"Total Eclipse of the Sun, 1901, May 18. Preliminary Account of the Observations made at Pulo Aoer Gadang, West Coast of Sumatra." By F. W. DYSON, M.A., F.R.S., Sec. R.A.S. Received October 24,—Read at Joint Meeting of the Royal and Royal Astronomical Societies, October 31, 1901.

I. *General Arrangements.*

The Admiralty having approved of expeditions from the Royal Observatory to observe the Solar Eclipse of 1901, May 18, I was instructed by the Astronomer Royal to occupy a station on the West Coast of Sumatra with the instruments used at Ovar in the eclipse of 1900, May 28. Mr. J. J. Atkinson, who accompanied the Observatory expedition to Ovar, again generously volunteered his assistance and is associated with me in all the observations. His advice and co-operation were of the greatest value throughout.

The programme of observations, which was arranged in concert with the Joint Permanent Eclipse Committee, was essentially the same as that carried out at Ovar.

The 16-inch cœlostat and the 4-inch rapid rectilinear (Abney) lens were lent by the Royal Astronomical Society, and Captain Hills kindly lent the spectrosopic equipment he used at the Indian eclipse, viz., a two prism flint spectroscope, a four prism quartz spectroscope, and a 12-inch heliostat.

At the request of the Royal Society the Admiralty placed H.M. gunboat "Pigmy" at the service of the observers in Sumatra. We are indebted to Lieut. and Com. Oldham for the ready manner in which he assented to our request to anchor off Gadang, and let us live on the "Pigmy." Without his cordial co-operation this station could not have been occupied. We are further indebted to him and to the officers and men of the "Pigmy" for assistance in erecting the huts and instruments, and for the large share they took in the observations on the day of the eclipse.

We received every assistance from the Government of the Dutch East Indies in the choice of station and arrangement with the natives, and were given free passes for ourselves and instruments on the railways. We are specially indebted to Mr. Joekes, the Governor of the West Coast of Sumatra, to Mr. Von Locken, the Assistant Resident at Painan, to Major Müller, the Director of the Ordnance Survey and Chief of the Dutch eclipse party, and to Mr. Delprât, the Director of Railways.

Itinerary.—The observing huts and instruments having been despatched some days previously, the 16-inch cœlostat mirror and some of the photographic plates were taken to Southampton and put

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on board the Dutch mail steamer "Koningen Regentes," at Southampton, on March 4. The observers joined the ship at Genoa, on March 14, and sailed in company with Mr. and Mrs. Newall, the Dutch eclipse party, and an American eclipse party from the Massachusetts Institute of Technology, direct to Padang in Sumatra, arriving there on April 6.

In consultation with Mr. Joekes the Governor of the West Coast and Major Müller the Director of the Ordnance Survey as to choice of station, it appeared that the small island of Pulo Aoer Gadang might be suitable, and the Governor kindly offered us the use of his yacht to visit the island on March 10. In company with Mr. Von Locken we chose a suitable site and made the necessary arrangements with the native chief who owned the island. Lieut. and Com. Oldham conveyed us with our instruments and materials for building huts to Gadang on March 13, and remained anchored off Gadang, except for short necessary visits to Padang for ice, fresh meat, &c., till May 25, one week after the eclipse. On this day the instruments were brought back to Padang for shipment to Europe, and the observers were conveyed to Singapore, which was reached in the early morning of June 2.

Station.—The particularly uncertain character of the weather in Sumatra made it desirable that stations as far apart as possible should be occupied by the different parties of observers. The stations occupied by different expeditions are shown on the accompanying map (A).

Sawah Loento, by Mr. Newall and by a party from the Massachusetts Institute of Technology.

Solok, by numerous American observers of the United States Naval Observatory expedition.

Fort de Koch, by American and Dutch observers.

