*Institut d'Astrophysique de Cointe,
University of Liege, Belgium,
temporarily at Ohio State University,
Columbus, Ohio.*

Nassau, J. J., and G. B. van Albada. A study of M-type stars in Cygnus.

This investigation is a continuation of our work in the infra-red spectra and magnitudes for M giants in the clear region of Cygnus. The primary additions to the observational data were derived by securing 2° objective prism spectral plates for our survey. The limiting magnitudes for which we believe our data to be complete is 13.5 infra-red, although a number of stars were classified down to 14.5.

The classification of the M stars was based solely on the *TiO* bands, while the carbon stars were identified from the bands of *CN*. A new band near λ 7950 has been utilized in the identification of S stars. A band in the same spectral region has been observed in several late M's, notably variables.

The search for M stars has been carried out in a relatively clear region in Cygnus at galactic longitude 43° and latitude $4^\circ 0'$. The area which is in the form of a rectangle, perpendicular to the celestial equator covers 2.28 square degrees. In this area 709 M stars were identified, four carbon stars and two S stars, among them several new variables. The number of M stars per square degree is 311, while at the galactic latitude of $9^\circ 2'$ and approximately the same longitude the corresponding number was 31. Even within the field itself a concentration toward the galactic plane is apparent.

The median apparent infra-red magnitude of the Mo stars at galactic latitude 4° is 13.1 which value decreases with advancing spectral type to 11.3 at M4. This is in agreement with the absolute infra-red magnitudes, derived from the Mt. Wilson spectroscopic absolute magnitudes, which give -1.1 for Mo and -2.9 for M4. For the later M types this relation does not seem to exist since the observed median magnitudes remain stationary after M4.

From our material it was possible to obtain the spectrum intrinsic color relation for all the M's, as follows: at Mo I.I. (photographic minus infra-red magnitude) equal to 2.8, at M5 I.I. equal to 4.3. The amount of interstellar absorption of the region was found to be equal to 0.10 mag./kpc infra-red, corresponding to about 0.22 mag./kpc in the photographic region. The unevenness in the surface distribution of M stars

indicates local regions of much heavier obscuration.

A density analysis has been made of 627 stars from Mo to M4. At a distance of 2 kpc from the sun the number of stars is 20×10^{-6} stars per cubic parsec. At 6 kpc a value of 8×10^{-6} is reached. These numbers vary slightly with different assumptions in absorption and absolute magnitude spread.

*Warner and Swasey Observatory,
Case Institute of Technology,
Cleveland, Ohio.*

Nininger, H. H. Research program of the American Meteoric Museum.

In addition to dispensing information on various phases of meteoritics through exhibits and lectures for visitors to this unique institution, the staff carries on a considerable program of research. This paper indicates the nature and scope of these investigations and summarizes in a progress report the results of two years of field explorations in the vicinity of the Barringer meteorite crater.

*American Meteoric Museum,
Winslow, Ariz.*

Omer, Guy C., Jr. A non-homogeneous cosmological model.

Non-static, non-homogeneous, relativistic cosmological models having spherical symmetry, zero-pressure, and co-moving coordinates have been investigated. If, as a first approximation, we assume that the observer is located near the center of the coordinate system, the following three relations can be obtained: the red-shift as a function of the radial coordinate; the total number of nebulae which are contained within a sphere as a function of the coordinate radius; and the apparent magnitude for a source of known luminosity as a function of its radial coordinate position. From these relations we can calculate the predicted nebular counts as a function of apparent limiting magnitude and the predicted red-shifts as a function of apparent magnitude. These are the observationally determined functional relationships.

We assume the average density in the neighborhood of the observer at the present time to be 10^{-29} gm./c.c. We take the cosmological constant to be 8.78×10^{-19} (lt. yrs.) $^{-2}$. We assign to the radius of curvature in the neighborhood of the observer, $1/R_0^2 = -10^{-20}$ (lt. yrs.) $^{-2}$. Then we find that the total time elapsed in the neighborhood of the observer since the beginning of