an ultraviolet excess of approximately 0.8 mag. ($B-V=+1.5$, $U-B=+0.8$) was reported for the 38-day eclipsing binary, KU Cyg, at primary minimum. The spectral types of the components are K5 III and F4p. An image-tube spectrogram has now been obtained at minimum with the 120-inch reflector. It shows a strong continuum dominating the spectrum in the ultraviolet. From $\lambda 3500$, the shortward limit of the exposure, to $\lambda 4000$ the spectral energy distribution is close to that of BD +28°4211, used as spectrophotometric standard. The color temperature of +28°4211 is greater than 50 000° (J. B. Oke, unpublished). Allowance for the effects of interstellar reddening and the low-temperature continuum of the K star would increase the color temperature of the added ultraviolet to well above that of +28°4211. The appearance of the continuum in KU Cyg is quite different from that observed in "ultraviolet excess" stars in young clusters in Orion and Monoceros, and does not result to an appreciable extent from Balmer emission. The observations do not serve to locate the place of origin of the emission in the binary system except to show that it is not confined to regions close to the photosphere of the hotter star.

KU Cyg shows the "RW Tauri" effect during eclipse, evidence of an emitting ring around the hotter component. RZ Oph, another system showing the RW Tauri effect and with spectral types similar to those of KU Cyg, shows an ultraviolet excess at primary eclipse of about 0.5 mag. ($B-V=+1.8$, $U-B=+1.4$). Thus excess ultraviolet radiation may be a general feature of similar systems. TT Hya, a system showing the RW Tauri effect but with considerably earlier spectral types than KU Cyg (A3,G8), appears not to have an appreciable ultraviolet excess during total eclipse.

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Mass and Nuclear Dimensions of Comet Wirtanen, 1957 VI. ELIZABETH ROEMER, *U. S. Naval Observatory, Flagstaff Station*.—The nucleus of the comet discovered on 16 March, 1956 by C. A. Wirtanen at the Lick Observatory was found to be double on 1 May 1957 by G. Van Biesbroeck with the 82-inch reflector of the McDonald Observatory. The two nuclei were separately measurable on plates obtained at Lick, at McDonald, and at the Flagstaff Station of the U. S. Naval Observatory during 1957, 1958, and 1959. Results of astrometric measures of some 60 plates obtained at Flagstaff are presented. The available data indicate that disruption of the nucleus of the comet occurred within a few days of 1 January 1957. The velocity of separation projected on the sky was about 1.5

m/sec. Under appropriate assumptions, dynamical information on the mass of Comet Wirtanen is obtained. Linear dimensions of the two nuclei are derived from photographic estimates of their respective brightnesses, a range of values of the albedo being assumed.

Evaporation of the Solar Corona into Interplanetary Space. HARI K. SEN, *Air Force Cambridge Research Laboratories*.—A model of the interplanetary gaseous medium based on evaporation of particles from the solar coronal exosphere has been considered, which uses Jeans' formula for escape of gases from planetary atmospheres (*Dynamical Theory of Gases*, Dover Publications, Inc., 1954, p. 343). The exosphere is fixed in the corona at the level where the mean free path is comparable with the scale height. This level is at four times the solar radius from the solar center. On account of the absence of collisions beyond the exosphere, the protons and electrons are treated as independent gases coupled only by the electric field due to charge separation.

The equality of flux for protons and electrons at the exosphere is assumed so that the sun may not build up an inordinately high charge. Ingham's density value (*Monthly Notices Roy. Astron. Soc.* **122** 157, 1961) is used at the exosphere, where the temperature is assumed to be 10⁶K. The electric potential at the exosphere is found to be about 525 V and to make the protons virtually weightless. Some further physically plausible approximations are made (spherical symmetry, steady state and radial flow, neglect of coronal rotation and magnetic field, etc.)

It is found that a hydrodynamic analysis of proton motion based on the isothermal model does not differ significantly from the one based on energy transfer by thermal conduction. Computed results are in good agreement with the observational data of van de Hulst, Vitkevitch, and Slee (*The Solar Corona*, Evans, Academic Press Inc., 1963, p. 2, Fig. 1). The theoretical proton density and velocity at 1 a.u. on the isothermal model are respectively 6 cm⁻³ and 246 km/sec.

An Optical Radius of Venus from Photographs Taken at Inferior Conjunction. BRADFORD A. SMITH, *Research Center, New Mexico State University*.—Photographs taken during the November 1962 inferior conjunction of Venus have been measured on a model 422-D Mann comparator across a diameter connecting the geometric cusps. The thin, illuminated crescent with extended cusps permits measurements that are relatively insensitive to seeing and completely insensitive to irradiation and limb