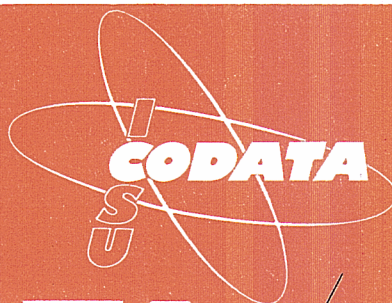


INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS
COMMITTEE ON DATA FOR SCIENCE AND TECHNOLOGY



16 CODATA / NEWSLETTER

MARCH 1976

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*The Committee on Data for
Science and Technology
(CODATA) was established
in 1966 by the International
Council of Scientific Unions.*

*Working on an international,
interdisciplinary basis,
CODATA seeks to improve
the quality, reliability and
accessibility of data of
importance to science and
technology.*

MONDAY, JUNE 28, 1976

10:30 - 11:45 STATISTICAL TECHNIQUES IN THE CORRELATION AND EVALUATION OF DATA
N. Kurti, Chairman

Modern Statistical Techniques in Data Analysis
John Tukey, USA (Princeton University and Bell Laboratories)

Introductory Address
Harrison Brown, USA (President, ICSU)

Functions and Objectives of CODATA
Paul Melchior, Belgium (President, CODATA)

GENERAL PROBLEMS OF DATA EVALUATION & ANALYSIS

Useful Data for Engineers
A. David (France)

Physical Property Needs in Computer-Aided Process Design

R. L. Motard (USA) and P. Winter (UK)
A Standard Data Input System for Chemical
Engineering Design
M. G. O'Reilly (UK)
Non-Ideal Vapor Density - A Typical Problem in
Building a Data Bank for Computer-Aided Design
R. Edmonds (UK)

Non-Ideal Vapor Density - A Typical Problem in Building a Data Bank for Computer-Aided Design
R. Edmonds (UK)

The International Data Series
H. V. Kehiaian (France)
Thermodynamic Properties of Key Organic Oxygen

Compounds in the Carbon Range, C₁ to C₄
J. Chao, R.C. Wilhoit, and B.J. Zwolinski (USA)

D. J. McMahon and D. W. Kraai (USA)
Alloy Phase Diagram Activities of the Alloy Data
Center

L. H. Bennett (USA)
Multicomponent Alloy Constitution Data Compilations
A. Prince (UK)

Continuation of above

Continuation of above

DATA ON FLAVOR AND AROMA
D. Duncan, Chairman
Volatiles in Grapes and Wines
A. D. Webb (USA)
Correlation of Instrumental Analysis
of Flavors with Sensory Data
A. C. Noble (USA)

20:00-21:30 OPEN MEETINGS

Presentation of Biological Data in the Primary Literature
Task Group on Key Values for Thermodynamics
Working Group on Data for Industrial Needs

TUESDAY, JUNE 29, 1976

8:30 - 11:45	COMPUTER TECHNIQUES IN THE HANDLING AND DISSEMINATION OF DATA O. Kennard, Chairman	User Reactions to a Network System Data Base Rachelle S. Heller, USA (University of Maryland), David C. Maxwell and Andrew McCormick, UK (Mass Spectrometry Data Centre, Aldermaston)
PLENARY SESSIONS	SPiR - Canadian Network for the Identification of Infrared Spectra R. Norman Jones, Canada (National Research Council) and Elizabeth N. Kirby, Canada, (Ontario Research Foundation) Crystallographic Data Services in Japan Takehiko Shimanouchi, Japan, and Takeo Yamamoto, Japan (Computer Center, University of Tokyo)	Data Access for Research in the Space Environment Laboratory of ERL Thomas B. Gray, Jr., USA (National Oceanic and Atmospheric Administration) Experiences with Remotely Accessed Data Bases A. William Gindra, USA (General Electric Company)
13:30 - 15:00	OPEN MEETINGS	OPEN MEETINGS
PARALLEL SESSIONS	Task Group on Presentation of Data in the Primary Literature Task Group on Transport Properties Task Group on Accessibility and Dissemination of Data CODATA Activities in Spectroscopy International Cooperation on Thermodynamic Tables	ICSU-AB/CODATA Joint Working Group on Data Tagging and Flagging Task Group on Fundamental Constants Task Group on Training in Data Handling Advisory Panel on Geosciences Solubility Data
19:30 - 22:00	NATIONAL AND INTERNATIONAL DATA PROGRAMS M. Kotani, Chairman	The Role of the UNISIST Programme in the Development of National and International Data Activities Adam Wysocki (Unesco) Role of Associate Organizations in Achieving the Goals of CODATA B. Vodar (France) Data Concerns and Programs of the World Federation of Engineering Organizations L. E. Eicher and F. K. Willenbrock (USA) The IAEA Nuclear Data Center - Its Role in the International Scientific Community A. Lorenz (Austria) Solubility Data Project A. S. Kertes (Israel)
PLENARY SESSION	National Program of Research in the Field of Numerical Data on Science and Technology V. V. Sytchev and A.D. Kostlov (USSR) An Information System for Physics Data in the Federal Republic of Germany H. Behrens and G. Ebel (FRG) Two Projects on the Evaluation and Compilation of Scientific Data in Japan Takehiko Shimanouchi (Japan) The National Archives as a Resource for Scientific and Technical Information Kenneth Thibodeau (USA)	

8:30 - 11:45 DATA NEEDS FOR ENERGY AND ENVIRONMENTAL PROBLEMS
V. V. Sytchev, Chairman

PLENARY SESSION
Organized Data Collection Needs for Energy Research, Development, and Demonstration
David M. Richman and Charles M. Gottschalk, USA
(Energy Research & Development Administration)

Competitive Forms of Energy and Relevance of Numerical Data
Jean-Claude Balaceanu, France (French Institute of Petroleum)

Monitoring for Environmental Information
Albert C. Trakowski, USA (U.S. Environmental Protection Agency)

Environmental Problems in Developing Countries
R. D. Deshpande, India (Department of Science and Technology)
The Effects on Stratospheric Ozone from Organochlorine Compounds
F. Sherwood Rowland, USA (University of California)

13:30 - 15:30 DATA ACTIVITIES RELEVANT TO ENERGY RESEARCH & DEVELOPMENT

PARALLEL SESSIONS
J. E. Dubois, Chairman

Data and Documents on Patterns and Efficiencies of Energy End Use
Arthur H. Rosenfeld (USA)

Data Needs for Energy Policy Assessment
M. D. Goldberg (USA)

The Information Center As a Link Between Basic and Applied Research
S. Pearlstein (USA)

Geothermal Properties of Aqueous Sodium Chloride Solutions
S. L. Phillips and J. A. Fair (USA)

Molten Salts: Energy Research and Data Center Activities
G. J. Janz (USA)

Central Computerized Data Base for Liquid Metal Fast Breeder Reactors
N. M. Greene, G. F. Flanagan, and H. Alter (USA)

Evaluated Nuclear Structure Data File (ENSDF) for Basic and Applied Research
W. B. Ewbank (USA)

Data Collected by the Shock Wave Data Center and Applications of Its Output
M. Van Thiel (USA)

BIOLOGICAL DATA BANKS & NETWORKING

R. R. Colwell, Chairman

Botanical Data Banking & Networking
T. J. Crovello (USA)

The Ecological Data Bank of the James Bay Hydro-electric Development
P. Legendre and M. Gagnon (Canada)

Microbiological Data Bank Activity in Japan
K. Komagata (Japan)

Information Management System for Genetic Resources
D. J. Rogers, G. N. Hersh, and J. April (USA)

Experience in Collection and Publication of Data in Microbiology
V. B. D. Skerman (Australia)

Some Information-Management Problems Raised by the International Nature of Systematic Biology Data
L. E. Morse (USA)

BIOLOGICAL DATA COMPILATION AND APPLICATION
R. Donovick, Chairman

Utilization of Computer Technology for Reproductive Studies in Nonhuman Primates
T. J. Kuehl and W. R. Dukelow (USA)

