THE "CATALOGUE OF STELLAR GROUPS" : A PROGRESS REPORT

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ABSTRACT

The catalog will provide lists of stars for about fifthy groups
of determined spectral peculiarity. The adopted selection procedure, the
connection to the C.D.S. data base and the future developments are des-
cribed.

INTRODUCTION

The Catalog of Stellar Groups (C.G.S. : "Catalogue des Groupes
Stellaires"), started in 1978, provides lists of stars about fifthy
different groups with determined spectral peculiarity, like Ap, Am,
H and K lines in emission, etc... The aim is to make available extensi-
ve lists of peculiar stars, especially for observational programs and
statistical studies.

THE PROCEDURE FOLLOWED TO CONSTRUCT THE CATALOGUE

The procedure can be divided into six steps.

1.1. The first is the adoption of a definition for each group. This is
an important point since the same denomination may have different mea-
nings according to different authors but only one can be retained. As an
example, our adopted definition of Be stars is somewhat restrictive
because we accept only stars for which an MK classification is known.
It is to be noted that the definitions we used are generally spectros-
copic definitions : we do not attempt to include stars on the basis of
their photometric properties (with the exception of the photometric va-
riable groups, like δ Scu and β Cep). Only a few groups are defined ki-
nematically (Pop. II objects) or by other characteristics (spectros-
copic binaries).

1.2. The second step consists of a literature search for the lists of

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members of each group. No critical editing was performed, since this is impossible if one has not seen the spectrum oneself. Lists were included if the authors used a definition of membership compatible with ours.

We started with the most comprehensive lists (or catalogues) published by the specialists, and we completed them with the more recent paper. Presently 180 references are used including general catalogues such as the Michigan Spectral Survey (. Houk and Cowley, 1975 ; Houk 1978) or the list of southern stars of astrophysical interest by Bidelman and Mac Connell (1973).

1.3. For each list retained, the following data were keypunched : an identification (H.D. number when available, Durchmusterungen or coordinates when no common identificator is provided) and a code number of the bibliographic source. In some cases complementary spectral information has been punched, but this has not been made systematically. At the present time (July 81) 30 000 cards have been punched.

1.4. It happens frequently that a star appears in different references. This question is treated by sorting each file and merging records with common identifications. In consequence each star may have several source numbers. These multiple references provide sometimes conflicting spectral classifications but our purpose is not to choose the best classification, but only to provide the user with the elements for his own choice.

Approximately 20 % of the cards appear to be redundant, i.e. 30 000 punched cards correspond to approximately 25 000 stars.

1.5. The following step is the addition of information by connection to the data base of the Stellar Data Center (see Ochsenbein et al. 1981, and the communication by Ochsenbein and Bischoff at this Colloquium). We have developed a program which reads each file, goes through the data base, and writes new files containing the following information : identification, equatorial and galactic coordinates, V magnitude, UBV photometry (from Nicolet, 1978), existence of some astrophysical data and reference.

This list can be modified and extended, if necessary.

1.6. Finally it becomes possible to prepare (and to provide to any interested colleague) final editions of the groups on printout, microfiche or magnetic tape. Some of the lists (especially in the later spectral types) have still to be completed, and only partial editions have already been released, namely the catalogue of Be stars (Jaschek and Egret, 1981) and the list of Chemically Peculiar Stars (Egret and Jaschek, 1981), both available on microfiche. The first one includes 1 159 Be stars ; the second one 3 729 He, Ap and Am stars. A general microfiche of the 18 earlier groups (about 6 000 stars) is in preparation. An announcement of the complete catalogue will be published later

on, together with definitions of each group and the list of references
(Jaschek and Egret, 1982).

SOME QUESTIONS CONCERNING THE C.G.S. :

1.1. Nomenclature :

Although we use preferentially the HD number, 15 % of the stars
do not have an HD number. The problem of the identificators is solved
through the connection to the data base of the C.D.S.

1.2. Star belonging to more than one group : this situation is accep-
table provided that the definitions of the group are compatible and
allow such an overlap. For instance, a δ Del star which is a δ Scu
variable, or an Ap star which is also a spectroscopic binary. Beside
the individual group lists a general index giving for each star the
name of the group (s) to which it belongs will also be prepared.

1.3. Completeness : In general we cannot be sure to have an exhaustive
sample to a limiting magnitude (e.g. V = 7.0) because of the incomplete-
ness of most of the Surveys. Usually the numbers of objects known dif-
fer sharply inside and outside the limits of the Michigan survey by
N. Houk, as can be seen for instance in the distribution of the Ap
stars given by Egret and Jaschek (1981).

CONCLUSION : USES OF THE C.G.S.

The C.G.S. is of good help for the preparation of observing pro-
grams (spectroscopy, photometry, satellite missions, etc...). The avai-
lability of extensive samples of peculiar stars makes possible various
statistical programs (see for instance the program of absolute magni-
tude calibration started by Heck et al. 1981). It permits also to eject
the peculiar stars when calibrating samples of "normal" stars. The con-
nection with the data base facilitates statistical studies such as the
distribution of stars in the Galaxy, the kinematics, the distribution
of observational data (photometry, V sini), the location in photometric
boxes. In the near future we hope to be able to develope some general
algorithms of recognition of peculiar stars by means of a statistical
method of data analysis generalizing what is done with the photometric
diagrams.

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