DESIDERATA FOR THE CATALOGUE OF NEARBY STARS

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In 1969 the second edition of the "Catalogue of Nearby Stars" was published. It contains 1529 single stars and systems with a total of 1890 components. The catalogue lists all stars with parallaxes equal to or larger than 0".045. Only 1049 of these objects are nearer than 20 pc. The "Catalogue of Stars within 25 pc of the Sun", published 1970 in the Royal Observatory Annals No. 5 consists of 1744 systems of which 1566 trigonometric parallaxes.

Since that time new programmes for determining trigonometric parallaxes have been started, concentrating mainly on nearby faint objects as white dwarfs and red dwarfs. The catalogues of the US Naval Observatory already have listed several hundreds of new distances determined with the 61-inch reflector at Flagstaff. Furthermore, some lists with spectroscopic and photometric parallaxes have been published. Altogether, about two hundred new stars at least can be added to the collection of objects in the solar neighbourhood. Therefore, the compilation of a third catalogue of nearby stars seems to be recommendable around 1980.

Such an undertaking consists of two parts:1) Collection of new data, and 2) selection of the best value of a quantity of which various measurements are known. In practice, very often the second task will be more problematic and more difficult than the first.

Let me restrict myself to a few basic questions:The well-known problems of a uniform system of trigonometric parallaxes, the weighting and combining of various measurements will be investigated by Dr. van Altena at Yale Observatory. I shall appreciate being able to use his results for the new catalogue of nearby stars.

C. Jaschek and G. A. Wilkins (eds.), Compilation, Critical Evaluation, and Distribution of Stellar Data. 37-39.

For spectroscopic and photometric distance determinations, especially of objects of low luminosity, the situation is more vague. Various "spectral type-luminosity" relations and "colour-luminosity" relations have been used by different authors. As compiler of a catalogue based on distances of stars, I would like to have a collection of these relations with a critical summary which would allow me to determine luminosities without wasting of time with additional investigations.

Basic sources of spectral types and photoelectric colours are MK classifications and UBVRI measurements. If different values are known for the same quantity of a star, we should not use the mean of all determinations. Normally, the catalogue compiler who has to restrict himself to one value only, will assign priorities to certain series of observations. But, usually, he does not consider himself an expert on such observations. As he can draw nearly no support from literature, he needs private advice from colleagues. The work of the Data Centers is of invaluably high benefit for the compilation of a catalogue of nearby stars. The addition of a system of priorities seems to be very useful but, I realize, that such a solution of the problem will be nearly impossible.

It is necessary that the stars listed in a catalogue can be identified unambiguously. For the large number of faint objects, the positions should be given at least to the second in RA and to 0^{s}.1 in Decl. If identification charts are published in the literature, references will be made.

Some of these faint objects are identified in the Astrographic Catalogues. A central collection of the most reliable values for the constants of AC plates would be appreciated.

No uniform system of the proper motions of faint objects can be given. But the situation is not very serious, since an error of 0".1 per annum corresponds to an error in the tangential velocity of only 1 km sec^{-1} at the distance limit of the catalogue members.

For radial velocities I hope to make use of the work done by Prof. D. Evans and by the CDS.

Summarizing, let me emphasize that the compilation of a third edition of the Catalogue of Nearby Stars will be decisively supported by the collections of data centers. If various determinations of the same quantity are known, I would appreciate preference being given to one value which may be the mean value or the most reliable measurement.

I have need of a center for spectroscopic and for photometric

parallaxes or, at least, of a center for the various "spectral type-luminosity" relations and "colour-luminosity" relations.

For identification of very faint objects, observers should give accurate positions or identification charts with their epochs.

Last, not least, there should be a priority list for the different systems of nomenclature.

The English version of the text was graciously corrected by Dr. R. Scholl.