Compilations of Evaluated Thermodynamic Data for Biological Applications
G. T. Armstrong and R. N. Goldberg (USA)

Estimation of the Structure of the Proteins of All Living Organisms
M. O. Dayhoff, L. T. Hunt, W. C. Barker, R. M. Schwartz and B. C. Orcutt (USA)

Studies Illustrating the Need for the Publication of Evaluated Spectral and Chromatographic Data for Compounds of Clinical Interest
R. W. A. Oliver (UK)

CONSTRUCTION AND INDEXING OF FILES IN THE GEOSCIENCES

M. Carapezza, Chairman

A Data Structure for Land Description and Investigation
F. Bonfatti and P. Tiberio (Italy)

Dealing with the Sparse Data Matrix - DSDP Data Management Procedures
P. B. Woodbury (USA)

ENDEX - A System for Locating Historical Environmental Data
C. D. Noe (USA)

Automated Classification of Sediments as a Geological Tool
L. Musich and S. Bearman (USA)

A Fault Tolerant Approach to Processing Volume Data from an Error Prone Experiment
S. Bearman (USA)

DATA SERVICES IN THE ASTRO- AND GEOSCIENCES
G. A. Wilkins, Chairman

The U. S. Environmental Data Service - A Multidisciplinary, Multipurpose National Service in the Geosciences with Relations to the ICSU World Data Center System
A. H. Shapley (USA)

International Cooperation of Centers for Ephemerides and Astronomic Data
R. L. Duncombe, A. D. Fiala, and P. K. Seidelmann (USA)

Experience of the Stellar Data Center as a Data Bank in Astronomy
C. Jaschek, and F. Ochsenbein (France)

The International Oceanographic Data Exchange
G. Peluchon (France)

Development and Applications of a Regional Environmental Data Base for Southeastern United States
R. J. Olson and F. G. Goff (USA)

20:00 - 21:30 OPEN MEETING
B. Vodar, Chairman

CODATA Associate Organizations

THURSDAY, JULY 1, 1976

8:30 - 10:30 PLENARY SESSIONS
 PANEL DISCUSSION ON PROBLEMS OF DATA CENTER OPERATION 10:45 - 11:45 PANEL DISCUSSION ON THE FUTURE OF CODATA
 Moderator: E. L. Brady, USA (National Bureau of Standards) Moderator: F. D. Rossini, USA (Rice University)

13:30 - 15:30
 EVALUATION OF DATA ON THERMOPHYSICAL PROPERTIES OF FLUIDS
 S. Angus, Chairman

Thermodynamic Properties of Propane
 D. N. Seshadri and D. S. Viswanath (India)

A Method for the Development of Thermodynamic Equations of State by the Representation of Multiple Data Forms
 R. J. Jacobsen and R. B. Stewart (USA)

Compilation and Evaluation of Thermophysical Data on Properties of Fluids by Computer Numerical Experiment
 V. V. Sytchev, A. D. Kostov, and G. A. Spiridonov (USSR)

A Rational Equation of State for Thermodynamic Properties of Fluids
 R. D. Goodwin (USA)

The PVT Surface of Simple Liquids at Densities Near Melting
 H. M. Roder (USA)

On the Evaluation of Physical Property Data of High Pressure Fluids
 J. Osugi, Y. Takezaki, H. Iwasaki, T. Makita, and K. Watanabe (Japan)

Viscosity of Multicomponent Mixtures of Gases
 J. Kestin, H. E. Khalifa, and W. A. Wakeham (USA)

Publication Program of Thermophysical Property Tables of Refrigerants in Japanese Association of Refrigeration
 H. Iwasaki, T. Makita, K. Oguchi, and K. Watanabe (Japan)

Activities of the Kanpur Critical Data Center
 A. P. Kudchadker (India)

Co-ordination of Data Programs: The IUPAC Thermodynamic Tables Project
 S. Angus (UK)

COMPUTER TECHNIQUES IN NUMERICAL DATA HANDLING
 R. N. Jones, Chairman

GEODAS-DCRF: Development of a Relational Data Base System and Its Application for Storage and Retrieval of Complex Data from Researcher Files
 K. Wadatsumi, F. Miyawaki, H. Murayama, M. Higashitani (Japan)

Interactive Data Manipulation and Data Analysis
 R. R. Hartwig, M. D. Bergen, P. Pistor, U. W. Schauer, and H. Schmutz (FRG)

Data Retrieval on a Budget with Customized Source Code
 P. B. Woodbury (USA)

Automated Aids for Managing and Evaluating a Data Base System Environment
 W. D. Dominick and M. H. McKinney (USA)

Searching Sparse Data Sets with Modified Boolean Expressions
 W. T. Birtley (USA)

Analysis of Large Structural Corpus and Computer-Aided Design in Chemistry
 J. E. Dubois (France)

Computer-Assisted Data Evaluation in a Small Data Center
 H. M. Gerstenberg (USA)

COMPUTER SYSTEMS FOR NUMERICAL DATA HANDLING
 N. G. Rambidi, Chairman

The Generalized Applications System of NODC
 W. J. Morawski, Jr. (USA)

A Model of Protected, Shareable, and Portable Scientific Data Bank
 F. Bouille (France)

Classification of Data Banks
 J. Michel, H. Viellard, and E. Labin (France)

NOSTRUMS for Rapid Information Retrieval
 L. Forman and B. T. Rickard (USA)

Basis On-Line Retrieval and Analysis of Large Numeric Data Bases
 J. B. Fried (USA)

An International Mass Spectral Search System (MSSS)
 S. R. Heller, G.W.A. Milne, and R. J. Feldmann (USA)

Acquisition, Storage, Retrieval, Display and Utilization of Computerized Data in the LLL Data Bank of Physical and Chemical Properties
 V.E. Hampel, E.A. Henry, R.W. Kuhn, and L. Lytes (USA)

EVALUATION OF THERMOCHEMICAL DATA
 L. V. Gurvich, Chairman

A Combined Least Sums and Least Squares Approach to the Evaluation of Thermodynamic Data Networks
 D. Garvin, V. B. Parker, D. D. Wagman, and W. H. Evans (USA)

Computer Analysis of Thermochemical Data
 J. B. Pedley and J. Rylance (UK)

Statistical Uses and Abuses of Thermochemical Data
 J. W. Kennedy (UK)

The Discrepancy Between 2d Law and 3d Law Analyses of (Equilibrium Constant, Temperature) Data
 R. D. Freeman (USA)

Procedures for the Critical Evaluation of Activity and Osmotic Coefficients of Electrolytes
 B. R. Staples (USA)

Electrochemical Data
 P. Zuman and L. Meites (USA)

EVALUATION OF DATA ON SOLID STATE PROPERTIES
 C. N. R. Rao, Chairman

Data Requirements in Properties of Solids: Past, Present and Future
 H. P. R. Frederikse (USA)

Methodology in the Generation of Critically Evaluated, Analyzed and Synthesized Thermal, Electrical, and Optical Properties Data
 C. Y. Ho and Y. S. Touloukian (USA)

Data on Crystal Structure Transformations
 C. N. R. Rao (India)

NOUVELLES ADJONCTIONS AU SYSTEME INTERNATIONAL

La Conférence Générale des Poids et Mesures, lors de sa 15^e réunion tenue à Paris au mois de juin 1975 a officiellement créé deux nouveaux préfixes destinés à désigner les multiples 10^{15} et 10^{18} d'une unité quelconque du Système International, et a également instauré deux nouvelles unités de mesure dans le domaine des rayonnements ionisants.

