in about 15^h $D = 56°$
it is near a star of the 5^m–6^n Mag

It can be easily found by the three stars of 6-7 Mag near it



Sunday Evening Jan. 22 Cloudy

Monday Morning 23rd Commenced Sweeping about 2 o'clock in the north west; swept round to the East nearly

The seeing was excellent. Swept mostly with the high power. Found only one new nebula, swept $4\frac{1}{2}$ hours

Wednesday Evening clear but did not sweep

The other mornings and evenings up to Sat morning have been cloudy

Jan 28 Sextant measures of Arcturus Vega and Benetnatch

× Benet. 39°44′ + Arc.

54°52′ 59°

× Vega

A neb. as seen in the great telescope

As seen in the comet-seeker

The two well known nebula

There is a blood red star near χ Draconis ∓ 2°
Seen in the comet-seeker this morning

Saturday morning Jan 28 commenced sweeping in the north west about 2 o'clock swept round to the north east Found one new object which is on the other page Seeing was very good

A faint nebula between ρ and 71 Cygni

Had not time to make a drawing

29 Morning in the first part of the evening, but the sky became clear about 10 o'clock, being asleep of course I did not sweep

30 Morning clear I intended to get up at 3 o'clock but did not till 5 the sky was then very clear. Began to sweep where I left off yesterday morning, and swept about 15° farther towards the east, It was so late when I began, that I had but little time to work before the twilight appeared. The object which I found yesterday was a nebula I saw a nebulous object between 71 and ρ Cygni but could not make a drawing on account of the proximity of it to the horizon, and the interference of twilight

Jan 31 Morning clear. Commenced sweeping in the north east, soon after three o'clock. The sky was very clear and the seeing was excellent; swept for nearly 3 hours and only stopped when the twilight appeared. I should have swept for a couple of hours more had I not been interrupted by the hell darnnerung

Saw nothing but nebula

Feb 9 Evening clear. (All of the nights since Jan 31 have been cloudy or moonlight)

Commenced sweeping along the north western horizon as soon as dark; there was a good deal of haze near the the horizon. Swept in azimuth, and in altitude to the zenith. The seeing was quite good.

After having finished in the north west, I swept for a few minutes in the north, and east of north. The full moon come up about 9 o'clock

Feb 10 Evening very clear. The wind was the greatest I ever experienced - so great that I could not work upon the balconys; therfore I brought the comet seeker down stairs and put it out in front of the the Obs. Then I swept over the south west, but found nothing. After having got round to the ~~east~~ south, I went up on the dome and went out on the east balcony, but the wind was as high as ever and I was unable to sweep any more.

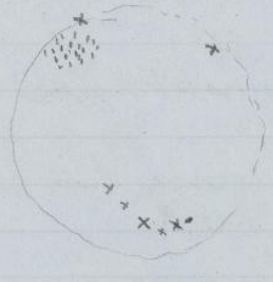
11 Cloudy

Feb 12 Fine clear evening. Swept over the north west and about 10° east of north, saw nothing but nebula

Feb 14 Evening clear, commenced sweeping as soon as dark, in the west and swept round to the south; then went out on the east window and swept round to the south east. Swept a little in the north east. The seeing was not very good

A very faint object near the letter O in Poniatowski. When it is in one edge of the field with the high power, there is a large cluster of small stars in the other

Feb 20



The brightest star near the nebula is about the 6-7 Mag, and the the one nearest the nebula of the 8 There is also another star of 7 mag in the upper edge of the field

A pretty faint nebula near the foot of Antinous, it is just one field east of the great nebula in the drawing

a little above it is three pretty bright stars

February 17 Evening clear. Swept over the north west

18 Morning clear. Swept 1 from the north round to the east, and then from the south round to the east; seeing was good Saw nothing but nebulas. Swept for about 5 hours

When there is no record made, it is cloudy or stormy

19 Sunday Evening clear, did not sweep

Feb. 20

Morning clear. Began to sweep soon after

3. Swept from the east round ~~to the~~ towards the south about 20°, with high power

Also swept along the north-eastern horizon

Found the two nebula which are figured on the opposite page Seeing was good

20 Evening clear for a little while swept in the South west, for a half hour it then clouded up

February 24 Evening clear but did not sweep

26 Morning clear did not sweep Eve. clear no sweep

27 Morning cloudy

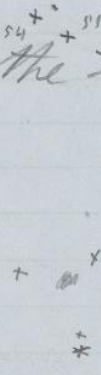
Evening cloudy

28 Morning cloudy

March 10.

First clear night since the month came in. Commenced sweeping soon as dark, along the north western horizon. Near the horizon there was a lot of clouds. Swept in azimuth and altitude about 50° my eyes then "gave out" and I had to stop. It clouded up in a few minutes after. The moon come up about $10^h 40^m$ (?)

A faint nebulosity in R $1V^h$ Dec 35° V near the stars 5·4 · 5·51 - 5·6



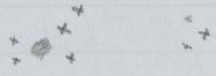
Sunday evening March 11

Swept over the South west, partly with lens and partly with powers. Then swept from the ~~P~~ Pleiades round to the north and up to the zenith. Seeing was pretty good

12 rainy

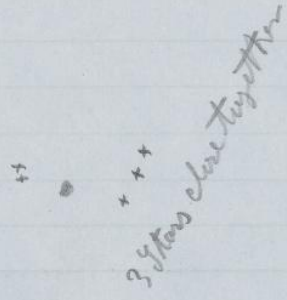
13 cloudy

A faint nebulosity in AR $20^h 30^m$
North Dec 27°



14 Sky cloudy till 11 P.M. Did not
begin to sweep till half past 12 on the 15
Then commenced in the north and swept
round to the east with high power
The ☽ came up at 3 but I swept
an hour after ~~that~~; found one nebula
figured above

A pretty bright nebula
between γ and δ Sagitti



16 Swept over the north west

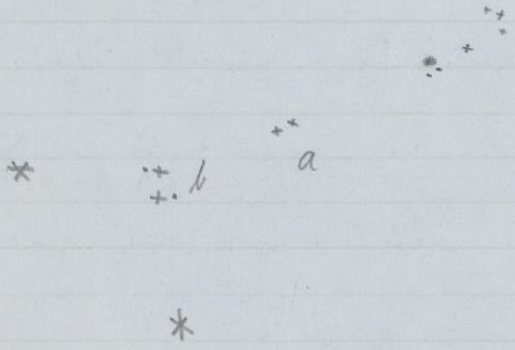
17 Morning swept over the South east

18 Cloudy

19 Morning cloudy

19 Evening swept ~~up~~ over the south west
with high power - but seeing so
I saw nothing

Very faint nebulosity between
ε and ζ Lyrae, and a little to the south
The double stars (?) a and b are quite conspicuous
in the C. S. and will
serve to find the nebula
with ease



21st Morning clear except from
the north round to α Altair, then
along the horizon on northeast and southeast
Found only one new nebula which is brown
above The sky was very fine
22d Evening cloudy

22 Morning clearly Evening cloudy
23 Clear for a while Evening over the north
west, found ~~nothing~~

April 8 Swept over the north west in a hurried manner as the clouds were coming up very fast, and soon overtook me First clear night since 23rd march

The seeing was not good. Found nothing

April 13 Evening clear, swept in the early part of the evening along the south western part of the heavens, and then along the northe western horizon, and finally in altitude over the north west heavens The seeing was very good untill the aurora appeard and drove me away about 11 o'clock

Saw a nebula in Cassopeia which had a cometary appearence but an arch of the aurora hid it from me

At 11 o'clock the Aurora was so very bright that I could not see but few stars in the north, and the southern sky was greatly illuminated, went to bed

April 14 Fine clear evening Brought the Comet Seeker down to front door of the observatory (The wind was so high that I could not stay out on the balcony) and swept over most of the south west with the high power Saw many nebula but nothing which looked like Comet

After having finished in the south, I took the comet-seeker back in the dome and put it out on the north balcony and swept both east and west of north

About 12 o'clock my eyes began to be tired and I stopped I intended to get up at 2 o'clock on the Morning of the 15th, but my clock did not make me up

15 Evening clear did not sweep

16 commenced sweeping about 1 o'clock, in the north and swept round to the South East After 3 o'clock the sky was very clear, before that it was not Swept from the north round nearly to the east with the high power

Saw many nebulæ but nothing which looked like a comet

16 Evening rainy

17 Morning rainy

Evening clear Swept from West round to α Persei with high power the sky then became cloudy

* * * A pretty faint object between the stars 35 and ρ in the right leg of Ophiuchus
It is in the same field with a brighter one

A pretty bright object above the star l ~~in~~ near the foot of Antinous

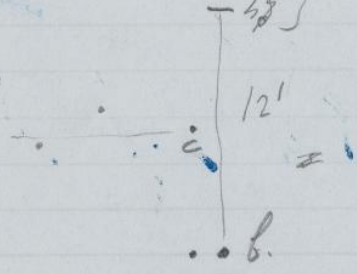
A faint nebulosity between the 27 ans λ and 20 in Antinous ⌒ Twilight prevented me from making a map

* *
**

18 Morning clear Commenced sweeping about 2 o clock, in the south Swept round to the place where I left off on the morning of the 16th Found several objects Seeing pretty good

1860
~~1859~~ Feb. 21. Search for Asteroid

At 9 2 1.6 + 10 56 26
7 8 11 1 33
9 20 45



Transits

Star a ✱ M. 10.1006 ~~9 13~~ 9 14 15.8 Scale (Reversed) −6'14"

Star b. about 19 21 −1 29

Planet precedes b very little is 5' 8s

c precedes 5' is 4' 41" 6s.

