

20 CODATA / NEWSLETTER

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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.*

SEVENTH INTERNATIONAL CODATA CONFERENCE

CALL FOR PAPERS

The Seventh International CODATA Conference is scheduled for 8-11 October 1980 at the Kyoto International Conference Hall, Kyoto, Japan at the invitation of the Science Council of Japan, the Chemical Society of Japan and the Japan Society for CODATA.

SCOPE OF THE CONFERENCE

The scope of the conference under the general title "Role of Data in a Dynamic World" will range from the role of data in basic scientific research to applications focusing on major problems facing society. Some of the aspects which will receive special emphasis are: formation of new scientific concepts and solution of problems using existing data; needs for new, evaluated data to test new working hypotheses; critical evaluation of data; promotion of data reliability in scientific applications. Presentation will be in the form of papers and poster sessions.

Scientists from many parts of the world representing different disciplines will participate in sessions specifically devoted to natural and controlled ecosystems, biological sciences, geosciences, computer storage and dissemination of data, large data banks, data in industrial applications, thermodynamics, spectroscopy, and other submitted contributions.

CALL FOR PAPERS

Users of data, as well as those involved in data compilation, data evaluation, and data handling are invited to submit papers on subjects within the scope of the Conference. Since poster sessions are planned at the Conference, the paper may be presented as a poster.

The title, together with a brief description of the contents of the paper should be submitted as soon as possible, but not later than February 1, 1980, to the Co-Chairman of the Program Committee

Professor T. Shimanouchi
c/o Japan Society for CODATA
Dai-ichi Kanamori Building
1-5-31 Yushima
Bunkyo-ku, Tokyo
113 Japan

Authors of papers will be notified before April 1, 1980 about the acceptance of their papers and will receive instructions on providing an abstract at that time.

SCIENTIFIC PROGRAM COMMITTEE

Professor T. Shimanouchi, Co-Chairman (Japan)
Dr. W. W. Hutchison, Co-Chairman (Canada)
Professor J. E. Dubois (France)
Professor H. Gutfreund (U.K.)
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Professor V. V. Sytchev (U.S.S.R.)

DATA NEEDS FOR ENERGY

At the Sixth International CODATA Conference held in May 1978 in Santa Flavia, Sicily, one session organized by Mme. A. David (Institut Français de l'Energie, Paris, France) and Professor N. Kurti (Department of Engineering Science, Oxford, U.K.) was devoted to a discussion of data needs for energy. The complete Proceedings of the Conference have now been published by Pergamon Press (see New Books section) but it was felt that many engineers and scientists whose interest lies mainly in various aspects of energy rather than in the data and their handling might wish to have easy access to the report of the Energy Session. With this in mind, the relevant part of the Proceedings has been published as a *CODATA Bulletin*.

The purpose of the session was to discuss whether CODATA should be specifically concerned with data for energy. Five introductory papers were given as follows:

- *A CODATA Vade-mecum for Energy?*, N. Kurti
- *What Does the User of Energy Data Want?*, B. Bailly du Bois, Délégation Générale de l'Energie, Paris
- *Evaluated Physical Properties Data for Materials Used in Energy Storage Systems*, V. E. Hampel and L. Gevantman, Lawrence Livermore Laboratory, California, and the National Bureau of Standards, Washington, D.C.
- *Energy Storage*, J. Butterworth, Atomic Energy Research Establishment, Harwell, U.K.
- *Large-Scale Energy Storage in District-Heating Systems*, U. Plantikow and R. Jank, Kernforschungsanlage, Jülich, Federal Republic of Germany

These papers were followed by numerous and wide-ranging contributions from the floor, all of which are fully reported.

This *CODATA Bulletin* (32 pages with a word equivalent of 900/page) is obtainable from the CODATA Secretariat, 51 Boulevard de Montmorency, 75016 Paris, France, at the following prices per copy (including postage): US \$7.50, 35 French francs, 4 f Sterling.

TWO NEW MEMBERS IN CODATA

The Federation of Astronomical and Geophysical Services (FAGS) has joined CODATA as its second Co-opted Member. Dr. G. A. Wilkins of the H. M. Nautical Almanac Office, U.K., has been named the Delegate from FAGS to CODATA.

In addition, the International Union of Immunological Sciences (IUIS) has joined CODATA as a Union Member. Professor Alain Bussard of the Institut Pasteur, Paris, will be the representative of IUIS to CODATA.

REPORT OF THE SECOND MEETING OF CODATA TASK GROUP ON DATA FOR THE CHEMICAL INDUSTRY

The CODATA Task Group on Data for the Chemical Industry held its second meeting in Miami, Florida, at the site of the 71st Annual meeting of the American Institute of Chemical Engineers, in November 1978. The highlights of the discussions which took place are summarized in this report.

Two projects of the 1976/78 Task Group (see *CODATA Newsletter* 17, Feb. 1977, p. 18) could be reported completed: (1) the *Guide for the Presentation of Physical Property Estimation Procedures in the Primary Literature* is being distributed as *CODATA Bulletin* 30, available for \$1.50 from the CODATA Secretariat in Paris; and (2) the results of a survey of chemical engineers in industry in the U.S. as to which kinds of estimation procedures are really needed was presented by the Task Group Chairman at the concurrent AIChE Symposium on "Thermodynamic Properties for Design". Copies of its draft are available from the Engineering Societies Library, United Engineering Center, 345 East 47th Street, New York, NY 10017. It has been accepted for publication in *Chemical Engineering Progress*.

Two members of the 1978/80 Task Group are planning to use suitable adaptation of the questionnaire to survey the data estimation needs of chemical engineers in France and in Poland.

The nonproprietary components of the work planned by the Task Group members for the 1978/80 biennium corresponds to the rank order expressed by the interrogated U. S. chemical engineers:

(1) Establishing the reliability of mixing rules for P-V-T properties: M. Hiza (U.S. National Bureau of Standards, Boulder, Colorado) is working on the P-V-T properties of pure fluids and their mixtures in the cryogenic region with special emphasis on LNG components, as well as liquid-vapor equilibria involving methane in low molecular weight alkanes. C. F. Spencer (Pullman-Kellogg, Houston, Texas) will shortly complete and also publish the results of a detailed study of methods for estimating the bubble point density of defined mixtures. Hydrocarbon mixtures, mixtures containing highly polar compounds and inorganics as well as LNG type mixtures are included in the data evaluation base. Future work plans include the evaluation of correlations for estimating the liquid and vapor transport properties of defined properties and possibly some work in the area of critical pressure prediction for mixtures. A. M. Szafranski (Polish Institute of Industrial Chemistry and Polish Academy of Sciences, Warsaw, Poland) will shortly release a publication containing critically evaluated second virial coefficients for 213 pure substances and 115 defined mixtures. It will supplement the well-known publication of Dymond and Smith. Future work plans include phase equilibrium studies, heat of mixing from component properties and entropy of melting estimation. A major portion of his work will be published in *Thermodynamic Data for Technology* (Polish journal). Because of this wide range of projects, Dr. Szafranski is in an excellent position to actively contribute to priority areas of data estimation. B. Le Neindre (Intermolecular and High Pressure Laboratory, Villeteuse, France) reported through Dr. Sobel that he is currently model-

ing the properties of selected polar mixtures with equations of state and in the near future, hopes to develop an equation of state for molten salts. A study of the available mixing rules is also a very important facet of each project. His plans include experimental measurements on molten salts; for example, the thermodynamic properties along the liquid solid transition and possibly P-V-T measurements on these compounds as well as electrolytes.