Les nouveaux préfixes sont exa- (noté E et signifiant 10^{15}) et peta- (noté P et signifiant 10^{18}). La gamme des puissances positives et négatives de 10 s'étend donc maintenant de 10^{-18} à 10^{18} et sa liste complète est la suivante :

Puissance de 10	Préfixe	Symbole
-18	atto	a
-15	femto	f
-12	pico	p
-9	nano	n
-6	micro	μ
-3	milli	m
-2	centi	c
-1	déci	d
+1	déca	da
2	hecto	h
3	kilo	k
6	mega	M
9	giga	G
12	téra	T
15	exa	E
18	peta	P

Les nouvelles unités créées par la CGPM sont destinées à exprimer la radioactivité et la dose absorbée. Désormais l'unité SI d'activité sera celle d'une source radioactive subissant 1 désintégration (ou tout autre transformation nucléaire) par seconde. Cette unité sera appelée le becquerel (symbole : Bq) en l'honneur de l'auteur de la découverte de la radioactivité en 1896. Jusqu'à maintenant l'unité d'activité était le curie, dont la valeur correspond à 37 milliards de becquerels ($1\text{Cu} = 3.7 \times 10^{10} \text{ Bq}$).

L'autre unité, qui sert à exprimer la dose de rayonnement absorbée par un organisme lors d'une irradiation ionisante est le gray (symbole : Gy). Nommée en l'honneur de Louis Harold Gray, radiobiologiste britannique qui fit des travaux fondamentaux sur la mesure des doses de rayonnement, le gray correspond à l'absorption d'une dose d'1 joule par kilogramme de tissus. L'ancienne unité, le rad, correspondait à l'absorption de 0,01 joule par kilogramme.

REPRESENTATIVE ESTIMATES FOR FUNDAMENTAL GEODETIC PARAMETERS

At the General Assembly of the International Union of Geodesy and Geophysics (IUGG) in Grenoble, September 1975, the International Association of Geodesy passed the following resolution:

Recognizing its responsibility for providing representative estimates for fundamental geodetic parameters to the scientific community, recommends that the following numerical values be considered as currently representative estimates:

- velocity of light in vacuo
 $c = (299\,792\,458 \pm 1.2) \text{ m.s}^{-1}$
- newtonian gravitational constant
 $G = (6\,672 \pm 4.1) \times 10^{-14} \text{ m}^3 \text{ s}^{-2} \text{ kg}^{-1}$
- angular velocity of the Earth (rounded value)
 $\omega = 7\,292\,115 \times 10^{-11} \text{ rad.s}^{-1}$
- geocentric gravitational constant including the atmosphere
 $GM = (3\,986\,005 \pm 3) \times 10^8 \text{ m}^3 \text{ s}^{-2}$
- geocentric gravitational constant of the atmosphere only
 $GM_A = (35 \pm 0.3) \times 10^7 \text{ m}^3 \text{ s}^{-2}$
- zonal harmonic coefficients
 $J_2 = (108\,263 \pm 1) \times 10^{-8}$
 $J_3 = (-254 \pm 1) \times 10^{-8}$
 $J_4 = (-161 \pm 1) \times 10^{-8}$
 $J_5 = (-23 \pm 1) \times 10^{-8}$
 $J_6 = (54 \pm 1) \times 10^{-8}$
- equatorial radius of the Earth
 $a = (6\,378\,140 \pm 5) \text{ m}$
- equatorial gravity
 $\gamma_e = (978\,032 \pm 1) \times 10^{-5} \text{ m.s}^{-2}$
- flattening : f
 $1/f = (298\,257 \pm 1.5) \times 10^{-3}$
- geoidal potential
 $W_0 = (6\,263\,683 \pm 5) \times 10 \text{ m}^2 \text{ s}^{-2}$
- geopotential scale factor
 $R_0 = (6363\,676 \pm 5) \text{ m}$

The values of c and G, as well as their standard errors, are taken from the CODATA System of Physical Constants of 1973. These standard errors have been computed on the basis of internal consistency of the least-squares adjustment; the other standard errors are intended to represent realistic estimates of accuracy; and the value of ω is accurate to the given digits.

It is further remarked that this resolution does not affect the validity of the Geodetic Reference System 1967 for reference purposes, that the IGSN 1971 is to give information on the global distribution of gravity, and that more details on the fundamental geodetic parameters are found in the report of the Special Study Group 5.39 at the same General Assembly, a copy of which may be obtained by writing to:

Mr. Michel Louis
Association Internationale
de Geodesie
39ter rue Gay Lussac
75005 Paris, France

According to a recent study on the "typology of data banks" conducted by the French scientist, Dr. Edouard Labin, the total number of data banks which would be required to cover some 60 scientific and technological fields on a world scale would be about 1500. At present, 150 to 200 are in actual operation (between 80 and 100 in the U.S., about 50 in France, 20-30 in the U.S.S.R., about 15 in Germany and the rest divided among the U.K., Italy, Spain, Japan and Canada).

Contrary to what was believed 10 years ago, setting up a data bank is not an easy task. Putting one into operation requires the equivalent of 30 man-years of work, an initial cash outlay in the order of \$0.8 to \$1 million and an annual operating expenditure of between \$120,000 and \$200,000. The choice of what data bank to create and support will no doubt cause serious problems to public officials because of the magnitude of the costs involved.

The method used by the author in his typological study of data banks consisted of breaking down each data bank according to 13 "functional viewpoints" (such as useful life of the data, reliability, homogeneity), and grading each of these viewpoints between 0 and 10. Thus, each data bank studied had a quantitative "characteristic profile" which allowed various correlations to be made and resemblances or dissimilarities to be brought to light.

A closer factorial analysis of these profiles (comprising 17 data banks in all) revealed that data banks fell into two main categories:

- "observatory-type" banks (e.g. meteorological data banks or oceanographical data banks) where huge quantities of data are being stocked, the data being significant only if the circumstances under which they were obtained are known in detail. This kind of bank can only be interrogated in direct-file mode and is mainly used to elaborate secondary, integrated data, these being the really useful data.

- "depository-type" banks (e.g. thermo-physical or thermodynamical data) whose data are interesting *per se* and are stored only after having been duly validated. This kind of bank can be interrogated either in direct- or in inverted-file mode.

Of all the problems raised by the creation of a data bank, the most severe is that of data validation, since experience has shown that many of the data found in the literature are far from reliable. Yet, a data bank must be responsible for the quality of its data. Some data bank managers have thought they could avoid this responsibility by providing along with the data, the list of sources from which they had been extracted, but this is unacceptable. Nevertheless, it should be noted that for the second category of banks, the validation procedure can absorb up to 75% of the time required to set up the bank.

In a very substantive concluding chapter, Dr. Labin does not try to hide the fact that if data banks have been very successful from a technical point of view, their "commercial" performance (or, in other words, their acceptance by data users) has been, on the whole, most disappointing. The reasons for this are twofold:

- 1) Psychological factors. A good many scientists are still firmly reluctant to address themselves to a machine when they need an important piece of information, and
- 2) Epistemological factors. By its very nature, scientific knowledge is practically never formulated in a form amenable to direct use. In other words, scientific information is, in essence, difficult to store, to retrieve and to disseminate.

In his final recommendations, Dr. Labin wonders if there isn't a sound case for organizing the information market by passing a law which, without in any way restricting liberty of expression or creation, would require authors of scientific papers to provide their numerical results and other data in a standardized, internationally-agreed format (perhaps in the form of an Appendix) so that these could be fed directly into data banks or other documentation centers.

This study which was carried out under a contract from the Bureau National de l'Information Scientifique et Technique will be published in French by Editions de la Documentation Française, 31 quai Voltaire, Paris under the title "Etude sur la Typologie des Banques de Données".

IAU COLLOQUIUM ON "COMPILATION, CRITICAL EVALUATION AND DISTRIBUTION OF STELLAR DATA"

This Colloquium will be held August 19-21, 1976 at Strasbourg, the week before the IAU General Assembly. The purpose of the Colloquium is to discuss the techniques for the compilation, critical evaluation and distribution of astronomical data, with particular (but not exclusive) reference to data on stars and stellar systems. The emphasis will be on how best to provide data of high quality in forms and ways that are convenient for the users.

