Melbourne Observatory, and by Messrs. Beattie, Moors and Holloway, of Sydney, together with two or three amateur assistants.

Dr. Stefanik erected his instruments on a low hill about a couple of hundred yards south-east of the R.C. Church. The two British expeditions—one under the direction of the Rev. Father Cortie, of Stonyhurst College, the other under the direction of Dr. W. J. S. Lockyer, of the Solar Physics Observatory, South Kensington—selected a site on the north-west side of a low hill and near its summit, about two miles south of Neiafu.

Father Cortie was assisted by Mr. W. McKeon, photographer at Stonyhurst College, and by Rev. E. F. Pigott, of St. Ignatius College,, Riverview, near Sydney, N.S.W. Dr. Lockyer's party consisted of F. K. McClean (England), the writer, and W. E. Raymond (Sydney), Mr. H. Winkelmann (Auckland), and Mr. Anderson (England), who joined the party *en route*.

In addition, the British expeditions had the co-operation and very willing assistance of the officers and men of the H.M.S. "Encounter," beginning with Captain Colomb, who had charge of the telescope for watching the progress of the eclipse, and who had to call out the very instant the eclipse began. The "Encounter" took the "English" contingent to Vavau, arriving there about 2nd April, whilst the remainder of the party travelled by the Union steamer "Atua," which reached Vavau on the 4th of April. Thence on, every one was busy building concrete foundations for coelostats and siderostats, levelling ground for the erection of horizontal cameras and spectrographs, pier for transit instrument, stand for chronograph, etc., etc., all to be used in one way or another during the (then) coming eclipse.

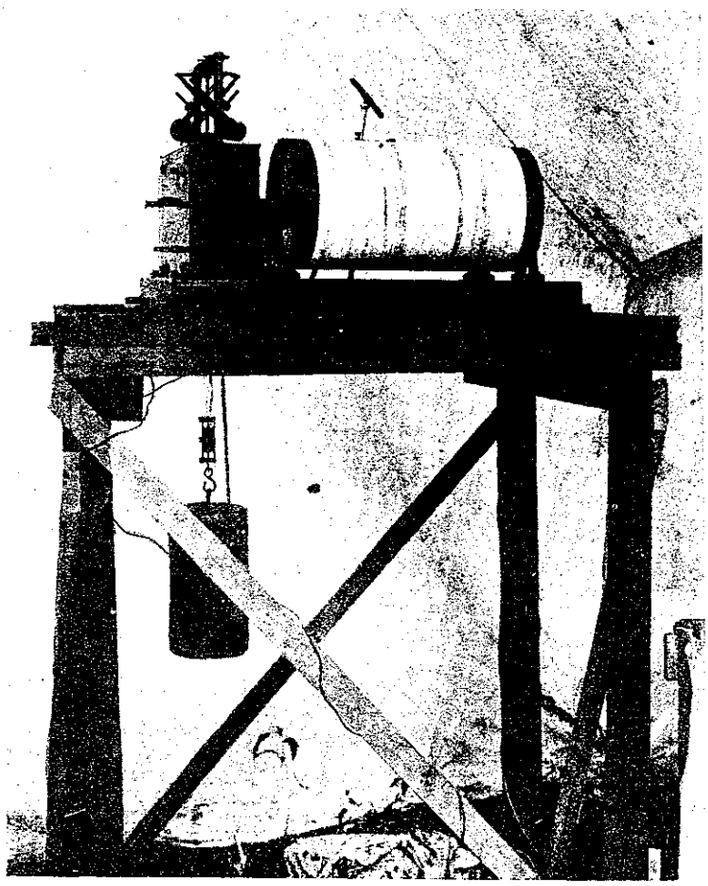
The instrumental equipment of Dr. Lockyer's party was a 6in. prismatic camera, 7½ feet focus, with four objective prisms of 45° angle, which Dr. Lockyer attended to. Lieut. Clover first operated a "Cusp" projector for indicating how far off the beginning of the totality was, then he went to a small spectrograph with a Thorpe replica diffraction grating. A 12in. siderostat reflected light to these instruments.

Mr. McClean's 21in. siderostat (by T. Cooke & Sons, of York) supplied light to a 10-foot concave grating spectrograph having a 6in. aperture Cooke photo-visual object glass of 31½ feet focal length. At the focus of this lens was a 2in. slit by Hilger, and the concave grating had 14.438 lines to the inch, having been ruled with a Roland engine in 1889. The films used were 24 inches (nearly) long and 3¼ inches wide, and exposed in a specially made dark-slide which held the half-dozen films at once, the exposure of each separate film being controlled by a rack and pinion in such a way that when the rack reached a certain place a stop indicated that that film was completely ready for exposure.

A 5in. doublet worked by the Rev. R. Pestall (of H.M.S. "Encounter"). Mr. Winklemann's telephoto camera of equivalent focus of 63 inches, and a very short focus, large apertured camera (which works at the unsual focal length of 1.6) were all fed, the two last by auxiliary mirrors, from the 21in. siderostat.

The writer had charge of the 16in. coelostat (lent to the expedition by the Government Grant Committee (England), and which supplied light directly to the 16ft. coronagraph, having a 4in. Cooke photo-visual object glass and giving an image of 1¾in. diameter, and to the 8ft. coronagraph, having an object glass of 4 ⅝in., and forming an image about ⅞in. in diameter. The 16-foot was worked by the writer, Lieut. Clutterbuck attending to the 8ft. An auxiliary mirror (10in. x 6½in., with corners cut off) reflected light from the coelostat to the 42-inch transparent grating spectrograph with a 4in. object glass, and in front of which was placed a transparent Thorpe grating of 17,000 lines to the inch, giving a visible spectrum of 10 inches. Lieut. Mortimer had charge of this instrument. Another auxiliary mirror (oval on shape) reflected light to Mr. Raymond's telephoto camera, the lens of which had an equivalent focal length of 9ft., and giving an image of nearly an inch in diameter. A 48in. focus 6in. doublet was mounted as an equatorial telescope, which Mr. Anderson looked after. Everything was ready and in good going order by the 27th April, and only a clear sky was needed to make the expeditions complete successes.

The morning of the 29th April broke with scattered clouds all over, but towards the critical time they cleared off, or, rather, thinned out apparently north and south of the island, whilst over the island it seemed to be all clouds. The "beginning" of totality was seen by us, then the clouds closed in again, and although just glimpsed at intervals, the eclipsed sun remained obscured until just about the middle of totality, when it was distinctly seen, but only faintly, and it remained more or less obscured until after the eclipse was over.



No. 3.—The Chronograph Worked in Conjunction with the Transit Instrument. *Winkelmann, Photo.*

No. 4.—The Six-Inch Steward Equatorial Telescope. *Winkelmann, Photo.*