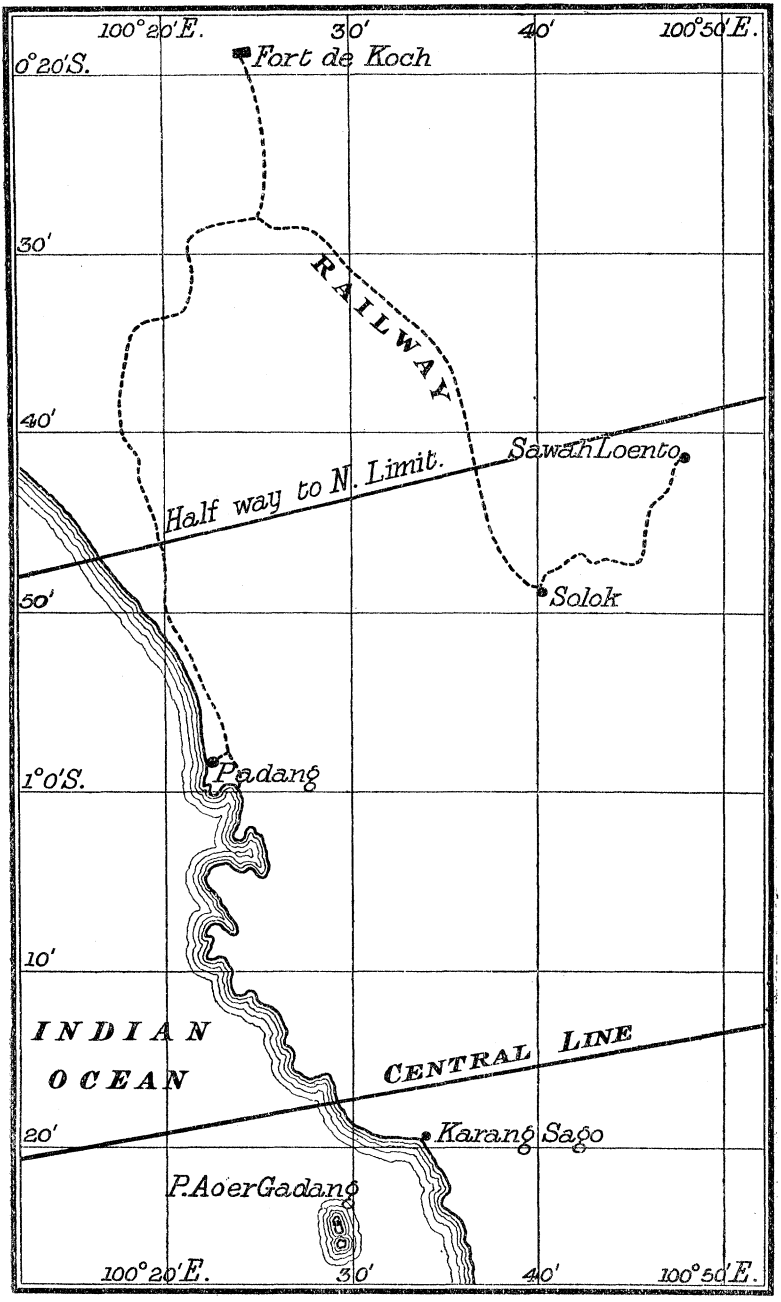
Padang, by the Lick Observatory party, French, Russian, and Japanese observers.

Karang Sago, by the Dutch party.

Aoer Gadang, by the Royal Observatory.

The presence of the "Pigmy" made it possible to occupy Aoer Gadang. This station had the advantage of being as far away as possible from the mountain range which runs parallel to the west coast of Sumatra. Solok and Sawah Loento are to the east of this range.

Aoer Gadang is a small island about 1 mile long and $\frac{1}{4}$ mile broad, surrounded by a coral reef. The site chosen for the eclipse camp was a small clearing near the eastern shore opposite a passage through the reef. Its position, as determined from large scale maps published by the Government of the Dutch East Indies, is lat. 1° 23′ 28″ S., and long. 100° 29′ 13″ E. of Greenwich. It is about 7 miles distant from


100° 20′ E.
30′
40′
100° 50′ E.
0° 20′ S.
Fort de Koch
30′
RAILWAY
40′
Sawah Loento
Half way to N. Limit.
Solok
50′
1° 0′ S.
Padang
10′
INDIAN
OCEAN
CENTRAL LINE
20′
Karang Sago
P. Aoer Gadang
100° 20′ E.
30′
40′
100° 50′ E.

the central line, 6 miles distant from the camp of the Dutch observers at Karang Sago, and 30 miles from Padang.