(2) Establishing the reliability of estimation procedures for vapor pressure and of P-V-T properties of pure, multifunctional polar compounds: L. Sobel (Ugine-Kuhlmann, Courbevoie, France) is currently determining the thermodynamic properties of fluorinated alcohols. Such compounds are to be used as heat transfer and working fluids in heat engines. He indicated that vapor pressure, latent heat of vaporization and Mollier diagrams will be generated. Data correlation and expansion by estimation is a natural part of this investigation. A. A. Bondi (Shell Development Company, Houston, Texas) intends to express the coefficient of a Frost-Kalkwarf type vapor pressure equation as function of the chemical composition of high boiling and very polar compounds because three-parameter corresponding states type correlations (T_c , P_c , ω) obviously break down when applied to highly polar compounds and probably will prove to be deficient in the long run for estimating the properties of high boiling petroleum and coal-derived liquids as well. In fact, for the most part, critical properties cannot be experimentally determined for these classes of compounds and are to a certain extent meaningless as correlating parameters.

The respondents to the survey mentioned above assigned the highest priority ranking to procedures for the estimation of the critical constants of multifunctional very polar substances. There are two problems with this widely felt need: firstly, few reliable data are, or ever can be, available, because many compounds of those classes are pyrolyzed before they attain their critical temperature, and secondly, the inference that the properties of such multifractional very polar compounds can be successfully generalized by even a modified corresponding states correlation is probably inadmissible. The difference in the temperature dependence of the strength of the polar group interactions from those of the nonpolar structure components precludes their being "in corresponding states". The members of the Task Group agreed to circulate within the group incidences of fit or nonfit of the properties of such substances to corresponding state correlations as they encounter them.

An effort will be made to use the reliability criteria of the *Guide* in the publications of the Task Group.

The survey results confirmed the need for synthesis of multifunctional polar compounds and the precision determination of their physical properties, as described in section 4 of our report in *CODATA Newsletter* 17. This need should be given wide publicity among chemists and physical chemists in order to stimulate action in a field that is of increasing importance, especially in the environmental conservation area.

Calvin F. Spencer, Secretary Arnold A. Bondi, Chairman

NUMERICAL DATA IN THE LIFE SCIENCES: THE ROLES OF CODATA NATIONAL COMMITTEES

by

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Opinions expressed in this paper
are personal opinions and do not
necessarily reflect those of NDAB

The purposes of this paper are to review: the characteristics and status of numerical data in biology; the present and future aspects of numerical data handling in the life sciences; and the roles that might -- or even must -- be taken by National Committees (NC) of CODATA around the world, [and by special organizations like the United States' National Research Council's Numerical Data Advisory Board (hereafter NDAB)*].

Given these purposes, it is necessary first to familiarize readers with relevant aspects of the life sciences and with their data. Many comments also will have direct relevance to other fields.

The Life Sciences and their data

Many workers, both life scientists and others, see this area of knowledge to be composed of two major divisions in terms of methods and actual data. One is related more closely to physics and chemistry, while the other appears more aligned with psychology and sociology. So, for example, cell biology is said to be closer to physics and chemistry than to ecology, due to cell biology's relative invariance of numbers, or at least its relatively high predictability. This, however, is not because physical and chemical characteristics do not occur in ecological systems, but because: additional types of characteristics exist and, until recently, both equipment and interest were relatively unavailable for quick and accurate measurement of such parameters.

Environmental systems (or sites), for example, a lake, or part of a forest, are complex, changing systems. Many important characters cannot be measured with the exact instrumentation of chemistry or physics. For example, what is the fundamental value for the number of eggs laid per mosquito per generation in a woodlot in Indiana? Not only do we have poor data accumulation estimation and methods to attempt to answer such questions, but also this important value is not a constant. Rather it varies with each species, even with each strain within the species, and

even at the same geographic site over time. So, while biology may have certain fundamental constants because of the dynamic nature of biological systems, often it is much more important to estimate not fundamental constants but fundamental vectors or matrices. Use of constants for such characters may be easier, but they provide a false sense of reliability for extrapolation to other parts of the real world, or even to apply to the same place but at different times.

Somewhat as an aside, perhaps we are doing more harm than good by emphasizing the dichotomy of hard versus soft data and hard versus soft sciences. Every time we mention this dichotomy we sensitize others at least subconsciously to enforcing the belief that only these two quite different kinds of data exist. I believe it more valuable to consider each datum along a spectrum of hardness or softness.

While characteristics such as the above suggest great differences between, for example, cell biology and environmental biology, I suggest that great similarities exist with respect to the data in each field. Thus, recently as both laws and a genuine concern for the environment increase our interests in environmental biology, it produces also an increased need for the accumulation of chemical and physical data at the environmental level, e.g., level of pollutant chemicals. In the United States the federal Environmental Protection Agency is very much involved in this activity. In addition, as cell biologists and biochemists begin to move out of their mostly analytical mode of research and include deeper syntheses, they become more like systems ecologists. My point is, that since all levels of biology now are utilizing chemical and physical data, all are directly relevant to CODATA's work. But since other types of biological data exist that are not direct chemical nor physical property data, there is need for an expansion of these organizations' foci.

In addition, biology is too diverse (not just too big) a discipline to treat as a homogeneous monolith. That is, we should stop making generalizations about the life sciences, such as that it is a soft science. Whether the data accumulated in some area of biology are relatively hard or not is a function of the level of biological organization (biochemical, cell,... up to the ecological level) and of the particular characters of interest. At each level of organization, one chooses between the accumulation of relatively hard or relatively soft data.

*The NDAB is a board of the National Academy of Science - National Research Council, whose members include leading scientists in universities and industry who are concerned with national needs for reliable data. Its meetings are held in conjunction with the U.S. National Committee for CODATA, and the two groups undertake joint projects.

Finally, as in other fields, the planners of numerical data accumulation and of data banks in biology are not the actual data accumulators. And the data accumulators are not the data users. Regrettably, the secrets of future advances in the life sciences may be locked in data already collected!

Important Roles for CODATA in the Life Sciences

As in other fields, for data to be of use to biologists (or to others who use biological data) they must be: relevant, available, and reliable. I believe that the CODATA committees of each country (and of NDAB in the United States) can help biology and biologists in all three of these areas. To elaborate a bit, numerical data must be relevant to a given purpose. They also must be available to users. Such availability has two aspects. The first is that users must know such data exist. Secondly, the data must be in a form that is readily retrievable and useable. Because the volume of required data is often large, this mandates that the data be computer compatible. An example is the long range weather data that is so important for predictions of environmental factors affecting biological systems. If the data are not computerized, they in fact often are not available. Finally, data must be reliable. Reliability includes ability to correct data, and implies the need for evaluation of the data. These attributes are of utmost concern to CODATA and NDAB.

