of Geological Sciences of the California Institute of Technology; and U. S. Geological Survey Branch of Astrogeology.—The 8–14 μ infrared emission of Jupiter has been observed on six nights in December of 1963 using the 200-in. Hale telescope. The new observations possess twice the resolution of those obtained in 1962. The brightness temperature at the center of the disk appears to be closely constant at 129°K. With some slight ambiguity, the light bands are about 0.5 cooler in appearance than the dark bands. There is some suggestion of morning–evening asymmetry in one of the bands. The Great Red Spot is found to be from 1.5 to 2.0 cooler than the surrounding disk at the newer resolution.

The observations were collected with a photometer employing a mercury-doped germanium photoconductor utilized as a 180 cps transducer through the use of a simple articulated double mirror spatial filter which eliminates a large portion of sky–telescope background from the signal.

The present limitations to these maps arise from the nonstationary nature of part of the noise. In the future, noise-suppressed maps may be possible without superposition of several maps, which may then remove some of the ambiguity of the present interpretation.

These observations will be presented in greater detail in the current issue of the *Journal of Geophysical Research*.

Measurement of the Flux of Five Sources at 4080 Mc/sec. R. W. WILSON AND A. A. PENZIAS, *Bell Telephone Laboratories, Inc.*—The receiving system employed in the absolute flux measurement of Cas A at 4080 Mc/sec in the fall of 1964 (Penzias, A. A., and Wilson, R. W., submitted to *Astrophysical J.*) has been used to measure the flux of Cygnus A, Taurus A, Orion A, and Virgo A. The accuracy of the present measurement is 3% probable error.

The flux of Cas A has been remeasured as a check of system stability. The night-to-night variation in the measured flux density of each source is found to be less than $\pm 2\%$.

Correcting the observed values for source size and atmospheric absorption the following flux densities were found (units of $10^{-26} \text{W m}^{-2} \text{cps}^{-1}$): Cas A, 1080; Cyg A, 476; Tau A, 711; Ori A, 445, and Vir A, 87.1.

Automatic Measurement of Radial Velocities. KENNETH M. YOSS AND THOMAS E. LUTZ, *University of Illinois*.—The plate positions for central depths of stellar lines and peaks of comparison lines are recorded with a digitized microphotometer. Two

scans are necessary, with the stellar and comparison lines alternately masked at the microphotometer slit. The digitized data are processed in an electronic computer, following standard procedure. The plates measured were obtained at Mount Wilson Observatory, with the 60-in. reflector and x-spectrograph (40 Å/mm). The spectral and wavelength ranges considered are G8 to K3 and 4000 to 4400 Å, respectively. Approximately 45 iron lines are used for establishing the dispersion curves.

Line blending necessitates the establishment of effective wavelengths for the stellar lines, which generally depend on spectral type, dispersion, and method of measurement. Seven spectrograms of five I.A.U. standard radial velocity stars were measured for this purpose. The plate positions for the stellar lines were reduced to zero radial velocity, yielding effective wavelengths. Approximately 50 lines are found to be suitable, giving an internal mean error in radial velocity of approximately ± 10.0 km/sec for a single line and ± 1.4 km/sec for a single plate. By comparison, conventional measurements for this dispersion give approximately ± 5.2 km/sec for a single line. However, usually fewer lines are measured per plate, giving a plate mean error comparable to the value found here.

Of the 18 lines listed by Wright (Wright, K. O., *Publ. Dom. Astrophys. Obs. Victoria* 9, 167, 1951) in the wavelength and spectral ranges considered, for which single effective wavelengths are valid, 14 are useful for the present method of measurement. The mean difference, Wright minus present values, is -0.04 ± 0.02 Å, suggesting no major systematic difference between the preliminary values established here for 40 Å/mm and the values of Wright for 30 Å/mm. However, several individual lines differ by as much as 0.15 Å, illustrating the necessity of a new set of effective wavelengths.

Glass-Filter Temperature Effects in Astronomical Photometry. ANDREW T. YOUNG, *Harvard College Observatory*.—The effects of temperature on colored glass filters have long been known [K. S. Gibson, *Phys. Rev.* 7, 194, 1916; S. Meyer, *Glastech. Ber.* 14, 305, 1936; A. J. Holland and W. E. S. Turner, *J. Soc. Glass Tech.* 25, 164, 1941; A. K. Angstrom and A. J. Drummond, *Quart. J. Roy. Meteorolog. Soc.* 85, 429, 1959; J. R. Hickey, "A Study of Radiometric Filters" (M.S. thesis, University of Rhode Island, 1962)]. For example, the cutoff wavelength of Schott GG 13 and GG 11 and Corning 3384 shift by 0.8, 1.2, and 1.1. Å/°C, respectively. The temperature coefficient of cutoff lies between 1 and 2 Å/°C for glasses cutting in the visible spectrum, and is greater at longer wave-