1860 Feb. 21. Jupiter

9 42 58.2 — 3' 4"
45 22 — 8 20

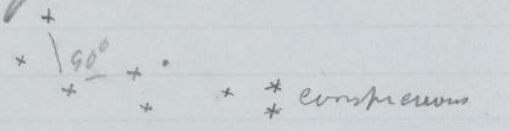
* b	9 56 41	— 5 34		9h 58' 55.6	61.1
a	~~56 8~~	— 6 1		10 0 13.2	18.5
b	58 8	— 4 34		22.2	27.6
c		— 6 54		10 2 39.4	44.7
a		— 7 21		3 57.1	62.5
b		— 5 55		4 5.9	11.1
c		— 4 55	Dec. 10s bef. 1st wire	5 3.3	8.6
a		— 5 19		20.9	26.2
b		— 3 57		29.7	34.9

Declination after 1st wire — using lines

c	— 4 54		10 45.3	49.1
a	— 5 22		11 3.5	7.5
b	— 3 55		12.2	16.0
c	— 5 41		13 47.7	51.7
a	— 6 7		15 6.1	10.0
b	— 4 44		14.9	18.8
c	— 6 12		16 14.0	18.0
a	— 6 36		17 32.4	36.4
b	— 5 13		41.0	45.0
c	— 7 39		19 50.9	54.8
a	—(8)		21 9.3	13.2
b	—(6)	10	18.0	21.9

Chart for Seylaya

A faint nebula near the head of Pices



This is exactly over the south chimney of the house

Found in "hell dammerung"

18 ~~N~~ compared Chamorac's Ecliptic +1h 40m à X11h with that part of the sky in that position. Then swept over the northern portion of the heavens Found one nebula which I looked at with the great Refractor On the morning of the 20th I swept from the south east round to the east; found the nebula which I have figured above Did not go to bed till ½ past 4 on the 19 i.e. swept all night

19 Clear for a while Students at the Observatory

20 Cloudy all night

21 Cloudy all night

22

1860 April 24 Occultation of Venus by Moon

EC = 9^h 54^m
424 9 53 $46^s.3$

Last contact observed at

Immersion 10^h $55^m + 43^s$ hours

~~11^h $43^m - 75 + 40$ hrs~~ Obs good

Emersion 11^h $42 + 35$ hrs

EC = 11^h 50^m
49 47^s

Atmosphere very unsteady. Could see no projection of the planet on the moon's disc

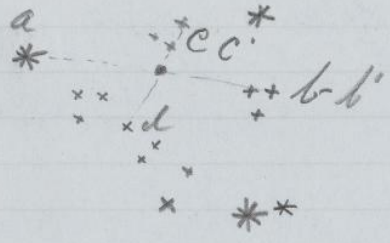
At the first contact the light of the planet totally shut the dusky edge of the moon

The time of the emersion is good

State Equatorial 3 inch object glass power 42

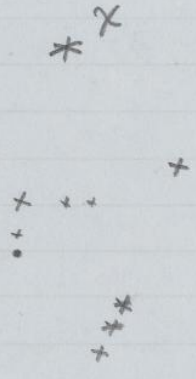
April 24

A bright nebula about 3° west of χ Ursa Maj. bounds Gee per high power



It is in a line of the stars b b' and a, & the stars c c' & d

Another between χ and γ



A faint nebula in a line of γ δ Ursa Maj near the * 6H 137

Not made nicely

This nebula can be easily found by a curve of stars resembling the Corona Borealis

A small and round nebula between λ Draconis and ε Ursa Maj and about $\frac{3}{4}$ of the way towards ε

A small round  nebula underneath and between 

δ & ε Cassiopeia

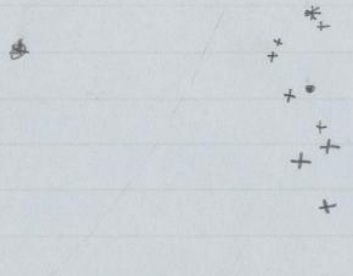
The Cluster and stars 1 2 3 are quite conspicous

April 24 After moon had set I commen-ced in the west and swept round to ~~The~~ the great nebula in Andromeda Swept 11 o'clock until ½ 4 on the 25 Found many new ~~n~~ objects which have proved to be nebula Seeing good

25 Evening cloudy

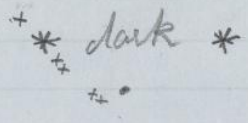
April 27 Morning

A faint nebula near the head of Cepheus



It is a little east of ε 2°(?) and difficult to see

A degree or two east of α Cygni there is a very dark ~~and~~ space containing two pretty bright stars and a nebulosity under and between them



27 Morning clear about 11 o'clock on last night the sky became pretty cloudy and did not clear off till 1 this morning Then I began near the left hand of Andromeda and swept round to α Capricorni Found some faint nebula Two of them are dreamy alone Swept till the daylight hit the stars

May 4 Distances of stars, measured by sextant

Arcturus & Vega Measured dist = 59° 0′ 0″
computed = 59° 0′ 2″.22

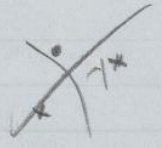
Measured Vega & α Cygni = 23° 50′

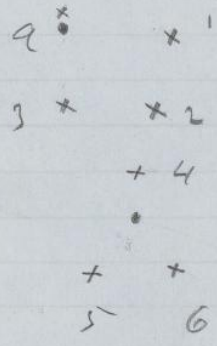
computed = 23 52 26 .13

Measured Arcturus & α Cygni = 80° 45′ 50″

computed =

Two faint objects near the star H in the mouth of Bomelleopardly seen in the great Refractor





The nebula a with the stars 1 2 3, forms a nearly a square The other nebula is in a triangle formed by the stars 4 5 6 The sky became cloudy before I could make a good drawing

First seen at 11 o'clock

May 10 The clouds disappeared from around the pole of the heavens and I swept for some time found the nebula above

May 11 commenced sweeping as soon as dark, in the west and swept round to nearly 10° east of north, the sky was not very clear could not find Brünken's comet Swept 4 hours The object on the opposite page proved to be nebula

My ~~April~~ 13 Sunday night
commenced sweeping as soon as dark, in the west, and swept round to beyond η Virgo saw many nebula all of which I found on the globe or in the charts. Swept till 12 o'clock The sky then became cloudy

My 17 Nearly all of the nights ~~during~~ in May up to this date have been cloudy, or rather smoky The 14-15-16 have been very much so

Posion der Bünkerschen Cometen
am 17 Mai $\alpha = 5^h\ 29^m\ 30^s$
$Decl = 56°\ 22'$

May 18 cloudy all night

May 19 At sunset the sky was clear, but before it became dark the clouds began to rise spread over the sky. Soon as dark Mr. Hull and me set the telescope on the place of Bünker's comet and found a small nebula immediatly. The clouds prevented us from seeing it for more than three minutes

At 10 o clock, part of the sky was clear and part cloudy. As there was no appearence of its being entirely clear, and not being well I went to bed. At 2 o clock I got up but seeing was so very bad that I could not do any thing by way of sweeping.

Dr. C. A. F. Peters says that on the 27 of of April, the comet was so faint that he could not observe it again. The only reason of my not finding ~~the~~ this comet on the 13th of April, was that it could not be seen in my comet seeker. Dr. Peters' telescope is 8 inches in diameter

The first comet of this year was discovered by Dr. Liais at Olinda in Brazil The Elements computed by Dr. Pape, show that the comet was in its descending node on the 19 of January and in AR 192° Decl -5°, and with a hell = to 1.61 Now on the 21 of January. I swept in a most thorough manner over the place where the comet was on that morning, and yet I did not see it. Why not? Because the comet was too faint to be seen in my comet-seeker. The morning was not clear and I used the high power and if there really was a comet it was too faint for my instrument.

