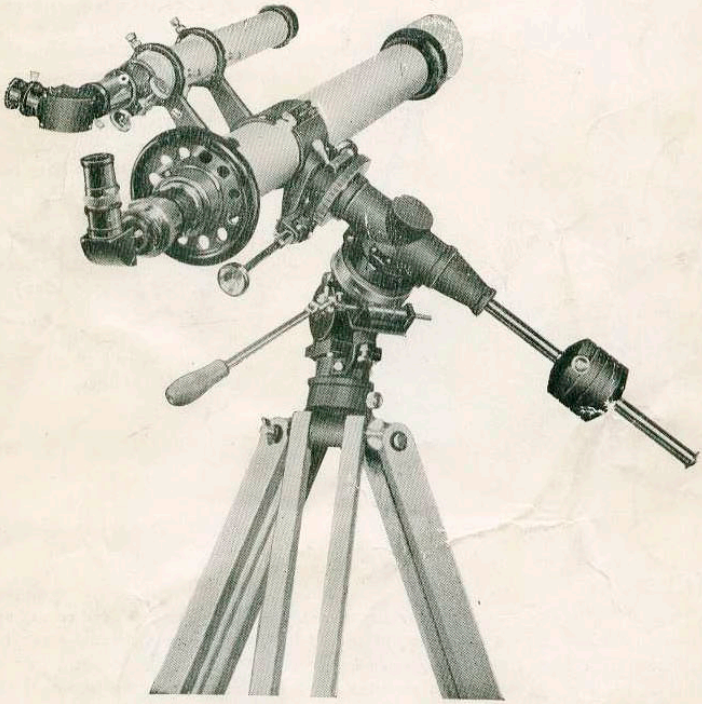
LAFAYETTE TELESCOPE

No. 99-7042 WX
No. 99-7053 WX

INSTRUCTION

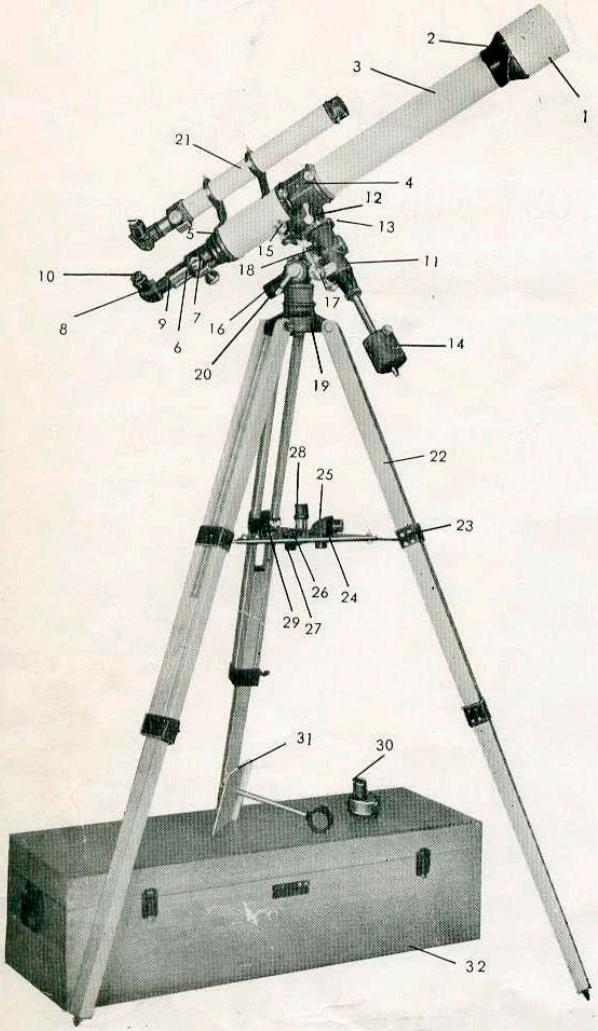


INSTRUMENT DIVISIOH

LAFAYETTE RADIO ELECTRONICS C

NEW YORK

NAME OF THE PARTS



1. Dew cap (Lens hood)
2. Objective cell
3. Telescope tube
4. Telescope tube trunnion sleeve with clamp screw
5. Eye end
6. Eyepiece drawtube with rack and pinion motion
7. Micro focusing knob for eyepiece
8. Star diagonal
9. Eyepiece adapter
10. Eyepiece
11. Declination axis
12. Clamp lever for fixing the telescope to the Declination axis
13. Declination circle
14. Adjustable counter-poise of the telescope with respect to the polar axis (Balance weight)
15. Slow motion in Declination
16. Polar axis
17. Slow motion in Riget Ascension
18. Hour circle
19. Tripod head with adjustment in Latitude
20. Clamp lever fixing the inclination of the polar axis
21. Finder telescope
22. Two section wooden field tripod
23. Tripod reinforcing band
24. Accessories tray
25. Sun diagonal
26. Eyepiece (HM 6mm)
27. 〃 (HM 12.5mm)
28. 〃 (H 20mm)
29. Sun-glass
30. Erecring prism
31. Sun projecting screen
32. Wooden carring case

FEATURES

1. Unique alt-azimuth & equatorial combination mount contributes to the versatility and ease of operation. The telescope moves on three axes, the Horizontal, Polar, and Declination. Since the Polar axis is supported by the Horizontal axis and can be fixed at any angle from vertical to horizontal, the telescope can be used as both an alt-azimuth telescope for terrestrial observation and equatorial telescope for astronomical observation.
