For bright stars the main source of error is centering in the entrance slot where $1''=0.13$ mm corresponds to 0.04 mm $\simeq 0.5$ Å $\simeq 30$ to 40 km/sec at the exit slit. For most galaxies the main sources of error are the difficulty of centering a faint image in the wide entrance slot, photon and instrumental noise, and airglow fluctuations. In common with photography, uncertainty in the effective wavelengths of some spectral features is also a problem. Nevertheless, the scanning technique is already superior to the nebular spectrograph in speed (2 to 3 times faster) and information content (intensities, equivalent widths); it is competitive in accuracy and spectral resolution; but it is still inferior in angular resolution.

High-Resolution Observations of Interstellar Sodium D Lines with an Interferometer. ARTHUR H. VAUGHAN, JR., AND GUIDO MÜNCH, *Mount Wilson and Palomar Observatories*.—Interstellar sodium D line profiles in some 20 early-type stars were scanned at a resolving limit of about 18 mÅ with a single-etalon Fabry-Perot interferometer. The coude spectrum scanner of the 100-in. telescope was used as a premonochromator, a monitor channel at nearby wavelengths provided seeing compensation, and pulse counting techniques were employed. The method achieves an efficiency gain of a factor 10 compared to conventional spectroscopy for the study of the D lines. The faintest star of this survey (HD 217101, $m_v=6.2$) gave a signal-to-dark ratio of 3.

In at least one-half of the stars observed the number of Na I components resolved interferometrically exceeded the number of Ca II components previously reported by W. S. Adams (*Astrophys. J.* **109**, 335, 1949). In most cases the use of higher resolution is responsible, but it is also of interest that a few components were found in Na I which are weak or missing in Ca II, in contrast to previous studies (Routly and Spitzer, *Astrophys. J.* **115**, 227, 1952) where the inverse has usually been true.

A comparison of our data for α Cygni with results obtained by a different interferometric technique by L. M. Hobbs (*Astrophys. J.* **142**, 160, 1965) indicates some discrepancies which as yet are unexplained.

This work is partly supported by the National Aeronautics and Space Administration under Grant NsG-426.

Motions in the Seyfert Galaxy NGC 1068. MERLE F. WALKER, *Lick Observatory*.—Spectroscopic observations have been obtained with the 120-in. reflector and both the prime-focus spectrograph and the Lallemand electronic camera at the focus of the coude spectrograph. The coude spectra because

of the large scale perpendicular to the dispersion enable one to detect discrete clouds in the nuclear region having angular extents of about $3''$ to $4''$ and being ejected with velocities up to about 600 km/sec. Turbulent broadening within each cloud is also about 600 km/sec. At the distance of NGC 1068, the clouds are about 250 to 350 pc in diameter and from density estimates by Osterbrock and Parker (*Astrophys. J.* **141**, 892, 1965), the mass in each cloud may be about 10^7 $M_\odot$ if they are spherical. The energy required to accelerate such a cloud to the observed velocity is about that of 3×10^5 supernovae of type I. Since the coupling efficiency must be low, a population of millions of supernovae would seem required to produce the observed result. Thus, a new, unknown, source of energy in the nucleus may be required to account for the observations.

Outside the nucleus, a sharp emission feature is observed. This feature shows a discontinuity across the nucleus at $r=5''$, a second maximum at $r=10''-20''$, and a continued rise after a shallow minimum at $r=30''$. The first feature has its maximum amplitude along the minor axis. The second, at a position angle between the major and minor axes, and the final rise has a maximum along the major axis. There appears to be a real difference between the motions of the stars and the gas. The analysis is extremely complex, but in general it appears that near the nucleus noncircular motions predominate. Further out, a combination of circular and noncircular motions exists, while for $r \geq 30''$, pure rotation occurs. Thus, the entire central region of the system is disrupted, perhaps as a result of earlier generations of the type of explosions now observed in the nucleus.

NGC 1068 is a radio source, the diameter of the source being close to those of the nuclear clouds. The Lallemand electronic camera has been used to derive the energy curve of the nucleus, which proves to be nearly flat between 4000 and 3500 Å. Photoelectric observations in yellow and ultraviolet light reveal the presence of ultraviolet polarization in the nucleus. Thus, some synchrotron radiation may be present.

OH Radio-Frequency Emission near Very Bright H II Regions. HAROLD WEAVER, DAVID R. W. WILLIAMS, AND NANNIELOU H. DIETER, *University of California, Berkeley*.—In a survey of radio sources we have found lines of the OH molecule in both absorption and emission. Characteristics of the gas from which the lines originate appear to be quite different in the two cases.

In absorption, the OH appears sharply confined to the galactic plane. There, however, we detect OH absorption in virtually every source brighter than a