The data available at the CDS are at the disposal of all interested colleagues all over the world; in the last years the CDS received requests from colleagues of 27 different countries all over the world. The interested reader can learn further details about the CDS in *Vistas in Astronomy,* **21**, 311 (1977) and the CDS Bulletins which appear twice a year.

Let us now consider some of the uses a stellar astronomer can make of the existing data.

First of all, if one is interested in a certain type of data, for instance UBV photometry, one can ask for the latest catalogue in the field. This catalogue can be obtained either on tape or on microfiche (a microfiche has a size of a post-card and contains the equivalent of 200 book pages; it is readable with any magnifying device giving × 35). At this time the CDS has over 200 catalogues on tape and 50 on microfiches; the list of catalogues available is given in the CDS Bulletins.

If on the contrary one is interested only in data for a smaller number of objects, one can proceed differently, namely one can ask for all available data for the stars one is interested in. One gets then a listing containing:

the main identificators (Name, HD, BD)
equatorial coordinates for 1950 and 2000;
galactic coordinates
equatorial proper motion components
MK spectral classification
radial velocity
trigonometric parallax
UBV photometry
Strömgren photometry
UBVRIJKLM
Celescope colour indices
two micron sky survey
V sin i
$H\gamma$
notes about variability and binarity

To complement this information, one can also ask for a listing providing the references to papers published from 1950 on, which refer to or discuss the star. For instance the star α Lyr is mentioned in 343 publications. Less "publicized" stars obviously are not mentioned that often – a "typical" object has about four references. For each paper the full reference and the authors are provided, as also the complete title, which permits to scan rapidly the most interesting papers.

It has been a common experience with the bibliographic service that everyone who uses it discovers that he has overlooked some reference which could have been useful for his own work.

The services mentioned do not cover however one essential aspect needed when one sets up an observing programme, namely to obtain a list of objects of a certain type.

We are also able to provide partial answers to this problem. One can create samples fulfilling certain conditions, like

list all HR objects south of +10° not having a radial velocity.

If one is interested in peculiar objects, one can ask for instance for lists of Ap, Am, Be, CH stars and so on – at present there exist about 30 different classes of peculiar objects. These lists are intended primarily for a first overview to be used together with the bibliographic service mentioned above.

A final point concerns observers of the Schmidt telescope or other large-aperture fields. Finding-charts exist for the Palomar and ESO/SRC Schmidt fields, providing a list of reference stars (which are also plotted on a chart), non-stellar objects and a coordinate grid. These "finding-charts" are provided on microfiche and are well suited for quick identifications.

We hope that this short description may encourage interested colleagues to request our services, or to inquire about more details. If so, please write or telex to the undersigned.

Professor C. Jaschek
Director
Centre de données stellaires
11, rue de l'Université
F-67000 Strasbourg
Telex: 890 506 STAR OBS

Astronomical Analysis Software Workshop

A small workshop was held in Geneva on 2 and 3 July 1980 to discuss possible ways of co-ordinating developments in astronomy-related software.

Those attending were: R. Albrecht, Vienna; K. Banse, ESO; A. Bijaoui, CDCA Nice; M. Capaccioli, Padua; P. Crane, ESO; R. Fosbury, Starlink-RGO; U. Frisk, Stockholm; I. King, Berkeley; and F. D. Macchetto, ESA.

A major fraction of those groups involved in large-scale astronomy-related software developments in Europe was represented (I. King attended only as an observer). Broad agreement in several areas was reached. These included:

(a) mechanisms to further communications among and within groups and among individuals on what software they have or are developing;

(b) suggested guidelines for documenting and coding programmes that would increase programming efficiency, useability, and transportability; and

(c) the continuing need for an ad hoc working group which would keep these issues active.

The advantages of software co-ordination and sharing were obvious during the workshop as several participants discovered an interesting programme of another. One participant announced his intention to prepare a magnetic tape with about 500 astronomy-related application programmes. However, the main intent of the workshop was to discuss methods by which a wider community could benefit from co-ordination. To this end, the workshop produced a number of recommendations and conclusions.

The first recommendation was that the IAU Circular on astronomical Image Processing edited by R. Albrecht and M. Capaccioli be produced in a better physical format. Thus it was recommended that the circular have its own distinctive cover including a table of contents and that better methods of reproduction be found. The hope was that this would attract a wider audience and a broader range of contributions. Nevertheless, it was evident that the circular which is distributed free of charge and is not formally refereed would not fulfill all the needs for publication in this field. Therefore, the workshop participants drafted a letter that was sent to the editors of the five major astronomy journals in Europe and the US. This letter asked that these journals give more attention to papers which deal with data-reduction algorithms and computational software.

The second set of recommendations were of a more technical nature. The group endorsed the use of the FITS standard for the exchange of astronomical data (for a description of FITS see the paper by Wells and Greisen in "Imaging Processing in Astronomy" edited by Sedmak, Capaccioli and Allen, 1979, Osservatorio Astronomico di Trieste, or write to F. Middelburg, ESO-Garching). The group recognized the need for a FITS-based standard that extended to catalogue and list types of data. A tape format for the exchange of character data was adopted. This is: (a) 9 track, 800 bpi, unlabelled; (b) ASCII Character set; (c) 80 characters/line; and (d) 50 lines/record. This is essentially a card image format and, although it is not appropriate for very large data sets, it is simple and easy for most normal needs.

A subgroup of the workshop agreed to draw up a set of programming and documentation guidelines which would serve to aid people in developing and using their algorithms. These guidelines will probably be quite similar to those that will be recommended by NASA for the development of Space Telescope related scientific analysis software. The guidelines will be published in the IAU Astronomical Image Processing Circular.