Where is biology today in these three important areas? Biology is generally at the costly stage of every worker or organization, and every user of data, still either creating their own data or using archaic methods of retrieval. This is true even in life scientists' attempts to keep abreast of the relevant literature. I suspect that perhaps less than 5% of life scientists use computer searches to keep up with the literature, either directly or via an information broker. Exceptions to the above occur mostly in government organized projects, for example, at the United States' Environmental Protection Agency or the National Institutes of Health. Often it occurs only in those projects in which long-term government employees are available to do the data capture and to maintain the data banks.

I believe some of the most critical "bottleneck" stages in biological data handling today are:

- 1) unawareness of the availability of extant data;
- 2) unavailability of necessary data in computer form;
- 3) the data simply have not been collected yet; and
- 4) data "die", being buried in unpublished reports or discarded as a scientist retires.

So what can CODATA and NDAB do? They can (and I believe have a mandate to do so): educate and sensitize workers to the values of good data handling at all stages; and suggest data handling guidelines to the biological community, both to people working at data accumulation as well as to those who overview data bank creation and support. For example, they should encourage registries of data banks. Examples of such registries in existence include the ENDEX project sponsored by the United States Department of Commerce. They also should encourage computer-

ization of data when this can be done easily and inexpensively, or without any extra cost beyond that which is involved in manual manipulation of data. They also should support archiving of data, with adequate documentation.

In addition, at all levels of biology -- again with a few exceptions in microbiology and biochemistry -- data are not being accumulated and/or made available in a way that permits integration of data bases. Such compatibility would allow closer estimates of important biological "constants", including their variance, and of more realistic data sets for systems analysis. Even agencies that are actively dedicated to the integration of data from diverse sources rarely campaign for compatibility standards. A strong need exists for the development of standards and coordination, but this first requires education as to the value of both standards and coordination! CODATA (and also NDAB in the United States) must take the initiative to motivate the leaders of biology toward these goals.

GEOLOGICAL WORLD ATLAS

Map compilation is the traditional method of storing geological data and requires no sophisticated retrieval system once the map is printed. Disadvantages are the delay required for processing through press, printing costs and consequent periodicity of publication. Advantages are the intellectual stimulation of compilation demanding intra-territorial correlations.

The first attempt to prepare and publish a Geological Atlas of the entire world is now yielding its harvest. With 16 continental sheets, all to a 1:10 000 000 scale and 5 ocean sheets to different scales, the Geological World Atlas provides a most modern geological synthesis. Short explanatory texts describe the sheets.

International cooperation and the final syntheses took place within the Commission for the Geological Map of the World. General convenors for the continents are G. Choubert and Anne Faure-Muret. The legend for the ocean sheets was master-minded by the late B. C. Heezen; they are the first-ever compilations of geological and geophysical information on the deep oceans.

The Atlas is sold in a hard folder or rolled, and can be ordered from the Commission for the Geological Map of the World (CGMW), 51 Boulevard de Montmorency, 75016 Paris or from Unesco at 650 French francs for the first set of six sheets, and also from Unesco retailers throughout the world. Orders through CGMW ensure notification of the publication of the second (1979) and third (last-1980/81) batch of sheets.

ESDU TO DISTRIBUTE NEW DATA SERIES

The Engineering Sciences Data Unit (ESDU) has been selected to distribute *International Data Series, Series B, Data on Aqueous Organic Systems*. The format, scope and editorial policies are broadly similar to those of *Series A (Thermodynamic Properties of Binary Systems of Organic Substances)* but will also contain Data Tables on the properties of dilute solutions of organic compounds in water. Contributions of Data Tables by authors and compilers are welcomed. Further information: ESDU, 251 Regent Street, London W1R 7AD, U.K.

THE JAPAN SOCIETY FOR CODATA ESTABLISHED

The inaugural General Assembly of the Japan Society for CODATA was held in Gakushi-kaikan Building in Tokyo on November 20, 1978. After the lecture of Dr. W.W. Hutchison, the guest speaker, entitled "The nature and use of data in the Geological Sciences", the Assembly approved the Constitution of the Society and marked its first ambitious step into scientific data activities. Prof. Takehiko Shimanouchi, ex-Vice President of CODATA, was elected as the first President of the Society, and Professors Toshio Kitagawa, Masao Kotani, Kazuo Sato and Shūzō Seki as Advisors. Sixteen Councilors, thirteen Members of the Steering Committee and an Auditor were also appointed. The purpose of the Society, according to the Constitution, shall be to seek to promote, improve and popularize the scientific and technical data activities such as collection, evaluation, storage, retrieval and utilisation with intimate intercommunications among the Members, and to contribute, in close cooperation with the Japanese National Committee for CODATA, to CODATA for the fulfilment of its purpose and objectives in the world as well as to the Japanese users of scientific and technical data by providing various benefits concerned. The Society will become an Associate Organization of CODATA.

A USEFUL BIBLIOGRAPHIC SURVEY ON ENERGY STORAGE

Storage of energy will become more and more important with the depletion of our primary energy sources and the consequent increase in the cost of energy. There are two reasons for this: 1., Energy from renewable sources such as sun, tides, waves, wind - is subject to seasonal, monthly, diurnal and even shorter term variations and these usually do not match the equally fluctuating demands. 2., Most plans for the conversion or utilization of energy carry high capital costs which can be reduced if peak demand can be met from stored energy. Efficient storage methods permit fuller use of the energy provided by nature and of the equipment created by man for its conversion.

Because of the importance of the subject, a study carried out during 1978 by the Institut Français de l'Energie is particularly welcome. The purpose of the research was to provide, by means of selective literature references, a manageable survey of energy storage work in progress or projected. Although the survey is in principle worldwide, it was inevitable that work in certain countries should be much better represented than in others. One half of the 740 citations are on U.S. work. France and Germany come next with 100 each, while international organizations, Japan and U.K. are represented by about 20 each.

An excellent double entry index gives the distribution of the cited papers among countries and storage methods (thermal, chemical, hydrogen, batteries, compressed air, underground pumped storage, fly-wheel, superconduction) while another index permits to identify storage installations, economic

studies and the research policies in the various pathways from energy sources to the types of energy stored (thermal, chemical etc.) to the methods used leading to final utilization.

The reference list gives the titles in both the original language and in French and also a 2-3 line abstract in French.

This most useful report so far exists only as a manuscript. It seems desirable that it should be made accessible to a wide, interested audience and it is hoped that this will happen before long. It consists of 300 typed pages of which 40 pages are tables.

TOXICOLOGY INFORMATION PROGRAM

The U.S. Toxicology Information Program (TIP) was established as a result of recommendations made in 1976 by the President's Science Advisory Committee report on the "Handling of Toxicological Information". TIP was established in 1967 at the National Library of Medicine. General objectives of the Program are: (1) to create computer-based toxicology data banks from the scientific literature and from the files of collaborating industrial, academic, and governmental agencies; and (2) to establish toxicology information services for the scientific community.