Position of a star of the 8 Mag

$A\!R = 5^h\ 46^m\ 25^s$ Decl $= 55^\circ\ 52'$

6 $A\!R = 5^h\ 49\ \ 47$ Decl $= 56.26$

The comet is 34' north of the *

and $3^m\ 22^s > A\!R$

May 20 Set the great telescope on the place of Rümker's Comet at dark, and found it at once. When I first saw it, there was a star of the 13 Mag within the nebulosity of the comet! The star was distinctly seen but did not have the sharp definition that it did after the comet had left it. The comet was pretty bright and easy to observe in the great telescope, and was by Mr. J H Safford so observed for an hour or ~~the~~ two. The motion of the comet

among the stars was soon detected by the eye
The comet was frequently obscured by clouds
and at 11 o'clock it was entirely so. I then
went to bed and got up again at 1. o'clock but
could see no stars

21 - 22 Rainy both nights

23rd Evening clear except round the horizon
Commenced sweeping in the west as soon as dark and swept
round to the north. Then commenced in the south
(Antares on the Meridian) and swept round to the
star S Capricorni, when owing to the very bad seeing
I had to give up. (at 2 o'clock A.M.)
The seeing was very unsettled all the time and
frequently I had to stop for some time
The appearance of the stars was like their
appearance <u>when</u> there is moisture on the
eye piece

May 23 R des comete $6^h 6^m$
$\delta = 56° 23'$

May 24 Evening clear Moon bright

Commenced sweeping as soon as dark (at R 13^h) along the south western horizon and continued to sweep in azimuth until I reached the altitude of γ Virginis and the body of the Little Lion Above this I did not sweep on account of the immense number of nebulae. The seeing was pretty good and the light of the moon was also good Found several nebul and found a nebula in each of their corresponding positions on the globe

At 12 the seeing was so bad that I could not sweep any more

25 Every clear with bright moon
The seeing was most ridiculous it being
clear only near the zenith
The moon set about 11 or 12 o'clock
but I did not (could not) begin to
sweep about half past 12. I then commenced
in the south (Antares ½ ° past N) with
high power and then swept round to
the east After the twilight
set in I S swept along the northe
eastern horizon (with low power) and in
altitude beyon the great nebula
in Andromeda
The seeing was unstatel except near the
Zenith Found many nebula and also found
then on the globe with one exception
Looked at Mars with great reractor

May 20 Max = 71 Min = 51
21 " " = 61 " " = 36
22 " " 55 " " = 39
23 " " 60 " " = 44

26 Cloudy

27 Cloudy

28 Evening clear, but after the moon had set the sky became cloudy

May 29 Occultation of g Virginis
State Equatorial 424 Chronometer

$I_m = 15^h\ 21^m - 80$ hts 484

$EC = 15^h\ 26^m$

$424 = 15 \quad 25 \quad 29^s.3$
30.7

Inst 424 $15^h\ 20^m\ 28^s$
30.7
15 20 58.7

29 Evening pretty clear Observed an occultation of the star g Virginis with State Equatorial
The moon set at about one o'clock, and then I began in the north and swept round to the bright stars in Cassiopia when the sky became cloudy
Then I began in the east and swept round

a few degrees towards the north rather as before
clouds absorbed the sky. The sun was very bad
it was clear as there was no
appearance of its being clear again I went
to bed

June 4 Evening clear and cloudy!
The full moon rose as soon as dark
Could not sweep for comets
The nights not mentioned had been cloudy
— very cloudy & rainy

June 11 The sky was cloudy in the first part of the evening but it became pretty clear about 10 o'clock and soon became cloudy again swept around the north and south western horizon At ½ 12 the sky east of the Pleiades was very cloudy and the clouds were coming towards the west and so I went to bed

12 Evening clear swept in in twilight round the north western horizon Then with high power, in azimuth and altitude to the zenith Then swept from the North round to the east with high power

Seeing was not very good; swept till ½ past 3 Saw but few nebulæ, and looked at some with G.R. they all appeared dapple

The week ending June 17 was very unfavorable for Ast. observations; nearly every night was cloudy, but on some nights I was able to sweep for from 15 to 30 minutes ambling the broken clouds, and swept over wherever there was a clear spot

June 17 Got up at ¼ before 2, the sky was very fine and clear but not have been long so. Began in the south and swept round to the east; used the low power found only one strange object which proved to be one of my earliest friends! – a nebula It caused me some delay, on account of my not examining the stars near it The following is a drawing

* * * * * *

June 18 The first part of the evening cloudy, or rather the sky was covered with flying and broken clouds. Swept about at random, whenever the was a clear spot About 12 it became pretty clear and I began in the north with the high power and swept round to Algol, and the the flying clouds again overtook me. For an hour or two I continued to sweep among the broken clouds where there happened to be a clear spot

The atmosphere was saturated with a great amount of vapor which caused me much trouble by getting on the object glass and eyepiece

The seeing was by generally Wonderful all night

19-20 rainy

June 13 Mars Diagram of stars surrounding Mars

1860
June 21st
Comet first at $15^h\ 15^m$ Dill

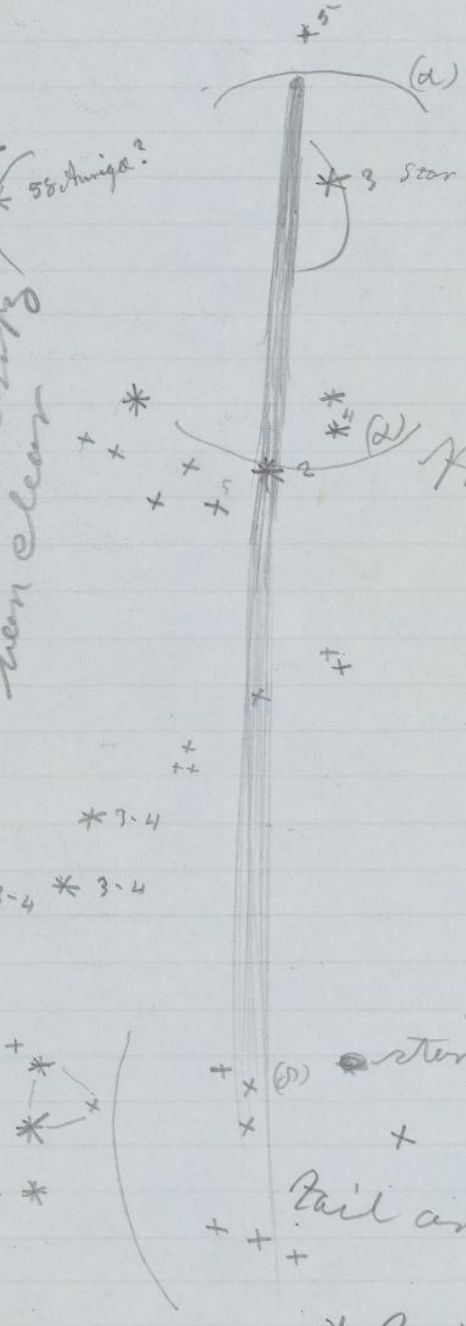
Scale for diagrams on next page.

June 21st 1860

At 9 h. 7 m. I observed a large & bright comet in the north northwestern region. It seemed that just emerged from a great cloud. Said was 6° long - perhaps more so that the sky was clear

At 16 h Sid time the nucleus was in one edge of the field and the big * in the near fig 2 in other

Fig (1)



High power field 2°45'

The diameter of the comet at the big star is ½ the dist between ** 4 & 5

The brighter star is in the centre exactly

When the Comet nucleus was in edge of field * 2 was at other edge

Also dist A to 3 = diam. of field high power used.

star (D) in exactly in centre of Tail

Tail appears in comet near the

* Tail afterwards seen to very near this big star

The comet set ~~[illegible]~~ while making these drawings

The drawings on the ~~aff~~ previous page were made as well as I could in the hurry & excitement of the moment. I A posed below the horizon in about an hour The nucleus was bright as a star of 3 Mag or brighter

After the comet set, I went into Boston with dispatches for Washington & Albany & a brief for the Advertiser The operators in Washington and Albany had gone to bed and the telegrams were not sent till the next morning

Monday 22 After I came back from Boston, I commenced sweeping in the S. E near Fomalhaut and ~~Ed~~ swept round to α Persei Used ~~high~~ low power; afternoon swept along the horizon from E to N Could not find the comet Being

☄'s R $6^h\ 29^m\ 9^s.3$

☄'s Decl 41° 57' 29"

Cont m'z ~~at~~ $6^h\ 50^m\ 0^s$

Boston Journal.

SATURDAY EVENING, JUNE 23, '60.

BOSTON AND VICINITY.

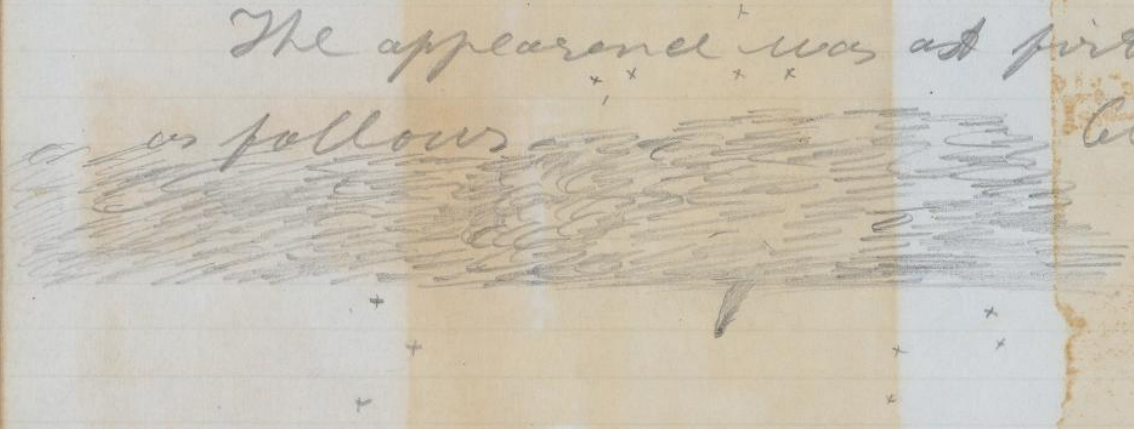
THE NEW COMET. The comet discovered by Mr. Tuttle at the Cambridge Observatory on the night of the 21st. inst. was plainly visible to the naked eye last evening in the clear northwest sky. It presents a very beautiful appearance, and reminds us of the coming on of the splendors of Donati's Comet in 1858. If it should be clear this evening, the astronomers will obtain the requisite number of observations for determining the elements of its orbit, which will inform us of its past and future career, and whether it is identical with the great one of 1556, (Charles V.) whose reappearance is looked for this year.

