The two components of the radio source coincide, within $1''$, with the star-like object itself and the end of the jet.

Photographic spectra show several broad emission lines. Photoelectric spectrum scanner observations in the infrared indicate a strong, broad emission line at $\lambda 7590$. The observed emission lines at $\lambda 7590$, $\lambda 5632$, $\lambda 5032$, $\lambda 4753$, and $\lambda 4595$ are identified with the Balmer lines $H\alpha$ to $H\epsilon$. The line $\lambda 7590$ is displaced to the violet by several angstroms due to the absorption of the atmospheric A band. The redshift is found to be $\Delta\lambda/\lambda_0 = 0.158$, corresponding to an apparent velocity of 47 400 km/sec. Other emission lines $\lambda 5792$ and $\lambda 3239$ are identified respectively as $\lambda 5007$ of [O III] and $\lambda 2798$ of Mg II.

The absolute energy distribution in the continuous spectrum, from $\lambda 3300$ to $\lambda 8400$, can be represented accurately by the relation $F_\nu \propto \nu^{+0.28}$, where F_ν is the flux per unit frequency interval and ν is the frequency. Beyond $\lambda 8400$ the flux may increase significantly. The observed energy distribution is very different from that of a blackbody or a normal star; at least part of the optical radiation must be synchrotron radiation. The absolute flux at $\lambda 5600$ is 3.5×10^{-28} W m $^{-2}$ cps $^{-1}$. The corresponding radio flux at 960 Mc is 5.0×10^{-25} W m $^{-2}$ cps $^{-1}$.

The large observed redshift and the stellar appearance of the object suggest two possibilities. (1) The star is a neutron star with a radius of 10 km. The appearance of both forbidden and permitted lines with the same redshift and the breadth of the lines (1 to 2% of the wavelength) make this explanation very unlikely. (2) The object is the luminous nucleus of a galaxy at a distance of 500 Mpc. The diameter of the nucleus region would be less than 1 kpc. The optical jet and component A of the radio source would be at a distance of at least 50 kpc, implying a time scale in excess of 10^5 yr.

Significance of Tektite Sculpturing. JOHN A. O'KEEFE, *Goddard Space Flight Center*.—Tektites other than australites show a very complex system of grooves and pits. These are not in general related to the variations of chemical composition in the interior. Suess originally regarded these as aerodynamic; recently there has been a tendency to consider them the result of attack by ground chemicals.

It is suggested that the pits have been formed by a mechanism described by R. H. Johnson, which occurs in disturbed laminar flow. E. R. van Driest suggested in communication that the grooves have been formed by a mechanism similar to the Goertler vortices in turbulent or transitional flow.

Since the forms of the tektites are in many cases the result of forces of surface tension, it seems likely

that they were not formed in an event as violent as a ground impact, but rather in some much more gentle form of heating such as aerodynamic ablation at great altitudes.

Physical Conditions in the Cygnus Loop. ROBERT PARKER, *Washburn Observatory*.—Using recent experimental measures of the cross sections for ionization, and the $1s-2s$, and $1s-2p$ transitions for hydrogen, calculations have been made of the relative intensities to be expected for the emission lines from a nebula in which the dominant process of excitation and ionization is the collision of the free electrons with the atoms and ions. Using these calculated intensities in conjunction with observations of the relative intensities of the emission lines in several of the filaments of the Cygnus Loop, it is concluded that the physical conditions of the Cygnus Loop can be described in terms of a microstructure such that the [O III] lines originate predominantly in a region with a temperature of the order of 10^5 K, while the other emission lines originate predominantly in a region with a temperature of about 1.7×10^4 K.

Preliminary Results of Observations of Faint B Stars. R. M. PETRIE, *Dominion Astrophysical Observatory*.—Radial velocities, spectroscopic absolute magnitudes, and distances are available for nearly 500 B stars. These data are analyzed to determine the parameters of galactic motion. The results are preliminary in that some 200 stars are yet to be added to the sample when accurate magnitudes and colors become available.

The following results are obtained: (1) There does not appear to be a close spatial connection between the distributions of the stars and the densest hydrogen clouds; (2) Circular galactic motion is the dominant feature and Oort's constant A is 20 km/sec/kpc; (3) A small outward radial motion is suggested by the behavior of the K term but the evidence is not conclusive; (4) Strong local departures from the circular motion are found, the most conspicuous one being in the direction of *Perseus* at a distance of 3 kpc.

On the Development of Spiral Arms in a Galaxy. PARIS PISMIS, *Observatorio Astronómico Nacional*.—In this report we describe one simple consequence of a hypothesis advanced in earlier publications, whereby symmetrical spiral formations in our and in other galaxies can be accounted for. (*Bol. Obs. Tonantz. Tacub.* Nos. 19, 21). The present stage of the theory is as follows:

In an already existing galaxy of Population II stars, similar to an E galaxy, we postulate that a