

COMMISSION 5. DOCUMENTATION AND ASTRONOMICAL DATA  
DOCUMENTATION ET DONNEES ASTRONOMIQUES

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The report period 1982-84 was characterized by an again increased volume of material processed in data and abstracting centers, and by a growing clientele particularly of online services. The Working Groups of Commission 5 seek continued consultation with research object commissions so that the advanced documentation technology be efficiently employed toward specific demands of subject areas as to indexing, tagging, comprehensive, selective and inter-disciplinary retrievals. The guideline library for these purposes has been augmented by the First Dictionary of the Nomenclature of Celestial Objects by A.Fernandez, M.-C. Lortet, and F.Spite (*Astr.Astrophys.Suppl.* 52, no.4, 1983) and by the Guide to the Presentation of Astronomical Data by G.A.Wilkins (*CODATA Bull.*46, 1982); a new draft of the IAU Style Manual is before the IAU EC.

Following the 1981 Strasbourg conference on data retrieval (IAU Colloquium 64, published 1982: Reidel), some topics of cataloguing have been discussed at the IAU Symposium 111 on Calibration of Fundamental Stellar Quantities in Como (Italy), May 24-29, 1984 (chaired by A.H.Batten and L.Pasinetti). Astronomical catalogs were the specific subject of a colloquium arranged by the Astronomical Council of the USSR Academy of Sciences (USSR Data Center, O.Dlushnevskaya) and the Abastumani Observatory, September 10-16, 1984, near Tbilissi. The Commission is arranging for an open meeting on celestial object designations (chair: C.Jaschek) during the XIX GA. Among the topics proposed for discussion are particularly the nomenclature of specific objects in other galaxies, designation practices of objects observed from satellites, establishments of lists of acronyms, and procedures of error correction.

The Working Groups present the following Progress Reports:

Astronomical Data (B.Hauck, IAU Representative in CODATA):

The most visible activity of the WG was the arrangement of a course on data handling in astronomy and astrophysics, which was held in Trieste, July 9-13, 1984, and co-sponsored mainly by CNR (Italy), CODATA, and the Osservatorio Astronomico di Trieste. There were over 50 participants, and the chief topics were: Data management for data banks; astronomical catalogs; information transfer systems and standards; extraction methods for observational data; data handling in other sciences. The proceedings will be published in the *Mem.Soc.Astr.Ital.*

Two meetings in Strasbourg relating to astronomical data were titled "Statistical Methods in Astronomy" and "The Future of Non-stellar Astronomical Data". The proceedings of the Astronet conference (Rome 1982) have appeared in *Mem.Soc.Astr.Ital.* vol.53.

To characterize the expanding activities of the existing datacenters: About 450 astronomical catalogs are now available at the CDS Strasbourg. The Catalogue of Stellar Identifications (CSI) now contains about 550,000 objects, and has commenced inclusion of non-stellar objects, among them 50,000 galaxies. The USSR datacenter has at present 268 catalogs, including 13 prepared in the USSR, and four new ones

dispatched in 1983. The collaboration between several observatories permitted extensive activity in relation to data in the USSR, and many scientific papers are being published in that field. Nauchnye Informatsii no.5 was devoted to the activities of the datacenter as a special issue. The compendium "Informatics in astronomy and Geodesy" (in Russian, ed. E.Mustel) was published by Nauka (Moscow 1982).

Among a number of new catalogues and atlases, wide interest attaches to the new edition of the Bright Star Catalog (Hoffleit and Jaschek; Yale 1982) with data on 9096 stars brighter than  $V = 6.50$ , with a 1983 Supplement. The Yale parallax catalog (to be published) contains - according to the entries completed in 1984 - trigonometric parallaxes for 7435 stars. Bibliographies of photographic catalogs of star positions, and of atlases and charts are found in Bull.Astr.O.Beograd no. 29 (1982). The new edition of the General Catalogue of Variable Stars is being completed in the USSR. Two astronomical satellites (the Space Telescope and Hipparcos) are at the origin of very large catalog projects. A massive guide-star list of some  $10^7$  objects is needed for the first mission, and comprehensive information on some  $10^5$  program stars for the second. The International Ultraviolet Explorer obtained many spectra, and a recently-published IUE Low-dispersion Spectra Reference Atlas contains 229 stars, the aim being to establish and to illustrate spectral reference sequences in the UV range.

Bibliography is an important complement of catalog data; in particular, the Bibliographical Index of the Strasbourg CDS (BSI) collects all citations of stars or of galaxies.

