the range of A2 to G0 main sequence stars, and 13 as obviously reddened.

The 825 remaining stars were divided into seven β groups, and a solution of the form $(b-y)_0 = A + B\beta + C\Delta c_1 + D\Delta m_1$ was obtained for each group. For the five groups of earliest spectral type, a mean deviation of $\pm 0^m.011$ (for one star) was found. For the two latest spectral groups it was $\pm 0^m.014$. The coefficients of Δc_1 and Δm_1 are small in all cases, and hence β is a very good predictor of intrinsic color. One can also state that very few of the A and F type main sequence stars brighter than $V=6^m.5$ are reddened by interstellar absorption.

A Search for Extragalactic Radio Sources Having a Flux Excess at Short Wavelengths. MICHAEL M. DAVIS (introduced by T. K. Menon), *National Radio Astronomy Observatory*.—A systematic survey at 1417 MHz (21.2 cm) has covered 3.7 sr of the sky in search of discrete sources missed by surveys at longer wavelengths. The 25-m Dwingeloo telescope has been used with switched beams and a parametric amplifier. The survey is complete to 2.5×10^{-26} W/m²/Hz away from the galactic plane and the North Pole Spur. This limit is set by irregularities in the background radiation. Of 401 sources found in Dwingeloo, 69 have not previously been catalogued. One hundred eighty-eight sources, including all those not previously catalogued, have been reobserved with the Green Bank 300-ft telescope at 20 and 40 cm. A few unusual sources have been singled out for further observations at 2, 6, and 11 cm on the basis of the 20 cm, 40 cm, and when available, longer wavelength flux densities. The source 4C5.64 appears to have a nearly constant flux density over the wavelength range from 2 to 168 cm. The source DW 0202+31 is weaker and hence does not appear in the 4C catalogue; however, over the range 2 to 40 cm, its flux density is also observed to be constant. DW 0742+10 has a flux density maximum near 20 cm. All three sources are unresolved with the NRAO interferometer, implying a size $< 5''$.

Telescope Plus Spectrograph System Optimization. A. H. DELSEMME, *The University of Toledo*.—At the Ritter Astrophysical Research Center of The University of Toledo, we have incorporated our new 41-in. telescope and a high-dispersion stellar spectrograph into an integrated system that is designed to optimize the use of the money available. I. S. Bowen (*Astron. J.* **69**, 816, 1964) has given the efficiency of a telescope as a function of its aperture and of the parameters of the auxiliary instrumentation. However, the question of the optimum price of the auxiliary instrumentation has

so far never received a quantitative answer. This answer is given here in the particular case of a high-dispersion stellar spectrograph by using empirical functions linking the aperture of a telescope and of the collimator of the spectrograph with their prices. For a given grant it is then very easy to maximize the amount of information collected by the system per unit of time. The result is that the prices of the telescope and the spectrograph should be in the inverse ratio of the exponents used in the two empirical price functions. This result is in particular independent of the apertures.

The "best buy" in terms of minimizing the price of each bit of information collected by the integrated system is thus between \$160 000 and \$200 000 for a spectrograph coupled with a 41-in. telescope.

These simple considerations are important, not only for the astronomer who wants to get the best use of his instrument, but for the sponsors who legitimately want the best use of their money.

Hyades Distance Modulus and Stellar Interiors. PIERRE DEMARQUE, *Yerkes Observatory*.—It is shown that Hodge and Wallerstein's recent suggestion (*Publ. Astron. Soc. Pacific* **78**, 411, 1966) of a revision in the Hyades distance modulus does not remove the difficulties previously encountered by Iben (*Astrophys. J.* **138**, 452, 1963) and Bodenheimer (*Astrophys. J.* **142**, 451, 1965) in comparing the Hyades binaries with stellar interior models. The problem seems to lie with the individual parallaxes attributed to each binary system. It is also pointed out that a change in the Hyades distance modulus would not necessarily affect other distances in the universe.

Effects of Stellar Rotation on the Colors and Magnitudes of Stars in Praesepe. R. J. DICKENS, W. KRZEMINSKI, AND R. P. KRAFT, *Mount Wilson and Palomar Observatories*.—Rotational velocities have been determined by J. D. McGee, A. Khogali, W. A. Baum, and R. P. Kraft (*Monthly Notices Roy. Astron. Soc.*, to be published) using an electronographic image tube, and also using conventional spectroscopy, for virtually all the stars in Praesepe brighter than $V=9.6$ mag. New *UBV* photoelectric observations have been made for all the stars for which rotations are available. The photometry is combined with that obtained much earlier by H. L. Johnson (*Astrophys. J.* **116**, 640, 1952). The brighter stars in Praesepe appear to rotate on the average about 15% faster than those in the Hyades at the same absolute magnitude.

Theory indicates that stellar rotation should change the effective temperature, surface gravity,