jective prism giving a dispersion at $H\gamma$ of 45 A/mm. The estimates of line intensities were carried out at Harvard, two-thirds of them prior to 1942. The reductions were performed on the International Business Machine equipment of the Ballistic Research Laboratories, Aberdeen Proving Ground, through the generous permission of Colonel Leslie E. Simon. The advantages of punch cards in the reduction of data for "normal" stars are discussed.

The spectroscopic absolute magnitudes are compared with absolute magnitudes computed from trigonometric parallaxes, reduced proper motions, and spectroscopic results obtained at other observatories. The relative scale and zero-point errors of the Harvard reductions for the main sequence stars are within the natural uncertainties of the various systems. A total dispersion in absolute magnitude of ± 0.7 – 0.8 is found of which ± 0.5 mag. is apparent observational error. This leaves ± 0.5 mag. as the indicated dispersion of the true absolute magnitudes, a result not inconsistent with published results from various statistical investigations.

The list of stars contains numerous peculiar objects, namely:

- 6 "Strontium stars"
- 1 "Chromium Europium star"
- 39 "Metallic-line stars"
- 9 Cepheid variables
- 1 Star with probable variable spectrum, HR 7055
- 23 Other supergiants.

The Harvard absolute magnitudes for the supergiant stars are poorly determined. This is primarily because these stars were not separated from the others in the automatic machine reductions, and it is well known that all the criteria for the run of the stars are not applicable to supergiants. Also, too few data are available for an independent calibration of the supergiants. They are, however, included in the discussion in order to demonstrate the consequence of ignoring luminosity class before calibrating supergiant luminosities.

About 40 of the stars have "ambiguous" spectral classes. On the basis of Miss Cannon's Henry Draper criteria they are A stars while Mount Wilson's metallic-line criteria place them in the F groups. The absolute magnitudes estimated for both types indicate no definitive preference for either. Color data (Cape photographic magnitudes) indicate a slight preference for the

F-types. On the other hand, in a comparison of Victoria (classified on the Draper system) and Mount Wilson spectral classes for northern stars, the colors of stars with discordant spectral classes appear to favor the earlier class.

For 50 of the stars the Yale Bright Star Catalogue has listed variable radial velocities: 7 Cepheids, 17 possible binary stars, the rest undefined. For 30 of these more than one Harvard spectrum each was available. With the exception of the plates for one Cepheid, the plates showed no variations in line intensities beyond the differences attributable to diverse quality and exposure.

The reduction and analysis of data such as those described require a large amount of sorting, listing, averaging and re-sorting of data. A moderately experienced operator would find I.B.M. equipment advantageous except in the analysis of those peculiar stars which are not amenable to statistical methods.

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Hynek, J. A. The Russell-Moore discordant parallax stars.

The discordance between the trigonometric and spectroscopic parallaxes of 52 giant binary pairs first pointed out by Russell and Moore¹ is found to remain when the study is extended to additional visual pairs and to 47 spectroscopic binaries. A similar discordance is observed between the dynamic and spectroscopic parallaxes of 103 pairs, thus corroborating the trigonometric results. The failure of the mass-luminosity law for, at least, the brighter members of giant binary stars is strongly indicated.

The evidence presented by all three types of parallax is consistent with the hypothesis that, as a class, the binary stars of the giant sequence are more than a magnitude brighter than normal giants, of nearly twice their radius, and of more than twice their mass. Excessive mass is indicated both by spectroscopic evidence and by direct determination by the usual double star method. There is some possibility that these stars are members of "population II."

1. *Masses of the Stars*, p. 60, 1940.

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Lampland, C. O. Notes on some planetary problems.

The memorable event of the joint meeting of the American Astronomical Society and the