2. The special design of the telescope permits its quick and easy assemblage and disassemblage, and it can be separated into three pieces, the telescope, mounting and tripod.
3. The free moving mechanism of the main tube permits positioning of the eyepiece and finder at will.
4. New designed optical parts and constructions are superior and precise.
5. In case of F.-385, Eyepiece craw tube provided will pull out tube and focused by helicoid motion. In astronomical observation, the polar axis points parallel the degree of latitude of its country. For keeping up the degree of latitude of the mount, it is adjusted by the latitude of adjustment bolt.

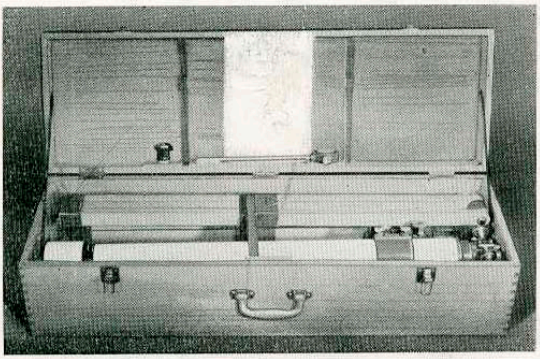


Fig. 2—Telescope packed in the carrying case.

ASSEMBLING

1. As shown in Fig. 1, the tube and tripod legs are tied with a tape in the carrying or packed position. When removing the telescope from the case, raise and pull out the eye-end section first.
2. Untie the tape as shown in Fig. 3.
3. Let the tripod legs down. Lift up the main tube by the mount section and the legs of the tripod will fall naturally into the position shown partially in Fig. 3.
4. The main tube slides freely. To balance the main tube, slide it a little toward the eye-end. Tighten the wing nuts on the tripod lightly. The legs of the tripod should not be spread apart too much.
5. Remove the balance weight and screw it in as shown in Fig. 4.
6. When footing is instable, secure the legs of the tripod with the chain.

