



NEWSLETTER

DECEMBER 1973

IVTH INTERNATIONAL CODATA CONFERENCE

TSAKHCADZOR OLYMPIC VILLAGE

(ca. 50 km from Yerevan, Armenian Republic, U.S.S.R.)
24 — 27 June, 1974

The 4th International CODATA Conference will be held near Yerevan, U.S.S.R. from Monday, 24th June through Thursday, 27th June, 1974. The Soviet Organizing Committee together with the Program Committee have provided a stimulating and challenging formulation in a pleasant setting. The Conference will provide opportunities for the interchange of information and ideas on CODATA concerns, and for the establishment of closer scientific contacts among scientists from different countries, throughout the broad scope of disciplines embraced within CODATA.

A final program will be available in March 1974. Aspects covered will include the *modus operandi* of both discipline- and mission oriented data centers, their interaction and co-operation with data centers, their interaction and co-operation with data producers and users; computer usage in data systems organization; CODATA's role in meeting data needs for the geo-, cosmic- and bio-sciences; progress in data handling for atomic, molecular, spectroscopic and thermophysical data, etc. together with a few additional relevant, terse communications included within the structure of the program. Opportunities for discussion will be provided both in the main sessions and in the special informal sessions. Whereas languages recognized by ICSU will be acceptable, the use of English is recommended both for oral presentations and for written texts submitted for publication in the Proceedings of the Conference.

The meeting will take place in the High-Altitude Olympic Training Camp "Tsakhadzor" which has excellent housing, discussion and Conference accommodation as well as sport (e.g. tennis and swimming) facilities. The Camp is located near Yerevan, the capital of the Armenian Republic, a city old as Babylon and Ninevah and situated on the Plains of Ararat (an "open-air" museum of ancient culture). Excursions to Yerevan and to the austere and majestic beauty of Lake Sevan situated at nearly 2000 meters elevation will be arranged during the week of the Conference.

NEW CODATA OFFICERS

The newly elected officers and the seven additional elected members chosen from among the delegates comprise the Executive Committee of CODATA as defined by the revised constitution. The elections took place during the CODATA General Assembly held at Stockholm, Sweden in September 1973.

President :

Prof. B. VODAR, Laboratoire des Interactions Moléculaires et des Hautes Pressions, 1, place Aristide-Briand, 92190 Meudon, France.

Secretary General :

Prof. E. WESTRUM, Jr., University of Michigan, Dept. of Chemistry, Ann Arbor, Michigan 48104, U.S.A.

Treasurer :

Prof. N. KURTI, F.R.S., the Clarendon Laboratory, Parks Road, Oxford OX1 3PU, U.K.

Vice-President :

Dr. R.N. JONES, Division of Pure Chemistry, National Research Council of Canada, 100 Sussex Drive, Ottawa 2, Ontario, Canada.

Vice-President :

Academician M.A. STYRIKOVICH, Academy of Sciences of the U.S.S.R., Leninskiy Prospekt 14, Moscow B - 71, U.S.S.R.

Members :

Dr. P.L. ALTMAN, Office of Biological Handbooks, F.A.S.E.B., 9650 Rockville Pike, Bethesda, Maryland 20014, U.S.A.

Prof. K. EGLE, Botanisches Institut der J. W. Goethe Universität, 6, Frankfurt/Main, Siesmayerstr. 70, Federal Republic of Germany.

Dr. W.W. HUTCHISON, Geological Survey of Canada, 100 West Pender Street, Vancouver 3, B.C., Canada.

Prof. H. JANCKE, Amt für Messwesen und Warenprüfung der DDR, 102 Berlin, Wallstrasse 16, D.D.R.

Prof. P. MELCHIOR, Observatoire Royal de Belgique, avenue Circulaire 3, 1180 Brussels, Belgium.

Prof. T. PLEBANSKI, Division of Physico-Chemical Metrology, National Board for Quality Control and Measures, Elektoralna 2, Warsaw 1, Poland.

Prof. T. SHIMANOCHI, Director of Computer Centre, University of Tokyo, 2-11-16, Yayoi, Bunkyo-ku, Tokyo, Japan.

NATIONAL COMMITTEE REPORTS TO THE STOCKHOLM GENERAL ASSEMBLY 1973

AUSTRALIAN NATIONAL COMMITTEE FOR CODATA

Following its decision to adhere to CODATA, the Australian Academy of Science has invited the following to serve on its National Committee:

Dr. G.K. WHITE, FAA (Chairman)
CSIRO Division of Physics
Sydney University Grounds
Chippendale NSW 2008

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CSIRO Division of Chemical Physics
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Dr. S.D. HAMANN, FAA
CSIRO Division of Applied Chemistry
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Assistant Director General
Postmaster General's Department
Communications House
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John Curtin School of Medical Research
Australian National University
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CANADIAN NATIONAL COMMITTEE FOR CODATA

The Scientific and Technological Information Services of the National Research Council of Canada is in the process of establishing a Canadian Scientific and Technological Information Network. The activities of the Canadian National Committee for CODATA will be directly pertinent to the work of developing and implementing this national network. This network will look to the Canadian National Committee for CODATA to provide an assembly of experts about the information needs of Canadians in the disciplines and subject areas which it represents. The network will also work to establish direct organized channels to international bodies including CODATA, FID, ISO and UNISIST, and the Canadian National Committee for CODATA will provide this link in the case of CODATA.

The Canadian National Committee for CODATA has assisted the CODATA Task Group on Computer Use with the organization of its recent Symposium on Man-Machine Communication in Scientific Data Handling. The National Research Council of Canada has provided financial support for the symposium and its International Conference Office, under the supervision of Mr. M.K. Ward, gave secretarial assistance and advice during the earlier stages of the symposium organization.

The National Research Council of Canada has published a Directory listing 9776 federally supported research projects in Canadian universities. The two-volume, 1600 page document provides detail-

ed information on the granting activities of 28 federal funding bodies amounting to \$(CAN) 100 000 000 for the 1972-1973 fiscal year. The directory is backed by a continuing computerized data base; it is being expanded to include all governmental, academic and industrial research activities in Canada. The 1972-1973 edition provides a listing of investigators with their on-going research projects and will help to identify expertise and competence in all fields and areas of the sciences. Though not specifically oriented to problems in the data field, it should serve as a primary reference source for data projects in Canada.

The Canadian National Committee for CODATA has received with regret the resignation of Dr. S.C. Robinson of the Department of Energy, Mines and Resources on his retirement from the Geological Survey of Canada. Dr. Robinson has played a prominent part in the organization of geological data both in Canada and in the international field and he was the first president of COGEOCODATA. The appointment of another geologist to replace Dr. Robinson is pending.

R.N. JONES, Chairman,
Canadian National Committee
for CODATA.

ISRAEL NATIONAL COMMITTEE FOR CODATA

The Secretariat of the Committee has been established at the National Center of Scientific and Technological Information. A questionnaire regarding data needs and activities was sent to senior scientists in institutions of higher learning and industrial enterprises. About 20% replied. The replies indicate that there is a need to make information on data services more widely available. Data needs covered a rather wide range. Fifteen data compilation projects were reported. Follow-up action is planned and support will be requested from the National Academy of Sciences and the National Council for Research and Development. However, the Committee favors the view expressed at the CODATA Bureau, that CODATA should issue instructions for Member Countries to prepare compilations of their own activities according to standard formats.

JAPANESE NATIONAL COMMITTEE FOR CODATA

During the past year, data compilation activities have been going on since the Japanese National Committee for CODATA began its new activity. Some other activities related to CODATA have also been launched. They are summarized as follows:

The National Committee for CODATA

The new committee started in September 1972. The chairman is Dr. Yoichiro Mashiko. The members consist of three physicists, three chemists, one biologist, one geologist, two advisory scientists, and two liaison participants. In October the first meeting was held. Professor Vodar attended and explained CODATA activities and the role of the national committee was discussed. Since then the Committee has met almost every month and the following activities were engaged in.

Discussion on the new version of the CODATA Constitution. The opinions were sent to the Central Office.

The investigation of the present data activities in Japan, including biological, geological and other fields. The results are now being collected.

The planning of disseminating the CODATA Compendium and the attached location list in all the scientific libraries in Japanese universities and institutes. For the purpose of implementing this plan and also some other activities, a committee in the Japan Society for Promotion of Sciences was proposed and admitted.

The manuscript for the second recommendation to the Japanese Government from the Science Council of Japan is being made. The practical procedure of supporting and initiating the data evaluation centers and the data dissemination centers will be described.

Two small scale symposia on the data activities in the field of natural science and on the utilization of computers were held.

Data evaluation center activities

The Infrared Data Committee of Japan (IRDC) is continuing to publish 1200 standard cards each year. The High Pressure Data Center of Japan (HPDC) is evaluating and compiling the high pressure data on methane, ethane, propane, ethylene and propylene. The NMR data compilation Committee started its activity of collecting and compiling NMR data obtained in Japan. The Raman Data Compilation Committee has been created and the test measurements are planned.

Investigation of needs for scientific data

The Department of Education investigated the needs for scientific information and received 19 714 answers from university professors, lecturers and research associates in the field of natural sciences. 95% claim difficulties in acquiring information effectively. 89% appealed for data centers and 94% appealed for the need of clearing service for information.

A new project for data processing

Department of Education initiated the three year special project on "Broad Area Large Quantity Data Processing Systems". The 24 groups consisting of 130 university professors participate and do research on (a) data-oriented computers and their network, (b) data terminals and facilities, (c) data management software including retrieval system and languages, (d) data structure study and model experiments in the field of chemistry, meteorology, natural disaster, pollution, and medical science. As one of the projects included in the last category, the national Crystallographic Data Centre will open in the Computer Centre of University of Tokyo, where chemists and other scientists will use the magnetic tape data prepared in the Crystallographic Data Centre in Cambridge University.

Professor T. SHIMANOUCI

THE JAPANESE NATIONAL COMMITTEE FOR CODATA

A division of the National Committee for Scientific Information in the Science Council of Japan.