Toxicology information services are presently being implemented in three ways: query response, publications, and through various on-line information retrieval services. For the first of these, TIP has established the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory. Literature searches are performed there for a service fee of \$25/hour. Search requests should be addressed directly to: Director, TIRC, Oak Ridge National Laboratory, P.O. Box X, Oak Ridge, TN 37830. TIRC also prepares special annotated bibliographies (sold through the National Technical Information Service) and state-of-the-art reviews written by experts on topics of current interest.

In the area of publications, TIP has sponsored or created a number of journals and monographs. Among these are *Toxicity Bibliography* (1968-1977) a quarterly publication containing bibliographic references with MeSH (Medical Subject Headings) terms, derived from the MEDLARS data base; *Abstracts on Health Effects of Environmental Pollutants* (HEEP), a monthly abstract journal, supported by a machine-readable data base, initiated in cooperation with Bio-Sciences Information Service of Biological Abstracts and published by them; *A Directory of Information Resources in the United States: General Toxicology*, prepared in 1968 with the National Referral Center, Library of Congress; and *Drug Interactions -- An Annotated Bibliography with Selected Excerpts*, Volume I (1967-1970) and II (1970-1971).

COMPUTERIZED SERVICES

TIP also provides toxicology information to users via on-line, interactive retrieval services. One such service, called TOXLINE, is an information retrieval tool for the areas of environmental pollution, occupational health and safety, pharmacology, toxicology, medicine, and related biosciences. The service is

accessible via terminals, through a national telephone-based communications network that connects users to the computer at NLM.

TOXLINE contains 490 000 bibliographic citations, with abstracts and index terms, referencing the scientific literature from 1971 to present. Pre-1971 information is in a backfile called TOXBACK which contains more than 200 000 records available through offline searches. These files include citations with MeSH terms from *Toxicity Bibliography* (1968-1977), abstracts from *Pesticides Abstracts* (1966-present), *Chemical-Biological Activities* (1965-present), *International Pharmaceutical Abstracts* (1970-present), and citations and keywords from the Environmental Mutagen Information Center File (1968-present), the Toxic Materials Information Center file (1950-present).

Another service, CHEMLINE, is a chemical dictionary file that allows more than 550 000 chemical substance names representing some 250 000 unique substances to be searched and retrieved on-line. CHEMLINE is derived primarily from the registry files of the Chemical Abstracts Service (CAS) and contains in on-line searchable form: CAS Registry Numbers, molecular formulae, preferred chemical nomenclature, generic and trivial names, and locator designations which point to other files in the NLM system containing information on a given chemical substance. Some records also contain MeSH terms, Wiswesser Line Notations, and ring structure information. CHEMLINE also includes records for the 33 000 substances on the Environmental Protection Agency's Toxic Substances Control Act Candidate Inventory List. The system allows for on-line, sub-structure searching and serves as an aid file for TOXLINE, MEDLINE, and CANCERLINE users.

The fee for using TOXLINE or CHEMLINE is \$15/hour of connect time between 10:00 a.m. and 5:00 p.m., EST, and \$8/hour at all other times. There is a charge of 12 cents per page of off-line printout.

In addition, TIP is building a number of data banks, either independently or in collaboration with other organizations. One example is the Toxicology Data Bank (TDB), an on-line, interactive data retrieval service. The TDB contains evaluated data on selected chemicals to which humans are exposed and which present actual or potential health hazards. Collected data include chemical and physical properties and analytical methods; animal and human toxicology; production, uses, and shipment methods; environmental hazards; and explosive and fire potential.

In cooperation with the National Institute for Occupational Safety and Health (NIOSH), the most current version of the *Registry of Toxic Effects of Chemical Substances* (RTECS) is available in structured, easily searchable format as an NLM on-line service. This file contains chemical identification, toxic data, and standards and regulations for 26 000 chemical substances.

COLLABORATIVE PROJECTS

Under the sponsorship of the Toxicology Information Subcommittee of the Department of Health, Education and Welfare Committee to Coordinate Toxicology and Related Programs, TIP carries out certain toxicology information activities.

A number of products and services resulting from Subcommittee-sponsored projects are available via TIP. These are: (1) *TOX-TIPS (Toxicology Testing-in-Progress)*, a monthly current awareness bulletin available from the National Technical Information Service, that provides information on long-term toxicity testing. Information about proposed and on-going tests is submitted to TIP voluntarily by industry, academia, and government agencies (subscription \$25 domestic, \$35 all others). (2) *Toxicology Research Projects Directory*, a monthly publication also available on subscription from the National Technical Information Service. Each year the Directory contains reports of some 12 000 on-going research projects in toxicology extracted from the files of the Smithsonian Science Information Exchange (subscription \$100 domestic, all others \$170). (3) Laboratory Animal Data Bank (LADB), an on-line, interactive data retrieval and manipulation service that will allow biomedical scientists, breeders, and other managers of laboratory animal research to retrieve and analyze baseline data obtained from selected strains of laboratory control animals. Most of the data in LADB are not available from the published literature.

Inquiries about the Toxicology Information Program or any of its products and services should be addressed to: Associate Director, Specialized Information Services, National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20014. Telephone: (301) 496-3147.

JOURNEE CODATA EN FRANCE

Le 16 Novembre 1978, dans les locaux de l'AFNOR, s'est déroulée une journée de réflexion sur "Les Logiciels de Gestion de Banques de Données". Organisée sous les auspices du Bureau National de l'Information Scientifique et Technique (B.N.I.S.T.) par le Comité Français de CODATA, cette journée a rassemblé quelques 150 personnes.

Les deux thèmes suivants: Les Logiciels Spécifiques, et Les Logiciels Généraux ont donné lieu à une dizaine d'exposés mettant l'accent sur les raisons du choix des logiciels et sur l'analyse a posteriori de l'adéquation entre les besoins et les services. Une troisième séance a été consacrée aux perspectives d'avenir et en particulier à l'impact des mini et micro-ordinateurs sur les banques de données.

La table ronde, présidée par le Professeur J.E. Dubois, a montré clairement que le choix entre logiciel général et logiciel spécifique restait un problème ardu et qu'il n'était guère possible de trancher définitivement en faveur d'une solution. En effet:

- sur le plan technique, le logiciel général implique des contraintes et souvent des développements particuliers, alors que le logiciel spécifique s'il est bien adapté au problème à traiter crée cependant des difficultés d'évolution en particulier en fonction des modifications du logiciel de base des machines.
- sur le plan économique, il semble que les deux solutions ne soient pas significativement différentes.

La table ronde s'est aussi penchée sur les perspectives d'avenir et a évoqué en particulier l'aspect des nouveaux moyens de stockage tel que le vidéodisque, et des nouveaux modes de diffusion de l'information tel que le télétexte.

NEW BOOKS

BIO-SCIENCES

BIBLIOGRAPHY OF PHYSICAL PROPERTIES OF FOODSTUFFS, TEXTURAL PROPERTIES, (1978, 396 pp, in Czech and English, published by V.U.P.O.P.I. Trebohosticka 12, Prague 10), edited by Ing. M. Adam. Eleven chapters covering texture-theory and general problems; texture-experimental measurement; rheology-theory and general problems; rheology-experimental measurement; firmness and elasticity; consistency; viscosity; surface tension, adhesivity; structure; tenderness, toughness, penetrometry; and mass. Author index and subject index.