This is the eighth comet independently discovered by Mr. Tuttle. For his comet discoveries in 1858, among which was a periodical one of short period, the Imperial Institute of France decreed to him the Laland prize of Astronomy.

[illegible] Boston Regatta will take place on

Great Comet of 1860. About 9 o'clock on the evening of the 21st of June, just as I was on the point of sitting down to use the comet-seeker, I cast a glance around the horizon as I am accustomed to do, and in the N.W I noticed a bright object about 1 & ½ of a degree long and at once recognized it as a comet

The appearance was at first sight as follows



For more than a week, previous to the 21st, the sky had been cloudy near the horizon and only on one or two occasion was it clear in other parts. So on the first clear night and when a part the comet was only visible it was taken in hand by me and accurately observed by the eminent Director of the Observatory

Boston Journal.

TUESDAY EVENING, JUNE 26, 1860

ADJOURNMENT OF CONGRESS. Congress

C W Tuttle

THE NEW COMET. Notwithstanding the haze in the western horizon, and the light of the moon, the comet discovered at the Cambridge Observatory by Mr. Tuttle, was easily distinguished by the naked eye last evening, a few minutes before 9 o'clock. It presented in the telescope a beautiful appearance, throwing off a light filmy train of seven or eight degrees in length, from a bright, starlike nucleus. It increases in brilliancy from night to night; but owing to the bad state of the sky since its discovery, sufficient observations were not obtained by the astronomers at Cambridge for determining its elements till last evening. The particulars of its distance and future course through the heavens will be reached by calculation to-day. The comet is now moving rapidly on the confines of Auriga, toward the zodiacal constellation, Cancer. Until the elements are computed, nothing but conjecture can be made respecting its future brilliancy.

The numerous subsequent amateur discoverers of this comet are perhaps not aware that the priority of discovery is subject to a very nice calculation among astronomers. It is very often the case that the comet is seen at European observatories on the same night it is seen here, and if it was at the same hour of local time in each place, the comet belonged to the European by virtue of his easterly longitude. In one instance it happened that the Cambridge and European astronomers pointed their telescopes upon the stranger so near the same moment of absolute time that it was doubtful who was entitled to priority.

The patient labors of the comet hunter of the Cambridge Observatory, whose tireless eye, during the whole year, never closes while there remains an unexplored region in the whole starry heavens, and whose investigations are not limited to what is visible to the naked eye, but extend to those vast regions which lie far beyond, and are fathomed only by the telescope, are but little understood. It is in the telescopic regions, which require to be surveyed in every part with the limited field of a telescope, that the comet is usually first seen long before it comes within the range of natural vision. In this instance the comet came into our system in that region occupied by the overpowering rays of the sun, but no sooner had it emerged therefrom, and the clouds which had obscured for some evenings previous the western sky, broken away a little, than it was detected by the observer at Cambridge, and its geocentric position measured. It is during long continued cloudy nights that comets frequently come within the range of the telescope, and then he is anticipated by some astronomer who is favored with clear skies. The merit of the discovery does not depend alone upon the mere discovery, however laborious and painstaking it may have been, but upon the ability to determine its place by instrumental means, and the calculation of the elements of its orbit, a problem of very great difficulty, declared even by the illustrious Newton to be, "*Problema longe difficillimum*."

of their adversaries."

THE COMET. The Cambridge astronomers inform us that the comet is approaching the earth, though owing to the strong moonlight, its low position and its increasing distance from the sun, it is doubtful whether it will become very conspicuous to the naked eye. Through the large telescope it presents an appearance curiously like that of the great comet of 1858, on a reduced scale. The tail branches off in two streams from the nucleus.

Daily Evening Traveller.

TUESDAY, JUNE 26, 1860.

BUSINESS THIS DAY AND EVENING.

Meteorological.

The thermometer, Monday, June 25th, stood at 1 P. M. (highest) at 70; 2½ P.M. 67½; 10 P. M. 61½; when lowest in the night 56; this day (Tuesday 26th) sunrise 57; 9 A.M. 70.

Barometer 25th sunrise 30.40; 26th do. 30.18.

The wind on the 25th was N.W. to 7 A.M., then N. E. or E.N.E., and late in the evening East; this morning it has been W.N.W. to West.

The weather on the 25th was cool fine and generally clear, but at times partially cloudy; in the evening the comet in the N.W. was well seen and its train conspicuous, even in the moonlight and through the haze. At sunrise this morning the weather was quite clear, but since 6 o'clock nearly cloudy, warm and sultry.

The Comet.

CAMBRIDGE OBSERVATORY, June 26, 1860.

Messrs. Editors:—The comet was observed at Cambridge on the 21st, 22d, 24th and 25th. From the places on the 21st, 24th and 25th, Mr. Safford and Mr. Tuttle have computed elements, which have not yet been sufficiently tested, but there is no doubt that the comet is approaching the earth, though owing to the strong moonlight, its low position and its increasing distance from the sun, it is doubtful whether it will become very conspicuous to the naked eye. However, when the moon is out of the way, the opportunity will be much better than it is now.

In the large telescope it presents an appearance curiously like that of the great comet of 1858 on a reduced scale. The tail branches off in two streams from the nucleus. But now the right hand one is the brighter instead of the left. The same dark hollow is visible in the axis in the rear of the nucleus, and there are similar disturbances and jets of luminous matter in its neighborhood, all on a reduced scale of intensity. I am making drawings, &c., for comparison with that of 1858.

Yours truly, G. P. BOND.

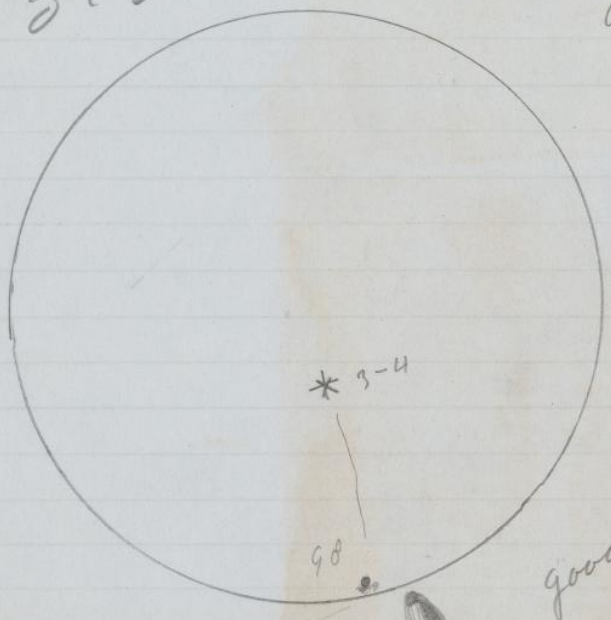
Musical.

Fig (2)

June 26 Sidereal time
= 15h 45m

Comet Secchi
Diam. 2°.45'

high power



good as seen in Comet seeker
Turned Right for left by prism

By this sketch
tail 18' broad at
18' from nucleus

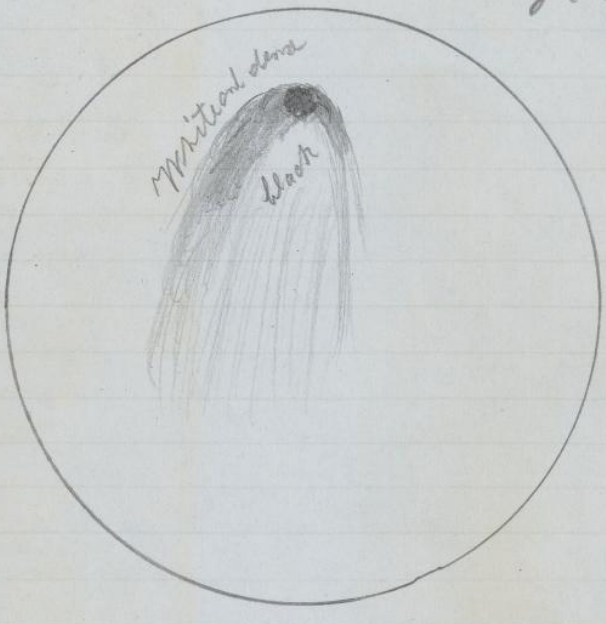
6-7

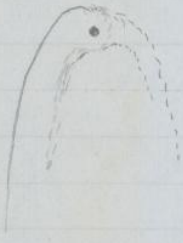
3-4

26 The sky was clear at times until the sun set, but I had a poor chance to make drawings of the tail and surrounding stars I Did the best in my power

