R-branches increases regularly with decreasing frequency, the extreme limits being 9.6 and 11.8 cm^{-1}; but the average value, 10.6 cm^{-1}, agrees exactly with that found in the laboratory. Of further interest is the absence of the first member of the P-branch, which is also missing from the laboratory spectrum.

The only important source of disagreement between the laboratory and solar observations lies in the wave numbers of the band components, which are systematically 3 cm^{-1} lower than those given by the laboratory measurements. In view of the much higher resolution obtained with the solar spectrometer, the discrepancy is perhaps to be expected. Infra-red wave-lengths at Lake Angelus are determined, by use of overlapping orders, with respect to visual Fraunhofer lines whose wave-lengths are known with high precision. In this way, the wave-lengths of infra-red lines can be determined with an error appreciably less than 0.1 cm^{-1}.

As a check on the identification of the 1.66μ band, a search was made for additional zero branches of the methane spectrum observed in the laboratory[4] at 4216, 4313, and 4546 cm^{-1}. Three prominent features were found close to the expected positions, as shown in Fig. 1.

Very recently, Migeotte[5] has observed 14 regularly spaced and intense lines in the 3.4μ region, which he ascribes to atmospheric methane. The spectroscopic evidence for the existence of methane in the earth's atmosphere therefore seems conclusive.

A preliminary analysis of the 1.66μ band indicates a high order of agreement with the theory of the CH_4 molecule as developed by D. M. Dennison and others.[6] The details of the analysis will be published in the Astrophysical Journal. We wish to acknowledge the helpful advice of Professors E. F. Barker and D. M. Dennison of the University of Michigan.

[1] McMath, Adel, Goldberg, Mohler, Phys. Rev. **72**, 644 (1947).
[2] J. G. Moorhead, Phys. Rev. **39**, 83 (1932).
[3] W. V. Norris and H. J. Unger, Phys. Rev. **43**, 467 (1933).
[4] Cf. Herzberg, *Infrared and Raman Spectra*, p. 308.
[5] M. V. Migeotte, Phys. Rev. **73**, 519 (1948).
[6] D. M. Dennison, Rev. Mod. Phys. **12**, 175 (1940).

Errata: Second-Order Corrections to Quadrupole Effects in Molecules

[Phys. Rev. **73**, 627 (1948)]

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THE right-hand side of Eq. (1) should read:

$$\left(\frac{3eqQK}{8I(2I-1)J(J+2)}\right)^2\left(1-\frac{K^2}{(J+1)^2}\right)\times\frac{(F(F+1)-I(I+1)-J(J+2))^2}{(2J+1)(2J+3)}\times(I+J+F+2)(J+F-I+1)(I+F-J)(J+I-F+1).$$

The second line on the right of Eq. (2) should read:

$$[1-(K^2/(J+2)^2)][1/(2J+1)(2J+5)].$$

A Possible Influence of the Moon on Recurrent Geomagnetic Activity

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THE tendency for magnetic activity to recur at 27-day intervals has suggested the rotation of the sun as the cause and has led to extensive studies to discover what solar features may be associated with the terrestrial magnetic activity. Recently we have given evidence[1] for a connection between the appearance of patches of bright flocculi at the east limb of the sun and the relatively abrupt recurrent onsets of terrestrial magnetic activity in 1943–44. We now wish to call attention to a correspondence between certain recurrent magnetic activity and the moon's declination.

Such 27-day recurrent magnetic activity is not always conspicuous. It can be readily seen in several series from 1930 to 1933, which are portrayed in Fig. 5 of reference 1.[2] The first series shown there began with the abrupt onset of February 12, 1930. The ten onsets in this series (designated by +'s) came within two days after the dates of maximum northerly declination of the moon.

In the second series, which began on April 19, 1930, the eight onsets (designated by ●'s) came within one day of maximum southerly declination of the moon.

In the third series, beginning on November 24, 1930, the eight onsets (designated by diamonds in Fig. 5—1) came within one day of maximum southerly declination.

In the fourth series (designated by X's), beginning on June 26, 1931, the onsets came three and then four days before the moon's maximum southerly declination. Directly following, there is a series, not designated in Fig. 5—1 but readily seen, with onsets on November 13 and December 10, 1931, January 7, February 3, March 2, March 28, April 22, and May 21, 1932, all of which occurred within two days of the dates of maximum southerly declination of the moon. Early in the long fifth series, designated by triangles and beginning with November 4, 1931, the onsets came four days after maximum northerly declination of the moon, but the lag decreased as the series progressed until at the end it was only one day.

The onsets of the three conspicuous mounds of activity in 1933 designated by squares in Fig. 5—1 occurred on the dates of maximum southerly declination of the moon.

In 1943–44 the onsets of the main series of mounds of activity, shown in Fig. 1 of reference 1, generally came near maximum northerly declination of the moon while those of the other series came near maximum southerly declination. The onsets in the main series lagged behind maximum northerly declination in the middle of the series by four or five days, but later by as little as one day.

In a well defined series which began about January 29, 1923, seven consecutive onsets all came two days or less before the dates of the moon's maximum northerly declination.

Other series can be found throughout the years in which the onsets do not come near the dates of maximum declination of the moon but they appear to be less prominent