Six sessions are scheduled and the provisional topics are: Standards for the presentation of data, Influence of acquisition techniques, Critical evaluation of data, Distribution of data, Survey of facilities, and Future role of data centers. For further information please contact:

Dr. C. Jaschek
Strasbourg Stellar Data Centre
Strasbourg, France

SPIR - SEARCH PROGRAM FOR INFRARED SPECTRA

The Division of Chemistry of the National Research Council of Canada and the NRCC Computation Centre are now providing a Search Program for Infrared Spectra (SPIR). The system is based on the FIRST-1 Infrared Search Program.*

In order to use the program the user must connect his terminal to the NRCC computer in Ottawa, either via a standard telephone line or via a leased data line. In conversational mode data are entered about the physical and chemical properties and infrared spectrum of the unknown material. The computer compares these data with approximately 142,000 sets of spectral data in a master file created by the American Society of Testing and Materials (ASTM). The computer prints out the ASTM identification serial numbers and brief descriptions of the twenty spectra in the master file that are most similar to the spectrum of the unknown. Each spectrum carries a correlation coefficient indicating the closeness of the match. The user may then start another search or disconnect from the computer.

Provision is also made for the user to create a personal file of reference spectra which may be searched in addition to or instead of the ASTM file. Such personal files are accessible only to the user unless he permits others to access them. Privacy of data is ensured by the use of a password known only to the user.

Availability. The SPIR system is available to the user whenever the Time Sharing System (TSS) is operational on the NRCC computer. TSS normally operates 24 hours daily, seven days a week, except for maintenance shutdowns from 0700 to 0900 on weekdays. Any deviations from this schedule are described in a recorded message which can be dialled.

Charges. A basic charge of \$25 per month is levied against the user's account with the Computation Centre. This charge covers the cost of storing and maintaining the program and the data base.

A count is kept of the number of searches carried out and a royalty charge of one dollar per search is levied by the Division of Chemistry on behalf of DNA Systems Inc.

The only other charge levied by the NRCC is a monthly billing for computer costs in excess of \$10. The cost per search is a variable depending on the amount of input data supplied, the time of day at which the search is carried out, and the extensiveness of the search. Experience to date would indicate that the computing cost for a single search will vary between \$4 and \$12 with the average cost being about \$6. Details of ways to minimize costs are given in the instruction manual for the program.

Other costs the user must consider are the charges for renting or buying and maintaining a time sharing terminal, and the telephone line charges or the cost of leasing a data line to the computer. Information on sources of suitable equipment may be obtained from

the NRCC Computation Centre or from companies dealing in computing equipment. The user will also need the ASTM spectral indices, which are described below. A demonstration of the program can be arranged through the Division of Chemistry by telephoning Dr. D. G. Cameron at (613) 992-4769.

Access to the Computer and Program. If the user does not already have an account with the NRCC Computation Centre he should proceed as follows:-

- a) Complete an application form.
- b) Apply for the right to access the SPIR program by completing a contract.
- c) Arrange for his own terminal facilities and acquire the ASTM spectral indices. When the account has been set up and access to SPIR has been granted the user will be informed and instruction manuals for the computer and the SPIR program will be supplied. This usually takes about one week.

Access to Spectral Data. It must be emphasized that SPIR is only a service for searching through the files of encoded spectra and no spectral reference collections are held by the operators of SPIR.

Many of the references and collections of spectra in the ASTM file are held by the National Research Council of Canada's Institute for Scientific and Technical Information (CISTI). Enquiries should be directed to the Interlibrary Loan Section of CISTI. All requests concerning access to the spectral collections should be addressed to the Chemistry Librarian.

ASTM Indices. These consist of the following six volumes which can be obtained from Sadtler Research Laboratories, Inc., 3316 Spring Garden Street, Philadelphia, Pa.

- | | |
|------------|---|
| AMD 31 | Molecular Formula List of Compound Names, Formulae, and References to Published Infrared Spectra. |
| AMD 31.S15 | 14th and 15th Supplements. |
| AMD 32 | Serial Number List of Compound Names References to be |
| AMD 32.S15 | 14th and 15th Supplements. |
| AMD 34 | Alphabetical List of Compound Names, Formulae and References to Published Infrared Spectra |
| AMD 34.S15 | 14th and 15th Supplements. |

The total cost of the set is approximately \$435. The minimal essential volumes to operate SPIR are AMD 32 and AMD 32.S15 at a cost of \$145, but the acquisition of the complete set is recommended.

For further information concerning SPIR write to:

Mr. G.A. Young
National Research Council of Canada
Division of Chemistry
100 Sussex Drive
Ottawa, Ontario, Canada K1A 0R6

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BIO-SCIENCES

ANALYSE CHROMATOGRAPHIQUE ET MICROSCOPIQUE DES DROGUES (1975, 251 pp, 170 FF, Technique et Documentation, 11 rue Lavoisier, 75008 Paris) par Egon Stahl, est la traduction en français de l'ouvrage paru en allemand sous le même titre en 1970 et destiné à servir de manuel pratique pour la pharmacopée et plus particulièrement pour la séparation et l'identification des constituants d'un mélange. Après un rappel des notions fondamentales de la chromatographie en couche mince et de sa technique annexe de microséparation par sublimation, l'auteur passe en revue une centaine des principales drogues rencontrées dans les pharmacopées européennes (alcaloïdes, huiles grasses, huiles essentielles, dérivés terpéniques, épices, antihelminthiques, insecticides, tanins, amidons). Pour chacune d'elles, il fournit la liste de leurs principes actifs, leur formule développée et leur chromatogramme, ainsi qu'une mention de leur provenance, de leur aspect, de leurs action et utilisation en pharmacie, et également la reproduction des principaux aspects observés lors de l'examen au microscope de la drogue en poudre.

- * **ENGINEERING ANTHROPOMETRY METHODS** (1975, 459 pp, \$27.95, Wiley-Interscience, ISBN 0-471-72975-2), by J.A. Roebuck, Jr., K.H.E. Kroemer, and W.G. Thomson. - Contents: Historical development of engineering anthropometry. Methods for static anthropometric measurements. Measurement of dynamic characteristics and movement. Measurement of muscular strength capabilities. Statistical methods. Biometric relationships. Application methodology. Work space design applications. Clothing design applications. Controls, devices, and components designs applications. Bibliography. Appendixes: Glossary; Correlation coefficient tables. Index. - Note: An advanced undergraduate or graduate text on this subject for engineering students. The materials covered are of importance in many engineering disciplines. The first author is with Rockwell International Corporation.

- * **ENZYME HANDBOOK SUPPLEMENT** (1974, 517 pp, \$21.50, Springer-Verlag, ISBN 0-387-06761-2), by Thomas E. Barman. - Contents: Symbols and abbreviations. Explanatory notes. Key to numbering and classification of enzymes. Enzyme commission numbers (1972) of incompletely numbered enzymes in the **ENZYME HANDBOOK** (1969). Enzyme data. Index. - Note: Includes molecular and kinetic data on about half of the several hundred new enzymes described since the appearance of the author's **ENZYME HANDBOOK** in 1969. It also describes several omitted from the **HANDBOOK**. For special and research libraries. Author is with the University of Reading, England.

- * **ENZYME KINETICS; BEHAVIOR AND ANALYSIS OF RARE EQUILIBRIUM AND STEADY STATE ENZYME SYSTEMS** (1975, 957 pp, \$27.50, Wiley-Interscience, ISBN 0-471-77425-1), by Irwin H. Segal. - Contents: Introduction -- enzymes as biological catalysts. Kinetics of unireactant enzymes. Simple inhibition systems. Rapid equilibrium partial and mixed-type inhibition. Enzyme activation. Rapid equilibrium bi-reactant and terreactant systems. Multisite and allosteric enzymes. Multiple inhibition analysis. Steady-state kinetics of multireactant enzymes. Iso-

tope exchange. Effects of pH and temperature. Appendix. Index. - Note: A discussion of general enzyme kinetic behavior and analysis written for use either as a textbook by advanced undergraduates and graduate students in the biological sciences or as a reference work for professional researchers. The author is with the University of California at Davis.

