releases from rockets can be used for the interpretation and identification of comet spectra.

Star Catalogues on Punched Cards. JULENA S. DUNCOMBE and DORRIT HOFFLEIT, *U. S. Naval Observatory and Maria Mitchell Observatory*.—Yale University Observatory and the U. S. Naval Observatory have cooperated in key punching and verifying 41 star catalogues. These catalogues include the AGK₂ catalogues, $+90^\circ$ to $-2^\circ.5$; the Yale catalogues, $+90^\circ$ to $+85^\circ$, $+60^\circ$ to $+50^\circ$, and $+30^\circ$ to -30° ; the Cape Zone catalogues, -30° to -64° ; and the *Catalogue of 5268 Standard Stars 1950.0* based on the system N30 (*Astron. Papers Am. Ephemeris* **13**, Part III).

In punching these catalogues 122 major errors were detected. Also numerous other discrepancies were noted. It is planned to assemble in a single list the catalogue errors detected here as well as errors from all other sources and to publish this list in the *Astronomical Journal*.

Crab Nebula Occultation Measurements and the Structure of the Solar Corona. WILLIAM C. ERICKSON, *Convair Scientific Research Laboratory*.—The Crab nebula was observed during occultation by the solar corona in June, 1960, with fan-beam aerials operating at 26.3 Mc. These observations indicate an absence of refraction of decameter radio waves in the outer corona, and an increase in the apparent angular size of the source at closest approach to the sun. In addition, they definitely indicate a strong decrease in the integrated flux during the occultation. This confirms the observations of S. Gorgolewski and A. Hewish (*Observatory* **80**, 99, 1960).

A model of the corona consisting of radially aligned, filamentary structures similar to that proposed by J. A. Högbom (*Monthly Notices Roy. Astron. Soc.* **120**, 530, 1960) is assumed. The anisotropic scattering caused by such structures may explain decreases in the integrated flux. The 1960 observations as well as those of previous years are interpreted with respect to such a model.

Can the Jupiter Emission be Cyclotron Radiation? GEORGE B. FIELD, *Princeton University Observatory*.—Recent observations of the polarization, spectrum, angular extent, and time variation of the Jovian decimeter emission are compared with a theoretical model based on cyclotron radiation by nonrelativistic electrons trapped in a dipole field. The polarization, spectrum, and angular extent can be fitted by a model which has an equatorial field strength of 0.6 gauss and a polar field strength of 1.6×10^5 gauss.

On the other hand, the observed slow decay of the emission during 1959 appears to be inconsistent

with the model. One finds that the decay due to radiation loss alone would have only one-hundredth of the observed duration if we suppose an instantaneous electron injection. On the other hand, continuous electron injection would result in a much steeper spectrum than is observed. We conclude that at least our simple model based on cyclotron emission is inconsistent with observation.

Synchrotron radiation by relativistic electrons appears to provide a better model. Qualitatively one can explain the polarization, spectrum, and angular extent of the emission, while now the decay period is longer owing to the much smaller field strengths required. Thus, a model with electrons of 5 to 10 Mev trapped in a field of 2 gauss provides roughly the observed spectrum and decay period, assuming the electrons were instantaneously injected sometime prior to April, 1959. The polar field is now only about 100 gauss.

Luminosity Distribution of the Spiral Galaxy NGC 5055. ROBERT A. FISH, *Yerkes and McDonald Observatories*.—The luminosity distribution of NGC 5055 was studied with photographic photometry on the *UBV* system. On comparison of the luminosity distribution with the mass distribution found previously (Burbidge, E. M., Burbidge, G. R., and Prendergast, K. H. *Astrophys. J.* **131**, 282, 1960), the mass-to-light ratios in each color are observed to rise at first, then decrease steadily on proceeding outwards from the nucleus. The over-all photographic M/L ratio for the galaxy out to $150''$ is 5.46.

Three different indices of asymmetry are constructed from the photometric information. They reveal that the light distribution within $50''$ of the nucleus is inherently asymmetric, but that beyond $50''$ the three-dimensional light distribution is nearly axially symmetrical.

Due to scattering and absorption of light the observed isophotes deviate widely from ellipses. If the albedo of the obscuring material is low, the intrinsic M/L ratios must vary only slowly from $50''$ outwards; if it is high the measured change of M/L by a factor of 5 between $50''$ and $150''$ represents very nearly the intrinsic change. The null effect of scattering on the average luminosity of NGC 5055 results from the inclination angle of the galaxy.

If high scattering efficiency is a universal property of the obscuring matter in spiral galaxies, then very little light is degraded into the infrared, and photons entering the scattering layer are simply redirected toward normal emergence. Because of this redirection a face-on spiral must appear brighter and bluer than it would if no obscuring matter were present. The magnitude of this effect is evaluated by means of Holmberg's photometry (*Lund Medd. Ser. II*,