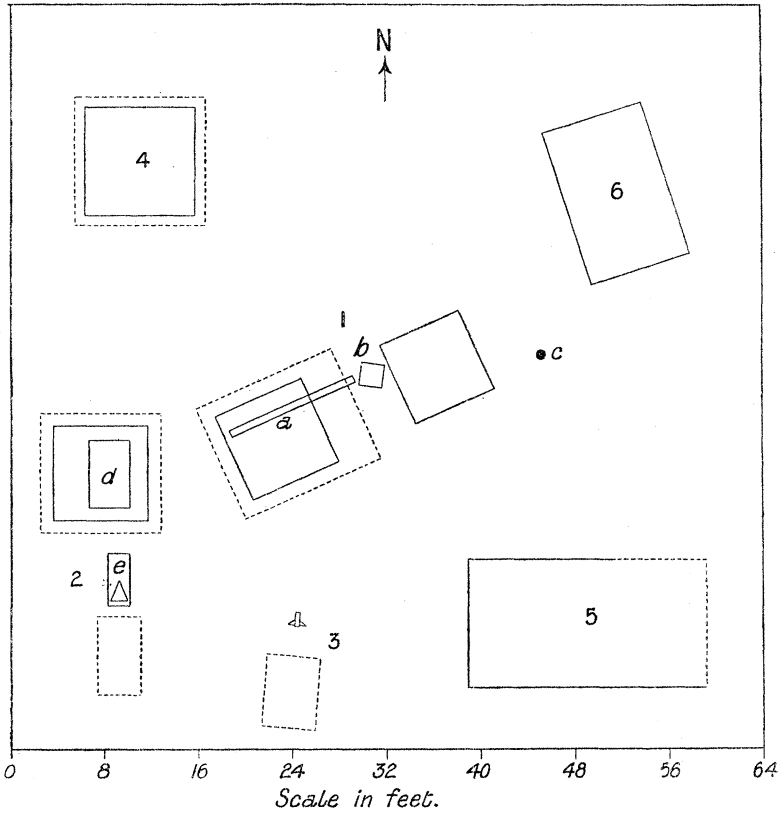
Erection of the Huts and Instruments.—The same light wooden frames covered with Willesden waterproof canvas which were used at Ovar in the eclipse of 1900, May 28, were taken out to Sumatra, with an additional one to serve as a developing room.* As a protection against sun and rain, these were supplemented by sheds, built in Malay style, of bamboos and thatched with *atap*, a species of palm leaf, which is obtained tied on laths about 4 feet long.

One open shed, 14 feet long and 12 feet broad, and 12 feet high at the gable, covered one of the two canvas huts and half of the second one, in which the Thompson coronagraph and the 16-inch cœlostat were placed. As at Ovar, the hut over the cœlostat was moved back a few feet during observations. Thatch was tacked on the roof of this hut. Similar sheds were fixed over the spectroscope hut and over the developing room. Thatch was also tacked all over the developing room hut. This, in addition to black waterproof paper inside, served to make the room light-tight. Movable sheds, each resting on four stout bamboos, were placed over the heliostat and condensing lenses of the spectroscopes and over the Dallmeyer photoheliograph. A house of bamboo and *atap* was also built, open on the east side and partly on the north, in which hammocks were swung, and where the observers lived at times when the "Pigmy" was obliged to leave for a short time. A tent was also erected for the two marines who were left on shore with the observers by Lieut. and Com. Oldham on such occasions. The general arrangement of the station is shown in the accompanying diagram. These huts, which were very satisfactory, were built under the superintendence of two Malay employés of Mr. Delprât, the Director of Railways.