- * **HANDBOOK OF NATURALLY OCCURRING COMPOUNDS. Vol. I. ACETOGENINS, SHIKIMATES, AND CARBOHYDRATES** (1975, 644 pp, \$32, Academic Press, ISBN 0-12-213601-2 (v. 1)) by T.K. Devon and A.I. Scott. - Contents: Shikimate-derived aromatics. Acetate/shikimate aromatics. Acetate-derived aromatics: acetate/malonate biogenic pathway. Linear acetogenins. Macrolides. Carbohydrates. Miscellaneous. Indices guide. Alphabetical index. Molecular weight index. Molecular formula index. - Note: A useful reference work. Information given for each structure includes its name, molecular formula, molecular weight, optical rotation, melting point, literature reference, and classification number. The authors are at Pfizer Central Research Laboratories, Sandwich, England, and Sterling Chemistry Laboratory, Yale University, New Haven, Connecticut, U.S.A., respectively.

- * **HUMIC SUBSTANCES: THEIR STRUCTURE AND FUNCTION IN THE BIOSPHERE** (1975 (c1973), 368 pp, \$25 - paper, Wageningen, The Netherlands: Centre for Agricultural Publishing and Documentation, ISBN 90-220-05526), edited by D. Povoledo and H.L. Golterman. (Distributed by International Scholarly Book Services) - Contents, abridged: The chemical nature of humic acids. On the determination of soluble humic substances in fresh waters. The biological transformation of soluble humic substances in Tjeukemeer, the Netherlands: a preliminary report. Chemical nature of sedimentary humic acids. Role of humus formation and decomposition in the terrestrial nitrogen cycles. Nitrogen in sedimented organic matter from Lake Ontario. Changes in the composition of rawhumus and the transport of organic matter as a result of urea fertilization. Humic substances and aquatic productivity. Ultraviolet and visible absorption spectra of humic systems. Chemical, spectroscopic, and thermal methods for the classification and characterization of humic substances. Gel chromatography as a method for characterization of humic systems. Biogeochemistry of humic compounds. - Note: The book contains 26 papers presented at an international meeting held at Nieuwersluis, The Netherlands, May 29-31, 1972. The papers were presented by organic chemists and soil, marine and freshwater scientists working on these substances. For other specialists working in this field. The editors are with the Department of the Environment of Canada and the Limnologisch Instituut, Nieuwersluis, The Netherlands, respectively.

- * **IMMOBILIZED ENZYMES, ANTIGENS, ANTIBODIES, AND PEPTIDES; PREPARATION AND CHARACTERIZATION** (1975, 661 pp, \$38.50, Dekker, ISBN 0-8247-6285-1), (Enzymology; Vol. 1), edited by Howard H. Weetall. - Contents: Inorganic support intermediates: covalent coupling of enzymes on inorganic supports. The kinetic of immobilized enzymes. Engineering aspects and reactor design of immobilized enzyme

systems. Modified nylons in enzyme immobilization and their use in analysis. Fiber-entrapped enzymes. Immobilized enzymes and their biomedical applications. Enzyme electrode probes. Affinity chromatography. Solid-phase immunoassay. Solid-phase sequencing of peptides and proteins. Author index. Subject index. - Note: The first in a new series for biochemists. This volume concerns researchers who wish to prepare and use an immobilized derivative of some biologically active compound. Methodology is a strong point throughout the work. Editor: with Corning Glass Works.

CELL BIOLOGY (1976, 454 pp, \$45.00, Federation of American Societies for Experimental Biology, Bethesda, MD 20014, U.S.A.), edited by Philip L. Altman and Dorothy Dittmer Katz. - Contents: General cell characteristics; cell environment; cell periphery; mitochondria; endoplasmic reticulum, microsome, ribosomes, and Golgi; lysosomes, peroxisomes, granules, and microbodies; and nuclei. The seven sections constituting this reference data book consist of 102 tabulations of numerical and descriptive information. An introduction to each section, prepared by a member of the Cell Biology Advisory Committee provides a synopsis of current thought on the topic, and places in perspective the particular organelles for which data were included. Each table was prepared by an outstanding authority on the subject, and reviewed by other specialists in the same field. The pertinence and reliability of the data are attributable to the expertise of the 340 contributors and reviewers involved. Appended to each table are the literature citations -- 5,625 in all -- from which the information was obtained. The 40-page index assures easy access to any item of data in a table.

CHEMICAL KINETICS

- * CRITICAL STABILITY CONSTANTS. Vol. 2. AMINES (1975, 415 pp, \$29.50, Plenum, ISBN 0-306-35212-5 (v. 2)), by Robert M. Smith and Arthur E. Martell. - Contents: Aliphatic amines. Azoles. Azines. Aminophosphorus acids. Protonation values for other ligands. Ligands considered but not included. Bibliography. Ligand formula index. Ligand name index. - Note: Continues a series on chemical constants of major organic building blocks. As with Vol. 1 excellent documentation is provided. For all comprehensive science collections.

EARTH SCIENCES

CONTRIBUTION A LA METHODOLOGIE D'UN SYSTEME D'INFORMATION EN GEOLOGIE. APPLICATION A LA GEOCHIMIE (1974, 277 pp, 99 figures, 80 FF, Sciences de la Terre, Série "Information Géologique", n° 2, 94 avenue de Lattre de Tassigny, 54000 Nancy, France), par Philippe Grandclaude. - On sait que l'information géologique, dans la mesure où elle dépend étroitement des conditions régnant dans l'espace et le temps, pose des problèmes spécifiques aux informaticiens. Dans cet important mémoire, qui a constitué sa thèse de doctorat, l'auteur décrit le système qui a été conçu et réalisé au Centre de Recherches Pétrographiques et Géochimiques de Nancy pour permettre l'exploitation en profondeur d'une base de données géochimiques portant sur quel-

que 14 000 échantillons. Après une introduction très générale et très intéressante, consacrée à la "philosophie" de l'informatique et aux contraintes introduites par la nature même des données géologiques, l'ouvrage aborde dans le détail la description du système mis en oeuvre au CRPG et donne de nombreux exemples concrets sur la description des échantillons, les langages de programmation, la gestion et l'exploitation des fichiers et même le prix de revient d'une banque de données de ce type. La 3^e et dernière partie présente quatre exemples récents d'applications du système en question.

- * THE EARTH'S DENSITY (1975, 420 pp, \$37.50, Halsted, Div. of Wiley, ISBN 0-470-12060-6), by Keith Edward Bullen. - Contents: Noted ancient investigations. Determination of the mean density of the Earth. Seismic wave transmission. First approximation to seismic P and S distributions in the Earth. Earth models of type A. Evidence on compressibility in the Earth. Some second approximations. Evidence from seismic surface waves. Evidence from free Earth oscillations. Miscellaneous developments. Optimum and standard Earth models. Application to other planets and the Moon. Index. - Note: This work draws together the various bits of evidence that have led to present knowledge of the distribution of density throughout the interior of the Earth. Details of other properties with which density is closely linked are also presented. For comparison purposes, density distributions of other planets are discussed. Author is with the University of Sydney.
- * HANDBOOK OF SOIL MECHANICS. Vol. 1. SOIL PHYSICS (1974, 294 pp, \$28.50, Elsevier, NY, ISBN 0-444-99890-X), by Árpád Kézdi, translated from the German by I. Lazányi. - Contents: Origin of soils -- soil properties. Constituent parts of soils. Soil structure. Classification of soils. Stresses in soils. Flow of water in soil. Soil strength. Deformation of soils. Earth pressure problems. Author index. Subject index. Contents of Vols. 2-4. - Note: The first of a four-volume handbook translated from the German version and updated to some extent. There are no literature references but rather lists of "recommended reading" for each chapter. The basis of this volume is rather broad, where soil mechanics are conceived as a physics of granular material which can be interpreted as a particulate state of matter. Primarily geared to the needs of civil engineers.