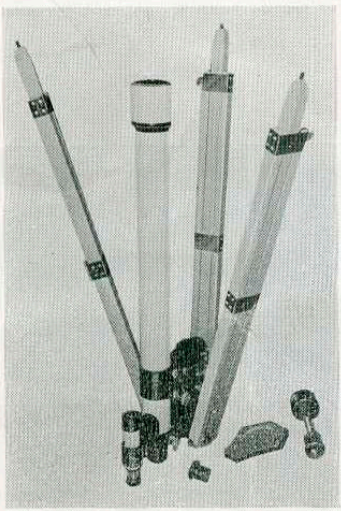


Fig. 3—Folding down the tripod legs, preparatory to setting the telescope

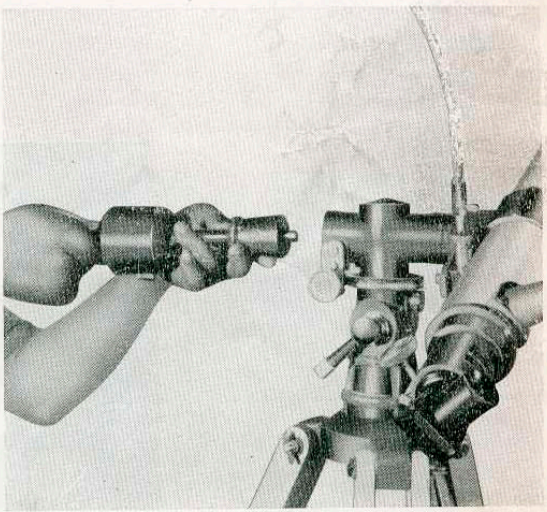


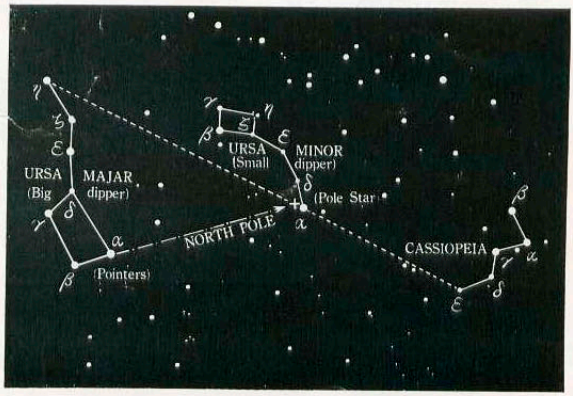
Fig. 4—Screwing the balance weight.

DISASSEMBLING

1. Disassembling procedure is the exact reverse of setting up. All accessories are firstly removed. Then the balance weight is unscrewed and removed.
2. The main tube, pointing straight up is pulled up as far as the eye end approaches to the tripod head and rotated to a position right by the pillar crevice, then, fold up the tripod legs one by one as shown in Fig. 3.
3. When tying the legs of the tripod and the main tube, the accessories tray is placed at the point of the middle bands of the folded legs. Then tie the telescope and tripod together by the tape.
4. To remove or turn the mounting from the tripod head, unscrew or loosen the clamp lever which is placed behind the tripod head.

TELESCOPE AS AN EQUATORIAL

1. Generally speaking, the daily and nightly movements of heavenly bodies in the sky are regular and unvarying. (This is because the celestial sphere turns on its axis of the north (south) pole of the heavens a motion identical with the rotation of the earth on its axis.) Accordingly the movements of the heavenly bodies can be followed by letting the telescope rotate around the axis which is parallel to the earth's axis. This parallel axis called the polar axis.
2. The polar axis points to true north, the angle of inclination being equal to the degree of latitude at the point of observation.
3. The equatorial mount of the telescope is built so that, as shown in Fig. 1, the polar axis of the telescope may point to the north pole of the heavens.
4. For practial purposes, it is sufficient to point the polar axis of the telescope at the North Star. Once this is done, the polar axis is secured at the place of observation and unless the telescope is moved, it is properly oriented.



Note :—A sketch of the area around North pole showing the Big Dipper (Ursa Major), the Small Dipper (Ursa Minor) and Cassiopeia.
In lining up the telescope for astronomical observation, the telescope is normally sighted on the North star.

ACCESSORIES

ASTRONOMICAL EYEPIECES

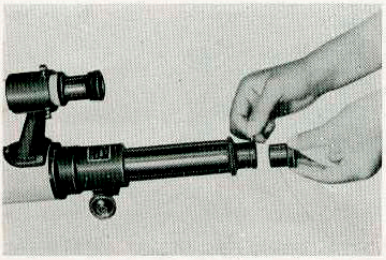


Fig. 5—Inserting the eyepiece into the adapter

1. As shown in Fig. 5. the astronomical eyepiece is inserted into the adapter simply by being pushed in and clamp with a screw. To focus, turn the focusing slow-motion knobs.
2. The magnifying power of the telescope can be obtained by dividing the focal length of the objective lens by the focal length of the eyepiece.
3. Observers who wear other than astigmatic glasses should, if possible, remove them in observation.
4. The tube of the astronomical eyepiece has the international standard diameter of 24.5 mm.

