These pulses appear to be associated with "sources" B and C rather than "source" A on Jupiter. Different forms of burst structure may occur on different frequencies at the same time, and on occasions different polarizations occur simultaneously on different frequencies.

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Some Results of Stellar Infrared Narrow-Band Photometry. PHILIP E. BARNHART AND WALTER E. MITCHELL, JR., *Perkins Observatory*.—Some interpretations are offered for data obtained in a program of stellar infrared irradiance measurements made in the atmospheric windows at 2.2 and 3.6 μ using Eastman Kodak Company plumbide detectors (p-type lead sulfide) at 72°K behind narrow-band interference filters.

Numerous attempts to measure definitive extinction properties of the terrestrial atmosphere have led to the postulation of a patchy obscuration produced in vertically elongated elements. Similar results have been recorded for solar radiation by Gates and Harrop (*Appl. Opt.* **2**, 887, 1963). This results in larger variations in transmission over a given optical depth near the zenith than for the same optical depth at larger zenith distances.

Attempts to attribute some of the scatter in the colors obtained for stars of the same spectral type to interstellar reddening have not generally been successful. There seems to exist on the average an infrared excess (about 0.5 mag) of the bright giants and supergiants over giants of the same spectral type. There also seems to be an intrinsic scatter in the visual–infrared indices which may be augmented slightly by differences in reddening.

An attempt is made to reconcile the observed infrared colors with what is known concerning line blanketing, TiO absorption and continuous absorption coefficients in the stellar atmospheres.

For the most part the data show excesses of infrared over visual radiation for stars of spectral types between K5 and M2 when compared with the predicted emission from a blackbody at the same temperature.

An evaluation of the data in terms of the revised temperature scale proposed by Johnson (*Astrophys. J.* **141**, 170, 1965) tends to bring the data into more qualitative agreement with what is currently known regarding the blanketing by Fraunhofer lines and TiO as well as the theoretical stellar absorption coefficient.

Further information on this program is included in *Perkins Observatory Contributions*, Ser. II, No. 16. This research has been supported in part by the Advanced Research Projects Agency (ARPA) as a part of Project DEFENDER.

CaII K Line Variations in the Spectrum Variable 73 Draconis. RICHARD A. BERG AND H. JOHN WOOD, *Leander McCormick Observatory*.—Thirty-two spectrograms of 73 Draconis at 22 and 90 Å/mm were taken with the grating spectrograph on the 32-in. reflector of the Leander McCormick Observatory in the period 30 September to 30 December 1965.

Equivalent widths of the K line, determined from microphotometer tracings, vary between the approximate limits of 2.5 Å on 30 September (phase 0.42) and 0.3 Å on 30 October 1965 UT (phase 0.89). The variations occur primarily in the wings of the line. Phase calculations are based on the light minimum and period derived by Rakos (*Lowell Obs. Bull.* **6**, 91, 1963).

Observations by Durham (*Astrophys. J.* **98**, 504, 1943) and Wehlau (*Astron. J.* **65**, 58, 1960) have shown a K-line maximum occurring at the time of light-curve maximum, contrary to the present observations. The period decrease of 0.000054 day per cycle suggested by Rakos does not give such a large shift.

The phase shift of the K-line maximum from the phase of maximum light to that of minimum light may be real, or it suggests that the period of 73 Draconis is variable.

Apparent Brightness of the Deflector Galaxy of Quasars Produced through Gravitational Lenses. J. M. BARNOTHY AND M. F. BARNOTHY, *University of Illinois*.—Last year at the Ann Arbor meeting of the Society and at the Chicago meeting of American Physical Society (*Astron. J.* **70**, 666, 1965 and *Bull.* **10**, 1130, 1965) one of us (J. M. Barnothy) has shown that quasars may be optical effects produced through gravitational lenses. At the Berkeley meeting we have suggested two observational tests of this hypothesis (*Astron. J.* **71**, 154, 1966 and *Astron. Nachr.* **292**, 127, 1966). Moreover that radio and optical variations follow from this hypothesis (*Astron. J.* **71**, 155, 1966); hence secular and short-time variations of quasars can be explained without the need to resort to novel, highly speculative physical phenomena, or to abandon the cosmological origin of the redshift. T. Matthews raised the question of whether in some cases the deflector galaxy would not be brighter than the image, the quasar. Assuming that the deflector galaxy is about midway between object and observer, and that the optical axis of the gravitational lens intercepts the nucleus of a Seyfert gal-