HANDBOOKS FOR BROAD FIELDS OF SCIENCE & ENGINEERING

- * CHROMATOGRAPHY; A LABORATORY HANDBOOK OF CHROMATOGRAPHIC AND ELECTROPHORETIC METHODS (3rd edition, 1975, 969 pp, \$47.50, Van Nostrand Reinhold, ISBN 0-442-23280-2), edited by Erich Heftmann. - Contents, abridged: History of chromatography. Adsorption. Techniques of paper chromatography. Instrumentation in gas chromatography. Theory of electrophoresis. Techniques of electrophoresis. Gel chromatography. Chromatography of amino acids and oligopeptides. Chromatography of proteins, terpenoids, and steroids. Column chromatography of nucleic acids and their constituents. Chromatography of phenolic compounds, pesticide residues, antibiotics, nonhydrocarbon gases, and hydrocarbons. Index. - Note: A heavily revised

(since 1967) summary of chromatographic and electrophoretic methods and applications to a wide variety of substances. Provides comprehensive coverage of basic theory, techniques and terminology. Documentation is superb. For research works in industry, government, and the university.

- * HANDBOOK OF HIGHWAY ENGINEERING (1975, 894 pp, \$42.50, Van Nostrand Reinhold, ISBN 0-422-20520-1), edited by Robert Fulton Baker. - Contents, abridged: Highway economics. Highway planning and programming. Urban transportation planning. Environmental engineering. Highway safety. Route location. Intersections. Traffic control. Computer applications. Drainage. Subgrades, foundations, embankments, and cutslopes. Pavement design, construction and reconstruction. Bridges, viaducts, and ramps. Tunnels. Roadway lighting. Specifications-control of quality. Maintenance procedures. Snow and ice control. Index. - Note: An exceptional work; in concept, timeliness, scope, detail, illustrative matter, and indexing. It includes principles, processes, data, and practical views of current highway engineering technology. Vital to university, special, and the larger public libraries.

- * TRANSISTOR SUBSTITUTION HANDBOOK, 15th ed. (1975, mixed pagination, \$4.50 - paper, Howard W. Sams, Indianapolis, U.S.A., ISBN 0-672-21169-6), by Howard W. Sams Engineering Staff. - Note: An important handbook for electronic technicians. Transistors are listed in alphanumeric order followed by possible replacements. For critical applications, the specifications of the replacing component should be checked against those of the component being replaced. For electronic technicians and hobbyists.

MATHEMATICAL METHODS AND COMPUTER PROGRAMS

TRAITEMENT NUMERIQUE ET CARTOGRAPHIQUE DES DONNEES SUR L'EFFORT ET LES PRISES DE LA PECHERIE PALANGRIERE THONIERE DE L'OCEAN ATLANTIQUE (1975, 47 pp, Centre Océanologique de Bretagne, Contribution No. 295), par Jean-Yves Le Gall. - Dans le cadre de la Circulaire des Pêches de la FAO, ce document décrit une chaîne de programmes sur ordinateur, dont le but est d'obtenir une visualisation pratique de l'ensemble tridimensionnel que constituent, en latitude, en longitude et en temps, les données brutes portant sur l'effort de pêche et les captures de 13 espèces de thons, l'effort de pêche étant défini, dans un cadre donné, par le nombre d'hameçons posés, et la capture par le nombre d'individus capturés. D'où la possibilité de déterminer pour une zone donnée l'espèce la plus abondante ou pour une espèce donnée la zone la plus favorable. - Les listings complets des programmes utilisés sont disponibles sur demande.

- * ELEMENTS OF SPATIAL STRUCTURE; A QUANTITATIVE APPROACH (1975, 258 pp, \$19.50, Cambridge University Press, Cambridge Geographical Studies; Vol. 6, ISBN 0-521-20689-8), by Andrew D. Cliff et al. - Contents: Regions as combinatorial structures. Regions as ordered series. Regions as surfaces. Spatial comparison of time series: a framework. Spatial comparison of time series I and II: Contagious processes. Unemployment in South-West England. Spatial autocorrelation. The analysis

of regional patterns by nearest-neighbor methods. Regional forecasting. Glossary of notation. Appendixes. List of references and author index. Subject index. - Note: A significant contribution to the quantitative literature on the structure of spatial series. The study includes consideration of both static features and dynamic structures. Applications which are involved in regional planning issues conclude the work. British statistical data is used throughout. The senior author is with the University of Cambridge.

MECHANICAL AND ENGINEERING DATA

ATLAS MICROFRACTOGRAPHIQUE DES FONTES (1974, Volume 1: Généralités, 45 pp; Volume 2: Planches, 119 pp, 150 FF, Editions techniques des industries de la fonderie, 12 avenue Raphaël, 75016 Paris) par Guy Henry et Jean-Claude Margerie. - Depuis quinze ans la technique de la microfractographie a permis d'apporter aux métallurgistes de précieux renseignements sur la façon dont les fissures s'amorcent et se propagent au sein d'une pièce métallique, au point d'en provoquer éventuellement la rupture. Limitée primitivement aux aciers, la microfractographie a récemment été étendue aux fontes, cependant que, dans le domaine des techniques, le microscope électronique à balayage venait s'adjoindre au microscope électronique à transmission. Le présent ouvrage, sans prétendre être exhaustif, présente un très vaste choix de fractures typiques rencontrées au cours d'une étude sur la fragilité par galvanisation des principales sortes de fontes. Après un rappel des diverses catégories de fontes (grises, malléables, alliées et blanches) et un chapitre de généralités sur les techniques de la microfractographie, les auteurs décrivent en détail les faciès de rupture pour chacune des 210 illustrations photographiques figurant au volume 2. Chaque photographie est accompagnée d'une double légende (en français et en anglais) spécifiant les caractéristiques de l'échantillon et les conditions de sa rupture, et donnant une description détaillée de la topographie de la cassure.

- * METALS HANDBOOK. 8th ed. Vol. 9. FRACTOGRAPHY AND ATLAS OF FRACTOGRAPHS (1974, 499 pp, \$45, American Society for Metals, Metals Park, Ohio USA), edited by Howard E. Boyer. - Contents: Preparation and preservation of fracture specimens. Photography of fractured parts and fracture surfaces. Special techniques in fractography by light microscopy. Fractographic features revealed by light microscopy. Interpretation of light-microscope fractographs. The scanning electron microscope and its application to fractography. The transmission electron microscope and its application to fractography. Comparison of scanning and transmission electron microscopes for fractography. Interpretation of scanning-electron-microscope fractographs. Interpretation of transmission-electron-microscope fractographs. Discontinuities leading to fracture that are revealed by fractography. Use of fractography for purposes other than failure analysis. Use of fractography for failure analysis. Light-microscope fractographs at low and high magnifications. Scanning-electron-microscope (SEM) fractographs. Comparison of SEM and TEM stereofractographs. Transmission-electron-microscope (TEM) fractographs from replicas. Failure-analysis fractographs. Index. - Note: The two parts contained in this volume, together with Vol. 7 and 8 in this series,

form an important contribution to the structure of metals and the resulting practical properties. The first part of this volume, "Fractography," contains 14 articles on this subject by experts in this field. The atlas part contains 1816 illustrations. As in previous volumes, the index and illustrations are excellent. An important reference work for many libraries.