DIAGONAL PRISM

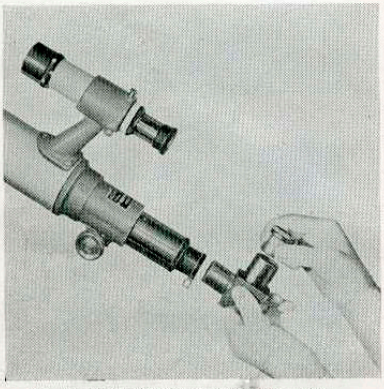


Fig. 6—Assembling the diagonal prism and eyepiece

1. The diagonal (right angle) prism is also known as the zenith prism. It permits greater ease in astronomical observation.
2. The diagonal prism is inserted as shown in Fig. 6. When the diagonal prism is inserted, the drawtube must be pushed into the depth of approximately 76.2mmto allow the diagonal prism's additional focal length.

SUN-GLASS

1. The sun-glass intercepting the heat and glare of the sun's rays, permits safe solar observation.
2. It is inserted as shown in Fig. 7.

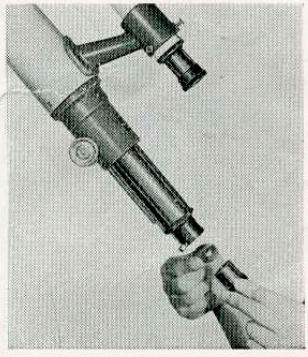


Fig. 7—Inserting the sun-glass

FINDER TELESCOPE

1. The finder is a small guide telescope and enables the observer to sight the object easily.
2. The eyepiece of the finder has crosswire. When the object, viewed through the finder, is centered at the juncture of the crosswire, it should be in the center of the view on the telescope. If you find this is not so, sight with your telescope some landmarks such as a smokestack or telephone pole at least 500 meters away. When this object is centered in the telescope's view, look through the finder and set the adjusting screw on the base of its mount till the object appears at the juncture of the crosswire.
3. To focus the eyepiece of the finder, turn the adjusting ring.

ERECTING PRISM

Any astronomical telescope shows an inverted image, and for terrestrial purposes the erecting prism is used. The image is erected by means of two right angle prisms. An astronomical eyepiece is attached. Considerably less light is lost than with the ordinary erecting eyepieces, and a wide field of view is obtained. If the prism is used, the drawtube will require shortening by approximately 10 cm.

SUN PROJECTION SCREEN

1. The sun projection screen, as its name indicates, is used for the projection of the image of the sun, as observed through the telescope, on the screen in observation.
2. The assembling of the sun screen is done as shown in Fig. 9. When attaching the ring of the rod holding the screen to the drawtube, be sure that the grooved side of the ring is directed toward the drawtube.
3. The HM 12.5mm eyepiece is used for projection of the image occupying 10 cm in diameter of the screen. Use of the diagonal prism will project an upright image on the screen.
4. For best results it is advisable to fasten a sheet of pure white paper on the reflecting side of the screen with a paper clip.
5. To get a magnified image of sun-spots use a high power eyepiece.