The question of how to entice people to conform to any set of programming guidelines was another major topic of discussion. Clearly anyone who does not want his programmes seen or used by a colleague and who does not need to use his own programmes again 6 months later does not find any inducement to follow anybody else's guidelines. So why would anyone want guidelines? One major reason is that good programming practices help the author as much as anyone. Another benefit of following the simple guidelines will be that programmes of general interest written by others following these guidelines can be easily integrated. This opens up the possibility of sharing to a wide number of people. Perhaps the message from this workshop on following guidelines is: "Try it, you'll like." A corollary is: "So will your colleagues.".

Finally those present at this workshop felt that the success of these few days warranted continued meetings on this topic at roughly 6-month intervals. The group decided to baptize themselves as the "Working Group on Co-ordination of Astronomical Software", but did not consider drawing up any formal "terms of reference" to guide the further deliberations. Thus the future tasks of the Working Group are still to be defined. Suggestions are welcome.

P. Crane

Tentative Time-table of Council Sessions and Committee Meetings

The following dates and locations have been reserved for meetings of the ESO Council and Committees:

November 4	Scientific/Technical Committee, Garching
November 5	Finance Committee, Garching
November 6	Committee of Council, Garching
November 26-27	Council, Garching
December 2-4	Observing Programmes Committee, Garching

Cataclysmic Binaries – From the Point of View of Stellar Evolution

H. Ritter, Max Planck Institute for Physics and Astrophysics, Garching

Cataclysmic Binaries

Cataclysmic variables (CV's) is the common name of a subgroup of eruptive variables consisting of the classical novae, the dwarf novae, the recurrent novae and of the nova-like objects. Since Kraft's pioneering investigation about twenty years ago (Kraft, R. P.: 1973, *Adv. Astron. Astrophys.* **2**, 43) we know that probably all of the CV's are close binaries. However among the roughly 500 CV's known at present, only for about 50 objects has the binary nature been established by observations. Hereafter these objects will be referred to as cataclysmic binaries (CB's). From the histogram of their orbital periods, shown in Fig. 1, it is seen that CB's have extremely short orbital periods, typically only a few hours. Moreover the histogram shows a remarkable gap of orbital periods in the range between about 2 and 3 hours. This gap has been found to be statistically highly significant. Apparently CB's are divided into two subgroups, i. e. into the ultra-short-period CB's (hereafter USPCB's) with orbital periods $P \lesssim 2^h$ and into the longer-period CB's (hereafter LPCB's) with orbital periods $P \gtrsim 3^h$.

From the wealth of observational data gathered during the past twenty years (for details see the excellent review paper by B. Warner: 1976, IAU Symp. No. 73, p. 85) a standard model of CB's has been derived. Accordingly a CB consists of a white dwarf primary in orbit with a low-mass main-sequence secondary which fills its critical Roche volume (Fig. 2). Matter streaming from the secondary through the inner Lagrangian point L_1 falls into an accretion disk around the white dwarf. At the point where the matter coming from L_1 hits the disk a shock front is formed which is usually referred to as the hot spot (Fig. 2). The typical masses involved are roughly 1 $M_\odot$ for the white dwarf whereas the secondary's mass is approximately 0.1 $M_\odot$ times the orbital period in hours. The relation between the secondary's mass and the orbital period is a direct consequence of assuming the secondary to be a main-sequence star.

Are the Secondaries Evolved?

Knowing a CB's orbital period, the mass and the radius of the secondary can easily be computed if it is assumed to be a main-sequence star, i. e. that it is essentially unevolved. On the other hand deriving the secondary's mass and radius from observations without making this

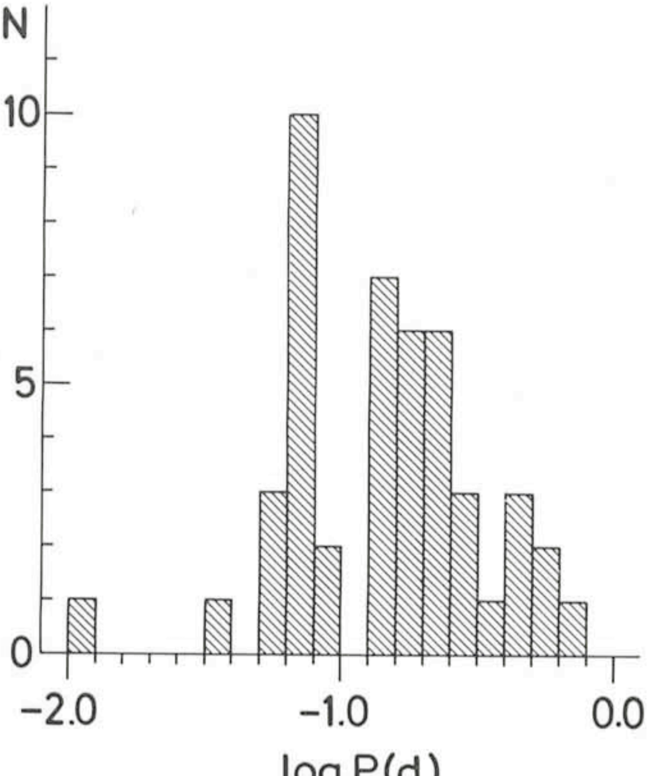

Fig. 1: *Histogram of the orbital periods of known cataclysmic binaries. Note the gap in orbital periods in the range* $-1.0 \lesssim \log P\,(d) \lesssim -0.9$, *i. e.* $2^h \lesssim P \lesssim 3^h$.