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UNITED KINGDOM NATIONAL COMMITTEE FOR CODATA

Data activities in the United Kingdom are sponsored mainly by the Department of Education and Science (DES) for whom the Office of Scientific and Technical Information (OSTI) is the main agent, and by the Department of Trade and Industry (DTI). The British National Committee on Data for Science and Technology, in which these bodies are represented, provides liaison with CODATA and periodically reviews the national situation. The following recent activities have been reported by DES and DTI.

A. THE OFFICE FOR SCIENTIFIC AND TECHNICAL INFORMATION, D.E.S.

Crystallographic Data Centre, Cambridge University

The Centre has been working on 2 publications, to appear by June 1973. These are Volume IV of the series "Molecular Structures and Dimensions", a bibliography of organic and organometallic compounds, which updates previous volumes; and Volume A1 of "Interatomic Distances", for organo and organometallic structures published between 1960 and 1965.

A current-awareness service is now provided from the Centre's bibliographic file. Details and prices can be obtained from the Centre. The tapes produced by the Centre are now being purchased and used by the US National Institutes of Health, and negotiations are taking place with other foreign centres for the sale of tapes and provision of services.

Data and Information Systems for Atomic and Molecular Physics, Belfast University

OSTI support for this work will continue until December 1973. The data base of interatomic potentials is almost complete, and can now be broadened by the compilation of subsidiary files on oscillator strengths, energy levels, transport properties and polarizabilities. Work is continuing on programs which will enable the user to obtain a display of data in a number of different forms, and to compute related properties.

IUPAC Centre on Thermodynamic Properties of Gases, Imperial College, London

The first data compilation resulting from this Centre's work, *Argon 1971: International Thermodynamic Tables of the Fluid State* has been published by Butterworths. The tables list values of the thermodynamic properties at suitable intervals of pressure and temperature. The next publication in this series will be on ethylene.

Kinetic Data on Hydrogen Atom Transfer Reactions, Birmingham University

Two compilations of evaluated kinetic data have recently been published as a result of this Centre's work: — *Evaluated Kinetic Data and Gas Phase Addition Reactions: Reactions of Atoms and Radicals with Alkenes, Alkynes and Aromatic Compounds* and a supplement to *Tables of Bimolecular Gas Reactions*. The latter set of tables includes rate constants, activation energies and A-factors and covers the literature for the years 1969-71.

Computer Analysis of Thermochemical Data, Sussex University

This team is studying the use of computer techniques for updating chemical constants and has published sets of tables on nitrogen, silicon, halogen and phosphorus compounds. Each set of tables contains the chemical formula, molecular weight and enthalpy of formation of each compound.

Critically Evaluated Data for High-temperature Processes, Leeds University

A grant to continue this project for a further 3 years from September 1973 has been awarded by OSTI. The team, jointly founded by the Scientific Research Council, is critically evaluating data for high-temperature processes important in combustion, air pollution and high temperature technology. Two volumes of results have been published by Butterworths: *Homogeneous Gas Phase Reactions in the H_2 - O_2 Systems* and *Homogeneous Gas Phase Reactions in the N_2 - H_2 - O_2 Systems*. A third volume is planned, covering the CO, CO_2 - H_2 - O_2 and H_2 - O_2 Systems.

B. THE DEPARTMENT OF TRADE AND INDUSTRY

Mass Spectrometry Data Centre, Aldermaston

A major development during the year has been the inauguration of a computer-based mass spectrometry data system available on a world-wide basis through the use of cable and satellite links to a central time-sharing computer complex. The system uses the Mass Spectrometry Data Centre's data base and search software developed by the US National Institutes of Health; an interesting illustration of the international nature of data activities. The basic facility which the new system offers is the comparison of the user's own mass spectrum of an unknown substance with the data on several thousand known compounds which the data base holds.

Meanwhile, the Mass Spectrometry Data Centre has continued to produce and issue its bulletin which lists the world's mass spectrometric literature, together with chemical and material indexes. Collation of mass spectra on an international basis has also continued. Both bulletin and data are available in printed or in magnetic tape form. Users of mass spectrometry are now in the middle of an increasingly rapid changeover to computer handling of data and the magnetic tape outputs of the Centre are now becoming the preferred format by users.

Cryogenic Data

A Centre has now been established at the National Physical Laboratory, which offers information and advisory services on material properties at cryogenic temperatures. The NPL Centre maintains close liaison with the Boulder Centre whose data files are available to NPL users.

Physico-Chemical Properties Data

Physico-chemical data evaluated in the Division of Chemical Standards, National Physical Laboratory, are being entered progressively into computer store. The existing banks comprise: i) Metallurgical thermodynamics, containing data on ~1600 single species and a number of dilute solutions, for wide temperature ranges; ii) Vapour pressures of organic compounds, held in the form of Chebyshev series; iii) Helmholtz-energy functions for organic fluids.

Computer Aided Design

The Department of Trade and Industry's Centre devoted to computer applications in design at Cambridge has increased the scope of its remote access links throughout the year. This is of particular interest in connection with chemical engineering design and data handling programs.

Technology Reports Centre

The use of the ESRO data banks via the direct line from ESRO Darmstadt to the Department of Trade and Industry's Technology Reports Centre at St Mary Cray in South-East London has continued to grow. TRC's Techlink service, which includes design data, is now available commercially and has been well received. By spec-

ial arrangements with the US National Bureau of Standards, TRC now holds stocks and sells the NSRDS handbooks in the U.K. with the object of providing a more rapid and convenient source for British users.

Nicholas KURTI

THE UNITED STATES NATIONAL COMMITTEE FOR CODATA

NDAB and NSRDS activities

The Numerical Data Advisory Board (NDAB) continued to provide advice to the Office of Standard Reference Data (OSRD) of the National Bureau of Standards on scientific matters — the past year specifically through panels on Mössbauer Data, on Thermodynamic properties of electrolyte solutions, and through the Committee on Fundamental Constants. The Panel on Mössbauer Data has drafted a proposal for terminology and symbols recommended for use in this area. The proposal has been discussed with experts world-wide and has been accepted by IUPAC for publication in one of their Bulletins as a tentative recommendation. The Committee on Fundamental Constants has studied the needs for revision of the fundamental constants based on recent precision measurements, and has submitted its recommendations to the relevant Task Group. In the area of evaluated data for thermodynamic and thermophysical properties, the Office of Standard Reference Data has held discussions to set up a formal cooperative program with its counterpart in the USSR under the US-USSR joint commission for scientific exchange.

The NDAB has conducted a study of availability and needs for data relevant to the coal gasification process. The NDAB also submitted a position paper on data needs for materials and materials processing to the National Commission on Materials Policy.

SYMPOSIA

The OSRD and the NDAB have co-sponsored a "Symposium on Industrial Needs for Evaluated P - V - T Data for Ethylene and Related Substances". Reliable data in this area are of great importance for custody transfer and for plant design.

The Committee on Crystallography of the National Academy of Sciences has sponsored a "Conference on Critical Evaluation of Chemical and Physical Structure Information".

AEC

Concerning nuclear data, a U.S. Nuclear Data Committee (USNDC) has recently been established under the AEC which will also serve as an interface with two international groups: The European Nuclear Data Committee (EANDC) which operates under NEA, and the International Nuclear Data Committee (INDC) operating under IAEA.

NSF DATA SYSTEMS PROGRAM

The NDAB has also provided advice to the National Science Foundation's Office of Science Information Service on its newly established Data Systems Program which deals with systems methodology of data flow.

PUBLICATIONS

The quarterly Journal of Physical and Chemical Reference Data has published in its first year 16 compilations and reviews covering over 1100 pages. Reprints of individual compilations are available. A first 420-page supplement on *Physical and Thermodynamic Properties of Aliphatic Alcohols* has been announced. The Journal also features Data Compilation Abstracts. Additional information relevant to data and other news is presented in the NSRDS monthly Newsletter.

EDUCATION

With support from the National Science Foundation, the NDAB has sponsored a first short course for college professors on critical data evaluation which is intended to foster greater attention on data handling in university courses.

The NDAB has made arrangements with the University of Colorado, Boulder, Colorado, to hold the 1976 CODATA Biennial Conference and General Assembly meeting the week of June 27-July 3 at the University Conference Center.

The national efforts in data evaluation, both in the public and private domain, are not expanding; economic limitations and pressures to recover operational costs are affecting the level of operations unfavorably. The NDAB attempts to create more awareness for data evaluation needs for research and development, to increase involvement of private industry, and, through the USNC for CODATA, to promote integration of national and international efforts in all of the natural sciences.

UNION DELEGATES' REPORTS TO THE STOCKHOLM GENERAL ASSEMBLY 1973

INTERNATIONAL ASTRONOMICAL UNION

The data activities of the International Astronomical Union are primarily the responsibility of its Commissions, each of which is responsible for cooperative activities in a specialized field of astronomy. At its last General Assembly in 1970 the Union set up a Working Group on Numerical Data to publish information about relevant data activities and to consider ways in which such activities could be carried out economically and effectively. A report on its

origin, membership and preliminary activities will be published shortly in *Trans. IAU*, **15A**, 1973. The Group will meet for the first time at the IAU General Assembly to be held in Sydney, Australia, in August 1973. A survey of the relevant activities of each Commission and a list of astronomical data centres is in the course of preparation and will be published in *Trans. IAU*, **15B**, as a supplement to the report of the proceedings of the meetings in Sydney.

G. A. WILKINS

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES (IUBS)

The 18th General Assembly of the International Union of Biological Sciences will take place in Ustaoset, Norway, between 27 September and 2 October 1973. The IUBS delegate to CODATA has requested and been granted a spot on the agenda for "Discussion of CODATA Affiliation".

It is important that an officer of CODATA attend the IUBS General Assembly to explain the functions of CODATA, its past achievements, and its plans for the future to the IUBS divisional and sectional representatives. A bridge must be built to provide communication between the two organizations.

Further, CODATA should suggest and provide advice on the establishment within IUBS of a committee on collection, processing, and dissemination of data. Such a committee, consisting of one representative from each IUBS division, could consider as a first objective the development of guidelines for the compilation and evaluation of biological data. Later efforts could concentrate on the needs for particular types of data and the means for obtaining such information. Data committees are essential for the effective development of useful and necessary data systems through the efforts of all unions devoted to the life sciences, and with the assistance of CODATA.