The cœlostat was mounted on a concrete pier sunk about 18 inches into the ground, and rising 4 inches above it. The clock was screwed on to a box which was partly let into the ground, the weight being carried over a pulley on an iron bracket fixed on a palm-tree at a height of about 12 feet. The Thompson tube was mounted on boxes The table of the spectroscope was placed on four brick piers 4 feet high. The heliostat and condensing lenses were placed on a heavy box which rested on two rows of bricks, which raised it about 4 inches above the ground, the bricks being fixed on a bed of concrete. A foundation of brick and concrete was also provided for the Dallmeyer photoheliograph. In the building of the foundations, erection of piers, and putting together of the canvas huts we received every assistance from the officers and men of the "Pigmy," and are specially indebted to Lieut. Briggs and the engineer, Mr. Townsend. The erection of the huts and instruments occupied us till the beginning of May.

* 'Roy. Soc. Proc.,' vol. 67, p. 393.

PLAN OF ECLIPSE STATION AT AOER GADANG, 1901, MAY 18.



1. { *a*. Thompson coronagraph.
   b. Cœlostat.
   c. Palm-tree to which clock-weight was attached.
2. { *d*. Spectroscopes.
   e. Heliostat.
3. Double photographic camera.
4. Developing room.
5. Observer's house.
6. Men's tent.

Personnel.—The following list gives the names of those who took part in the observations:—

F. W. Dyson—Quartz spectroscope, Thompson coronagraph.

J. J. Atkinson—Flint spectroscope.

Lieut. and Com. Oldham—Double camera for small-scale photographs. Observed duration.

Lieut. Frewen—Gave signals of beginning and end of totality. Observation of stars.

Engineer Townsend—Set heliostat for corona spectrum, and again for second contact.

Surgeon Nimmo—Exposed at object glass of Thompson coronagraph. Observed duration.

Seven men from the "Pigmy" also assisted; two counting seconds with the aid of a metronome; one exposing in front of the condensing lenses for the spectroscope; one exposing in front of the object glasses of the double camera; and three assisting in handing plate holders to Mr. Dyson and Captain Oldham.

The mode of procedure, which was carefully rehearsed on several occasions previously, was as follows: The observers were stationed at their instruments, and Lieut. Frewen watched the diminishing length of the crescent of the sun on the ground glass of the coronagraph. He had a paper scale on which the lengths of the crescent were marked, computed at intervals of 3^m, 2^m, 1^m, 30^s, 20^s, 10^s before totality. At 3^m before totality Mr. Frewen called out "Stand by," and the metronome, which had been carefully rated, was started. At 1^m before totality he called out "Get ready." At the words "Thirty seconds" Mr. Dyson and Mr. Atkinson drew out the dark slides ready for exposure. At the word "Ten" the exposures for the "flash" spectrum were begun. At the word "Now" given at the moment of totality the time was recorded by Lieut. Oldham and Dr. Nimmo. Six seconds after totality Mr. Dyson and Mr. Atkinson changed the plates of the spectra and exposed for the corona spectrum, Mr. Townsend moving the image on the slit by the heliostat. Mr. Dyson then went to the Thompson coronagraph and made exposures as detailed below, while Lieut. Oldham exposed with the double camera. When the exposures with the Thompson were finished, about 30^s before the end of totality, Mr. Dyson returned to the spectroscope, where he and Mr. Atkinson changed the plates ready for the second flash, and Lieut. Frewen returned to the ground glass of the coronagraph, calling out "Now" at the instant of re-appearance, the times being noted as before by Lieut. and Com. Oldham, and by Surgeon Nimmo.

The Day of the Eclipse.—From May 1 to May 13 the weather was very fine in the early mornings, but the sky became overcast later in the day. On some of these days the observing conditions at the time of the eclipse were excellent, and on all were moderately good. On May 13, however, there was a heavy thunderstorm, and till May 17 the sky was generally overcast about noon. May 17 was a very wet day, and on May 18, the day of the eclipse, it was completely overcast at 6^h. At 8^h it began to clear, but during totality there was a good deal of light cloud in front of the sun. At 1 o'clock the sky was perfectly clear.