INBRED AND GENETICALLY DEFINED STRAINS OF LABORATORY ANIMALS, PART 1: MOUSE AND RAT, (1979), 418 pp, 90 tables, \$65, FASEB, 965C Rockville Pike, Bethesda, Maryland, ISBN 0-913822-12-4) edited by P.L. Altman and D.D. Katz. Coverage of the mouse includes introductory statement, inbred and genetically defined strains, karyology, development, epidermis, biochemical and endocrine mutants, immunology, neurology, tumors and wild mice. Coverage of the rat includes introductory statements, inbred and genetically defined strains, morphological traits, biochemical polymorphisms, immunogenetics, and regulatory systems. Index. Part 2 of this data book will cover the hamster, guinea pig, rabbit and chicken and will be available in autumn 1979. Scientists requiring the mouse or the rat in their research will find Part 1 an essential reference source.

CHEMICAL KINETICS

REACTION RATE AND PHOTOCHEMICAL DATA FOR ATMOSPHERIC CHEMISTRY, (1978, 111 pp, \$2.75, NBS SP-513, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, SD Stock Number SN003-003-01924-1), edited by R.F. Hampson, Jr. and D. Garvin. A table of data for gas phase chemical reactions and photochemistry of neutral species is presented. It gives preferred values for reaction rate constants, photoabsorption cross sections, and quantum yields of primary photochemical processes, and also cites recent experimental work (to December 1977). It is intended to provide the basic physical chemical data needed as input data for calculations modelling atmospheric chemistry. An auxiliary table of thermochemical data for the pertinent chemical species is given in the appendix.

COMPILATION OF GEOTHERMAL INFORMATION: PHYSICAL CHEMISTRY, (1978, 678 pp, \$25, (\$19 for DOE Users), National Geothermal Information Resource, Lawrence Berkeley Laboratory, 90-3117, University of California, Berkeley, CA 94720) compiled by H. Ozbek. Included in this compilation is an aqueous electrolyte database and data on the viscosity, thermal conductivity and density of sodium chloride solutions to elevated pressures and temperatures. Tabulated experimental data extracted from the available literature, references, author index, author affiliation index and subject index. Data are urgent both to research and development of geothermal electrical and non-electrical systems.

JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA VOL. 6 (1977, 1355 pp, \$100 for U.S., Canada and Mexico, 104 other countries, special rates for members ACS or AIP, American Chemical Society, Subscription Service, 1155 16th Street, Washington D.C. 20036), edited by D.R. Lide, Jr. Contents: Diffusion in Copper and Copper Alloys, Part V. Diffusion in Systems Involving Elements of Group Va by D.B. Butrymowicz, J.R. Manning and M.E. Read; The Calculated Thermodynamic Properties of Superfluid Helium-4 by J.S. Brooks and R.J. Donnelly; Thermodynamic Properties of Normal and Deuterated Methanols by S.S. Chen, R.C. Wilhoit and B.J. Zwolinski; The Spectrum of Molecular Nitrogen by A. Lofthus and P. Krupenie; Energy Levels of Chromium, Cr I through Cr XXIV by J. Sugar and C. Corliss; The Activity and Osmotic Coefficients of Aqueous Calcium Chloride at 298.15K by B.R. Staples and R.L. Nuttall; Molten Salts: Volume 4, Part 3, Bromides and Mixtures; Iodides and Mixtures- Electrical Conductance, Density, Viscosity, and Surface Tension Data by G.J. Janz, R.P.T. Tomkins, C.B. Allen, J.R. Downey, Jr. and S.K. Singer; The Viscosity and Thermal Conductivity Coefficients for Dense Gaseous and Liquid Methane by H.J.M. Hanley, W.M. Haynes, and R.D. McCarty; Phase Diagrams and Thermodynamic Properties of Ternary Copper-Silver Systems by Y.A. Chang, D. Goldberg, and J.P. Neumann; Crystal Data Space-Group Tables by A.D. Mighell, H.M. Ondik, and B. Breen Molino; Energy Levels of One-Electron Atoms by G.W. Erickson; Rate Constants for Reactions of ClO_x of Atmospheric Interest by R.T. Watson; NMR Spectral Data: A Compilation of Aromatic Proton Chemical Shifts in Mono- and Di-Substituted Benzenes by B.L. Shapiro and L.E. Mohrmann; Tables of Molecular Vibrational Frequencies. Consolidated Volume II by T. Shimanouchi; Effects of Isotopic Composition, Temperature, Pressure, and Dissolved Gases on the Density of Liquid Water by G.S. Kell; Viscosity of Water Substance - New International Formulation and its Background by A. Nagashima; A Correlation of the Existing Viscosity

and Thermal Conductivity Data of Gaseous and Liquid Ethane by H.J.M. Hanley, K.E. Gubbins, and S. Murad; Elastic Properties of Zinc: A Compilation and a Review by H.M. Ledbetter; Behavior of the AB-Type Compounds at High Pressures and High Temperatures by L. Merrill; Energy Levels of Manganese, MnI through MnXXV by C. Corliss and J. Sugar.

VOL. 7: (1978, 1780 pp, same price as above), edited by D.R. Lide, Jr. Contents: Tables of Atomic Spectral Lines for the 10 000Å to 40 000Å Region by M. Outred; Evaluated Activity and Osmotic Coefficients for Aqueous Solutions: The Alkaline Earth Metal Halides by R.N. Goldberg and R.L. Nuttall; Microwave Spectra of Molecules of Astrophysical interest XII. Hydroxyl Radical by R.A. Beaudet and R.L. Poynter; Ideal Gas Thermodynamic Properties of Methanoic and Ethanoic Acids by J. Chao and B.J. Zwolinski; Critical Review of Hydrolysis of Organic Compounds in Water Under Environmental Conditions by W. Mabey and T. Mill; Ideal Gas Thermodynamic Properties of Phenol and Cresols by S.A. Kudchadker, A.P. Kudchadker, R.C. Wilhoit, and B.J. Zwolinski; Densities of Liquid $\text{CH}_4\text{-aX}_d$ ($\text{X}=\text{Br}, \text{I}$) and $\text{CH}_4\text{-(a + b + c + d)F}_a\text{Cl}_b\text{Br}_c\text{I}_d$ Halomethanes by A.P. Kudchadker, S.A. Kudchadker, P.R. Patnaik, and P.P. Mishra; Microwave Spectra of Molecules of Astrophysical Interest XIII. Cyanoacetylene by W.J. Lafferty and F.J. Lovas; Atomic Transition Probabilities for Vanadium, Chromium, and Manganese (A Critical Data Compilation of Allowed Lines) by S.M. Younger, J.R. Fuhr, G.A. Martin, and W.L. Wiese; Thermodynamic Properties of Ammonia by L. Haar and J.S. Gallagher; JANAF Thermochemical Tables, 1978 Supplement by M.W. Chase, Jr., J.L. Curnutt, R.A. McDonald, and A.N. Syverud; Viscosity of Liquid Water in the Range -8 °C to 150 °C by J. Kestin, M. Sokolov, and W.A. Wakeham; The Molar Volume (Density) of Solid Oxygen in Equilibrium with Vapor by H.M. Roder; Thermal Conductivity of Ten Selected Binary Alloy Systems by C.Y. Ho, M.W. Ackerman, K.Y. Wu, S.G. Oh, and T.N. Havill; Semi-Empirical Extrapolation and Estimation of Rate Constants for Abstraction of H from Methane by H, O, HO, and O₂ by R. Shaw; Energy Levels of Vanadium, V I through V XXIII; Recommended Atomic Electron Binding Energies; 1s to 6p_{3/2}, for the Heavy Elements, Z= 84 to 103 by F.T. Porter and M.S. Freedman; Ideal Gas Thermodynamic Properties of $\text{CH}_4\text{-(a + b + c + d)F}_a\text{Cl}_b\text{Br}_c\text{I}_d$ Halomethanes by S.A. Kudchadker and A.P. Kudchadker; Critical Review of Vibrational Data and Force Field Constants for Polyethylene by J. Barnes and B. Fanconi; Tables of Molecular Vibrational Frequencies, Part 9 by T. Shimanouchi, H. Matsuura, Y. Ogawa, and I. Harada; Microwave Spectral Tables II. Triatomic Molecules by F.J. Lovas.

