void of activity. Analysis of the intensity distribution at 26.3 Mc/sec suggests two components of the emission. One component is comprised of a large amount of weak activity of flux density between 10^{-23} and 10^{-22} W m^{-2} cps^{-1}. The other, secondary component is comprised of strong activity of flux density greater than 7×10^{-22} W m^{-2} cps^{-1} and may correspond to the radiation commonly observed by workers at lower frequencies.

Average Composition of Planetary Nebulae. Lawrence H. Aller, *University of California, Los Angeles.*—Intensities of the strongest emission lines in the spectra of planetary nebulae have been measured for many objects in both northern and southern hemispheres. Photoelectric measurements of monochromatic fluxes in the green nebular lines or in λ4861 combined with nebular-line intensity data, angular size, and distance permit one to estimate the electron densities and temperatures of the radiating gases as well as the concentrations of the emitting ions. To go from the abundances of individual ion types to those of the corresponding elements is extremely difficult because of the necessity of allowing for distribution of atoms among different ionization stages, the effects of density and temperature fluctuations, and (in some instances) uncertainties in atomic parameters.

Data for 40 planetaries are discussed. The mean *He/H* ratio appears to be 0.165 ± 0.005, but the probable error of a single observation is about 3%, mostly due to errors in measurements. For ratios of other elements one must allow for the fact that not all ionization stages are observed. The mean composition of an "average" field planetary nebula is suggested to be:

log*N*	log*N*	log*N*
H 12.00	*O* 8.5	*S* 7.9:
He 11.22	*Ne* 8.1	*Ar* 6.7:

Neon appears to be more abundant than previously supposed, in agreement with the conclusions of O'Dell, Peimbert, and Kinman. We must also keep in mind that large fluctuations in abundances may also occur from one planetary to another (cf. O'Dell *et al.*), although such variations are difficult to establish accurately.

In NGC 7027, NGC 7009, and NGC 6572, the recombination lines of *O* III, *O* IV, and even *O* V are observed. Hence, following the procedure of Burgess and Seaton, the total oxygen abundance in these nebulae is obtained as $\log N(O)=9.55$, 8.87, and ≤ 8.55, respectively.

Theoretical Model for Type III Radio Emission from the Sun. Martin D. Altschuler and Ludwig Oster, *Yale University Observatory.*—A model is suggested which can explain the excitation of type III radio bursts from the sun. The physical picture is a stream of fast charged particles that induce electric fields (polarization) in the surrounding corona. These electric fields will accelerate the electrons in the neighboring coronal regions which in turn emit a spectrum that consists of a weak (bremsstrahlung) continuum and a superimposed resonance line just above the plasma frequency. The resonance emission is thus able to propagate out from the corona. Its spectral characteristics depend crucially on the speed and other physical properties of the exciting charge cloud. Predicted spectra for various possible physical situations are shown.

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A Very Simple Model for the Study of Fragmentation in a Collapsing Gas Cloud. T. Arny and R. Weymann, *Steward Observatory.*—In order to gain some insight into the process of fragmentation in nonuniform media, the full equations of hydrodynamics are replaced by two ordinary nonlinear equations describing the motion of two points, one on the equator, and one on the pole, of a small spheroidal perturbation embedded in a spherically symmetric collapsing gas cloud. In this preliminary analysis the effects of gas pressure are not included.

For the cases in which the gas is initially at rest, and in which the perturbation is initially spherical and small compared to the size of the cloud, the results depend upon three parameters: (a) The ratio of the density perturbation to the local density q; (b) the ratio of the local density to the mean cloud density p; and (c) the ratio of the perturbation radius to the cloud radius y_0.

The *initial* rate of growth of the density perturbation relative to the *mean* density in units of free-fall time to the center is given by

$$\frac{(\dot{p}\dot{q})_0}{(Pq)_0}=\frac{3\pi^2}{8}[P_0(2+q_0)-1]$$

so that for centrally-condensed configurations tidal forces inhibit the growth; however, relative to the *local* density, which is probably more significant, the perturbation always initially increases at a rate given by

$$\frac{\ddot{q}_0}{q_0}=\frac{3\pi^2}{8}P_0(1+q_0)$$

so that in this sense tidal forces are not disruptive.

Graphs are presented showing the nonlinear develoment of the perturbations, for an unperturbed flow having a density distribution of a truncated isothermal cloud, and for a cloud of