- * **INTERNATIONAL BEARING INTERCHANGE GUIDE; WORLD'S MOST COMPLETE HISTORY OF BEARING NUMBER ALTERNATIVES.** 4th ed. (1975, mixed pagination, \$55, Interchange Inc., St. Louis Park, Mn, USA). - Contents: Ball bearings, pillow block, flange units (.050" to 12.5984" bore). Clutch bearing assemblies. Waterpump bearings and shafts. Ball bearings without dimensions. Tapered cones (from .3125" to 19.000" bore). Tapered cones without dimensions. Tapered cups (from 1.2126" to 25.000" outside). Tapered cups without dimensions. Tapered cone and cup sets (from .4720" to 19.000" bore). Tapered cone and cup sets without dimensions. Needle bearings (no inside dimensions shown). Straight and curved roller bearings (from .125" to 37.4016" bore). Roller bearings without dimensions. - Note: A comprehensive guide to bearings from domestic and foreign manufacturers. The four sections provide for quick access to the required information. For design engineers and purchasing agents.

- * **INTERNATIONAL SEAL INTERCHANGE GUIDE; WORLD'S MOST COMPLETE HISTORY OF OIL AND GREASE SEAL ALTERNATIVES** (1975, mixed pagination, \$35, Interchange Inc., St. Louis Park, Mn, USA). - Note: A comprehensive guide of oil and grease seals. It combines, in one source, information from domestic and foreign seal manufacturers thereby allowing the user to quickly find substitutions and other options. The first part of this volume lists seals in numerical sequence. The second part consists of arrangement by shaft size. An important guide for design engineers and purchasing agents.

- * **HANDBOOK OF SOLID WASTE DISPOSAL: MATERIALS AND ENERGY RECOVERY** (1975, 549 pp, \$25, Van Nostrand Reinhold, ISBN 0-442-23027-3), by Joseph L. Pavoni, John E. Heer, Jr., and D. Joseph Hagerty. - Contents: Composting. Incineration. Sanitary landfill. Innovations in disposal. Materials recovery. Energy recovery. European solid waste management. Summary and procedures for selection of short-term and long-term solid waste management techniques. Index. - Note: The handbook covers techniques, equipment, and environmental effects of a variety of methods of solid waste disposal. The book is designed to meet the information requirements of the non-specialist. The authors are with the University of Louisville.

INTRODUCTION TO MATERIALS SCIENCE; SI EDITION (1975(c1974), 364 pp, \$12.50, Wiley, ISBN 0-471-76177-X), by B.R. Schlenker. - Contents: Materials through the ages. Classification of engineering materials. Structure of the solid state. Properties of engineering materials. The mechanical testing and inspection of materials. Casting and as-cast structures. Deformation in crystalline materials. Methods of forming and working metals. Single-phase and multi-phase materials. Non-ferrous metals and alloys. The metallurgy of iron and steel. Heat treatment of steel. The joining of metals. Wood as an engineer-

ing material. Polymers. Ceramics. Corrosion of metals. The modification of materials. General review questions. Index. - Note: An undergraduate text for materials science and metallurgy students. The text covers properties of important engineering materials and the effect of manufacturing processes on final characteristics.

- * **SUNLIGHT TO ELECTRICITY; PROSPECTS FOR SOLAR ENERGY CONVERSION BY PHOTOVOLTAICS** (1975, 163 pp, \$12.95, M.I.T. Press, Cambridge, USA, ISBN 0-13116-1), by Joseph A. Merrigan. - Contents: Expected energy usage in the United States to the year 2000. Solar energy as a resource. Principles of photovoltaic energy conversion. State-of-the-art in photovoltaic conversion technology. Economic considerations in the development of photovoltaic energy conversion. Business opportunities and the development of photovoltaic energy conversion systems. Summary and predictions. Bibliography. Index. - Note: The book is a discussion of the economic and technological aspects of solar energy conversion. It outlines the expected development in this field. For scientists and interested laymen.

- * **WASTE MANAGEMENT, CONTROL, RECOVERY AND REUSE.** The International Edition of the 1974 Australian Conference, held at the University of New South Wales (1975, 228 pp, \$18.50, Ann Arbor Science, Ann Arbor, Michigan, USA, ISBN 0-250-40100-2), edited by N.Y. Kirov. - Contents: Legislative aspects. Surveys and problem assessment. Waste collection and handling. Treatment and disposal of liquid wastes. Disposal methods. Industrial waste control. Resource recovery and reuse. - Note: The book contains 39 papers presented at the conference. The papers deal primarily with experience in this field. A few research papers are also included. For graduate students and workers in this field. The editor is with the University of New South Wales.

NUCLEAR PROPERTIES

TABLE OF RADIONUCLIDES. Part 1 (1975, 232 pp, 150 FF, Commissariat à l'Energie Atomique, Laboratoire de Métrologie des Rayonnements Ionisants, 91190 Gif-sur-Yvette, France, ISBN 2-7272-0004-8), edited by J. Legrand, J.P. Pérolat, F. Lagoutine, Y. Le Gallic. - This table which, in its first part, includes 29 radionuclides, is intended for meeting the growing need for high-quality radioactive measurements. It gives the evaluation for the following decay scheme data: half-lives, transition energies and intensities, internal conversion coefficients, fluorescence yields, intensities for the main radiations. An uncertainty is associated with each datum and is defined for a given confidence level. Moreover, compiled values of the energies and relative intensities are given for X-ray and K-Auger electrons. Each radionuclide is the subject of a separate entry which comprises the following: decay scheme, tables of nuclear, atomic, and radiation data, major production methods, references employed in evaluation, decay table, γ , X-ray and conversion electron spectra. Furthermore, the tables are preceded by a short description of the radioactive processes and of the evaluation rules used. The 29 nuclides are: ^{22}Na , ^{24}Na , ^{24m}Na , ^{51}Cr , ^{54}Mn , ^{57}Co , ^{58}Co , ^{58m}Co , ^{60}Co , ^{60m}Co , ^{75}Se , ^{103}Ru , ^{103m}Rh , ^{110m}Ag , ^{110}Ag ,

^{109}Cd , ^{125}Sb , $^{125\text{m}}\text{Te}$, ^{125}I , ^{133}Xe , $^{133\text{m}}\text{Xe}$,
 ^{131}Cs , ^{134}Cs , $^{134\text{m}}\text{Cs}$, ^{139}Ce , $^{144}\text{Ce-Pr}$, ^{144}Pr ,
 ^{169}Er , ^{186}Re , ^{203}Hg .

SOLID STATE PROPERTIES

INTERNATIONAL DIRECTORY OF SOLID STATE MATERIALS PRODUCTION AND RESEARCH (1975, 161 pp, Research Materials Information Center, Oak Ridge National Laboratory, Oak Ridge, Tennessee, 37830, USA), compiled by George C. Battle, T.F. Connolly and Anne M. Keese, provides the addresses of some 600 laboratories engaged in crystal growth and allied activities (preparation of ultrapure inorganic materials, crystalline synthesis, etc.). In addition to the usual practical information (name, address, telephone number, etc.) the entries give the list of crystal species grown, prepared or studied in each laboratory as well as the specific techniques and apparatus used for that purpose. A detailed subject index, listing the materials alphabetically, concludes this very useful directory.

SOLUTION PROPERTIES

TABLES OF SOLUBILITY IN BI- AND TRI-COMPONENT AQUEOUS SYSTEMS (Tabulky rozpustnosti v dvou- a trisložkových vodných systémech. - 1975, 104 pp, 10 Kcs, Publishing House of the Czechoslovak Academy of Sciences. - In Czech), by Jaroslav Nyvlt and Jirina Wurzelova, summarize data on the solubility of compounds (most of them inorganic) in aqueous systems. The first part contains data on bi-component systems and the second part deals with tri-component systems. Critical processing of the data in the form of constants in equations describing phase equilibria in tri-component systems makes it possible to use them for temperature interpolations and moderate extrapolations in quadri- and multi-component systems. A programme for computers is added in the Appendix.