The following readings of the dry-bulb thermometer were taken on the day of the eclipse:—

	Local time. hrs.	mins.	secs.	Reading of thermometer. °
Beginning of eclipse	10	48	0	—
	11	0	0	88·8
	11	17	0	86·0
	11	30	0	85·0
	11	45	0	84·3
	12	0	0	81·8
	12	20	0	79·0
Beginning of totality	12	19	30	—
End of totality.....	12	26	50	—
	13	25	0	84·9
	13	40	0	84·9
	13	53	0	88·0
End of eclipse	13	58	0	—

As the temperature usually rose from 90° to 92°, there would seem to have been a fall of temperature of from 10° to 13° due to the eclipse.

The duration of the eclipse was observed by Captain Oldham as $6^m\ 20^s{\cdot}5$, and by Dr. Nimmo as $6^m\ 21^s{\cdot}5$. These times agree with those obtained by the Dutch observers at Karang Sago, who give for the duration $6^m\ 22^s$.* These times are 10^s less than that given in the Nautical Almanac, but agree closely with a prediction kindly forwarded by Dr. Downing (based on a value of 15′ 31″·47 for the mean semi-diameter of the Moon, derived from a recent discussion of eclipse observations), viz., $6^m\ 20^s$.

At the commencement of totality at Aoer Gadang a signal was flashed across to the Dutch eclipse camp by the "Pigmy" search-light, thus giving them a warning 16^s before totality occurred at their station.

During totality the sky was much darker than at Ovar in the eclipse of 1900, May 28. Venus, Mercury, and Aldebaran were seen. The corona appeared to be white; the polar plumes and the prominences were distinctly seen.

Development of the Photographs.—As stated in a previous paragraph, a fully equipped dark room was taken out to Sumatra. It was found before the eclipse that considerable care was needed in the development of photographs owing to the high temperature. Immediately after the eclipse the "Pigmy" went to Padang, returning the next day with 250 lbs. of ice. The photographs were developed on May 19 and five following nights. Thanks to the untiring assistance of Mr. Curtain, gunner of the "Pigmy," the development of the thirty-seven

* 'Proceedings of the Koninklijke Akademie van Wetenschappen te Amsterdam, 1901,' p. 87.

photographs, which was a somewhat trying and arduous matter, was carried out very satisfactorily, only one failure of any consequence occurring.

II. *Photographs of the Corona.*

The programme of observations was composed of two distinct parts:

(1.) Photographs of the corona on a large scale to show structural detail.

(2.) Photographs on a smaller scale with rapid lenses, to show the coronal streamers with the greatest possible extension, and to photograph the sky round the Sun for the detection of an intra-Mercurial planet, should one exist.

(1.) *Large-scale Photographs.*—The instrument used was the Thompson photographic telescope with object glass of 9 inches aperture and 8 feet 6 inches focal length, belonging to the Royal Observatory, in combination with a concave telephoto lens by Dallmeyer, of 4 inches aperture and 16 inches focus, fitted as a secondary magnifier, to give an image of the sun 4 inches in diameter, with a field (for full pencils) of 14 inches. The total length of the coronagraph was 12 feet, the equivalent focal length being about 36 feet. The focus was determined by the method used by the Astronomer Royal at the eclipses of 1896, 1898, and 1900, by means of the image of a gauze net in the plane of the plate reflected from the plane mirror of the cœlostat.* In the determination of the focus, which was done at night, Mr. Curtain, warrant officer, rendered great assistance. A cœlostat, with 16-inch plane mirror (made by Dr. Common), was employed to reflect the rays into the coronagraph, which pointed downwards to the mirror at an angle of 3° or 4°, and was in the azimuth 18° north of east on the day of the eclipse. The adjustment of the cœlostat was readily made by observations of the Sun with the attached theodolite in the usual manner.

The camera was furnished with eight plate holders, to take 15 × 15 inch plates, or for the shorter exposures 12 × 10 inch plates in a carrier.