Professor Donald S. Farner, president of IUBS, has suggested that one or two areas should be identified in which critical compilations of numerical data would be broadly useful to biologists. He further recommended that we "go from there to well-defined CODATA projects as an experiment to ascertain whether or not the CODATA concept can be useful in biology". The Task Group on Environmental Data, established last year within CODATA, may well serve as the experiment envisioned by Professor Farner. A panel discussion on environmental pollution of air, water, and soil, and its effects on living things is planned for the 4th International CODATA Conference in Yerevan, USSR.

To implement the active participation of biologists in the work of CODATA, it is necessary that all life-sciences unions join the Committee on Data for Science and Technology. Last year the Secretary-General of ICSU invited the International Unions of Biochemistry (IUB), Physiological Sciences (IUPS), and Nutritional Sciences (IUNS) to join with the International Unions of Pure and Applied Biophysics (IUPAB) and of Biological Sciences (IUBS) as CODATA members. As a result of this effort, IUNS has joined CODATA, and Professor Boris Vodar, CODATA President, was to write to the other life-sciences unions to enlist their membership. For the purpose of coordinating their efforts in the data field, it would be desirable to have IUBS, IUPAB, and IUNS establish a task group on biological data. Eventually all unions in the life sciences should be partners in such a group.

The scope of CODATA has been broadened to include the bio- and geo-sciences, but such action is meaningless if the International Unions in these disciplines fail to show a corresponding interest in their own data fields. CODATA provides a mechanism for the initiation, stimulation, and coordination of data projects on an international level. The opportunity to participate should not be wasted.

Philip L. ALTMAN

INTERNATIONAL UNION OF CRYSTALLOGRAPHY

During 1972-73 there have been quite a number of developments concerning crystallographic data and publications of the Union. The 9th General Assembly and Congress of the Union took place in Kyoto, Japan in August/September 1972. At this meeting there was extensive discussion of the information needs of crystallographers and the future of Union publications.

A *Working Party on Information Services* was established under the chairmanship of Professor S. E. Rasmussen, General Secretary of the IUCr and the terms of reference proposed by the Executive Committee are:

(a) To evaluate the present situation in relation to needs in IUCr information services (e.g. publication, collection, storage, retrieval, critical appraisal and dissemination of data and other information pertinent to crystallography).

(b) To project these needs into the future and to determine how the IUCr, primarily through its Commissions, should best meet them.

(c) To make specific proposals for needed innovations to, and extensions of, services in this field. In these proposals, feasibility on economic, manpower and cost bases are to be specifically considered.

(d) To report to the Executive Committee at its meetings in 1973 and 1974 and prepare a full report for circulation before and submission at the Tenth General Assembly in 1975.

Item (a) has been considered by the Working Party and a report is now in preparation for the 1973 meeting of the Executive Committee.

The Union has set up a voluntary scheme, for an experimental period, for the *deposition of structure factor tables* and other voluminous material which would otherwise be published in the Union's journals. The information is stored on microfiche at the National Lending Library for Science and Technology at Boston Spa, England. For a trial period the Union has decided to pay the charge for copies obtained from the NLL.

At the 9th Congress there was some discussion on the problem of the *deposition of atomic coordinates*. It was the view of the Commission on Crystallographic Data that journals should be encouraged to publish such important data, in photo-reduced form, with the exception of protein data where the lists of coordinates are very lengthy.

The Commission on Journals has instituted a new type of paper in section B of *Acta Crystallographica*. These *short structural papers* must not exceed three printed pages and they must conform to a well-defined scheme of presentation. This type of publication lends itself very well to the reporting of the results of many structural investigations and it affords one method whereby the problems of costs and increasing volume of material can be alleviated.

To facilitate the checking of commonly used crystallographic computer programs, *short standard tests* have been prepared as a project of the Commission on Crystallographic Computing. The calculations have been carried out at a number of different locations using different computers and programs. The results have been compared and each laboratory informed of the variation in results, until eventually all significant variations have been eliminated. The results of this project have been published in *Acta Crystallographica*, section A. It has been decided to extend the standard tests to other types of calculation.

The third edition of the *World List of Crystallographic Computer Programs* is scheduled for publication in the summer of 1973. This book catalogues available programs with notes on source, language, computer requirements, etc.

Volume IV of *International Tables* is being printed and Parts 1 and 2 of the pilot issue of the future International Crystallographic Tables has been distributed to selected laboratories which undertake to reply to questionnaires on the pilot issue.

At the ninth General Assembly it was agreed to investigate the production of future editions of the *World Directory of Crystallographers*. It is hoped that a computer file can be generated for the automatic typesetting of this publication. Such a system should greatly simplify the updating of new editions. During the past months the U.S.A. National Committee has been conducting a feasibility study of this project.

The fourth (bibliographic) volume of the series *Molecular Structures and Dimensions* has been published, covering the literature for the years 1971-72. A data compilation under the same series

title will be published in June 1973. This is a continuation of the *Tables of Interatomic Distances and Configurations in Molecules and Ions* and covers the literature for the years 1960-65. Computer methods have been used for the critical evaluation of the numeric data and the presentation of the results on some 1300 structures.

The Commission on Crystallographic Data has decided to prepare a list of current crystallographic information services. A draft document has been written and this will be circulated to selected people for amendment and additions. It is hoped that it will be possible to publish this list in one of the Union journals. Also this list will be available to CODATA as material for a future edition on the Compendium.

D. G. WATSON
31 May 1973

TASK GROUP REPORTS TO THE STOCKHOLM GENERAL ASSEMBLY 1973

ACCESSIBILITY AND DISSEMINATION OF DATA

The urgent task of our Group is to submit a report to the next General Assembly (Sept. 1973, Stockholm) which may be, *mutatis mutandis*, presented to UNESCO from CODATA before September 30th, 1973 in order to fulfill CODATA's obligation on contract with UNESCO. In order to prepare the draft, a Working Group was set up in Japan consisting of: Dr. Masao KOTANI, chairman, Prof. Makoto KIZAWA, secretary, Prof. T. SHIMANOUCHI, Dr. Y. MASHIKO, Mrs. E. USHIJIMA, assistant secretary, and Mr. E. OKADA.

Besides these activities, the Task Group sent questionnaires to National Committees for CODATA (except to 6 Founder Countries) and to National Committees for ICSU of Countries which are not yet members of CODATA to collect information concerning data activities, data demands, availability of computer facilities, etc. At present we have received 6 responses.

The membership of CODATA/ADD is at present as follows:

Mme A. DAVID (France)
Prof. I. ELIEZER (Israel)
Dr. H.W. HOCK (U.S.A.)
Dr. Masao KOTANI (Japan)
Prof. C.N.R. RAO (India)
Member to be nominated (U.S.S.R.)
Dr. S.A. ROSSMASSLER (U.S.A.)
Dr. Christoph SCHÄFER (F.R.G.)
Dr. David G. WATSON (U.K.)
Dr. A. WYSOCKI (UNESCO)

Masao KOTANI

countries was to have active and direct co-operation in data evaluation between operating centers. Such co-operation has been formally commenced between the U.S.A. and the U.S.S.R. through recent cultural exchange treaties, and it is hoped that this will lead to an extensive, general program of mutual co-operation in data evaluation.

At its May 1970 meeting, the panel also agreed on a rough draft for a format for the presentation of kinetics data. A sub-panel, under the chairmanship of Dr. D. Baulch of Leeds, England, has been active since that time (along with the chairman) in outlining, detailing, and otherwise elaborating this draft. Recently a nearly-final version has been mailed out to over a thousand scientists active in the kinetics area for their comment and judgment. About one hundred replies have been received to date, indicating a rather widespread agreement with the purpose and detail of the draft. These will all be considered together with any further replies, and a final draft will then be prepared for consideration by the entire panel.

It should be emphasized that an undertaking of this scope, involving the voluntary action and co-operation of scientists on an international scale, many of them not even specialists in kinetics, is necessarily slow-moving. It is essential to have overwhelming agreement among the active research workers in order that any uniform plan for presenting data can be expected to be adopted in practice. We are now in the final stages of such an action, and we are currently planning to convene a panel meeting to ratify the final stages of this program sometime near October 1973.

During the current year it is also hoped to start a dialogue among the panel members so that, at the panel meeting, it will be possible to take some action on assigning priorities to fields in which data evaluation and compilation would be especially useful. The panel has also agreed, in principle, to sponsor in September 1974, along with appropriate groups from the American Chemical Society, a Symposium on the Kinetics of Atmospheric Pollution. This symposium will have as its theme quantitative rate constants of importance in the pollution processes taking place in urban atmospheres (such as Los Angeles, etc.) and in the stratosphere. Details will be announced in the near future and will be subject to panel review at its October meeting.

Sidney W. BENSON

CHEMICAL KINETICS

The kinetics panel has had one formal meeting since its inception in 1969. This meeting took place in Paris in May 1970, and a plan of action was adopted which has since been pursued mostly by mail. One action which has since been implemented by member

COMPUTER USE

Much of the past year has been spent by a number of Task Group members on the preparations for the Task Group Symposium which is being held at the University of Freiburg during July 23–27, 1973. A number of Task Group members had already done some of the preparatory work before the CODATA Meeting at Le Creusot and, at the Le Creusot Meeting, a draft programme for the Symposium had been prepared and enquiries were in progress at that meeting for a suitable location. A Programme Committee had been established as follows:

Dr. Olga KENNARD (U.K.)
Dr. R.N. JONES (Canada)
Dr. R.L. WIGINGTON (U.S.A.)
Professor M. KIZAWA (Japan)
Professor G. BLACK (U.K.)

During the second half of 1972, subsidiary meetings on the planning of the Symposium were held in London with help from the Royal Society.

Dr. Kennard, Dr. Jones and Professor Black met on September 28th 1972 and on January 16th and 25th 1973, by which time, enough financial support had been received from sources other than CODATA to guarantee a successful Symposium. The present situation (June 21st 1973) is that all plans have been made and the Task Group has been fortunate in the help given by Dr. Barbara Starck and others in providing local arrangements at the University of Freiburg. The Task Group is grateful for the financial support which it has received. A full detail of that support will be prepared during the Symposium at Freiburg. The Task Group has undertaken to provide a report on the results and outcome of discussions at the Symposium in time for the General Assembly in Stockholm.