EARTH SCIENCES

COMPUTER BASED FILES ON MINERAL DEPOSITS: GUIDELINES AND RECOMMENDED STANDARDS FOR DATA CONTENT, (1978, 72 pp, \$4.00 Canada, \$4.80 other countries, Geological Survey of Canada, 601 Booth St., Ottawa, ISBN 0-660-10124-6), by the Mineral Deposits Working Committee on Research in the Geological Sciences. Makes recommendations on content, organization and some aspects of editorial control that will promote both the effectiveness of individual mineral deposit files and a degree of compatibility between them. "Mineral deposit" is considered to be any known, naturally occurring

concentration of metallic or industrial minerals or mineral fuel (including petroleum and coal).

DIRECTORY OF U.S. DATA REPOSITORIES SUPPORTING THE INTERNATIONAL GEODYNAMICS PROJECT

(1978, 40 pp, \$0.95, WDC-A for Solid Earth Geophysics, Environmental Data and Information Service, NOAA, Boulder, Colorado 80303) compiled by Working Group 10b on Data Centers and Repositories, U.S. Geodynamics Committee, A.H. Shapley, Chairman. Contains information for 19 data categories with an index by state and an index by geographic data coverage.

THE TIDES OF THE PLANET EARTH, (1978, 620 pp, 152 illustrations, over 2500 references, \$75.00, £37.50, Pergamon Press, Oxford, ISBN 0-08-022047-9) by Paul Melchior. Contents: Tidal potential. Relation between the tidal theory and precession-mutations theory. Love numbers and the description of tidal deformations. Kelvin's and Hergeholz's theories of Earth tides. Reduction of the problem of elastic deformations of a sphere to a system of six differential equations of the first order. The liquid-core dynamic theory. Tidal analysis. Tilt: Deflexion of the vertical with respect to the earth's crust, instrument, results (the factor $\gamma=1+K-H$). Gravity tide, instruments, results. The indirect effects, deformations by surface loads of radially symmetric earth. Local perturbations in earth tide observations. General comparison of the experimental and the theoretical results. Tidal effects in astronomy. Earth tides, satellite orbits and space navigation. Solid tides on the surface of the moon. Miscellaneous. Bibliography covering all papers on earth tides. An outstanding and valuable reference for all advanced students and research workers in geophysics.

FLAGGING AND TAGGING

EXPERIMENT IN DATA TAGGING IN INFORMATION-ACCESSING SERVICES CONTAINING ENERGY-RELATED DATA, (1978, 73 pp, Chemical Abstracts Service, American Chemical Society, Columbus, OH 43210). A final report prepared by CAS for the National Science Foundation which describes the results of an experiment on the use of "data tags" in machine-readable output file for incorporation into an on-line search service. "Data tags" are codes which uniquely identify specific types of numerical data in the corresponding source documents referenced in the files.

HANDBOOKS

HANDBOOK SERIES IN ORGANIC ELECTROCHEMISTRY, VOL I AND VOL II, (1977, Vol I - 884 pp, Vol II - 637 pp, 2-volume set \$115, ISBN 0-8493-7251-8, CRC Press, 2255 W. Palm Beach, Lake Blvd., W. Palm Beach, FL 33409) by L. Meites and P. Zuman. Comprehensive critically evaluated compilation of fundamental data on organic organometallic, and biochemical substances by polarography and approximately fifty electrochemical and electroanalytical techniques related to it, including voltammetry, amperometry, controlled-potential

coulometry, chronopotentiometry, and double potential-step chronocoulometry.

MOLECULAR PROPERTIES

GUIDE FOR THE PUBLICATION OF EXPERIMENTAL GAS-PHASE ELECTRON DIFFRACTION DATA AND DERIVED STRUCTURAL RESULTS IN THE PRIMARY LITERATURE, (Reprinted from *Acta Crystallographica*, Vol. A32, Part 6, November 1976, pp. 1013-1018), by L.S. Bartell, Kozo Kuchitsu and H.M. Seip. This report, written after extensive consultation with workers in a majority of the existing laboratories of electron diffraction, contains general recommendations for the guidance of authors, referees and editors on the reporting of electron diffraction data and derived structures. Even though structural investigations by gas-phase electron diffraction differ so widely in complexity and in aim as to render impractical the enunciation of rigid rules for the reporting of procedures and the presentation of results, it is to be hoped that the recommendations laid down in this report will help authors in their efforts to compare, evaluate and possibly retrieve data whenever re-analysis of the original results becomes necessary. The recommendations of the present "Guide" are largely based on CODATA's *Guide for the Presentation in the Primary Literature of Numerical Data Derived from Experiments*.

NOMENCLATURE, SYMBOLS, UNITS, STANDARDS AND CONSTANTS

INTERNATIONAL SERIALS CATALOGUE, PART 1: CATALOGUE, (1979, 521 pp, \$40 (price for Part 1 and Part 2: INDEX), \$60, ICSU-AB, 51 Bd. de Montmorency, 75016 Paris). A data base recording more than 30 000 serial titles presented with their key title, ISO title, abbreviation, ICSU-AB service code(s), CODEN and ISSN descriptor. Valuable bibliographic reference source.

SOLID STATE PROPERTIES

PROPERTIES OF SELECTED SUPERCONDUCTIVE MATERIALS. 1978 SUPPLEMENT, (1978, 99 pp, \$2.75, National Bureau of Standards Technical Note 983), by B.W. Roberts, is an addendum to the survey of superconductive materials published by the same author in the *Journal of Physical and Chemical Reference Data* (Vol. 5, No. 3, pp 581-821, 1976). More than 1000 compounds or alloys have been reviewed for such properties as composition, critical temperature, critical magnetic field, crystal structure and the results of negative experiments. Special tabulations give lists of high magnetic field materials and materials with organic materials. A bibliography of more than 400 items substantiates the data supplied in the compounds/properties compilation. A list of review articles and books on superconductivity is also appended.