SPECTRA COLLECTIONS

THE ELECTRONIC SPECTRA OF ANTHRAQUINONES is the English translation by Dr. R.W.A. Oliver, of the University of Salford, of V. Ya. Fain's book, *Tablitsy Elektronnykh Spektrov Anthrakhinona i ego Proizvodnykh*, published in 1970 by Khemia Publishing House, Moscow. It contains digitized electronic spectral data on 1316 substituted anthraquinones. This English version is available in a loose-leaf spiral binding from Dr. Oliver, Department of Chemistry, University of Salford, Peel Park, Salford 5, Lancs, England, at a charge of \$15 (including packing and postal charges).

*THE INFRARED SPECTRA OF COMPLEX MOLECULES. Vol. I. 3rd ed. (1975, 433 pp, \$24, Halsted, Div. of Wiley, ISBN 0-470-06417-X), by L.J. Bellamy. - Contents: Alkanes. Alkenes. Alkynes and allenes. Aromatic compounds. Alcohols and phenols. Ethers, peroxides and ozonides. Acid halides, carbonates, anhydrides and metallic carbonyls. Aldehydes and ketones. Carboxylic acids. Esters and lactones. Amides, proteins and polypeptides. Amino-acids, their hydrochlorides and salts, and amido-acids. Amines and imines. Unsaturated nitrogen compounds.

Heterocyclic aromatic compounds. Nitro- and nitroso-compounds, nitrates and nitrites. Organo-silicon compounds. Inorganic ions. Organo-sulphur compounds. Subject index. Compound index. - Note: The third edition of this useful work is enriched by recent group-frequency studies which seek to solve structural and chemical problems. Although this is the first of a two-volume set, enough references are duplicated so that Vol. 1 can stand on its own. A good introductory text on the subject for undergraduate students.

*METAL CARBONYL SPECTRA (1975, 286 pp, \$22.25, Academic Press, ISBN 0-12-125850-5), by P.S. Braterman. - Contents: Principles of vibrational spectroscopy. The CO stretching modes of metal carbonyls. Experimental methods in metal carbonyl vibrational spectroscopy. Interpreting of a spectrum. Some topics related to the chemical interpretation of vibrational data. Selected vibration data for carbonyls. Non-vibrational spectroscopy of carbonyls. Appendixes. References. Author index. Subject index. Compound index. - Note: The book provides the organometallic chemist with a sufficient background in the use of spectroscopic data with a minimum of mathematical sophistication. Familiarity with matrix notation and group theory is however assumed. The author is with the University of Glasgow.

TABLES OF SPECTRAL LINE INTENSITIES (1975, NBS Monograph 145; Part I: Tables arranged according to elements, 403 pp, \$8.55; Part II: Tables arranged according to wavelength, 228 pp, \$6.80), edited by William F. Meggers, Charles H. Corliss and Bourdon F. Scribner, is a revised and expanded edition of NBS Monograph 32. The present tabulation gives the intensity, character, wavelength, spectrum, and energy levels of 39 000 lines between 2000 Å and 9000 Å in the spectra of 70 elements. Part I lists the lines by element, arranged in alphabetical order. Part II tabulates all of the lines in order of increasing wavelength. Several improvements over the 1961 edition may be mentioned: 8500 additional lines have been assigned energy levels, the accuracy of about 9000 wavelengths has been improved and the relative intensity has been multiplied by ten to eliminate fractional numbers. The Tables may be ordered as SD Catalog No. C13.44:145/I and II.

THERMODYNAMICS AND THERMOCHEMISTRY

BULLETIN OF THERMODYNAMICS AND THERMOCHEMISTRY (No. 17, May 1974, 674 pp, \$12, University of Michigan, Publications Distribution Service, 615 East University Avenue, Ann Arbor, Michigan, 48106 USA), edited by Edgar F. Westrum, Jr., provides a comprehensive yearly panorama of research in progress in thermodynamics and of the results completed so far but not yet published. As in former years, the 1974 edition essentially consists of a very thorough substance-property index (230 pages) which in turn refers the reader to a 180-page bibliography. An abstracts section includes some 700 items describing the research activities presently going on in 350 laboratories all over the world.

THERMOPHYSICAL PROPERTIES OF MATTER. Vol. 11: VISCOSITY (1975, XXV + 122 + 649 pp, \$50, IFI/Plenum, New York), edited by Y.S. Touloukian, S.C. Saxena and P. Hestermans, presents the data and information on the viscosity of 59 pure fluids and 129

systems of fluid mixtures among those considered to be of the greatest engineering importance. The data on pure fluids have been critically evaluated, and "recommended reference values" are presented, while the data on fluid mixtures have been smoothed graphically and are being presented, along with the experimental data, in both graphical and tabular forms. As usual in the volumes of the TPRC Data Series, the main section, entitled Numerical Data, is preceded by a 120-page introduction on the Theory, Estimation and Measurement of viscosity which provides a detailed discussion of the subject and refers the interested reader to a 1200-item bibliography.

MISCELLANEOUS

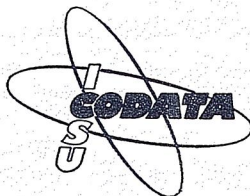
COMMENT ORGANISER SA DOCUMENTATION SCIENTIFIQUE (1975, 228 pp, 39 FF, Gauthier-Villars, Paris), par Hélène Desvals. Sous ce titre modeste, voici un livre qui se révèle être à chacune de ses pages une mine de renseignements irremplaçables. Tout au long de leur carrière scientifique, presque tous les chercheurs, quelle que soit leur discipline, se trouvent en butte au triple problème consistant à dépister des références pertinentes par rapport à l'objet de leurs recherches, puis à localiser et à acquérir les documents en question, et enfin à stocker les informations ainsi recueillies, et ce d'une manière efficace c'est-à-dire "retrouvable". Le livre de Madame Desvals aborde tour à tour ces trois problèmes et en décrit les principales solutions depuis les plus simples jusqu'aux plus récentes, en prenant constamment soin de renforcer ses explications par des fac-similés de documents ou des exemples de typographie ou de mise en page. Par les références

qu'il fournit, les adresses qu'il signale, les exemples qu'il donne, les mises en garde qu'il énonce, et plus généralement par le nombre et la qualité des renseignements qu'il procure. ce petit livre rendra d'éminents services non seulement aux chercheurs mais également aux bibliothécaires, aux documentalistes et, plus généralement, aux "information officers".

* FACTS AND THEORIES OF AROMATICITY (1975, 109 pp, \$16.50, The Macmillan Press Ltd., ISBN 333-16815-1), by David Lewis and David Peters. - Contents: General introduction. Experimental evidence on aromaticity. Theoretical ideas on aromaticity. Simple examples of aromaticity. Aromaticity of some selected classes of compounds. Homoaromaticity. Antiaromaticity. Conclusion and comments. Appendix. References. Index. - Note: Provides a semi-empirical, yet general, account of the problem of aromaticity. Still there is a confinement to a critical examination of experimental and theoretical aspects. Consideration of inorganic aromatics is excluded. A most unusual text which is suitable for a wide range of scientists. For university, special, and public libraries. Author: with University of London. (This publication is distributed by Crance, Russak.)

* INDUSTRIAL RESEARCH LABORATORIES OF THE UNITED STATES. 14th ed. (1975, 580 pp, \$49.75, R.R. Bowker Co., ISBN 0-8352-0787-0), edited by Jaques Cattell Press. - Contents: Industrial research laboratories. Geographic index. Personnel index. Subject index to research activities. - Note: An important directory listing 6661 laboratories in 32-41 industrial organizations. Gives addresses, names of key officers and fields of research. For public, special and research libraries.

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Springer-Verlag, Berlin, Heidelberg, New York, 1969, 295 pp, DM 48.—, US \$20.—, FF 120.—.

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Proceedings : Third International CODATA Conference; Le Creusot, France, 26—30 June, 1972

CODATA, Frankfurt Main, F.R.G., Aug. 1973, 100 pp, 297 × 210 mm, DM 30.—, US \$15.—, FF 75.—.

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