Gordon BLACK

FUNDAMENTAL CONSTANTS

The Task Group has not held any formal meeting during the past year; the work of the Group has been carried out by correspondence. The Chairman, in collaboration with Dr. B. N. Taylor of the U.S. National Bureau of Standards, has completed a full reevaluation of the numerical values of the fundamental physical constants. A summary of this analysis, which will appear in full in the *Journal of Physical and Chemical Reference Data*, is attached to and incorporated as part of this report. The experimental data and the resulting least-squares analyses have been reviewed by the Task Group and it is their recommendation that the results of the Cohen-Taylor analysis be adopted as the present standard reference values of the fundamental physical constants.

It is also necessary to remember at all times that there is a vital distinction between "recommended standard reference values" and the correct values of the fundamental constants. We can perhaps do no better than quote from last year's report: "It should be recognized (and emphasized in the publication of the recommended list) that the list will in some sense and to some degree become quickly obsolete as new data or new theoretical calculations become available".

Although the publication of this report would appear to mark the completion of the Task Group's assignment, it is clear that a continuation of the Task Group is important in order that new information and new experimental data may be readily evaluated and considered for possible revision of the present recommendation.

E. Richard Cohen, Chairman
2 July 1973

Dr. E. Richard COHEN, (Chairman), North American Rockwell Science Center, Thousand Oaks, California 91360, U.S.A.

Dr. R.D. DESLATTES, National Bureau of Standards, Washington, D.C. 20234, U.S.A.

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Dr. B.N. OLEINIK, Deputy Director, Mendeleev All-Union Scientific Research Institute of Metrology, Leningrad L-5, U.S.S.R.

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Prof. U. STILLE, Physikalische Technische Bundesanstalt, Bundesallee 100, Braunschweig 33, Germany.

Dr. J. TERRIEN, Director, Bureau International des Poids et Mesures, Pavillon de Breteuil, 92-Sèvres, France.

Dr. Y. YAMAMOTO, Director, National Research Laboratory of Metrology, 10-4, 1-Chome, Kaga, Itabashi-ku, Tokyo, Japan.

KEY VALUES FOR THERMODYNAMICS

Expected co-ordination of efforts has been achieved through correspondence between the compiling centers. The U.S. Member D. Wagman and Consultant W. Evans will stop in Lund for a one day conversation on their way to a more than week-long visit to the Soviet compiling group at the Institute for High Temperatures in Moscow (Task Group Member L. Gurvich and Consultant V. Medvedev).

According to schedule, the Final Set of Key Values, Parts II and III will be put before the IUPAC Commission I.2: Thermochemistry and Thermodynamics for approval during the Munich Conference.

The selection of data for the Tentative Set IV will be discussed as well as the choice of compounds for the coming two year period during the Task Group meetings in Munich, 26-28 August 1973. A half-day session on policy matters will also be scheduled.

Both the Final Sets II and III as well as the Tentative Set IV will be processed at the CODATA General Assembly and Bureau Meeting in Stockholm 9-12 September.

Tentative Set of Key Values for Thermodynamics No. III was published in CODATA *Bulletin* N° 7. (The recommended Key Values for Thermodynamics, 1973, appear in *Bulletin* N° 10, December 1973.)

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PRESENTATION OF DATA IN THE PRIMARY LITERATURE

The Terms of Reference of the Task Group have been agreed by the task group and we will ask the General Assembly to ratify them at the Stockholm Meeting.

The *modus operandi* of the Task Group can be envisaged in terms of the following phases :

Phase 1A. Production of UNESCO-CODATA Guide for publication in the primary literature.

Phase 1B. Provenance of the final criticism of this Guide version.

Phase 1C. Production of alternative versions of the Guide for special impact or effect (this may involve additional documentation or explanatory material).

Phase 2. Widespread dissemination of the guide, in various journals and in various languages in addition to whatever circulation UNESCO-CODATA provide.

Phase 3. Encouragement to international groups of the provision and assistance in the "production" of disciplinary guides for important areas.

Phase 4. Resolution of resulting problems which may become evident only after even more widespread circulation than there has been possible in the procurement of criticism of the present version of the guide.

Phase 5. Consideration of the major problem of provenance of data beyond that which can be incorporated in the primary literature itself. It may be useful at this point to invoke the coöperation and assistance of Kotani's Task Group on Accessibility of Data.

Edgar F. WESTRUM, Jr.

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Prof. N. KURTI, F.R.S.
The Clarendon Laboratory
Parks Road
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NEW PUBLICATIONS

ATOMIC AND MOLECULAR PROPERTIES

Atomic Data presents tables and compilations of experimental and theoretical data in various areas of atomic physics. Collections and evaluations of data on energy levels, wave functions, line-broadening parameters, collision processes, various interaction cross-sections of atoms and simple molecules, transition probabilities, penetration through matter of charged particles, etc. are covered. Vol. 5, No. 4 (June 1973) 317-469 is by W.A. Coghlan and R.E. Clausing: Auger catalog — calculated transition energies listed by energy and element.

Atomic Masses and Fundamental Constants 4 (1972, 571 pp, £ 10, Plenum, London, New York), J.H. Sanders and A.H. Wapstra, eds, presents the Proceedings of the 4th International Conference on Atomic Masses and Fundamental Constants, held at NPL, Teddington, U. K., September 1971. The following topics were covered: particle energies; beta and gamma energies; mass spectroscopy; Coulomb energies; mass formulae and mass calculations; velocity of light; wavelength comparisons; fine structure constant; $2e/h$; Rydberg constant; magnetic moments; miscellaneous constants; and evaluation. The papers presented at the Conference were equally divided (about 30 each) between atomic masses and fundamental constants.

Dissociation in Heavy Particle Collisions (1972, Wiley-Interscience Series, New York) by G.W.M. McClure and J.M. Peek is a critical review of the published information concerned with the dissociation of molecules undergoing single collisions with heavy particles. After a general introduction to the subject of dissociative collisions, there is critical discussion of the experimental approaches to obtain dissociation cross-section data and a final chapter on the theoretical approach to dissociation processes. A systematic list of criteria for a well-defined measurement provides a means of evaluating reported data and a checklist for investigators planning new measurements.

Metastable Precursor Ions; A Table for Use in Mass Spectrometry (1973, \$ 29.50, Elsevier, New York) by R. Neeter and C.W.F. Kort, arranges tables to permit rapid insight into the metastable decomposition of one particular ion, or into the metastable peaks in the spectra of a series of homologues, or in the spectra of analogues labeled with stable isotopes.

Precision Measurements and Fundamental Constants, NBS Special Publication 343 (Aug. 1971, 543 pp, \$ 6, SD Catalog No. C13.10:343), D.N. Langenberg and B.N. Taylor, eds, presents the Proceedings of an International Conference on Precision Measurement and Fundamental Constants, held at the NBS, Gaithersburg, Md., U.S.A., 3-7 August, 1970. The Conference brought together

theoretical, experimental, and applied scientists for the purpose of discussing modern techniques of precision physical measurement and their application, together with modern theoretical developments, to the determination of the fundamental constants. Topics covered were: frequency and time standards; length standards; the velocity of light; the Rydberg constant; electrical standards; the proton gyromagnetic ratio; the Faraday constant; atomic masses; the proton magnetic moment; Josephson effects; X-rays; fine and hyperfine structure in simple atoms; lepton *g*-factor anomalies; the gravitational constants; and least-squares adjustments of the constants. These Proceedings are available from: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, U.S.A.

Resonances in Electron Impact on Atoms and Diatomic Molecules NSRDS — NBS 50 (1973, 110 pp. \$1.35, National Standard Reference Data System, National Bureau of Standards, Washington, D.C.) by G.J. Schulz is reprinted from *Rev. Mod. Phys.* 45 (July 1973) 378-486. Two reviews are presented on the energies, configuration, and other properties of resonances in electron impact on atoms and diatomic molecules. Included are discussions of the experimental methods which are useful for studying resonances and of the results obtained by various investigations. Much of the information is presented in tables and energy level diagrams. NSRDS-NBS 50 may be ordered as SD Catalog No. C13.48 :50 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402, USA.

SI Units (1971, 116 pp, \$3.50, Wiley, New York) by B. Chiswell and E.C.M. Grigg, provides a handy and complete reference work of the symbols, units, and rules relating to the SI system of units (Système International d'Unités).

Total Electron-Atom Collision Cross Sections at Low Energies — A Critical Review, B. Bederson and L.J. Kieffer, *Rev. Mod. Phys.* 43 (October 1971) 39 pp. The principal emphasis is placed upon the Ramsauer method, d.c. swarms, and crossed-beam experiments. The best available cross-section values, along with comments on individual experiments, are presented in tables.

BIO—SCIENCES

Analytical Profiles of Drug Substances, Vol. 2 (1973, 575 pp, \$18.50, Academic Press, New York), K. Florey, ed., contains pertinent information on the physical and chemical properties of 21 official and new drug substances.

An Atlas of Mammalian Chromosomes, Vol. 7 (1973, 264 pp, DM 42.70, Springer-Verlag, Heidelberg) by T.C. Heu and K. Benirschke is a loose-leaf atlas which will be supplemented so that it will continue to contain all available information about the karyotypes of mammals.

Atlas of Protein Sequence and Structure, Vol. 5 (1973, 544 pp, \$22.50, National Biomedical Research Foundation, Silver Springs, Maryland) by M.O. Dayhoff et al. is a compilation of critically evaluated data on all complete protein and nucleic acid sequences published before January 1971, and also unpublished work and the structures of many large fragments. It contains structured information on over 100 sequences, discussions of chemical genetics and evolutionary aspects of the 159 families represented, 90 alignments of related sequences, 12 stereo-pair drawings of protein structures from X-ray crystallography, 30 evolutionary trees, enzyme active-site peptides, abnormal human haemoglobin structures, matrices of percent differences between related sequences, and average amino acid compositions of 108 protein families.

Vol. 5, Supplement 1 (1973, 114 pp, \$ 5.00, NBRF, Silver Springs, Maryland) by M.O. Dayhoff et al. updates the collection of critically reviewed data up to June 1972, with over 150 published complete sequences or major fragments, 15 940 amino acid residues and 1529 nucleotide residues.