CODATA activities: The 8th International CODATA Conference was held in Jachranka (Poland), October 4-7, 1982. The Proceedings ("Data for Science and Technology", ed. Ph.Glaeser) were published by North-Holland Co. The 13th General Assembly took place just after this conference. The 9th International Conference, followed by the 14th GA, was held in Jerusalem, June 24-28, 1984. This assembly adopted a new policy concerning task groups, and some of the groups were discontinued, or modified in scope. The next conference will be prepared for July 14-17, 1986 at the Univ. of Ottawa (Canada), the subject being Computer Handling and Dissemination of Data. IAU members interested in this topic may contact the WG Chairman. CODATA Bulletins 45 through 55 were published during the report period. Apart from the "Guide to the Presentation of Astronomical Data" (G.A.Wilkins, no. 46, cited earlier), the following issues may be mentioned:

- No.48: CODATA Directory of Data Sources for Science and Technology, chap.7: Nuclear and elementary particle physics (June 1982).
- No.49: Directory chap.8: Molecular spectroscopy (July 1982).
- No.52: Directory chap.10: Geodesy (Jan 1984).
- No.54: 9th Conference Jerusalem 1984), Scientific Program and Abstracts (March 1984)

In addition, CODATA has sponsored the publication of "Database Management in Science and Technology", eds. J.R.Rumble and V.E.Hampel (North Holland Co.), which may be useful to astronomers. It is designed as an introduction for scientists and engineers to the use of computers to store, manipulate, and distribute collections of, numerical data.

#### Standardisation of Data Exchange (Special Task Force; P.Grosbol):

The Task Force on the Flexible Image Transport System (FITS) was created by Commission 5 during the XVIII GA in 1982, where Resolution C1 recommended the FITS tape format for the interchange of astronomical image data and other digital arrays between observatories. In cooperation of the North American AAS group and the European Software Coordination group, the two main functions of the Task Force are: (1) to channel comments and suggestions on the use of FITS for data interchange, and (2) to explore the possibilities for extending the FITS tape format to include

table and catalog data. The current results, including presentations at the Course in Trieste (1984), are as follows:

(1) Close contacts between the groups have been established; the problems, comments and suggestions raised are collected, and discussed at intervals. The main items that came up in the groups and in a Panel Discussion at Trieste were: (a) a need for a booklet on how to use FITS; (b) a list of commonly used non-standard FITS keywords and their meaning would also be helpful; (c) concern on the 'small' physical block size on FITS tapes has been expressed by a number of major institutions.

(2) After extensive discussion a proposal for Generalized FITS Extensions (with applications to tables and catalogs) was published in the Astronomical Image Processing Circular no.10, and presented at Trieste. The proposed FITS extension format has been implemented in prototype versions at NRAO and ESO. Table data exchange between these institutions proceeded without problems. The extension is being examined by datacenters for the purpose of catalog exchange. Sample programs for encoding and decoding have been prepared in addition to a test tape which contains the Nilson Uppsala General Catalogue of Galaxies.

#### Designations (C.Jaschek):

The "First Dictionary of Nomenclature ..." (Fernandez, Lortet, Spite 1983, cited above) contains about 1200 acronyms and 900 references, and is expected to become the standard reference for catalog abbreviations. Preparation of the first supplement is well under way, as is similar work on objects in M31 and in the Magellanic Clouds.

Circulars were addressed to the editors of astronomical periodicals to call their attention to the designation problem. All contacted magazines answered favorably and requested additional desk copies of the "Dictionary" which were provided. It is hoped that the actions promised to be taken will yield visible results in the future. Input from other commissions is desired. Designation practices were also the subject of a paper by J.Mead and a discussion by Jaschek at Trieste. The WG had an exchange of letters with regard to the designations of objects observed by EXOSAT.

#### Classification Systems and Information Retrieval (P.Lantos):

The IAU Vocabulary, on which a report was presented to the CODATA 1984 conference, is awaiting approval by the WG. The translation into French is planned. Contacts to journal editors are intended in order to explore a feasible way of disseminating the Vocabulary.

#### Abstracting Guidelines (L.Schmadel):

The Task Force is still constituting itself, but preliminary material has been circulated. A progress report will be completed in time for discussion at the XIX GA.

The Astronomy and Astrophysics Abstracts (AAA) are approaching a volume of 20,000 papers per year. Compilation has been transferred to a modified ITT 3030 system which is very satisfactory and has permitted further reduction of the publication time of the volumes. As a result, the 3rd Five-year Index (vol.35/36) has already appeared, and vol.38 is in progress. A tape service is in preparation. The code ASTHMA, under which the latest volumes of AAA should be available by mid-1984, will be a standard tape (9-track unlabeled, ASCII, 1600 bpi, block size 80, record length 4000) of high redundancy and simple structure, so that it can be operated on computer systems of low capacity. Marketing is still being negotiated.