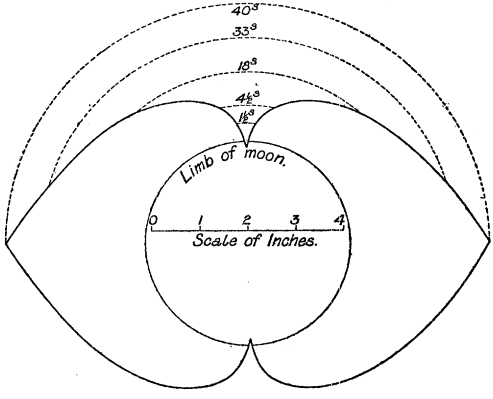
Two of the photographs were taken with a Burckhalter apparatus, made at the Royal Observatory, for graduating the length of exposure at different distances from the Sun's limb. For this purpose a zinc screen, whose form is shown in the diagram, and which was arranged to give what appeared to be suitable exposures at different distances (as shown by Professor Burckhalter's previous experience and Professor Turner's investigation of the diminution of the intensity of the coronal light) was rotated in front of the plate.

To accomplish this, photographic plates were obtained with a hole

* 'Monthly Notices, R.A.S.,' vol. 57, p. 105; 'Roy. Soc. Proc.,' vol. 64, p. 8; vol. 67, p. 397.

in the centre $\frac{3}{4}$ inch in diameter, through which a spindle, mounted on the back of the plate carrier, was passed. On this spindle the screen was fixed in the dark room after the plate had been put in the carrier.

Occulting Shutter for Photographs of Corona by Burckhalter's Method.



The figures against the dotted lines show the effective exposures at different distances from the Sun's centre.

During the exposure, the observer turned a small handle about once a second, which, by a suitable train of wheels, caused the screen to turn about eight times a second. The apparatus appears to work perfectly smoothly, as the limb of the Moon is sharply defined on the photographs taken.

The eight slides were exposed as below, the exposures being made at the object glass by Dr. Nimmo:

	Exposure.			Plate.	
	Beginning.	End.	Duration.		
	m. s.	m. s.	secs.		in.
1	0 30	0 40	10	Mawson Photo-mechanical.	12 × 10
2	1 0	1 10	10	Edwards' Ordinary.	12 × 10
3	1 20	1 40	20	Ilford Empress.	15 × 15
4	2 0	2 40	40	„ „	15 × 15
5	2 50	3 30	40	Barnet Rocket.	15 × 15
6	3 40	3 45	5	Imperial Ordinary.	12 × 10
7	4 5	4 15	10	„ Sovereign	15 × 15
8	4 35	4 55	20	Wratten and Wainwright Ordinary.	12 × 10

A ninth plate was taken at 1 o'clock, local time, on which two exposures were made (the driving clock being stopped for two minutes between) for determination of the orientation of the plates.

"Abney" squares were printed on No. 6 when the plates were put in their carriers the night before the eclipse. The exposure given was 15^s to the light of a standard candle at the distance of 5 feet.

Of the eight photographs taken, the two by Burckhalter's method of an occulting shutter, are failures. The failure is not due to any fault in the method, but apparently is entirely owing to insufficient exposure, the corona photographed on the plates not extending as far as had been anticipated from previous eclipses. It seems probable that with a clearer sky these would have been quite satisfactory.

The other six photographs are excellent. The programme of exposures, which was carefully arranged with the Astronomer Royal before leaving England, has resulted in a well graduated series of photographs from No. 1, which shows the prominences and a small amount of corona to No. 5 in which the extension is shown to about 25′ from the Moon's limb. The polar plumes and the coronal streamers are well brought out, as well as the remarkable detail of the inner corona. Two features call for special note: (1) the polar streamers round the Sun's north pole are not nearly so extensive as those round its south pole; (2) a very remarkable arch in the corona round the large prominence at position angle 145° (measuring N.E.S.W.). Round this prominence three separate arches are shown, one inside the other, their radii being 1′·2, 2′·4, and 3′·7 respectively. They have the appearance of layers of clouds over an eruption.

(2.) *Small-scale Photographs to show Extension of the Corona.*—The double camera was used in this eclipse exactly as at Ovar to carry a Dallmeyer rapid rectilinear lens of 4 inches aperture and 34 inches focus working at $f/8$ (lent by the Royal Astronomical Society), and a "Unar" lens, by Ross, of 2·4 inches aperture and 12 inches focus, working at $f/5$.