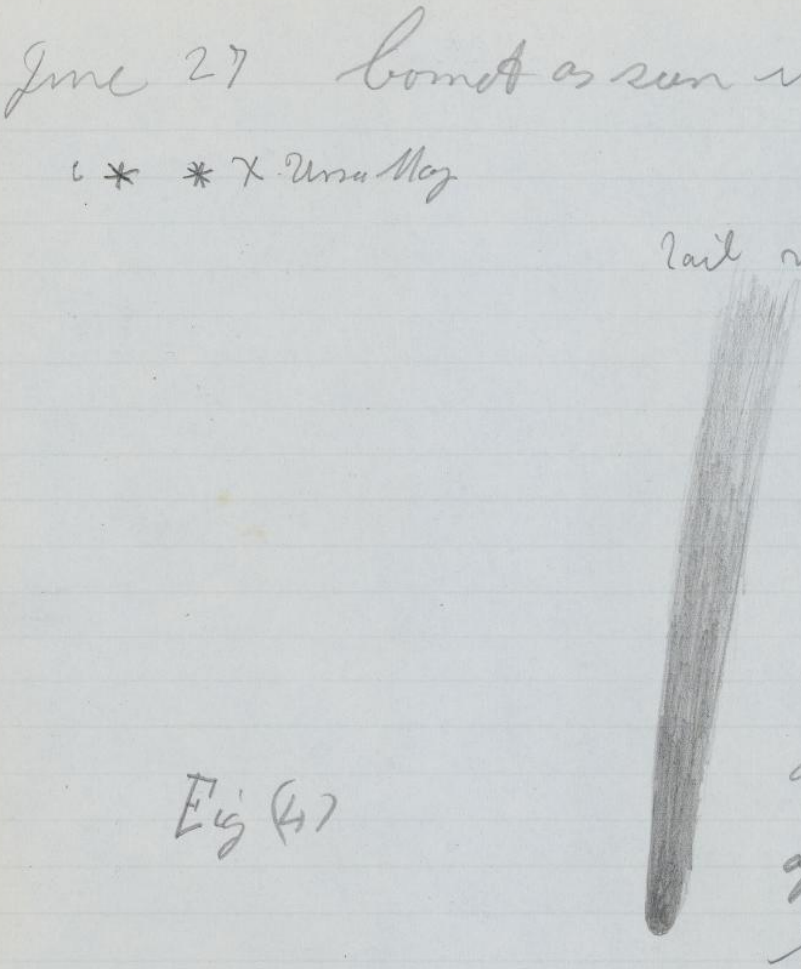
26th Diagram of nucleus, etc as seen in great Reflector

Fig (3) General outline





June 27 Comet as seen with naked eye



At 16h Sid. time
The tail of the comet
could be traced to
about 2° beyond * 27
of the Lyrae, with
the naked eye

Fig (4)

Being in a very great hurry, I could not stop to make a drawing of more than 3 stars and the comet, with the naked eye

Comet III 1860

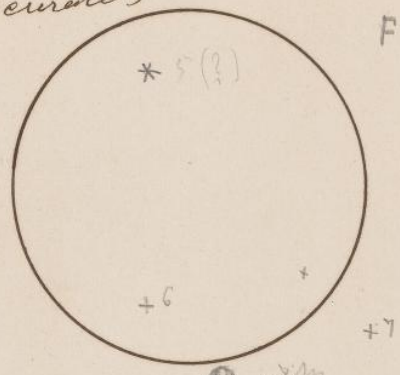
June 27 1860

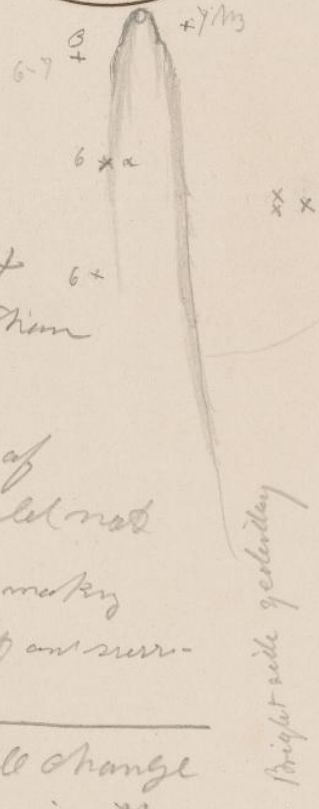
The distance of the nucleus from some star or the distance of A some two stars will be used as a base line, and the dist. of star and width of the tail will draw as accurately as possible from this data

The circle corresponds rigorously with field of view of the comet seeker with high power

High power
Field 2° 45'

Fig (5)





at α the tail is just as wide as the dist of β from nucleus at 16h 30m sid time

(inverted by prism sideways)

near nucleus left hand branch a little brightest

June 27 Evening fine & clear, but more than half a moon.

Owing to the presence of photographers, I could not do much by way of making a drawing of the comet and surrounding stars

---

A most remarkable change has taken place in the comet since last night

Fig (2) is an accurate drawing drawing of the comet as seen in the C. S. on the 26 and Fig (6) as seen on the 27 with C S

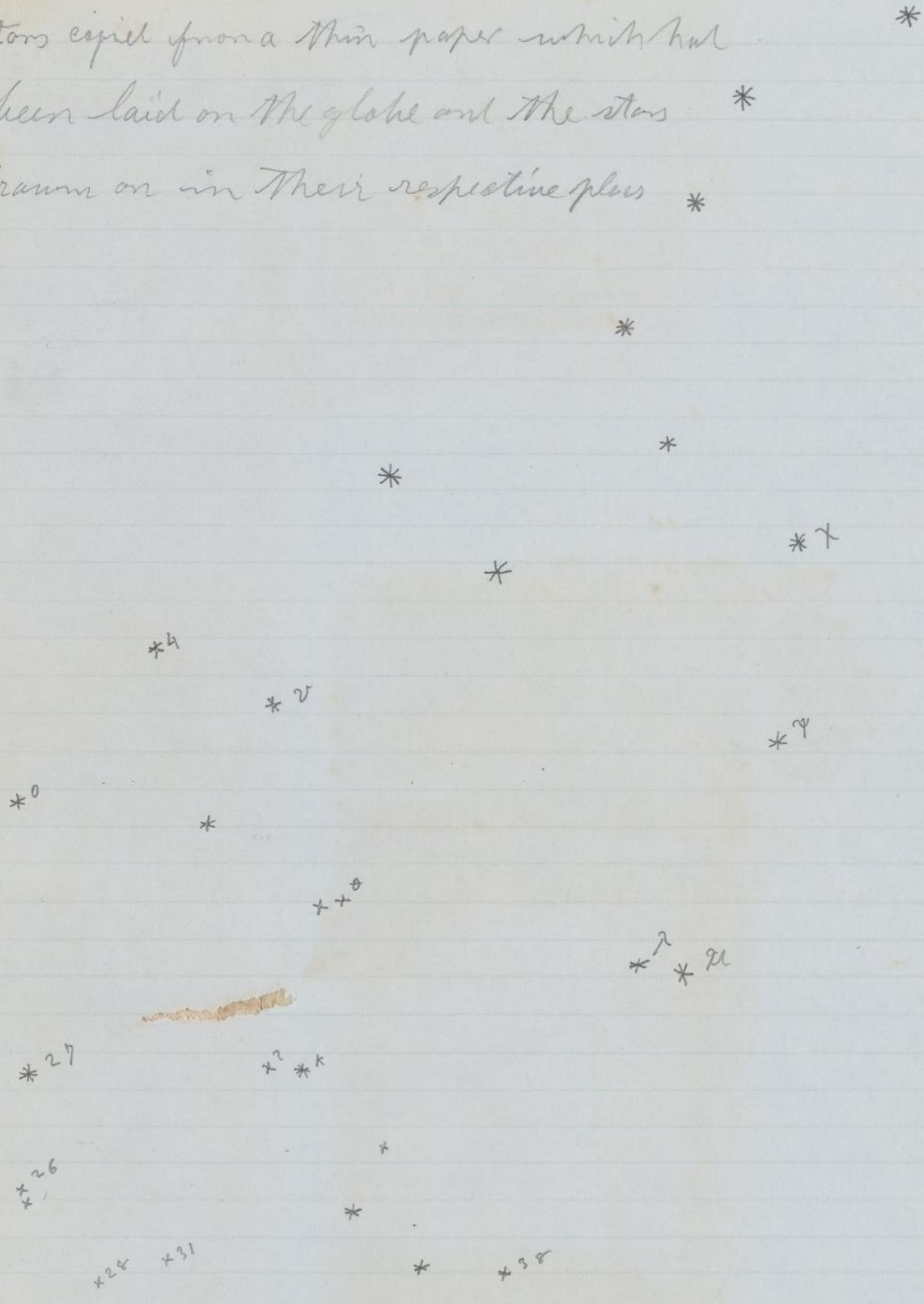
Fig (6)

The appearance in the comet seeker is exactly as I have drawn it here. The curve of the coma is exact

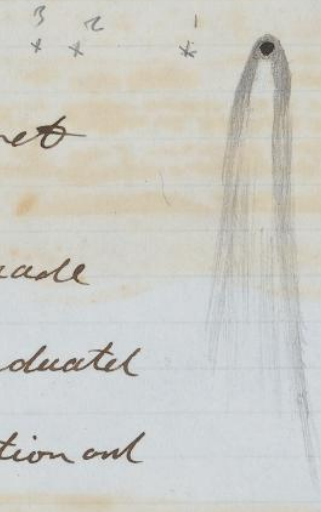
June 30

An accurate drawing
of the comet at 9h
m.t.c. on June 30
as seen in comet seeker
The kern appears as
a star of the 2nd Mag
while the tail
is but just visible;
the sky is not very
clear The width
of the tail 1° from
the kern is 20'
The tail is about 4° in
length as seen with the
naked eye, and is directed
towards the star κ in Ursa
Majoris

Stars copied from a thin paper which had
been laid on the globe and the stars
drawn on in their respective places



June 28 The sky was cloudy nearly all of the evening and I had but a meagre opportunity to make drawings of the comet



9^h m. t.

star 1 = 17' from nucleus and of 7 mag

A $\frac{1}{2}°$ from nucleus tail is 14' wide

AA 9^h 30^m m t

The Kern was 41' from star 2 & 51' from star 3 of 7 Mg

During the day I made a mica scale and graduated it to 10' in one direction and 30' in the other. It is set between the two lenses of the eye piece and works finely. The graduations are such that they are visible without any illumination

The time that I could see the comet, this evening I measured the of the stars 1, 2, 3, from the nucleus; there were others in sight, but owing the clouds I did not have any chance to measure them

DAILY ADVERTISER.

