

mula. The following well-determined times of heliocentric minima observed photoelectrically have been added to those used by de Sitter:

Heliocentric J.D.	<i>E</i>	Phase	O—C
2429875.6902	10475	+ .0042	.0000
2430028.6812	10603	+ .0031	— .0010
0322.7125	10849	+ .0026	— .0010
2085.7011	12324	— .0040	— .0002
2115.5827	12349	— .0038	.0000
2152.6358	12380	— .0035	+ .0001
2452.6460	12631	— .0019	+ .0004
2820.7853	12939	— .0005	— .0004
2862.6189	12974	— .0006	— .0009

The epochs are numbered as in Dugan's and de Sitter's papers. The phases in the table were computed by the formula:

$$\text{Phase} = 0.836643729 \text{ (J.D.} - 2432862.6197\text{)}.$$

The variation is represented by

$$0^d.0041 \sin (E - 195) \frac{360^\circ}{3190}.$$

The representation of the minima published in de Sitter's paper is very poor. Both Dugan and de Sitter used normal points with very large scatter. The Washburn Observatory minima are determined from observations made on single nights, the last three from measures recorded on an Esterline-Angus recording meter. Because of the poorly determined early minima, the preliminary period of the variation—3190 epochs—is very uncertain. If accurate observations of the times of minima between 1933 and 1940 are available, it should be possible to decide between the two periods, 5499 E and 3190 E.

*Washburn Observatory,
Madison, Wis.*

Jose, Paul D. The spectrum of Comet 1948 I.

The first spectrogram of Comet 1948 I was obtained at the McDonald Observatory on November 14, at 12^h9^m UT. The comet was extremely bright and could easily be photographed with the quartz prisms and the 500 mm camera giving a dispersion of about 50 Å/mm at λ4000. The spectrum was guided accurately so that the nucleus of the comet which had a stellar appearance could be kept in the same place on the slit throughout the exposure. The continuous spectrum of the nucleus is very strong and the absorption lines of the solar spectrum are prominent. The emission features of the comet are relatively faint. We distinguish the very prominent bands of CN and those of C₂. In addition there are many of the other bands which are

usually found in comets but a detailed study of this spectrum has not yet been undertaken. The group of lines in the vicinity of λ4050 which Herzberg has identified with the molecule CH₂ is present but is rather weak on this plate. I would like to call attention especially to a group of lines in the vicinity of λ4300. This is the band of CH designated as A²Δ → x²Π. This is usually a complex band showing several branches. The strongest line is at λ4313 belonging to the Q branch of the band. This group of lines is blended on this spectrogram but it is clearly visible. Just to the violet of it we see another line or group of lines with a wave length of about λ4304. This line would correspond to the R branch of the band and it is usually second in intensity in cometary spectra. Still further to the violet we see another emission feature at a wave length of about λ4296. This too should be a group of lines belonging to the R branch. It seems to me that the middle line at λ4304 has a slightly different distribution of intensity along the slit than do the other two lines. I would like to ask you to remember this feature so that you can compare it with the next spectrogram which was taken on November 17. This plate was obtained with the quartz prisms and a camera having a focal length of 180 mm. The dispersion is thus very much smaller than on the preceding spectrogram and it is difficult to say very much about the distribution in the line at λ4304. However, the spectrogram is interesting because it is very much stronger and it seems to show a strengthening of the emission features relative to the continuous spectra of the nucleus. Next, we come to a spectrogram which was taken on November 19 at 12^h5^m UT. This plate was obtained using a pair of glass prisms with a camera of 180 mm in focal length. The dispersion is somewhat smaller than that used for the first plate but it is about twice that used for the spectrogram on November 17. The definition is particularly fine on this spectrogram and I would like here to stress especially the unsymmetrical distribution of the intensity along the slit as shown by the line at λ4304. You will notice that it extends almost wholly towards one side of the nucleus and differs in this respect very greatly from most of the other lines including those which belong to the same band. The feature to which I have called attention is undoubtedly real and is interesting in connection with the fact that during the exposure the slit was held in the parallel as is usually done for stellar exposures. This means that the tail of the comet extended