radiation of NGC 1068 seems to be localized in the nuclear region. This radiation can be explained neither by any reasonable combination of stars nor by inverse Compton scattering of low-frequency photons on relativistic electrons responsible for radio radiation.

An extensive program involving photometry of the remaining Seyfert galaxies is under way. Some of them are currently being monitored for variability.

Luminious Efficiency of Matter in Galaxies. THORNTON PAGE, *Smithsonian Astrophysical Observatory, Yale University*, and *Wesleyan University*.—A survey of the measurements of masses and photographic luminosities of single galaxies, and the means for galaxies in pairs, groups, and clusters (Page, *Smithsonian Spec. Rept.* No. 195, December 1965) shows a systematic trend in the mean ratio of mass to luminosity from 1 or less in single spirals to about 1000 for large concentrated clusters of ellipticals, confirming an earlier conclusion by Poveda (*Astrophys. J.* **134**, 910, 1961) in somewhat different terms. A possible explanation, first explored, was that the turbulence of protogalaxy material was on a smaller scale in the large clusters of galaxies, leading to the formation of low-mass stars and nonluminous bodies. However, recent measures of x-ray emission from the Coma Cluster and from M87 indicate an x-ray emission many times larger than the photographic luminosities. Calculations by Woolf and others seek to explain this by a mass of intergalactic gas at 10 million degrees' temperature as expected from thermalization of mass motions in the Coma Cluster. Such intergalactic gas would explain the large value of $\Sigma M/\Sigma L$, but aside from the fact that Friedman failed to detect the Coma Cluster in 2.5-keV x rays. there is a difficulty in accounting for groups of galaxies with *intermediate* values of $\Sigma M/\Sigma L$.

Detection of the Hydrogen Emission Line 253α at 404 MHz. H. PENFIELD, PATRICK PALMER, B. ZUCKERMAN, AND A. E. LILLEY, *Harvard College Observatory*.—Using the 140-ft radio telescope of the National Radio Astronomy Observatory, we have detected the hydrogen emission line 253α in the galactic thermal radio source W80 (the North American and the Pelican Nebulae). The results obtained are compared to the predictions of N. S. Kardashev (*Soviet Astron.—A. J.* **3**, 813, 1959), L. Goldberg (*Astrophys. J.* **144**, 1225, 1966), and H. R. Griem (*Astrophys. J.*, to be published).

A Measurement of the Background Temperature at 1415 MHz. A. A. PENZIAS AND R. W. WILSON, *Bell Telephone Laboratories*,—We have made a measurement of the background temperature at 1415 MHz. This work was done using the same antenna employed in our previous measurement at 4080 MHz (Penzias, A. A., and Wilson, R. W., *Astrophys. J.* **142**, 419, 1965). The radiometer and liquid-helium-cooled reference termination are similar to those used before. The resulting measured excess temperature of about 3.2°K is in good agreement with the values obtained at shorter wavelengths.

As part of this work we have measured the temperature contributed by the atmosphere, which is 2.3 ± 0.2°K and is in good agreement with that predicted by D. C. Hogg (*J. Appl. Phys.* **30**, 1417, 1959).

S Process in Stars of Moderate Mass. JAMES G. PETERS, *Indiana University*.—Results of calculations of the buildup of elements heavier than iron by neutron capture on a slow time scale during the evolution of stars of 9 and 15 solar masses are presented. The seed nuclei for the process are taken to be ^{56}Fe, and the ^{22}Ne(α,n) ^{25}Mg reaction is assumed to be the neutron source, operative in the convective cores of stars in the late stages of helium burning. The basic source reaction rate is that given by Reeves [*Stellar Evolution*, Stein and Cameron, Eds. (Plenum Press, New York, 1966), p. 83]. The models used are approximations to the convective cores of the models computed by Iben (*Astrophys. J.* **143**, 505 and 516, 1966). The lighter elements are included as neutron poisons in an approximate manner. Dependence of the results on various nuclear parameters and on abundance is discussed.

As the core convection dies out, shells remain which contain various amounts of heavy elements depending on the total exposure of material in a given shell to the neutron flux. The heavy element abundance distributions resulting from subsequent (i.e., post helium burning) mixing of the outer regions of the core to different depths in the core are presented, and curves of abundance times neutron capture cross section as a function of atomic mass number are discussed and compared with those of Clayton, Fowler, Hull, and Zimmerman [*Ann. Phys.* (*N.Y.*) **12**, 331, 1961] and of Seeger, Fowler, and Clayton (*Astrophys. J. Suppl.* **11**, 121, 1965).

A Search for Horizontal-Branch Field Stars at High Galactic Latitudes. A. G. DAVIS PHILIP, *Dudley Observatory* and *State University of New York at Albany*.—During the past year a search has been made for horizontal-branch field stars. These stars are interesting since they are three to seven magni-