BOSTON:

THURSDAY MORNING, JUNE 28, 1860.

[For the Boston Daily Advertiser.]

The Comet.

Sufficient observations have been made at the Observatory of Harvard College to determine the elements of this body. I have obtained them as follows:—

Perihelion Passage June 15th, 11h 5m P. M. at Washington.	
" Distance	0.2875
Longitude of Perihelion	160° 32′
" Asc. Node	85 11
Inclination	79 21

These elements show conclusively that the present object is not the "Comet of Charles V." They have also given the means of predicting the course which it will pursue among the stars. It will go southward and still keep in advance of the sun, until it disappears in the South; while it recedes from the sun it will approach the earth, and will be conspicuously visible at least with very small telescopes. After the next full moon it will be still visible to the naked eye. Mr. H. P. Tuttle (the discoverer) has also computed elements, which agree with the above. T. H. S.

Traveller June 22

Meteorological.

The thermometer on Thursday, June 21st, was highest (57½) about 9 A. M; at 2½ P. M. it stood at 57; 10 P. M. 53; this day (Friday 22d.) sunrise, 49; 9 A. M. 63½.

Barometer 21st, sunrise 30.02; 22d, do, 30.12. The wind throughout 21st, was N. E.; brisk before sunrise, slowly abating during the day, light in the evening. This morning it has been N. W.

The weather on the 21st was very cool, and after 8 A. M., partially clear, at times nearly clear. This morning it has been very clear and very fine; at sunrise, however, it was quite cool, the thermometer standing at only 49.

At Harvard College Observatory, thermometer highest on 21st, 60; lowest last night, 45.

Another Comet.

Messrs. Editors:—A fine Comet has suddenly come in view in the North-west, near the horizon, and on the verge of the evening twilight. It was first seen at 9 P. M. of the 21st, at the Observatory of Harvard College, showing itself at a low altitude, in a narrow opening of the clouds, and was immediately detected by Mr H. P. Tuttle, whose special duty it is to keep watch for such objects. For nearly two years past his vigilance has been almost fruitless, only two faint Comets having been discovered at the Observatory since the apparition of the magnificent one of 1858.

The present one promises well; its nucleus is as bright as a star of the 4th magnitude, well concentrated, and has appended to it a narrow tail, but little curved, and rising vertically from the horizon, like a faint streamer of the Aurora.

Astronomers will wait with interest for the determination of the elements of this comet. Three nights' observations will be needed before its future path and appearance can be predicted. G. P. Bond.

Observatory of Harvard College, June 22, 1860.

Daily Evening Traveller.

FRIDAY, JUNE 22, 1860.

A new and most promising *Comet* has been discovered by the Columbus of the skies, Mr. Tuttle. We hope it will become as grand a celestial affair as was the *Comet* of 1858, which did a vast deal of credit to the whole erratic family, and the having seen which is something to boast of.

Traveller-June 23

DOVER ENQUIRER

Dover, N. H.

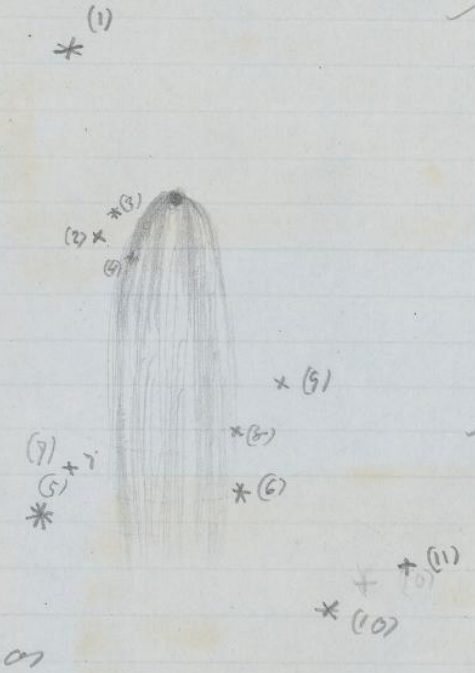
THURSDAY MORNING, JUNE 28, 1860.

A New Comet. Prof. Bond of the Cambridge Observatory writes to the Traveller that a fine Comet has suddenly come in view in the Northwest, near the horizon, and on the verge of the evening twilight. It was first seen at 9 P. M. of the 21st, at the Observatory of Harvard College, showing itself at a low altitude, in a narrow opening of the clouds, and was immediately detected by Mr H. P. Tuttle, whose special duty it is to keep watch for such objects. For nearly two years past, the Salem Register says, his vigilance has been almost fruitless, only two faint Comets having been discovered at the Observatory since the apparition of the magnificent one of 1858. The present one promises well; its nucleus is as bright as a star of the 4th magnitude, well concentrated, and has appended to it a narrow tail, but little curved, and rising vertically from the horizon, like a faint streamer of the Aurora. Astronomers will wait with interest for the determination of the elements of this comet. Three night observations will be needed before its future path and appearance can be predicted.

A Comet in Sight.—A fine comet, visible to the naked eye, was seen from the Cambridge observatory, Thursday evening, near the northwest horizon. It is moving towards the east. The tail is narrow and slightly curved, extending five or six degrees from the nucleus, which is as bright as a star of the 4th magnitude, and is strongly concentrated.—The Boston Traveller says it was discovered by Mr. H. P. Tuttle, whom it denominates "the Columbus of the skies."

June 30. Sky not clear, got a pretty good view of the comet with the comet seeker which will be found on previous page

July 1 Fine and clear Comet III 1860



(1) = 5-6 Mag
At $15^h 32^m$ Sid & star (1) was one degree from Kern and star (2) 26' (2) = 6^{-7} Mg
at $15^h 39$ star (3) = 20'
star (3) = 7-6 Mg
At $15^h 44^m$ star (4) = 22' from Kern and 13' from (2) star (4) = 6^{-7} M and about 8' in the tail
At $15^h 52^m$ star (5) was 112' from Kern and star (6) 65' dist from (5) each 5-6-7 Mag. star (7) = (7) Mg and dist from (6) 55' 18' from (5)
At 16^h the Kern was about 98' from star (6) and the tail went between stars (5) and (6) and was not less than 30' wide there (measured it)

July 1, began as soon as I could see any stars near the comet and measured their dist's from the neclus and from each other. Worked with diligence till the comet set
There was a full moon and the sky very clear could trace the tail farther with the naked eye than with the comet seeker
I should judge that it was 2° long by natural vision

star (5) dist from (7) 55' and from (6) 21' star (5) = 7-8 Mg
star (9) is dist from (7) 75' and from (5) 21' = 7-8 Mg
Owing to the moonlight the tail appears to vanish just below stars (5) (6) can see no curvature

Star (10) dist from (6) 50' and from (5) 104' about, it is same Mg as fuse = (5)
Star (11) = 8 Mg 1° from (6) and 29' from (10)

July 2-3 cloudy 03

July 13 Last night the sky was clear for a little while but finally clouded up Swept among the broken clouds, principally in the north west Tonight (13) the sky is cloudy at the time of writing. During the last two weeks the sky has been in a state wholly unfit for comet seeking July 13 Friday Every Swept from the N. W. round to the East; used high power for a while and then the low one A few minutes past 10 o'clock, the sky became wholly obscured by a dense fog I then went to <u>cowher</u> Saturday 14 Swept from the West round to Taurus Tomas* Kowi The seeing was not very excellent 15 cloudy

16 Sky became cloudy at dark

* Poniastowski

0^h 8^m 58^s 424 = beginning
5^h 15^m 8^s = End

July 17 Sky clear. Commenced sweeping in the north and swept round to 70° of azimuth from north Then starting from the north again, I swept round nearly 30° towards the east Soon after the stars in the head of Capricornus had passed the meridien I turned the comet seeker to the south and swept in azimuth 135° towards the north I did not have time to sweep round to the point in the N.E. where I left off three or 4 hours before At last I swept along the horizon from east towards the north 60 or 70° The seeing was pretty on the average; but sometimes it was wretched Swept till the twilight became too strong