SOLUTION PROPERTIES

SOLUBILITY DATA SERIES is a series of approximately 80 to 100 volumes organized into five broad classifications: solubility of gases in liquids, solubility of gases in solids, solubility of liquids in liquids, solubility of solids in liquids and solubility of solids in solids. This series, to be published over the next ten years at a rate of 8 - 10 volumes per annum is an ongoing project of the Analytical Chemistry Division of IUPAC. A.S. Kertes is Editor-in-Chief of these critically evaluated solubility data. Special pre-publication prices are available by contacting Pergamon Press, Oxford.

SPECTRA COLLECTIONS

BIBLIOGRAPHY OF MICROWAVE SPECTROSCOPY 1945-1975, (1977, 664 pp, ZAED 9-1, Druckhaus Karlsruhe GmbH, Ostring 6, 7500 Karlsruhe 1, F.R.G.), by B. Starck, R. Mutter, C. Spreter, K. Kettemann, A. Boggs, M. Botskor and M. Jones. This annotated bibliography covers the first thirty years of experimental, gas-phase, microwave spectroscopy, on diatomic molecules, linear molecules, symmetric top molecules, asymmetric top molecules (inorganic), saturated chain molecules, unsaturated chain molecules, saturated rings, unsaturated rings (without aromatic 6-rings), benzene and monosubstituted derivatives, organometallic compounds (with Se, Te) and noble gas compounds. A supplement covering radicals and ions as well as some of the molecular beam and interstellar space investigations will be produced at a later date.

EPA/NIH MASS SPECTRAL DATA BASE, five-part set including index (1978, 4636 pp, \$65, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, SD Stock No. 003-003-01987-9), by S.R. Heller and G.W.A. Milne. This publication presents a collection of 25 556 verified mass spectra of individual substances compiled from the EPA/NIH mass spectral file. The spectra are given in bar graph format over the full mass range. Each spectrum is accompanied by a Chemical Abstracts Index substance name, molecular formula, molecular weight, structural formula, and CAS Registry Number.

THERMODYNAMIC PROPERTIES

BULLETIN OF CHEMICAL THERMODYNAMICS, NO 21, (1978, 520 pp, \$25, Thermochemistry, Dept. of Chemistry, Oklahoma State University, Stillwater, OK, 74074, ISSN 0149-2268), edited by R.D. Freeman. This is the 21st volume of this unique annual index, bibliography and review for published and unpublished research in the intersecting areas of thermodynamics and chemistry.

THE CHEMICAL THERMODYNAMICS OF ACTINIDE ELEMENTS AND COMPOUNDS, (Part 1: The Actinide Elements, 1976, 111 pp, \$8; Part 2: The Actinide Aqueous Ions, 1976, 65 pp, \$5; Part 3: Miscellaneous Actinide Compounds, 1978, 85 pp, \$7, IAEA, Vienna), edited by E.H.P. Cordfunke and P.A.G. O'Hare. This series will consist of eleven publications comprising a critical assessment of the chemical thermodynamic properties of the actinide elements and compounds. Each part is devoted to an individual class of actinide compound, and the text gives the thermodynamic characterization in the low- and high-temperature regions as well as the properties of the gaseous state and vaporization behaviour. Thermodynamic data are also included in tabular form over the complete temperature range for most actinide materials. The material is compiled by eleven groups of authors from widely separated institutions and laboratories who are experts in the field of thermodynamic experimentation and analysis. Of interest to chemists, physicists, nuclear engineers and material scientists.

THERMODYNAMIC PROPERTIES OF PURE SUBSTANCES, in four volumes (2 parts per volume) in Russian. (1978, Vol. I, Part 1, 326 pp, Vol II, Part 2, 495 pp., Academy of Sciences, Moscow), edited by V.P. Glushko and I.V. Gurvich. The thermodynamic properties [$C_p(T)$, $\phi^\circ(T)$, $S^\circ(T)$, $H^\circ(T)-H^\circ(0)$, $\log K^\circ(T)$, $\Delta_f H$ etc.] for about 1200 substances in condensed and gaseous phases are presented from 100 up to 6000 K (for 150 gases - up to 10 000 or 20 000 K). Forty-seven elements (from H to Pu), their compounds with O, H, halogens, S, N including salts, ions and radicals are considered. All thermodynamic values were calculated using the most accurate and reliable methods on the basis of critically evaluated or estimated constants. More than 15 000 bibliographic sources are cited. Recommended thermochemical constants and tabulated values are self-consistent, and uncertainties are given. For a number of substances the properties in non-standard states are also presented. In the course of the work the authors followed IUPAC and CODATA-ICSU recommendations for symbols, fundamental constants, key values, etc. The accuracy of the data tabulated, the temperature range, the list of substances included exceeds those in other reference books.

THERMOPHYSICAL PROPERTIES OF MATTER, VOL. 13. THERMAL EXPANSION: NONMETALLIC SOLIDS (1977, xxviii + 57a + 1658 + Appendix., \$155,IFI/Plenum, NY, ISBN 0-306-67033-X), by Y.S. Touloukian, R.K. Kirby, R.E. Taylor and T.Y.R. Lee. This volume of the TPRC data series covers eleven non-metallic elements, 23 groups of graphites, 61 of ceramics, 11 groups of cermets, 15 groups of glasses, 60 polymers and 15 groups of composites. Slightly over 50% of the data have been critically evaluated, analyzed and synthesized, and recommended reference values have been generated and are presented in the volume together with the original experimental data.

VAPOR-LIQUID EQUILIBRIUM DATA FOR BINARY SYSTEMS CONTAINING ALIPHATIC AMINES: DATA AND RECOMMENDATIONS, (1978, 182 pp., National Physical Laboratory, Teddington, Middlesex TW11 OLW, U.K.), by J.F. Counsell, J.H. Ellendes, and C.P. Hicks. This book is available free of charge as NPL Report CHEM 79.

VAPOR-LIQUID EQUILIBRIUM DATA FOR BINARY SYSTEMS CONTAINING ALIPHATIC AMINES: FITTING AND CORRELATION, (1978, 49 pp., National Physical Laboratory, Teddington, Middlesex TW11 OLW, U.K.), by C.P. Hicks and J.F. Counsell). This report may be had by requesting NPL Report CHEM 80.

VAPOR-LIQUID EQUILIBRIUM DATA COLLECTION, Vol. 1, part 2a: Organic Hydroxy Compounds: Alcohols, (1977, 733 pp, DM120, DECHEMA, Frankfurt/M, F.R.G., ISBN 3-921567-09-2), by J. Gmehling and U. Onken. Vol. 1, part 2b: Organic Hydroxy Compounds: Alcohols and Phenols, (1978, 556 pp, ISBN 3-921567-12-2), by J. Gmehling, U. Onken and W. Arlt. These two books comprise part 2 of an eight-part volume. (See further CODATA Newsletter No. 18).

