a stratospheric platform must be balanced against the benefits to be gained in each specific program.

The 60-inch Astrometric Reflector of the U. S. Naval Observatory. K. AA. STRAND, *U. S. Naval Observatory*.—The urgent need for a telescope for astrometric work of high precision such as trigonometric parallaxes of stars too faint to be observed with existing refractors has been emphasized at several international conferences over the past five years.

In the fall of 1959 funds were made available by the Navy Department for engineering studies of a 60-inch astrometric reflector.

In July of this year Congress appropriated \$1.9 million for the construction of the telescope and the dome building with annex to be located at the Flagstaff Station of the U. S. Naval Observatory.

The telescope will have a free aperture of 60 inches and a focal length of 50 feet.

To ensure utmost stability in the optical system, a folded system will be used, with a flat secondary 35 inches in diameter reflecting the light through the center perforation of the primary. A collimation system for quick alignment of the optics will be incorporated.

To avoid deleterious temperature effects both mirrors will be of fused silica which has a coefficient of expansion of 16% of that of Pyrex.

The telescope tube structure will be exceptionally rigid and mounted in a fork with an oil pad bearing of the polar axis.

Present engineering design includes instrumentation for automatic photoelectric guidance, and automatic exposure timing and plate transport.

The telescope will be mounted 41 feet above the ground in a circular building with a dome 65 feet in diameter. The dome will have double walls separated by insulation and air space.

The approximate exposure time for an 18th magnitude star will be 8 minutes. The uncorrected field will have astrometric precision over a $22' \times 22'$ field and the scale on the photographic plate will be $1 \text{ mm} = 13''$.

The Photoionization Cross Section of Negative Hydrogen. THOMAS L. SWIHART, *Los Alamos Scientific Laboratory, Los Alamos, New Mexico*.—The calculations of Bransden, Dalgarno, John, and Seaton (1958) indicate that the bound-free absorption cross section of the negative hydrogen ion as given by Chandrasekhar and Elbert (1958) is too large at 3000 Å by about 20%. The error should decrease at longer wavelengths. The purpose of the present investigation is to test the indicated change in the H^- absorption coefficient by means of model atmospheres.

Although the sun can be observed in much greater detail than other stars, it is a poor object to use in

the present case. The reason is that the rather large and poorly known blanketing corrections tend to mask the effects under consideration. Thus stars with low abundance of the heavy elements are used instead. The decrease in the H^- absorption does improve somewhat the fit of model atmospheres with observation of the energy distribution of metal-deficient stars.

Slow-drift (Type II) Radio Bursts from the Sun. A. R. THOMPSON AND A. MAXWELL, *Harvard Radio Astronomy Station, Fort Davis, Texas*.—Slow-drift (Type II) solar radio bursts are characterized as a band of emission which drifts steadily from high to low frequencies in the meter wave range. The bursts are attributed to a disturbance moving outwards through the solar corona with a velocity of about 1000 km/sec. The velocity is deduced from a model of the solar atmosphere in which the electron density is increased by a factor of almost 10 over that usually given for the quiet corona. This high electron density is supported by direct measurement by other workers of the height in the corona at which various radio frequencies are emitted. It is suggested that the disturbance responsible for slow-drift bursts takes the form of a longitudinal shock wave. Nearly all slow-drift bursts are associated with flares and about 25% of them are accompanied by continuum (Type IV) radiation.

The Radial Velocities of Galaxies in the Virgo Cluster. SIDNEY VAN DEN BERGH, *David Dunlap Observatory*.—It is found that the radial velocities in the Virgo Cluster do not deviate significantly from a Gaussian distribution. However, reasonable assumptions regarding the mass to luminosity ratios of galaxies indicate that there is no equipartition of energy between cluster members, i.e., the velocity dispersion is the same for galaxies of large and small mass. The analysis of the velocity differences between members of close pairs indicates that many close pairs in the Virgo Cluster form stable binary systems. Application of the method developed by Page (1952) to the close binaries in the Virgo Cluster yields a mass to light ratio

$$M/L < < 280,$$

which is considerably smaller than the value

$$M/L \approx 700,$$

which is obtained from the virial theorem under the assumption that the entire mass of the cluster is in the form of visible galaxies. Although the number of multiple galaxies in the Virgo Cluster, for which velocity data are available, is small, the difference between the mass to light ratios obtained from mul-