

mination of Lines of Position and Geographical Position at Sea," by Lieut. R. de Aquino, the second edition of which was reviewed in NATURE for February 6 last (vol. xc., p. 617).

THE proceedings at the conference on the theory of radiation, held in Brussels in 1911, have been referred to in two articles in NATURE. The first appeared on November 16, 1911 (vol. lxxxviii., p. 82), and the second on January 16, 1913 (vol. xc., p. 545). We have now received a copy of a volume containing the papers read at the conference and reports of the discussions upon them; it is printed in French, edited by MM. P. Langevin and M. de Broglie, and published by M. Gauthier-Villars, of Paris, at the price of 15 francs.

### OUR ASTRONOMICAL COLUMN.

#### ASTRONOMICAL OCCURRENCES FOR MARCH:—

- March 2. oh. 24m. Jupiter in conjunction with the Moon (Jupiter  $5^{\circ} 22' N.$ ).
3. 22h. 50m. Uranus in conjunction with the Moon (Uranus  $4^{\circ} 2' N.$ ).
4. 8h. 30m. Mars in conjunction with the Moon (Mars  $3^{\circ} 19' N.$ ).
9. 2h. 53m. Mercury in conjunction with the Moon (Mercury  $1^{\circ} 29' N.$ ).
11. 8h. 30m. Venus in conjunction with the Moon (Venus  $2^{\circ} 1' N.$ ).
13. 12h. 36m. Saturn in conjunction with the Moon (Saturn  $6^{\circ} 23' S.$ ).
17. 8h. 43m. Neptune in conjunction with the Moon (Neptune  $5^{\circ} 34' S.$ ).
19. 3h. om. Venus at greatest brilliancy.
20. 17h. 18m. Sun enters Sign of Aries, Spring commences.
21. 23h. 58m. Moon eclipsed, invisible at Greenwich.
29. 14h. 29m. Jupiter in conjunction with the Moon (Jupiter  $5^{\circ} 19' N.$ ).

THE SOLAR ACTIVITY.—A sun-spot of unusually high latitude is at present visible on the solar disc. First seen on February 19, when it had just come over the eastern limb in heliographic latitude about  $35^{\circ} N.$ , the spot has since developed somewhat, and on Monday last the leading nucleus was fairly large and dense. An outbreak in such a high latitude possibly marks the beginning of a new sun-spot cycle, for the new cycles generally commence at a great distance from the equator, while the old cycle is dying away near the equator.

As pointed out in Monday's *Times*, the epoch of the next maximum of spot activity is somewhat uncertain because the previous maximum, 1906, was late, and presented a double peak.

PHOTOGRAPHIC MAGNITUDES OF STARS IN COMA BERENICES.—On five plates taken with a 4-in. anastigmat portrait lens, Herr Hnatek has measured the extra-focal images of 104 stars in the asterism Coma Berenices, and publishes the results in No. 4629 of the *Astronomische Nachrichten*. In addition to the definitive mean magnitudes, ranging from 5.2 to 10.3, Herr Hnatek gives the magnitudes as determined from each of his five plates, the B.D. number, the spectral type (Harvard), and the differences between his own and five other measures by various observers; these comparisons show differences varying with magnitude and spectral type. For example, it is seen that the difference of magnitude Hnatek-Pickering

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increases as the temperatures decrease, and amounts to 0.43 mag. for class K stars.

THE DISTRIBUTION OF SPECTROSCOPIC BINARY STARS.—From Prof. Stroobant we have received an abstract from the *Comptes rendus* (vol. clvi., p. 37), in which he has discussed the distribution of spectroscopic binaries, as compared with other stars, in the celestial sphere. Dividing the sphere into  $20^{\circ}$  zones of galactic latitude, he finds that of the 306 stars given in Campbell's second catalogue of spectroscopic binaries, 217 lie within the zone  $+30^{\circ}$  to  $-30^{\circ}$  galactic latitude, and only eighty-nine without it. For naked-eye stars generally, the proportion is 3154 to 2565, according to Houzeau.

This preponderance near the Milky Way is found to be due to the relatively large number of helium stars among the binaries, about 35 per cent. of the total, for, according to Pickering, 93 per cent. of 686 helium stars are to be found in the galactic zone.

HIGH-LEVEL MEASUREMENT OF SOLAR RADIATION.—In No. 1, vol. xxxvii., of *The Astrophysical Journal* Prof. Very discusses the conditions affecting the measures of solar radiation at high levels. Taking measures made up to nearly 30 km., he shows that aqueous vapour, the chief atmospheric absorbent of solar radiations, is still present, in appreciable quantities, at these great altitudes; thus the limits of the aqueous atmosphere are extended much further than some meteorologists have thought to be possible. Having reduced observations made at sea-level, 4420 and 13,700 metres, he finds thermal equivalents, at these heights, of 1.5, 2.00, and 2.86 cal./sq. cm. min. respectively, and by plotting these results gets a value for the solar constant of radiation of 3.5 cal./sq. cm. min.

### THE BLEACHING OF FLOUR.<sup>1</sup>

EARLIER reports to the Local Government Board on the chemical changes produced in flour by bleaching, which have been summarised already in these columns, have been written with the object of producing chemical evidence of the supposed injurious effect of bleaching. A recent legal decision of considerable moment has stated that the presence of 3.43 parts of nitrites per million does not alter the genuineness of flour, and that it is admitted that no injurious effects from such a quantity of nitrites can be proved. The result of commercial bleaching is merely to alter the colour of flour to suit the taste of the consumer without altering the nature, substance, and quality of the flour so as to render it a different article.

In the present report, Dr. Monier-Williams admits evidence which brings his views more into line with those prevailing elsewhere.

Following the suggestion of Wesener and Teller, the colouring matter of flour has been compared by him with carotene, the yellow plastid colouring matter of plants which is so obvious in the carrot. The method of comparison adopted is a physical one, namely the examination of the absorption spectra of the two pigments, which are shown to be identical. The colouring matter of flour is thus established as carotene.

Pure carotene crystallises in small leaflets of an intense red colour, which, on exposure to the air, gradually absorb oxygen and form a colourless compound. Carotene also absorbs practically its own weight of nitrogen peroxide, forming colourless compounds of unknown nature, which, however, all give

<sup>1</sup> Report to the Local Government Board by Dr. G. W. Monier-Williams. Food Reports, No. 19. October, 1912. Price 3d.