July 18. Observed the eclipes with a Fraunhofer telescope of 5 feet length, & chronometer 424 Ann-old The sky was cloudless throughout Mr. Paine and myself were in company and had our telescopes in front of the Observatory

18-19-20-21-22- Some of these nights have been clear and some have not Not having been well I have not swept much

Sunday Evening, July 22

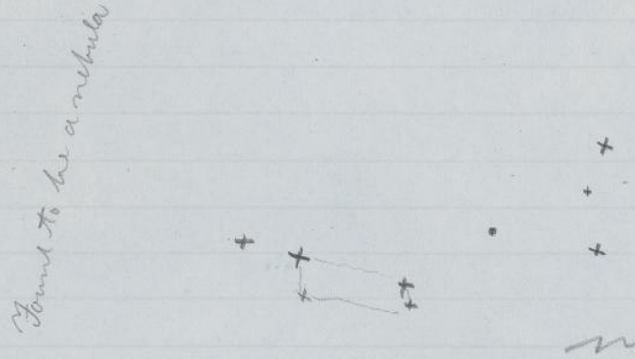
A nebula or comet near the star 8 in the head of one of the hunting dogs. A line from star (2) to star (3) will pass through the nebula; and a line drawn from the nebula to (1) and thence to (2) will make a right angle at (1)

July 22 fine clear evening Begun as soon as dark, in the north, and swept round towards the west to beyond Cor Karoli. Then again begun in north and swept round to the east, and finally along the horizon from the east to north. Used high and low powers Swept till daylight.

23 Sky was covered with great clouds all night

Aug. 6-7 Evenings clear but a full moon which rose soon after dark. Swept each evening in a rapid manner over the north west

Aug. 15 First good night for a month. All the nights for the last week have been rainy or cloudy



A pretty bright & round object 6° or 7° north of ε Virginis - one field north of a brighter neb.

August 15 Evening clear. Swept along the north west in the twilight and then in the south west for a short time, then went back to the ~~sou~~ north west and swept to the zenith nearly

Then went back to the south west and swept for half an hour.

About midnight I began in the north and swept round to the east, and then along the north-eastern horizon for some time

Finished about 2½ o'clock

August 16. Soon after dark I began in the west and swept round towards the south until I reached the milky way. Then began about 10° west of north and swept round to the north. The seeing had began to get bad and I being tired, gave up for the night

August 17. Fine and clear

Swept in horizontal Zones from the west to north and then up to the zenith; then from the north ~~up~~ round (nearly to) Capella. Then put on the low power and swept a little in the south. My eyes being tired I had to give up. Looked at all of the nebula which I had found the night before. The night was very fine. Worked till two o'clock

Never Again!

Pro con certa

August 18 The sky was clear after 10 o'clock, but cloudy in the first part of the evening Did not sweep in the first part of the night. Got up at 2 in the morning (19) and swept from the east, south 45°, then along the horizon from N.E to S.E till daylight. The seeing was pretty good; saw some old nebula

September 9 Since the 18 of August there has hardly a clear night, and then only when the moon was full on Wed. or Thurs. eve I swept over the north west and from the west round towards the south as far as Antares and up to the zenith. Saw nothing but nebulæ The moon then come up and "put me down"

September 9 Evening clear. Soon as dark, I began in the north and swept round to the tail of the great bear; then began again in the north and swept around towards the east about 70°. Not being well I then lied down on the table and did not wake up till one o'clock. The D was then up and I went to bed

α Aquarii time of 236 = $18^h\ 9^m\ 32^s.2$
$20^h\ 11^m\ 5^s$
21 55 27 .2
21 55 . 42 .2
− 14 5 8

D δ = −1° 6′
0 59.18
− 6′ 42″

Planet's R. 21 42 18
− 15
21 42 3
18 15 2

Corr. 7

Planet's Dec. − 0° 48′
Cor − 6.7
− 0″ 54.7

8 33

a 9th precedes b c a same dec.
b. 9th precedes c. b. south 12′

In 18 24 16.5 c. 18 25 3.9
Out 25 15.2

									b − a
In.	a	18	27	8.0	c	18	27	59.6	+52.75
Out.			28	5.2			28	59.1	
In	a	18	29	34.9	c	18	30	26.3	52.45
Out.			30	32.2			31	25.7	
		south				north.			
In	a	18	33	54.4	b.	18	34	34.4	
Out			34	51.2			35	14.8	
In	a	18	36	10.5			36	50.5	
			37	7.3				31.4	

Z = Required dist
x = Dist. A travelled
y = ... B .....

Then $x + y = Z$
and $x = y + a$

$\frac{x}{m}$ = miles an hour B travelled
$\frac{y}{n}$ = .- - - - - - - A - - - -

$$\frac{nx}{y} = \frac{my}{x} \qquad nx^2 = my^2$$

$$x^2 = \frac{my^2}{n}$$

$$x = \frac{\sqrt{my^2}}{\sqrt{n}}$$

Now $x = y + a$

$$\sqrt{\frac{my^2}{n}} = y + a \qquad \sqrt{my^2} = \sqrt{ny^2} + \sqrt{na^2}$$

$$y\sqrt{m} - \sqrt{n} = \sqrt{na^2}$$

$$y = \frac{a\sqrt{n}}{\sqrt{m} - \sqrt{n}} + x = Z$$

$$a\sqrt{n} + \sqrt{mx^2} - \sqrt{nx^2} = \sqrt{mZ^2} - \sqrt{nZ^2}$$

September 10 The sky was covered with broken clouds all night Could not do anything by way of comet seeking.

Copied from H. P. Tuttle's Observing Book.
Comet III 1862
Aug. 16

Drawing is made at
9 1/2 mean time.

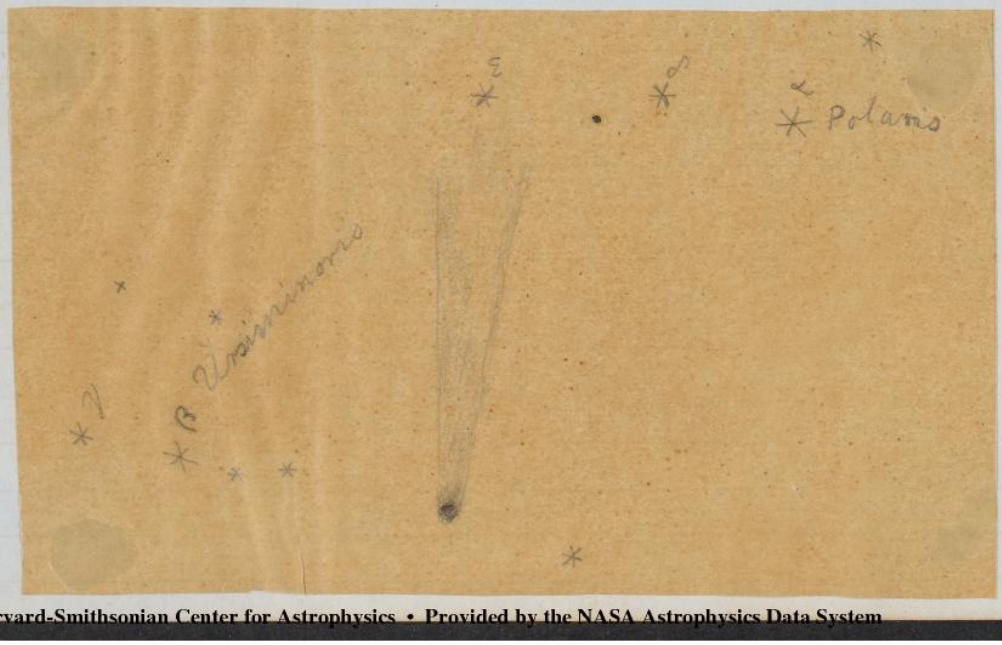
View in the great telescope at
10 1/2 mean time.
The length of the bright cone is 30",
and about one 1" in width at the
point.

The above drawing is made from a comet-seeker
view. The stars 1.2.3. are of the 6 1/2 mag.
The star in the end of the tail is of the 5 1/2 mag.
Between a and b the comet is curved both above
and below.

Copied from H. P. Tuttle's Observing Book
Sunday Evening
Aug. 17 1862

The nucleus and the rays which emanate from it make an angle of 15° with the meridian and is on the opposite side from what it has been before. The bright part, that is from the nucleus to where it begins to be different is 25" in length

A naked eye drawing of the comet made at midnight Aug. 18



Copied from H. P. Tuttle's Observing Book.

Comet Aug. 20. at 9½ P. M.

Aug. 20 Fine and clear

The comet tonight is much fainter than it was on the 18-19. The train can be traced not over 8.° and is directed towards and reaches nearly to the stars marked a.

The tail is not easily seen for more than one degree beyond the nucleus*, and the latter is not brighter than a star of 3. mag.

The brighter of the two stars a is of 6 and the fainter of 6½. To the naked eye the tail has not appeared curved as yet, but in the comet-seeker it has.

View in the Great Telescope
Aug. 20.