VINITI (All-Union Institute for Scientific and Technical Information, Dept. Astronomy and Geodesy, Moscow; I.S.Shcherbina-Samoilova) :

The Department continued publication of Abstract Journals (Referativnyj Zhurnal) in three series: 51.Astronomy, 52.Geodesy, and 62.Space Research. The total number of abstracts amounted to 22,000 annually.

Itogy Nauky (state-of-the-art reviews) have the following new volumes: (Astronomy Series)

17. Radio Exploration of Moon and Terrestrial Planets, part II (1981).
18. Problems of Extragalactic Astronomy (1981).
19. Radiation Receivers for Ground-based Astronomy (1982).
20. Celestial Mechanics.
21. Stellar Flares. Supernovae. X Ray Sources. The Sun (1982).
22. Peculiar Stars, Strong Magnetic Fields, and Gamma Astronomy (1983).
23. Problems of Modern Astronomy (1983).
24. Astrophysics and Cosmic Physics (1983).
25. Solar Physics (1984).

(Space Research Series)

17. Physics and Evolution of Stars (1981).
18. Magnetism of Planets (1982).
19. Key Problems of Planet Exploration in the Solar System (1983).
20. Molecules in Astrophysics (1983).
21. Materials Science in Space (1984).

The descriptor vocabulary "Space research" has been prepared and is used for storage and machine readable output of Abstract Journal 62. The corresponding work for Astronomy is nearing completion.

Astronomy and space research reviews are contained in a newly established database for reviews.

NASA/GSFC Astronomical Data Center (Greenbelt MD, USA; W.Warren):

Request activity at the ADC, NASA Goddard Space Flight Center, continues to increase. During the report period, 1300 requests were completed by the ADC, with 900 machine readable catalogs disseminated. New or corrected/modified machine readable catalogs received numbered 141, while detailed descriptive comments were produced for 64 catalogs. In brief description, significant work completed at the ADC includes these items:

Machine readable versions of the entire Cordoba (613959 stars) and Cape Photographic (454877 stars) Durchmusterungen were completed. Zones  $-01^{\circ}$  to  $+19^{\circ}$  of the Bonner Durchmusterung (111323 stars) were also finished.

New versions of the Smithsonian Astrophys.Obs. Star Catalog (SAOC) and the SAO-HD-GC-DM Cross Index were completed following five years of part time work (Roman and Warren, ADC Bull. 1,212). A new machine version of the Henry Draper Catalogue has also been prepared (Roman and Warren, Bull. AAS 16, 502, 1984).

The NASA version of the retrieval system of the Bibliographical Star Index (Carpuat et al., Bull.Inf.CDS 26, p.83, 1984), available on-line to the scientific community, was considerably improved and updated with new BSI data (Hill, Mead, and Nagy, ADC Bull. 1,220, 1983; Hill, Brotzman, and Mead, Bull.AAS 16, 503,1984).

A Bibliographical Index of Objects Observed by IUE 1978-82, containing 523 papers, has been prepared (Mead, Kondo, and Boggess, Bull.AAS 16,502). A new version of the Catalog of Infrared Observations has been completed in both machine and printed forms, and published as NASA Reference Publ. 1118 (May 1984).

ICSTI (International Council for Scientific and Technical Information, the former ICSU Abstracting Board) reconstituted itself at the GA in Philadelphia in June 1984, the IAU being represented on its Executive Committee by W.Heintz. The organisation is resuming its wide-field and inter-disciplinary studies (Aggregate lists of serials; thesauri and translations; downloaded machine readable databases; copyrights) and intensifying the cooperation with CODATA.

Astronomy has a problem, in the opinion of this author, with some bibliographical databases (other than those prepared by astronomical services) which are less than helpful when used for searches. They may be incompletely compiled or downloaded (particularly on noncommercial literature), confusingly classified, or poorly cross-referenced. Diversity of publishing policies in the primary literature, especially with respect to vocabularies, and disagreements on classification schemes do not help to alleviate the problem. A fact accepted with resignation appears to be the "unmanageable" volume of primary publications. Hardware and techniques for the requisite secondary processing are in place, but the conventions toward optimal use of these facilities are incomplete.

CDS Strasbourg and the USSR Data Center in Moscow report in the Bulletins d'information of CDS. Attention is called to other publications in these Bulletins, notably the Holding Aggregates (no.25, p.87, 1983) with supplements on microfiches, and the paper by D.Egret (no.24, p.109) on the organisation, contents and use of the CDS database. Literature relevant to documentation is referenced in chapter 002 of the A.A.Abstracts.

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