mirror, which returns the rays towards the centre of the large mirror and causes them to converge less rapidly. They then meet a small plane mirror supported at the point of intersection of the polar and declination axes, whence they are reflected down through the hollow polar axis as shown in fig. .2, and come to focus on the slit of the powerful spectroscope that is mounted on a pier in the chamber of constant temperature as shown in fig. 20. In this case the equivalent focal length is 150 ft.

(3) As a Cassegrain reflector, for photographing the moon, planets or very bright nebulae on a large scale, as shown in fig. 21 (c), with an equivalent focal length of 100 ft.

(4) As a Cassegrain reflector, for use with a spectroscope mounted in place of the photographic plate, fig. 21 (*d*); in this case a convex mirror of. different curvature is employed, the equivalent focus of the combination being 80 ft.

*Type E.—*In the *Comptes Rendus* for the year 1883, vol. 96, pp. 735-741, Loewy gives an account of an instrument which he calls an "equatorial coudé," designed (1) to attain greater stability and so to measure larger angles than is generally possible with the ordinary equatorial; (2) to enable a single astronomer to point the telescope and make observations in any part of the sky without changing his position; (3) to abolish the usual expensive dome, and to substi­tute a covered shed on wheels (which can be run back at pleasure), leaving the telescope in the open air, the observer alone being sheltered. These conditions are fulfilled in the manner shown in fig. 22. E P is the polar axis, rotating on bearings at E and P. The object-glass is at O, the eye-piece at E. There is a plane mirror at M, which reflects rays converging from the object-glass to the eye-piece at E. A second mirror N, placed at 45° to the optical axis of the object-glass, reflects rays from a star at the pole; but by rotating the box which contains this mirror on the axis of its supporting tube T a star of any declination can be observed, and by combining this motion with rotation of the polar axis the astronomer seated at E is able to view any object whatever in the visible heavens, except circumpolar stars near lower transit. An hour circle attached to E P and a declination circle attached to the box containing the mirror N, both of which can be read or set from E, complete the essentials of the instrument. There must be a certain loss of light from two additional reflections; but that could be tolerated for the sake of other advantages, provided that the mirrors could be made sufficiently perfect optical planes. By making the mirrors of silvered glass, one-fourth of their diameter in thickness, the Henrys have not only succeeded in mounting them with all necessary rigidity free from flexure but have given them optically true plane surfaces, notwith­standing their large dia­meters, viz., 11 and 15∙7 in. Sir David Gill tested the equatorial coudé on double stars at the Paris Observa­tory in 1884, and his last doubts as to the practical value of the instrument were dispelled. He has never seen more perfect optical definition in any of the many telescopes he has employed, and certainly never measured a celestial object in such favourable conditions of physical comfort. The easy position of the observer, the convenient position of the handles for quick and slow motion, and the absolute rigidity of the mounting leave little to be desired. In a much larger