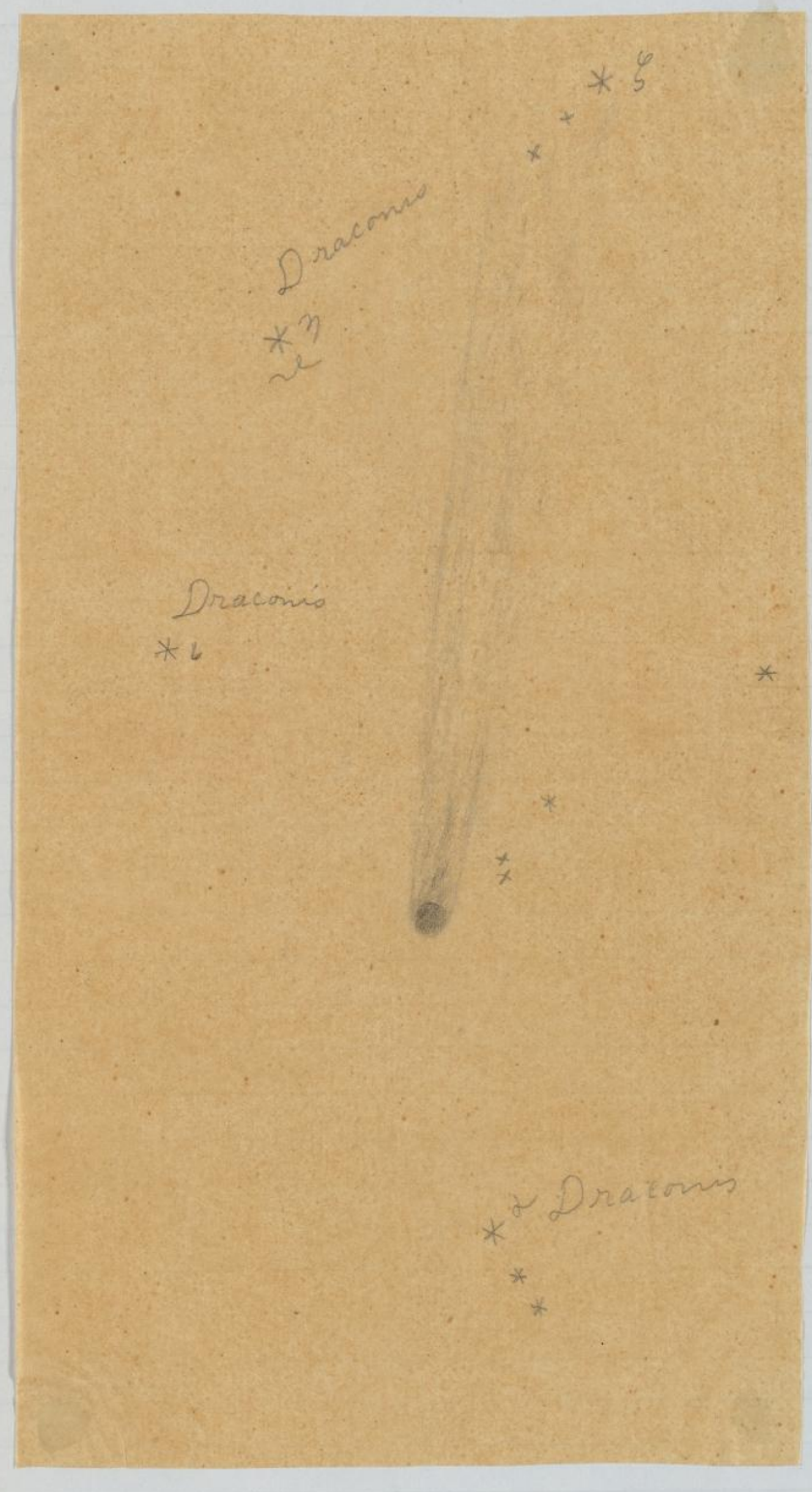
Copied from H. P. Tuttle's Observing Book
Comet III. 1862.

Aug. 21. 1862.

The coma is a little brighter to night - is I think equal to a star of the 2nd mag. With great difficulty the tail can be traced to the stars numbered 6-7. The tail, about three degrees from the nucleus, is about 20′ in width. The tail is about equal to last night in billiancy. Drawing was made a few minutes after 9. Sky not first class. The upper edge of the tail appears to graze γ.

Great Telescope
Aug. 21.

Copied from H. P. Tuttle's Observing Book



Sat. night - Aug. 23.

Finest evening for months.

Tonight the comet is brighter than on any previous evening. The tail appears perfectly straight and the nucleus is equal to a star of the 2d mag. The drawing is made with the greatest precision possible, and between 9 & 10 p.m.

* β Urs. Min.

At 11 P.M. The tail can be seen five degrees beyond ξ and is a little curved towards the left. The extremity of the tail is near a star marked E on the globe, and whose α is 18h 15m δ 58°. 30'

E is one of three stars of 6 mag. and equidistant in the neck of Draco

*b *d *c

Copied from H. P. Tuttle's Observing Book

Sunday Eve. Aug. 24

The sky tonight is very clear but the atmosphere is very moist. The tail is not so bright as last night, but can be seen by the unpractised eye with ease as far as M; with difficulty it can be seen as far as the little stars a b c.

A line drawn from the coma to the star c will pass directly through the tail. The width is greatest midway between M and the head and there it is about 20′ in width.

There is no signs of curvature

Drawing made at 10 P.M.

Copied from H. P. Tuttle's Observing Book

Drawing of the nucleus and "ray" as seen through the great telescope Sund. Eve. Aug. 24 1862 at 11 P. M.

Monday eve. Aug. 25 21^h 20^m sid. time.

The "ray" tonight is on the right of the nucleus. Seeing very good. The nucleus and bright part above it is only 15" in length. At 21 30 s.t. the tail can be seen with difficulty to β Draconis. It is not very conspicuous more than 7° beyond the nucleus.

Sweeping Ephemeris for Hind's Comet

1860

Feb 25
$\alpha = 2^h\ \delta = 6^\circ S$ to $2^h\ 5^\circ S$

March 7
$\alpha = 2^h\ \delta = 5^\circ S$ to $0^h\ 27^m\ 4^\circ S$

March 17 $\alpha = 2^h\ \delta = 4^\circ S$ to $1^h\ 2^\circ S$

March 27 $\alpha = 2^h\ \delta = 3^\circ S$ to $1^h\ 1^\circ S$

April 6 $\alpha = 2^h\ 2^\circ S$ to $2^h\ 0^\circ S$

April 16 $\alpha = 3^h\ 1^\circ S$ to $2^h\ 1^\circ S$

April 26 $\alpha = 3^h\ 0^\circ S$ to $2^h\ 1^\circ N$

May 6 $\alpha = 3^h\ \delta = 1^\circ N$ to $3^h\ 2^\circ N$

May 16 $\alpha = 3^h\ \delta = 1^\circ N$ to $3^h\ 2^\circ N$

May 26 $\alpha = \alpha = 3^\circ \delta 2^\circ$ to $3^h\ 3^\circ N$

June 5 $\alpha = 3^h\ 31^m\ \delta = 2^\circ N$ to $3^h\ 3^\circ N$

Sweeping Ephemeris for Hind's comet

According to the ephemeris, this comet will never be more than 90° from the sun

Eye Piece = 70

South	North
10.4	73.4
7.3	76.0
6.0	75.9
6.3	74.5
10.0	75.7

Zero

16.0
15.0
17.0
16.5
16.4

53.6
72.5
126.1
69.7
55.4
125.1
62.8
41.6
104.4
72.5
33.6
106.1
41.6
61.3
102.9
69.7
35.4
105.1

Level

West	East
72.5	×33.6
69.7	×35.4
68.8	×35.6
41.6×	62.8
41.2×	61.3
41.5×	60.5

x = one

$a - x$ = 2nd

$ma - mx = a + x$

$ma - a = x + mx$

Harlir 9 8 8

15. 38. 46.

6h 30m.5

49°.5

June 21.5

10	3h 28m	33.0	13.3
June 20	5 5	46.03	1.3
		27 47.8	
30	7 50	43.6	
July 10			

June 25 | June 24. 25

June 20
30
July 10
20
30

demand. Sales of fancy $7 88 per bbl. Southern is $7@8 50 ⅌ bbl. Corn Meal sells at $3 50@ according to quality. Rye flour at $4 87½ ⅌ bbl. GRAIN—The receipts since yesterday in bushels Oats, 209 bushels Rye, and 400 bushels Corn in moderate demand at previous prices. Southern yellow at 70c; mixed Western 67@ white nominal. Rye—Sales at 88@90c ⅌ bushel for Northern. Shorts are in steady demand at $18@20 ⅌ ton.

local pains, loss of flesh and strength, debilitating and remittent hectic, which generally indicate **Incipient Consumption**, this remedy has allayed the fears of friends and physicians, in several very gratifying resting instances.

Scrofulous Tuberculosis this medicated from far more than the good effect of the most cautious and ced preparations of iodine, without any of their own liabilities.

Attention of females cannot be too confidently invited is *remedy* and *restorative*, in the cases peculiarly y them.

Rheumatism, both chronic and inflammatory—in r, however, more decidedly—it has been invariably ported, both as alleviating pain and reducing the s and stiffness of the joints and muscles.

Intermittent Fevers it must necessarily be a medy and energetic restorative, and its progress in the West will probably be one of