MISCELLANEOUS

ENCYCLOPEDIA OF INFORMATION SYSTEMS AND SERVICES, (1978, xvi + 1030 pp, published by Gale Research Co., Detroit, MI., CIP: L.C. Card No. 78-78-14575, ISBN 0-8103-0940-8, \$95), edited by A.T. Kruzas. A guide to information storage and retrieval services, data base producers and publishers, online vendors, computer service companies, computerized retrieval systems, micrographic firms, libraries, government agencies, networks and consortia, information centers, data banks, clearinghouses, research centers, associations, and consultants. Third edition. Introduction; Content of an Entry; Index Scope Notes; 18 Indexes.

PROCEEDINGS OF THE SIXTH INTERNATIONAL CODATA CONFERENCE, (1979, 433 pp, \$95, Pergamon Press, Headington Hill Hall, Oxford), edited by B. Dreyfus, contains 79 papers presented at the CODATA Conference held in Santa Flavia, Palermo, Italy in May 1978. The papers are grouped under the following headings: evaluation and prevention of man-made hazards, atmospheric data and the quality of life, environmental data modelling, industrial data and international endeavour, data and computerized information systems, spectroscopy and computer-aided elucidation of structures, correlation and critical evaluation of data, national and international data management programs, data in the physical sciences, data evaluation methodology, data needs for energy, astro- and geosciences, scientific data correlation, data handling and computer systems, data processing methodology.

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GEOCHEMICAL DATA BANK

GEOCHEM 1 is the geochemical data bank located at the Institut Français du Pétrole and which is available to the public. Several thousand worldwide geochemical analyses on crude oils, gases, oil-filled waters and impregnated rocks are available in four files based on the nature and the sources of information. The following information is stored: geo-

graphical location, geological characteristics of the reservoir, production data, physical chemical characteristics, elementary analysis, distillation data and bibliographical references.

For detailed information and prices write to:
Institut Français du Pétrole, Division Géologie,
Boîte Postale 311, 92506 Rueil Malmaison Cedex,
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INDUSTRIAL USE OF THERMOCHEMICAL DATA

A conference on the Industrial Use of Thermochemical Data is scheduled to be held under the joint auspices of the Inorganic Chemicals Group of the Industrial Division of The Chemical Society and the National Physical Laboratory on 12-13 September 1979 in the U.K. The scope of the conference will be limited to inorganic and metallurgical sectors and the main themes will be the application of and needs for thermochemical data in industry and the environment, and methods of assessment, calculation, banking and dissemination of thermochemical data.

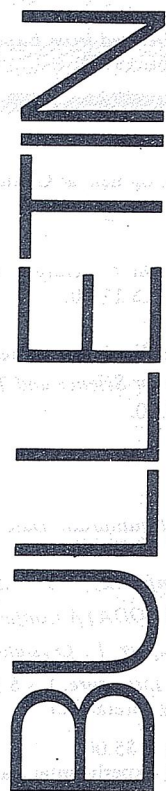
For further information write Dr. R. P. Miller,
Division of Chemical Standards, National Physical
Laboratory, Pennington, Middlesex PW11 0LW, U.K.

UNISIST II MEETING IN PARIS

The Intergovernmental Conference on Scientific and Technological Information for Development (UNISIST II) was held in Paris from 28 May to 1 June 1979 at Unesco headquarters. The meeting was attended by delegates representing 90 countries and 35 organizations of the U.N. system, intergovernmental and non-governmental organizations.

The Conference reviewed the achievements of the first UNISIST program and recommended ways in which Unesco, through UNISIST in its General Information Program, could continue to contribute to advance the applications of science and technology in development. Among the recommendations were the promotion of policies which ensure that information networks do not merely facilitate the flow of information but also encourage creativity, capacity for innovation, maximum utilization of local resources of information, stimulation of the will to gain knowledge, and the establishment of centers of documentation on technologies of local origin; assistance in setting up national or regional data and information analysis centers and information institutions providing a wide range of users with services tailored to meet their special needs for evaluated, consolidated and repackaged information, data, and documentation; encouragement in the creation and strengthening of international, regional, subregional and national referral services, in order to collect and disseminate information on the world sources of information; and, an intensification of efforts in training and education of personnel at all levels.

The participants felt that UNISIST II could provide a significant input to the forthcoming United Nations Conference on Science and Technology for Development (UNCSTD) to be held in Vienna in August 1979.



NAME _____

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 Fourth International CODATA Conference : Tsakhadzor, USSR, 24-27 June 1974, 171 pp, Pergamon Press, US \$ 25.
 Fifth International CODATA Conference : Boulder, USA, 28 June-1 July, 1976, 642 pp, Pergamon Press, US \$ 70.
 Sixth International CODATA Conference : Santa Flavia, Italy, 22-25 May 1978, 433 pp, Pergamon, US \$ 95.
- CODATA Newsletter - distributed free of charge on an irregular basis.
- CODATA Bulletin** : Annual subscription : US \$ 20 or 100 French Francs.
- No 1 (Oct. 1969), 12 pp, *Automated Information Handling in Data Centers*, US \$ 1.50, superseded by Bulletin No 4.
- Nos 2, 5, 6, 7, 10, 17 and 22, superseded by Bulletin No 28.
- No 3 (Dec. 1971), 28 pp, *A Catalog of Compilation and Data Evaluation Activities in Chemical Kinetics, Photochemistry and Radiation Chemistry*, US \$ 3.50.
 (Report of the CODATA Task Group on Data for Chemical Kinetics).
- No 4 (Dec. 1971), 12 pp, *Automated Information Handling in Data Centers*, US \$ 1.50 2nd Edition.
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- No 8 (Nov. 1972), 32 pp, *Geological Data Files : Survey of International Activity*, US \$ 3.50.
 (Report of COGEO DATA, Committee on Storage, Automatic Processing and Retrieval of Geological Data of the International Union of Geological Sciences (IUGS)).
- No 9 (Dec. 1973), 6 pp, *Guide for the Presentation in the Primary Literature of Numerical Data Derived from Experiments*, US \$ 1.50.
 (Report of the CODATA Task Group on Presentation of Data in the Primary Literature, Sept. 1973).
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 (Report of the CODATA Task Group on Fundamental Constants, August 1973).
- No 12 (Sept. 1974), 12 pp, *Energy Data Accessing and/or Retrieval*, US \$ 1.50.
 (Report on Data Tagging, compiled by a Panel of Experts at the Energy R & D Data Workshop held at Gaithersburg, Md, May 6-7, 1974).
- No 13 (Dec. 74), 8 pp, *The Presentation of Chemical Kinetics Data in the Primary Literature*, US \$ 1.50.
 (Report of the CODATA Task Group on Data for Chemical Kinetics).
- No 14 (Feb. 1975), 180 pp, *Proceedings of the Fourth International CODATA Conference on the Generation, Compilation, Evaluation and Dissemination of Data for Science and Technology* (Tsakhadzor, U.S.S.R., June 1974), US \$ 17.00.
- No 15 (March 1975), 32 pp, *Man-Machine Communication in Scientific Data Handling*, US \$ 5.00.
 (Proceedings of the Symposium sponsored by the CODATA Task Group on Computer Use, Freiburg im Breisgau, F.R.G., July 1973).
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 (Report of the CODATA Task Group on Data for the Chemical Industry)
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