Synthetic Nucleotides, Vol. 1 (1972, 336 pp, £ 10.00, Van Nostrand-Reinhold, London) by G.R. Pettit is a tabular survey of synthetic nucleotides and methods of synthesis. The history of nucleotide synthesis is traced and the book tabulates the synthetic nucleotides and polyribonucleotides recorded in literature over the past 25 years. Each is summarized with respect to method of synthesis, purification technique employed and physical constants.

CHEMICAL KINETICS

Beilsteins Handbuch der Organischen Chemie, Supplement 4, Vol. 1, Part 2: Acyclische Verbindungen (1973, 549 pp, DM 658.00, Springer-Verlag, Heidelberg) by H.G. Boit, starts with ethylene (and its simple derivatives) and includes data relevant to theoretical chemistry. Another entry covers acetylene, and the volume concludes with the carbohydrate C₄₀H₅₀, tetraconta-1,9,11,21,29,31,39-octane.

Chemical Kinetics Data Survey: IV. Preliminary tables of chemical data for modelling of the stratosphere, NBSIR-203 (1973, 92 pp, National Bureau of Standards, Washington, D.C.) D. Garvin, ed., presents in four tables chemical kinetic and photochemical data for gas phase reactions pertinent to the chemistry of the stratosphere. The tables give recommended values, cite recent experimental work, and give data on chemical reactions and photochemistry of neutral species, energy transfer reactions, high-temperature air reactions, and ion-molecule reactions.

V. Sixty-six contributed rate and photochemical data evaluations on ninety-four reactions, NBSIR 73-206 (1973, 115 pp, National Bureau of Standards, Washington, D.C.) D. Garvin, ed., records the data evaluation contributed to the Climatic Impact Assessment Program chemical kinetics survey during the period November 1972 to April 1973 by various kineticists and photochemists.

VI. Photochemical and rate data for twelve gas phase reactions of interest for atmospheric chemistry, NBSIR 73-207 (1973, 124 pp, National Bureau of Standards, Washington, D.C.) R.F. Hampson, ed., presents a data sheet evaluation and summary of photochemical and rate data for each of twelve gas phase reactions of interest for the chemistry of the stratosphere. A preferred value is given for the rate constant or the primary quantum yield and photoabsorption cross section.

Evaluated Kinetic Data for High Temperature Reactions, Vol. 1: Homogeneous Gas Phase Reactions of the H₂-O₂ System (1972, Chemical Rubber Co. Press, International Scientific Series, Cleveland, Ohio) is the first of a new series and is derived from a project on kinetic data at the University of Leeds. For each reaction, relevant thermodynamic data are tabulated and a recommended rate constant is given wherever possible, with comments and indication of temperature range. Experimental values and rates from review articles are presented.

Evaluated Kinetic Data for High Temperature Reactions, Vol. 2: Homogeneous Gas Phase Reactions of the H₂-N₂-O₂ System (1973, 576 pp, £ 12.00, Butterworths, London) by D.L. Baulch, D.D. Drysdale and D.G. Horne is the second in the series devoted to the critical evaluation of rate data for elementary gas phase reactions. Kinetic data for reactions of species derived from N₂, H₂ and

O₂ are compiled and evaluated. The reactions were chosen for their importance in combustion, air pollution, upper-atmosphere chemistry and high-temperature systems generally.

A Supplementary Bibliography of Kinetic Data and Gas Phase Reactions of Nitrogen, Oxygen and Nitrogen Oxides (1973, 92 pp, \$1.25, National Bureau of Standards) is NBS Special Publication 371. It may be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, USA, using SD Catalog number C 13.10:371.

Thermochemistry of the Rare Earths (Part 1. Rare Earth Oxides; Part 2. Rare Earth Oxysulfides; Part 3. Rare Earth Compounds with B, Sn, Pb, P, As, Sb, Bi, Cu, and Ag) (1972, 67 pp, Rare-Earth Information Center, Ames, Iowa) by K.A. Gschneidner, Jr., N.A. Kippenhan, and O.D. McMasters. This report (IS-RIC-6) includes the enthalpies and free energies of formation of various rare earth compounds important in the manufacture of iron and steel. Existing data are reviewed and estimates are made where only partial data are available. The procedure for arriving at the estimated values is also given. The results from 298 K up to 2773 K are tabulated and, in most cases, are presented graphically. IS-RIC-6 was prepared and published under the sponsorship of the Molybdenum Corporation of America. Copies may be obtained free of charge from the Rare Earth Information Center, Institute for Atomic Research, Iowa State University, Ames, Iowa 50010, USA.

EARTH SCIENCES

Computer-Based Storage and Retrieval of Geoscience Information: Bibliography 1970-72, GSC Paper 73-14 (1973, 38 pp, \$3.00, Geological Survey of Canada, Ottawa) by C.F. Burk, Jr., Secretary of COGEO DATA, includes 211 references with the objectives of: worldwide coverage; identification of papers describing the use of computers and/or computer-readable records for storage and retrieval of information in the solid-earth sciences; and identification of works of direct assistance to this activity. Remote sensing, hydrology and oceanography have largely been excluded.

Discharge of Selected Rivers of the World, Vol. II, Monthly and annual discharges recorded at various selected stations (1971, 192 pp, \$16, £4.80, FF64), and Vol. III, *Mean monthly and extreme discharges (1965-69)* (1971, 96 pp, \$8, £2.40, FF 32, Unesco, Paris) are the latest reports in the Unesco series *Studies and Reports in Hydrology*, which covers the main results of hydrological studies carried out and data collected within the framework of the International Hydrological Decade. Volume II of the present publication contains data from a network of 200 stations, which are the most characteristic and furnish the oldest and most valid information. All monthly and annual discharges, and extreme daily discharges (maximum and minimum), recorded through successive years from the start of observations to 1964 are tabulated. Volume III, which will be up-dated periodically, contains the same data for the period 1965-69.

Environmental Isotope Data No. 3: World Survey of Isotope Concentration in Precipitation (1966-1967) (Technical Reports Series No. 129, STI/DOC/10/129, 1971, 402 pp, \$8, £3.33, FF 44.20, DM 28, AS 200, IAEA, Vienna) is the third volume in a series of reports from a network organized by the IAEA together with the WMO and co-operating national laboratories. Following the format of the earlier publications (Tech. Rep. Series Nos 96 (1969) and 117 (1970), a computer-produced tabulation is given of environmental isotope (tritium, deuterium, oxygen-18) concentrations in monthly samples of precipitation taken by a global network of 212 stations in the period 1966-67. Relevant meteorological data

(amount of precipitation, vapor pressure, temperature) are also tabulated.

Geochemical Tables (1973, 448 pp, \$25, Elsevier, Amsterdam) by H.J. Rosler and H. Lange, translated from German by H. Liebscher.

Geologic Reference Sources (1972, 454 pp, \$12.50, Scarecrow, Metuchen, N.J.) by D.C. Ward and M.W. Wheeler is a subject and regional bibliography of publications and maps in geological sciences. It has a section on geologic maps by M.W. Pangborn, Jr.

The Interpretation of Geological Phase Diagrams (1972, 214 pp, £5.40, W.H. Freeman, Reading, Berkshire) by E.G. Ehlers.

Light Scattering Functions for Small Particles with Applications in Astronomy (1973, 506 pp, \$39.50, Halsted (Wiley), New York) by N.C. Wickramasinghe presents a summary of the theory of light scattering by small particles. It consists mainly of tables and graphs of extinction and scattering data for particles. Relevant computational procedures accompany the data.

Marine Carbonates, Part 1 of Recent Sedimentary Carbonates (1973, ca. 360 pp., DM 66, Springer-Verlag, Heidelberg) by J.D. Milliman, discusses marine carbonates, their ecology, precipitation, petrography, composition, distribution and diagenesis. Data on calcification, composition, and petrography of various marine carbonate elements are synthesized.

Profiles of Wind, Temperature, and Humidity over the Arabian Sea (1972, 68 pp, \$7.50, University Press of Hawaii, Honolulu) by F.I. Badgley, C. A. Paulson, and M. Miyake, is No. 6 in the series *International Indian Ocean Expedition Meteorological Monographs*.

Statistics and Data Analysis in Geology (1973, ca. 410 pp, Wiley, Chichester, Sussex) by J.C. Davis deals with quantitative methods of analysis of geologic data. It strongly emphasizes computer applications using FORTRAN programs.

Use of Earth Sciences Literature (1973, 464 pp, £7.50, Butterworths, London), D.N. Wood, ed., is designed to provide guidance on the effective use of earth sciences literature and is a title in the *Information Sources for Research and Development Series*.

World Data Centre (WDC) publications recently issued are as follows:

WDC A: Data received by WDC A for Rockets and Satellites for the Period 7 March 1947 — 31 December 1971, Vol. 1, Part A, *Sounding Rockets* (1972, 351 pp, WDC A, Washington, D.C., U.S.A.).

WDC B1: Catalogue of Publications received by WDC B1 between January and June 1971 (1971, WDC B1, Moscow, U.S.S.R.):

Issue 25, *General and Periodicals* (23 pp),

Issue 25, *Longitudes and Latitudes, Seismology, Gravimetry, Geodesy, Upper Mantle* (42 pp),

Issue 25, *Glaciology and Oceanography* (22 pp),

Issue 25, *Meteorology and Nuclear Radiation* (25 pp).

Catalogue of Data on Rockets and Satellites, 1 January to 30 June 1971 (1971, 52 pp, WDC B1, Moscow).

Six-Monthly Catalogue of Data on Oceanography (Ship Programs), received during the Period 1 January-30 June 1971, Parts 1 and 2 (1971, WDC B1, Moscow).

Six-Monthly Catalogue of Data on Oceanography (Ship Programs), received during the Period 1 July-31 December 1971, Parts 1 and 2 (1971, WDC B1, Moscow).

MATHEMATICAL METHODS AND COMPUTER PROGRAMS

L'Analyse des Données (1973 ; Vol. I : 624 pp ; Vol. II : 628 pp, FF 61 per volume, Dunod, Paris) by J.P. Benzecri. These volumes present the theories and methods of statistical and informational analysis of numerical data. Each volume includes theoretical explanations, examples of applications and programs in FORTRAN. The applications cover all the human and natural sciences — economics, psychology, pedagogy, sociology, history, linguistics, ecology, zoology, botany, geology, archeology, biology and medicine.