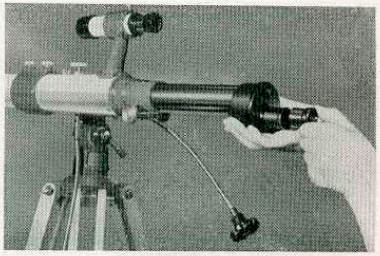


Fig. 8—Erecting prism

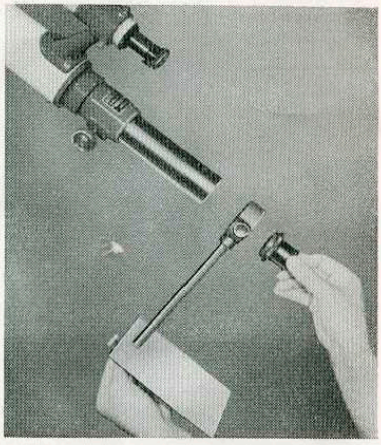


Fig. 9—Assembling the sun projection screen

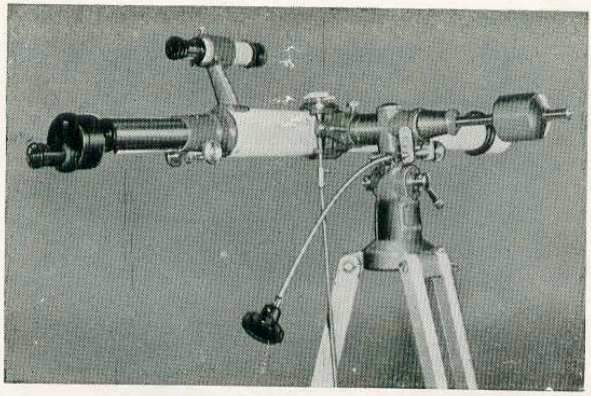


Fig. 10—Alt-azimuth posture of the telescope

THE TERRESTRIAL OBSERVATION

1. To observe the terrestrial objects, use the erecting prism and eyepiece.
2. Is this case, it is easier to use the telescope in an alt-azimuth position as shown in Fig. 10.
3. Always remember that under conditions of haze or fog, you will not be alre to see much more clearly, than you can see with your naked eye. Under such condition, it is advisable to use in as small as low a magnification as possible.

HOUR AND DECLINATION CIRCLE

Hour circle is fitted to the polar axis and Declination circle is fitted to the declination axis respectively. Hour circle graduated in 4 min. in time, and Declination circle graduated in 1° in degree. These circles enable so helpfull to the stellar observation or other as follows:

1. To find the stellar time at the instant of the observation.
2. To lead a faintest or dicernible heavenly body (but it position known) into the field of the telescope.
3. To observe the brilliant star as Venus in the day time.
4. To know the apparent position of a Comet or a Nova.
5. To set the telescope's pillar exactly.

BARLOW LENS

1. The Barlow lens gives twice the magnifying power of the telescope.
2. Slipe the lens into the eyepiece sliding sleeve, up to the center, then slide the eyepiece into the Barlow lens tube as shown in Fig. 11.
3. Magnifications with Barlow lens
   F - 384.....454×, 304×, 202×, 146×, 90×, 46×.
   F - 385.....454×, 304×, 202×, 146×, 90×, 46×, 36×.

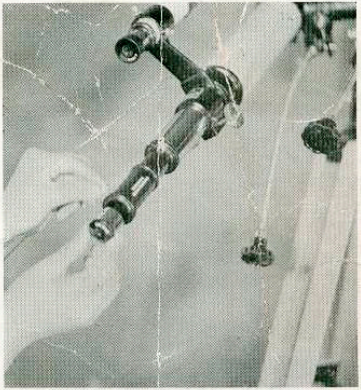
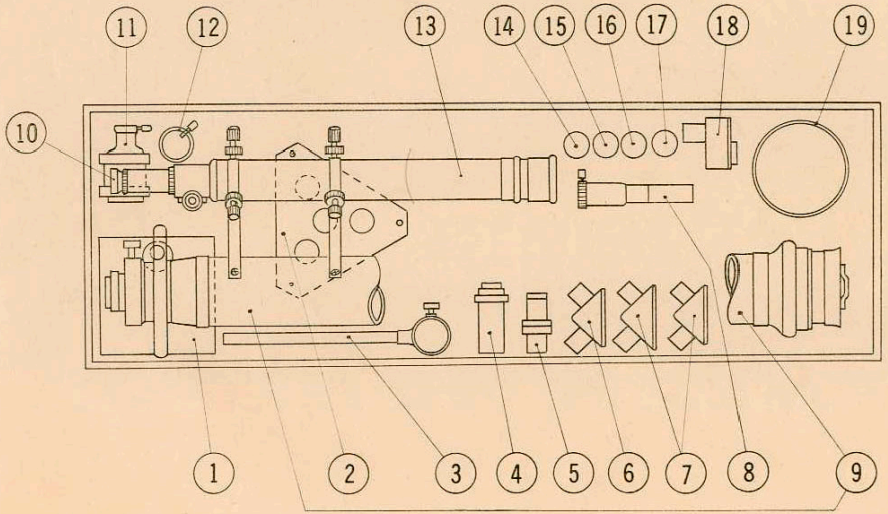


Fig. 11

ACCESSORIES DIAGRAM



1. Sun screen
2. Acceseries tray
3. Holder for the Sun projection screen
4. Eyepiece H 50 mm
5. 〃 KAH (26-32 mm)
6. Sun prism
7. Diagonal prism
8. Barlow lens
9. Telescope tube
10. Eyepieces H 20 mm
11. Eyepiece adapter
12. Eyepiece adapter for H 50 mm
13. Finder scope
14. Eyepiece Or 4 mm
15. 〃 HM 6 mm
16. 〃 HM 9 mm
17. 〃 HM 12.5 mm
18. Erecting prism
19. Dew cap