Eight plate-holders, each taking a pair of 16 cm. × 16 cm. plates, were used during totality. The exposures, to avoid any possibility of shake, were made by holding a cover in front of the object glasses.

The mounting was exactly as at Ovar.

The exposures were as follows:—

No.	Duration. secs.	Plate.
1	5	Wratten and Wainwright Instantaneous.
2	20	Ilford Empress.
3	10	Imperial Ordinary.
4	35	Imperial Special Rapid.
5	20	Imperial Ordinary.
6	35	Imperial Sovereign.
7	5	Wratten and Wainwright Instantaneous.
8	10	Imperial Ordinary.

Abney squares were printed on No. 6 by exposure to a standard candle at a distance of 5 feet for 4 minutes with the Dallmeyer lens, and 8 minutes with the Unar lens. It had been intended to print squares on several plates, but the number of photographs to be dealt with made it necessary to limit work as much as possible the night before the eclipse when the photographic plates were taken from sealed tins and put in their carriers, and after the eclipse it was necessary to finish the developing as soon as possible. Of these photographs Nos. 5, 6, 7, 8 are the most successful. The extension shown with the Abney lens reaches to 66′ from the centre, and with the Unar lens to 77′.

Venus and Mercury and a number of stars are shown on the Unar plates. No. 5 is the best, and shows 7 stars of the Pleiades and 25 others of magnitudes ranging from 4 to 6, which have been identified. Unfortunately, owing to the clouds, stars are not equally well shown all over the plate, and δ Tauri ($4^m{\cdot}0$) and θ Tauri ($3^m{\cdot}9$) are not shown; γ Tauri ($3^m{\cdot}9$), which is near θ Tauri, is, however, shown.

It may be concluded that any object appreciably brighter than $4^m{\cdot}0$ within the area covered by the plate (*i.e.* within 15° of the Sun) would have been shown.

III. *The Spectroscopic Cameras.*

The two spectroscopes used by Captain Hills at the Indian Eclipse of 1898 were kindly lent by him, and were used in Sumatra with the following adjustments:—

	Spectroscope No. 1.	Spectroscope No. 2.
Objective	Cooke, achromatic, 4½-in. aperture, 6-ft. 2¼-in. focus.	Single quartz lens, 5-in. aperture, 4-ft. 7-in. focus.
Collimator and camera lenses	Single quartz lens, 2½-in. aperture, 30-in. focus.	Single quartz lens, 3-in. aperture, 33½-in. focus.
Prisms	Two dense flint prisms of 60°, 4½-in. base, 2½-in. height.	Four double quartz prisms of 60° (each prism being composed of two half-prisms of right- and left-handed quartz), 3½-in. base, 2¾-in. height.
Slit.....	1½ in. by 0·0015 in.....	2 in. by 0·0012 in.
Prisms at maximum deviation for	H (λ 4340)	λ 3500.

The width of the slit of the flint spectroscope was obtained by means of the diffraction images, and that of the quartz was checked in the same manner.

The length of the spectrum of the flint is 3¼ inches from Hβ

(λ 4861) to K (λ 3934), and for the quartz 3 inches from λ 4000 to λ 3300. In order to obtain a greater length of spectrum in focus, the plate holders were made, at Mr. Davidson's suggestion, to carry two plates $3\frac{1}{4}$ inches wide, inclined at a suitable angle, instead of one $6\frac{1}{2}$ inches wide.

Both spectroscopes were mounted horizontally, and supplied with light by a heliostat furnished with a 12-inch flat mirror. The heliostat was adjusted in the usual manner by means of the attached theodolite.

Programme of Exposures.—The two spectroscopes were adjusted to be as nearly as possible on the Sun's limb simultaneously, and the programme of exposures was the same for both. The cameras were provided with rack movements so that a number of exposures could be made on the same plate. The programme arranged to take—

(i.) A number of short exposures from 10^s before to 6^s after the beginning of totality for the "flash" spectrum.