Automatic Data Processing, 3rd Edition (1973, 566 pp, \$ 15.95, Prentice-Hall, New Jersey) by E.M. Awad, outlines principles and procedures.

A Cataloging System for Machine Readable Data Bases (1971, 15 pp, \$ 3.29, ERIC Documentation Reproduction Service, Bethesda, Maryland) by Corvallis, proposes a standard by which computerized data bases may be catalogued for easy reference and availability.

Computer Handling of Chemical Structure Information (1972, 148 pp, \$ 6.25, Elsevier, Amsterdam, New York) by M.F. Lynch, et al., describes and evaluates the various computer systems for handling information in the area of structural chemistry, especially that of organic chemistry. Future developments likely to occur in this field are also discussed.

Data Management Systems (1973, ca. 192 pp, ca. £ 3.00, Melville, Chichester, Sussex), C. Cagan, ed., explains generalized data-base management systems designed to permit simplified implementation of data-processing applications, from file generation and maintenance to data retrieval and reporting.

Data Processing Dictionary (English-German, German-English) 2nd Edition (1973, 343 pp, Verlag Dokumentation, Munich) by A. Oppermann, ed., contains 15 000 entries.

The Evaluations of Information Services and Products (1973, \$ 15, Information Resources Press, Washington, D.C.) is concerned with the evaluative and quantity control aspects of library and information system design and operation — on what to measure, how to measure it, and how to interpret the results.

Structured Information Files (1973, 176 pp, ca. £ 5.00, Melville Publishing Co., Chichester, Sussex) by R.A. Kaimann, describes how data may be housed within a computer memory system to permit access to nominated records and to other logically related data elements.

Utilization of Scientific Data Bases at LLL using the "Master Control" Computer Program (Oct. 1972, 12 oo) by V.E. Hampel and J. Wade, is a paper (Preprint UCRL-74259) describing a computer program designed to unify storage, manipulation, reorganization, retrieval, and display of information from dissimilar data bases. For further information, contact the authors at : Lawrence Livermore Laboratory, University of California, Livermore, Calif., U.S.A.

MECHANICAL AND ENGINEERING DATA

Chemical Technology, Vol. 4 (1973, 792 pp, \$ 42.50, Harper and Row, New York) by Barnes and Noble, is an encyclopedic treatment of petroleum and organic chemicals.

Engineering Alloys, 5th Edition (1973, 1800 pp, £ 17.50, Van Nostrand-Reinhold, London) by N.E. Woldman gives the chemical composition, physical properties and main uses of 50 000 proprietary commercial and technical alloys, 15 000 of which have been added since the 4th edition. A directory of manufacturers and index are also provided.

Engineering Tables and Data (1973, 168 pp, \$ 6.50, Halsted (Wiley New York) by A.M. Howatson et al. is a compilation of mathematical, statistical and engineering information, data and formulae collected from scattered sources for engineering students and practicing engineers.

Foams (1973, ca. 320 pp, DM 61.60, Springer-Verlag, Heidelberg) by J.J. Bikermann is Vol. 10 of the *International Series in Applied Physics and Engineering*. Complete and critically evaluated information on liquid foams is presented, including many applications.

International Petroleum Encyclopedia (1973, 440 pp, \$ 32.50, Petroleum, Tulsa, Oklahoma) includes data on new offshore techniques for design and operation of oil terminals, computer technology in petroleum installations, worldwide environmental regulations, 1972 crude oil movements, and a natural gas processing survey.

Pollutant Removal Handbook (1973, 528 pp, \$ 36, Noyes Data Corporation, Park Ridge, New Jersey) by M. Sittig shows how to remove 128 pollutants, particularly those emanating from industrial processes.

Tables de Butée et de Poussée, 2nd Edition (1973, 178 pp, FF 8, Gauthier-Villars, Paris) by A. Caquot, J. Kerisel, and E. Absi. The tables are presented to permit simultaneous knowledge of the often greatly separated values of the two equilibrium thrust and pressure.

Tableaux de Résistance à la Corrosion des Alliages Cuivreux et Fonderie dans Différents Milieux (1972, 84 pp, FF 48, Edition Techniques des Industries de la Fonderie, Paris).

Tribology Handbook (1973, ca. 500 pp, £ 12.50, Butterworths, London), M.J. Neale, ed., is the result of four years work by the governmental Handbook Advisory Committee. The information was provided by a hundred specialist contributors and is grouped in six parts : components, lubricants and lubrication, materials, environments, failures and repair, and basic data. The data are provided concisely and in a highly illustrated format.

NUCLEAR PROPERTIES

CCDN Newsletter No. 2 (October 1973) contains for the Experimental Neutron Data Library : a) the index to data received from the other three neutron data centres since the publication of Newsletter 13 in February 1972. b) the index to numerical data compiled at the CCDN since the publication of Newsletter No. 73-1 in April 1973. c) the index to all experimental data from Italy available at the CCDN. This part of our file was thoroughly revised and brought up to date during the last months. d) the index to the experimental data on fission products compiled by E.A.C. Crouch reported in AERE-R-6642 (1970) and AERE-R-7207 (1972). Details from NEA Neutron Data Compilation Centre, B.P. 9, 91190 Gif-sur-Yvette, France.

Charged-Particle Reaction List 1948-1971 (1973, 548 pp, \$ 15, Academic Press, New York) by F.K. Mc Gowan and W.T. Milner is Vol. 2 of *Atomic and Nuclear Data Reprints*.

Data for Protection against Ionizing Radiation from External Sources (1973, 101 pp, £ 2.50, Pergamon, Oxford) is Publication No. 21 of the International Commission on Radiological Protection, a supplement to ICRP Publication 15. It comprises 12 sections, the first three describing collision stopping powers and quality factors. The fourth section gives dose distributions in the body; Figures 10-12 show that for low photon energies there is a considerable difference between the doses received by some critical organs and those doses measured in the same radiation field by a personal dosimeter on the front of the trunk. The next four sections give conversion factors and quality factors for electrons, neutrons, protons and photons. One of the last four sections gives range-energy curves, the three others describe neutron, gamma, X-ray and beta-ray sources and shielding (bremsstrahlung included).

Evaluated Data on 192 Fission Products (1973, AERE, Harwell, Berks) compiled by J.L. Cook are evaluations of the total, elastic, inelastic, capture, non-elastic and transport cross-sections of 192 fission products.

An Evaluated Data Set for Tantalum, UCRL-51306 (1972, 31 pp, \$3.00, Lawrence Livermore Laboratory, California) by R.J. Howerton, M.H. MacGregor and S.T. Perkins, describes the methods used to obtain neutron-induced reactions and gamma-ray production. Cross-sections are presented for tantalum-181.

Evaluated Neutron-Interaction and Gamma-Ray Production Cross Sections of 9 Be, UCRL-51337 (1972, 12 pp, \$ 3.00, Lawrence Livermore Laboratory, California) by R.J. Howerton and S.T. Perkins, discusses the methods used to produce evaluated neutron-interaction and photon-production cross-sections. The evaluated neutron-interaction data were tested by comparing calculated with experimental parameters.

Evaluated Neutron Reaction Data for Uranium-235, UCRL-51370 (1973, 28 pp, \$ 4.00, Lawrence Livermore Laboratory, California), by R.J. Howerton and M.H. MacGregor, describes the methods used to obtain evaluated neutron interaction and photon production data for U-235 in the neutron energy range from 10 μ eV to 20 MeV.

Gamma Ray Spectra of Uranium and Thorium Ores by High Resolution (Ge(Li)) Spectrometry (1973, Australian AEC Research Establishment, Lucas Heights) by D.F. Urquhart.

Interpolation in Excitation Energy for Two-Dimensional Tabular Data, UCRL-51401 (1973, 10 pp, \$ 4.00, Lawrence Livermore Laboratory, California) by S.T. Perkins and R.J. Doyas presents techniques for interpolation of two-dimensional tabular arrays that describe either inelastic neutron scattering (through resolved or unresolved levels) or discrete photon production spectra.

Interpolation Transformations for Two-Dimensional Tabular Data, UCRL-51290 (1972, 11 pp, \$ 3.00, Lawrence Livermore Laboratory, California) by R.J. Doyas and S.T. Perkins discusses methods of interpolation between tabular arrays of two independent variables. These have been applied successfully to tabulations of Legendre expansions of energy-angle correlated neutron transfer cross-sections.

The above UCRL Reports are available from National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22151, USA.

Landolt-Börnstein, Numerical Data and Functional Relationships in Science and Technology, New Series, Group I: Nuclear and Particle Physics, Vol. 5: Q-values and excitation functions of nuclear reactions, Part A: Q-values, by K.A. Keller, J. Lange and H.

Münzel (1973, Springer-Verlag, Heidelberg) K.H. Hellwege, ed. Tables of nuclear reaction Q-values for reactions with up to eleven outgoing particles are presented according to the projectiles used, which include γ 's and all important nuclei up to medium mass, and outgoing particles. All stable nuclides and some radioactive ones are listed as targets. The tabulated Q-values are rounded off to 0.1 MeV. **Vol. 6: Properties and production spectra of elementary particles**, by A.N. Diddens, H. Pelkuhn, and K. Schlüpmann. This first of three volumes on properties of elementary particles contains a review of some of the general formulae for decays, resonances and two-particle reactions. Tables of elementary particle properties — masses, widths, modes of decay, partial widths, decay coupling constants, some absorption properties — are presented with references to earlier compilations and current literature. Cross-sections for the production of charged elementary particles in p - p interactions as functions of various kinematical variables are given in graphs and tables. **Vol. 8 Photoproduction of Elementary Particles** (1973, ca. 350 pp, ca. DM 230, Springer-Verlag, Heidelberg), H. Schoppner, ed., by H. Genzel, P. Joos, and W. Pfeil. This volume contains critically analyzed data on Compton scattering and on photoproduction of pseudoscalar and vector mesons of nucleons and of deuterons.

