This can explain in terms of a Zeeman splitting the strong and highly specific polarization of the OH emission that is observed (as suggested earlier by S. Weinreb *et al.* and by R. D. Davies *et al.*) and also explain the extremely high values of the magnetic field that one infers and the time variations. The structure of the calculation is described.

Population Discrimination among Planetary Nebulae. W. E. GREIG, *University of Illinois Observatory*.—Planetary nebulae are divided into morphological types: B for bi-nebulous, C for circularly symmetric, A for annular and a few miscellaneous. B planetaries seem to belong to moderate Population I compared to non-B.

B nebulae exhibit strong [N II], [O II], and [O I]. Indeed, these lines intensities are used as supplemental classification criteria where the morphological type is indefinite. The B's appear to be primarily truncated toroids and the C's spheroidal shells. In C nebulae these same forbidden lines are weaker by an average factor of 5. Weaker correlations are found for [S II] and [Ar IV].

In a plot of $[\omega - \omega(\text{sun})]$ versus galactic center to planetary distance no B nebula falls very far from the expected curve for circular orbits. A number of C nebulae do, particularly some which fall below indicating a lag in their galactic rotation velocity. In a plot of radial velocity verses galactic longitude few B nebulae are not near their expected circular velocity position (given by their distance) whereas quite a number of C nebulae do deviate.

Mean z distances for C nebulae are at least 50% greater than for B depending on the distance scale. Similar results hold for the mean absolute $\sin(b)$. B nebulae occur in larger numbers near galactic longitude 60° and are perhaps related to the spiral arms. The radial velocity dispersion of nearby B, and all B planetaries when corrected for galactic rotation, is smaller than for non-B planetaries.

B central stars are found to be WC or O continuous with a few A0 stars. C central stars are WN and/or Of, or O continuous. Presumably they evolve from Wolf-Rayet to O continuous.

Lunar Occultation Studies of Six Weak Radio Sources. S. GULKIS, C. HAZARD, AND J. SUTTON, *Arecibo Ionospheric Observatory*.—This paper describes an investigation of six weak radio sources including 4C12.11, 4C24.18, 4C22.22, 4C11.37, and 4C04.38, based on lunar occultation observations with the 1000-ft steerable radio telescope at Arecibo, Puerto Rico. The sources studied range in flux from 0.5 to $2 \times 10^{-26} \text{ W m}^{-2} (\text{cps})^{-1}$ at 430 Mc/sec and have angular diameter structures ranging from $10''$ to $<1''$. Accurate positions and brightness dis-

tributions for these sources are given. Optical identifications are proposed for four of the six sources but for the remaining two sources there is no object within the plate limit near the source position.

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Evidence for Interstellar Absorption from Galactic X-Ray Sources. H. GURKSY, R. GIACCONI, P. GORENSTEIN, AND J. R. WATERS, *American Science and Engineering*.—The region between $l^{\text{II}} = -15^\circ$ and $l^{\text{II}} = +90^\circ$ and centered on the galactic equator was scanned during an October 1966 rocket flight using proportional counters with a $1^\circ \times 40^\circ$ field of view. Sixteen x-ray sources were observed during the flight and the general distribution is similar to that of the O association and the H II regions in this part of the sky. The region between $l^{\text{II}} = +20^\circ$ and $l^{\text{II}} = -15^\circ$ is found to contain 10 sources and the Cygnus region is found to contain four sources, one of which Cyg X-3, is found at $l^{\text{II}} = 80^\circ$ directly along the projection of the Cygnus arm. The proportional counter data was analyzed to give spectra of the stronger sources. A number of the sources show a marked deficiency in the flux at low energies which, if interpreted as caused by photoelectric absorption, requires an optical depth of unity at x-ray energies between 2 and 3 keV. The greatest deficiency is found in Cyg X-3; no deficiency is found in Sco X-1 or Cyg X-2 which are at $b^{\text{II}} = 26^\circ$ and $b^{\text{II}} = -10^\circ$, respectively, and thus removed from the galactic equator. Interpreting this deficiency in the low-energy photon flux as the result of interstellar absorption, we can determine the value of the product of the path length times the matter density along the path. On the assumption that the sources are within our own galaxy, this imposes a lower bound on the density of certain elements (e.g., neon and oxygen) in the interstellar medium that is substantially higher than the presently accepted values.

A Scanning Polarimeter or Colorimeter. JOHN S. HALL, *Lowell Observatory*.—The observations of Rakos (*Appl. Opt.* 4, 1453, 1965) clearly demonstrated that improved photoelectric resolution could be obtained through the use of area scanning techniques. Further observations by Franz (*Lowell Bull.* 6, 251, 1966) indicated that this improvement could be four- or fivefold over conventional photoelectric techniques used in *UBV* work on close visual binaries. Boyce (*Astron. J.* 71, 847, 1966) has success-