The plate carriers were then changed, and

(ii.) An exposure for the spectrum of the corona made from 15^m or 20^s after the beginning of totality, and continued for $5\frac{1}{2}$ minutes—the exposure ending at $5^m\ 50^s$ from the beginning of totality.

The plate carriers were again changed, and

(iii.) From $6^m\ 10^s$ from the beginning or 10^s from the end of totality, exposures were to be made for the "flash" at third contact.

Between (i) and (ii) the image of the Sun was to be brought by the slow motion of the heliostat from being nearly tangential to the slit to a position in which the horizontal diameter was divided by the slit in a ratio of 1 : 3. Again, between (ii) and (iii) it was to be brought nearly tangential.

A hitch occurred between (ii) and (iii), and the "flash" at second contact was not obtained.

The plates used for the "flash" at the beginning of totality were Edwards' Isochromatic and Ilford Empress for the flint spectroscope, and Ilford Empress for the quartz.

For the corona, "Snap-shot," Isochromatic, and Rocket plates were used for the flint spectroscope, and Imperial Special Rapid for the quartz.

The Corona Spectrum.—The continuous spectrum of the corona is shown from D_3 (λ 5876) to λ 3350. The green line at 5304 is strongly shown. The lines at 4568, 4233 and 3987 are shown. No new lines are shown. In the ultra-violet the lines at 3801, 3456 and 3381 are strongly shown, and possibly some fainter lines. The wave-lengths have not yet been determined accurately. No absorption lines are shown.

The Chromospheric Spectrum.—This is obtained on the different plates extending from D_3 (λ 5876) to a little beyond 3300. The photographs are not on the whole so good as those obtained at Ovar, but will serve

to supplement at the two ends of the spectrum, 70 lines being shown between Hβ (λ 4861) and D_3 (λ 5876), and 100 between 3500 and 3296.

"Total Eclipse of the Sun, 1901, May 18. Preliminary Account of the Observations made at the Royal Alfred Observatory, Pamplemousses, Mauritius." By E. WALTER MAUNDER, F.R.A.S. Received October 24,—Read at Joint Meeting of the Royal and Royal Astronomical Societies, October 31, 1901.

General Arrangements.

An expedition from the Royal Observatory to observe the Solar Eclipse of 1901 in the island of Mauritius having been sanctioned by the Admiralty, I was instructed by the Astronomer Royal to proceed to that island, there to act in concert with the Director of the Royal Alfred Observatory, Mr. T. F. Claxton, who had expressed his desire to co-operate in the observation of the eclipse. In accordance with a scheme approved by the Joint Permanent Eclipse Committee of the Royal and Royal Astronomical Societies, I took out with me two instruments belonging to the Royal Observatory, Greenwich, for photographing the corona; the one giving an image of the Moon 2·4 inches in diameter, and intended to secure the general structure of the corona, and the other giving an image 0·3 inch in diameter, and intended to secure the outer coronal streamers. The Joint Permanent Eclipse Committee lent for use in combination with these instruments two cœlostats, the one carrying a mirror of 16 inches diameter, the other one of 12 inches. A third mirror, one of 12 inches diameter, was kindly lent by Mr. Frank McClean, F.R.S. My equipment was completed by the generosity of Mr. John Evershed, F.R.A.S., who very kindly placed his prismatic camera of 2 inches aperture at the disposal of the Astronomer Royal for my use in the eclipse.

I was warmly welcomed in Mauritius by the Director of the Royal Alfred Observatory, Mr. T. F. Claxton, and by his Chief Assistant, Mr. A. Walter. Both identified themselves completely with me in my work, and helped me in every possible way. We therefore combined the instruments which I had brought out with those of the Observatory, and worked with them as though we formed but one party, and as if the instruments were all part of the same equipment.

I was also greatly indebted to Sir Charles Bruce, G.C.M.G., the Governor of the island, and to Sir Graham Bower, K.C.M.G., the officer administrating the Government during the Governor's absence, for the ready hospitality which they extended to me. Through their action, also, my instruments were landed without Customs examina-