MINIGAL Output from UK Nuclear Data Library NDLI (1973) by A.L. Pape and J.S. Story, covers thermal cross sections, resonance integrals, and fission spectrum averages. Details from AWRE, Aldermaston, Berkshire, UK.

NN and ND Interactions — A Compilation LBL-58 (May 1972) by the Particle Data Group. **K_L^0 N Interactions — A Compilation, LBL-55** (March 1972) by the Particle Data Group. These two publications are distributed in North and South America, Australasia and the Far East by Lawrence Radiation Laboratory, Berkeley, California, 94720, USA, and elsewhere by CERN, CH-1211, Geneva 23, Switzerland.

Nuclear Data Tables presents compilations and evaluations of experimental and theoretical data in various areas of nuclear-structure physics. Vol. II, No. 7 (June 1973) 531-619 contains the following contribution:

Peak cross-sections for (HI,xn) reactions, W. Neubert (22 pp);

Matrix element for penetration factor in MI transitions between Nilsson states in odd-A nuclei, D.K. Krpić, I.V. Aničin, and R.B. Vukanović (16 pp);

Neutron production cross sections and energies for the reactions $T(p,n)\text{He}$, $D(d,n)\text{He}$ and $T(d,n)\text{He}$, by H. Liskien and A. Paulsen (50 pp). Vol. 11, Nos. 8-9 (July 1973) 621-826 contains the following contribution: Neutron Activation Cross Sections — measured and semi-empirical, W.E. Alley and R.M. Lessler (205 pp).

Photonuclear Reaction Data, (1973, \$ 2.10, National Bureau of Standards, Washington), by E.G. Fuller, H.M. Gerstenberg, H. Vander Molden, and T.C. Dunn, is NBS Special Publication 380. It provides a brief summary of the available data on the gross features of the photonuclear giant resonance. Data are presented in tabular form for all nuclei where measurements have been made. In addition, a comprehensive, annotated data index and bibliography are given which cover experimental data published in scientific and technical journals in the period from 1955 to 1972. Organized by element and isotope, each entry in the index is for a specific reaction reported in a given reference. Information is given on the type of measurement, excitation energies studied, source type and energies, detector type, and angular ranges covered for each reaction entry. Available as SD Catalog No. C13.10: 380 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, USA.

Survey of the Nuclear Data Needs in Activation Analysis (1972, 24 pp, Gesellschaft für Kernforschung m.b.H. Karlsruhe) by H. Münzel and W. Michaelis. KFK 1812 describes the results of an enquiry the goals of which were: (a) to yield a survey about the kind and the accuracy of nuclear data needed in activation analysis and (b) to provide information about the usefulness of the available compilations and whether they cover the needs of the users. A reference list of 87 compilations is given. Enquiries should be addressed to Dr. H. Münzel, Gesellschaft für Kernforschung m.b.H., Institut für Radiochemie, D-75 Karlsruhe, Postfach 3640.

X-ray Cross Section Compilation from 0.1 keV to 1 MeV. Final Report (1972, NTIS) by E.A. Briggs and W.J. Weigelt.

PHYSICAL QUANTITIES, UNITS, NOMENCLATURE, SYMBOLS, STANDARDS

Anglo-Amerikanische Abkürzungen und Kurzwörter der Elektrotechnik und angrenzender Gebiete (1973, 308 pp, Verlag Dokumentation, Munich) by P. Wennrich, lists 17 000 abbreviations and acronyms in the field of electronics and related areas with their English definitions.

Atomic Masses and Fundamental Constants Vol. 4 (1973, 572 pp, \$ 28.00, Plenum, New York) J.H. Sanders and A.H. Wapstra, eds., in the Proceedings of the September 1971 Conference at Teddington, U.K.

The Critical Constants of Inorganic Substances, J.F. Mathews, *Chemical Reviews*, **72**, 1 (1972), 28 pp. The author builds on a previous review (K.A. Kobe and R.E. Lynn, *Chem. Rev.* **52**, 117 (1953) and covers the literature to December 1970. He includes a discussion of the recent "second generation" methods for working in the close vicinity of the critical point and the data available on critical properties for inorganic substances. Selected values are presented for 124 materials. Complete data, that is T_c , P_c , V_c and ρ_{cl} are given for 46 materials, partial data for the rest.

Introduction to Chemical Nomenclature, 4th Edition (1973, 180 pp, £ 3.95 (cased), £ 1.80 (paper), Butterworths, London) by R.S. Cahn, has been revised and expanded to cover new official nomenclature rules, including those of IUPAC.

IUPAC Appendices and Tentative Nomenclature, Symbols, Units, and Standards (1973, IUPAC, Oxford). No. 30: Classification and Nomenclature of Electroanalytic Techniques; No. 31: Nomenclature of Organic Chemistry, Section D: Organic Compounds containing Elements which are not exclusively Carbon, Hydrogen, Oxygen, Nitrogen, Halogen, Sulfur, Selenium, and Tellurium; No. 32: Nomenclature of Iron-Sulfur Proteins; No. 33: Nomenclature and Convention for Reporting Mössbauer Spectroscopic Data.

IUPAC Definitive Recommendations for Presentation of Raman Spectra for Cataloging and Documentation in Permanent Data Collections. *Pure and Applied Chemistry* **36** (1-2), 277.

Physical Constants, 9th Edition (1973, 107 pp, \$ 6.95, Halsted (Wiley), New York) by W.H.J. Childs is a selection of constants frequently used by students, scientists and engineers. Practical SI units are given.

Quantities and Units in Neutron Dosimetry (1972, 8 pp, Euratom, Brussels) by S. Wagner.

Radiation Quantities and Units (1972, 6 pp, Euratom, Brussels) by H.O. Wyckoff.

SI Units (1973, 110 pp, \$ 8.95, McGraw Hill, New York) by G. Ramaswamy and V.V.L. Rao, is a source book designed to set a stage for total conversion of weights and measures to SI units.

Symboles électroniques (1973, 104 pp, FF 18.00, Dunod, Paris) G. Thalmann, is a compendium of all the literal and graphic symbols used in electronics, electrotechnology, and communications represent a system or a circuit element. It conforms to recent standards.

The Vapour Pressures of Pure Substances (1973, 626 pp, \$ 25.50, Elsevier, New York) by T. Boublik, V. Fried and E. Hala comprises selected values of the temperature dependence of the vapour pressures of some pure substances in the normal and low pressure region. Standard deviations are provided for each set of data. 800 compounds are arranged according to the Hill system used in *Chemical Abstracts Formula Index*.

SOLID STATE PROPERTIES

Crystallographic Properties

Crystal Data (Determinative Tables), Vol. 1: Organic Compounds and Vol. 2: Inorganic Compounds, 3rd Edition (1973, Vol. 1: \$ 30.00; Vol. 2: \$ 50.00, NBS/JCPDS, Swarthmore, Pennsylvania) by J.D.H. Donnay et al. should be of particular interest not only to crystallographers but also to chemists, mineralogists, physicists and individuals in related fields of study. The current edition is thoroughly revised and updated work, containing over 250 entries. The entries are listed, within each crystal system, according to increasing values of a determinative number: a/b ratio in tetragonal systems, c/a ratio in dimetric systems, and cubic cell edge in the isometric system. In addition, the following information is given: axial ratio(s) and interaxial angles not fixed by symmetry, cell dimensions, space group or diffraction aspect, number of formula units per unit cell, measured density and X-ray calculated density. Also listed are the name of the compound and synonym(s), chemical formula, literature reference, and transformation matrix. When available, the crystal structure type, crystal habit, cleavages, twinning, color, optical properties, indices of refraction, optical orientation, melting point, and transition point are also listed. Address orders to Joint Committee on Powder Diffraction Standards, 1601 Park Lane, Swarthmore, Pa., 19081, USA.

Landolt-Börnstein, Numerical Data and Functional Relationships in Science and Technology, New Series, Group III: Crystal and Solid State Physics, Vol. 1, Part a: Key elements F, Cl, Br, I (VI Main Group, Halides and Complex Halides) by W. Pies and J. Weiss (1973, ca 675 pp, DM 436, Springer-Verlag, Heidelberg) K.-H. Hellwege and A.M. Hellwege, eds. This is the first part of Vol. III/7 which covers the crystal data on about 20 000 inorganic compounds as completely as possible. Vol. III/7a contains data on about 3800 halides and complex halides.

Molecular Structures and Dimensions Series, Vol. 4: Bibliography 1971-72. Organic and Organometallic Crystal Structures, and Vol. A1 Interatomic Distances 1960-65, Organic and Organometallic Crystal Structures may be obtained from Crystallographic Data Centre, Cambridge University Chemistry Laboratory, Lensfield Road, Cambridge CB2 1EW, U.K.

SOLID STATE PROPERTIES

Electrical and Magnetic Properties

Bibliography of Magnetic Materials and Tabulations of Magnetic Transition Temperatures (1972, 180 pp, \$ 20, IFI/Plenum, New York)

York); by T.F. Connally and E.D. Copenhauer, is Vol. 5 of *Solid State Physics Literature Guides*.

Physico-chemical Properties of Nucleic Acids, Vol. I: Electrical, Optical and Magnetic Properties of Nucleic Acids and Components (1973, 336 pp, \$ 15.75, Academic Press, New York), J. Duchesne, ed.

SOLID STATE PROPERTIES

Optical Properties

Dye Lasers (1973, ca. 300 pp, DM 77, Springer-Verlag, Heidelberg) F.P. Schäfer, ed. This is Vol. I of *Topics in Applied Physics* and contains the significant properties of dye lasers (physical principles, CW and pulsed operations, material properties), with coverage of the literature up to April 1973.

Handbook of Electronic Materials, Vol. 8: Linear Electro-optic Modular Materials (1972, 258 pp, \$ 22.50, IFI/Plenum, New York) by J.T. Milek and M. Neuberger. Vol. 9: **Electronic Properties of Composite Materials** (1972, 104 pp, \$ 15.00, IFI/Plenum, New York) by M.A. Leeds.

SOLUTION PROPERTIES

Compilation of Specific Rates of Reaction of the Hydrated Electron (1973, \$ 0.90, National Bureau of Standards, Washington) by M. Anbar, M. Bambenek, and A.B. Ross, is NSRDS-NBS-43. These tables present reaction rates of hydrated electrons with over 700 different organic and inorganic molecules, ions, and transients. Obtained from about 180 references, most of the data are derived from pulse radiolysis; data from steady-state radiolysis by competition kinetics are also included. The period covered is from 1961 to 1971. This compilation is one of a series on radiation chemistry originating at the Radiation Chemistry Data Center, University of Notre Dame. It may be purchased directly from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, USA, using SD Catalog number C13.48:43.

Reactivity of the Hydroxyl Radical in Aqueous Solutions, NSRDS-NBS 46 (1973, 59 pp, \$ 0.90, National Standard Reference Data System, National Bureau of Standards, Washington, D.C.) by L.M. Dorfman and G.E. Adams compiles and evaluates the reaction rate data of the hydroxyl radical in aqueous solutions. The values are reported in a series of tables covering addition, hydrogen abstraction, inorganic electron transfer and radical reactions. Rate constants for the hydroxyl radical with biological molecules are included. In addition, the rate constant data for the oxide radical ion are given. Physical properties are listed and the experimental methods employed in OH radical chemistry are reviewed. An analysis involving rate constant data comparisons is made. NSRDS-NBS 46 may be ordered by SD Catalog No. C13.48:46 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, USA.

SPECTRA COLLECTIONS

Infrared, Raman

Absorption Spectra in the Infrared Region: Vol. I (1973, 306 pp, £ 6.00, Butterworths, London).

Catalog of Selected Infrared Spectral Data, Supplementary, Vol. B-14 (1973, 97 pp, American Petroleum Institute Research Project 44, Thermodynamics Research Center, Texas A & M University, College Station, Texas) by B.J. Zwolinski et al. contains revised filing orders for spectral data by serial number and for the index of compounds by standard order. Also included are 87 new sheets of infrared spectral data.

SPECTRA COLLECTIONS

Ultraviolet, Visible, Nuclear Magnetic Resonance

Catalog of Selected Nuclear Magnetic Resonance Spectral Data, Supplementary Vol. F-17 (1973, 63 pp, American Petroleum Institute Research Project 44, Thermodynamics Research Center, Texas A & M University, College Station, Texas) by B.J. Zwolinski et al. contains 54 new sheets of selected nuclear magnetic resonance spectral data (60 MHz).

Catalog of Selected Nuclear Magnetic Resonance Spectral Data (40, 60, 100 MHz), Supplementary Vol. F-19 (1973, 99 pp, American Petroleum Institute Research Project 44, Thermodynamics Research Center, Texas A & M University, College Station, Texas) by B.J. Zwolinski et al. contains revised filing orders for spectral data by serial number and index of compounds by standard order. Also included are 50 new sheets of nuclear magnetic resonance data (60 MHz) and 29 new sheets (100 MHz).

Evaluated Infrared Spectra, Vol. 9 (1973, Sadtler Research Laboratories). This volume will supplement the eight volumes of spectra which have previously been issued in this collection. Included are 1000 high quality spectra which have been evaluated and selected by experienced spectroscopists to meet criteria established by the Coblenz Society. Previously published spectra are not included unless the new spectrum is more accurate, better resolved, has greater spectral range, or shows the sample in a different physical state. A set of cumulative indices containing four separate sections is furnished with the collection. Each spectrum is indexed by the following methods: Alphabetical, by chemical name; Classification, by chemical type; Molecular Formula, by ascending number of carbon atoms; Numerical, by spectrum number. Pertinent information about the compound is routinely included on each spectrum, such as: chemical name, molecular formula, structural formula, physical and optical constants, method of sample preparation, instrumentation, and donor of spectrum. The spectra in this volume have been collected by the Joint Committee on Atomic and Molecular Physical Data, edited by the Coblenz Society and published by Sadtler Research Laboratories, Inc. Address inquiries to: Sadtler Research Laboratories, Inc., 3316 Spring Garden Street, Philadelphia, Pa. 19104, USA.

IUPAC Tables of Wavenumbers for the Calibration of Infrared Spectrometers, Parts III and IV: 600-1 cm⁻¹ (1973, Butterworths, London) by A.R.H. Cole, R.N. Jones, and R.C. Lord. In 1961 the Commission on Molecular Structure and Spectroscopy compiled an extensive set of tables of wavenumbers with illustrative spectra for the calibration of infrared spectrometers in the range 4300-600 cm⁻¹. That publication was in two parts: I — Tables for the calibration of high-resolution grating spectrometers requiring data of an absolute accuracy of ± 0.03 cm⁻¹ or better, and II — Tables for prism and small grating instruments requiring data of an accuracy of ± 0.5 cm⁻¹. In recent years, the production of commercial spectrometers for the low-frequency region and the extension of high-resolution work into the far infrared by the use of liquid-helium cooled detectors have led to a wider interest in the range below 600 cm⁻¹. The Sub-Commission on Infrared and Raman Spectroscopy has carried out a reassessment of the data available for this

longer wavelength region and has recognized a similar need for two sets of calibration tables as before — one with an accuracy of $\pm 0.03 \text{ cm}^{-1}$ or better for high-resolution work and one with an accuracy of $\pm 0.5 \text{ cm}^{-1}$ for the calibration of lower resolution spectrometers.

THERMODYNAMIC PROPERTIES

Monographs on the Metallurgy of Copper (1973, \$ 10 each, INCRA, New York) Monograph I, *Selected Thermodynamic Values and Phase Diagrams for Copper and Some of its Binary Alloys*, by Ralph Hultgren and P.D. Desai, presents evaluated thermodynamic data on copper and 31 of its binary alloys; recommended values of heat capacity; activity coefficients; and entropy, enthalpy, and Gibbs free energy of formation are tabulated at selected temperatures as a function of alloy composition. Phase diagrams are given for each alloy system. Each set of tables and diagrams is accompanied by an extensive discussion of the available experimental data on that system and the method selection of recommended values. The section on pure copper includes vapor pressure data and a table of thermodynamic properties at 100° intervals up to 2900 K. An introduction discusses general procedures for evaluating thermodynamic data on alloys. Monograph II, *Thermodynamic Properties of Copper and its Inorganic Compounds*, by E. G. King, A. D. Mah and L. B. Pankratz, consists of critically reviewed and evaluated information on thermodynamic properties of copper and its inorganic compounds including enthalpy of formation, Gibbs energy of formation, enthalpy of substances at 298 K, heat capacities and equilibrium constants as a function of temperature, thermodynamic data for selected chemical reactions over ranges of temperature, as well as in analytical form. The volume also includes a detailed bibliography of the 159 copper-containing substances and a cross index by chemical formula for all tables that are tabulated as a function of temperature. Available from the International Copper Research Association, Inc. (INCRA), 825 Third Ave, New York, N. Y. 10022.

Physical and Thermodynamic Properties of Aliphatic Alcohols (1973, 420 pp. \$ 30.00, American Chemical Society, Washington) by R.C. Wilhoit and B.J. Zwolinski is the first supplement to the *Journal of Physical and Chemical Reference Data*. It covers important properties of the liquid, vapour and ideal gas states and pertinent solid-state data needed for equilibrium calculations encountered in chemical engineering applications. All available quantitative data on each property for each aliphatic alcohol are fully documented and critically analyzed, thus providing a data bank for the 640 monohydroxy alcohols in the carbon range of C_1 to C_{50} . Internally consistent tables of critical, standard, or selected "best" values are given for each compound.

Selected Values of Chemical Thermodynamic Properties, Tables for the Lanthanide (Rare Earth) Elements (62 through 76 in the Standard Order of Arrangement) (1973, \$ 1.00, National Bureau of Standards, Washington) by R. H. Schum et al. is NBS Technical Note 270-7 and is the seventh in a series of notes containing tables of numerical values prepared as a revision of NBS Circular 500, *Selected Values of Chemical Thermodynamic Properties*. This note contains tables of values for the standard heats and Gibbs free energies of formation, entropies and enthalpies at 298.15 K and heats of formation at 0 K for compounds of the rare earth elements (the lanthanides, lutetium through lanthanum). In addition there is an appendix which contains a list of all the corrections and misprints that have been detected in previous parts of this series. Because of the urgent need for data, additional revised tables of Circular 500 will be published in the Technical Note 270 series as they are completed. After revision, all tables will be combined with a description of the evaluation process and a listing of

data sources into a publication that will be part of the NSRDS series of critically evaluated compilations. It may be ordered direct from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, USA, using SD Catalog number C13.46:270-7.

Selected Values of Properties of Hydrocarbons and Related Compounds, Supplementary Vol. A-64 (1972, 72 pp, American Petroleum Institute Research Project 44, Thermodynamics Research Center, Texas A & M University, College Station, Texas) by B. Zwolinski et al. covers the following properties of C-H n-Pentane: entropy for the real gas less the entropy for the gas in the ideal state at the same temperature and pressure (pressure range: 0-700 atm, temperature range: 300-1500 K); entropy for the real gas less the entropy for the gas in the standard state at the same temperature (pressure ranges: 0-700 atm, and 0-10000 lbf in⁻²; temperature ranges: 0-1500 K, and 0-2600°R); Gibbs energy for the real gas less the Gibbs energy in the ideal state at the same temperature and pressure (pressure range: 0-700 atm, temperature range: 300-1500 K); Gibbs energy for the real gas less the Gibbs energy for the gas in the standard state at the same temperature (pressure range: 0-700 atm, temperature range: 300-1500 K); Gibbs energy function for the gas in the standard state at the same temperature (pressure range: 0-700 atm, temperature range: 300-1500 K). Also covered are the vapor pressures and boiling points of normal monoolefins, normal alkyl benzenes, and normal 1-alkanethiols.

IUPAC Ethylene 1972: International Thermodynamic Tables in the Fluid State (1973, Butterworths, London) compiled by S. Angus and B. Armstrong provides internationally agreed values of the equilibrium thermodynamic properties of ethylene. The range covered for each property is that for which reliable experimental data exist. In addition to the IUPAC Tables, the volume includes a section on symbols, units and conversion factors and a part on experimental data and their representation.

THERMOPHYSICAL AND TRANSPORT PROPERTIES

On the Utility of the m-6-8 Potential Function (1973, \$ 0.75, National Bureau of Standards, Washington) by H.J.M. Hanley and M. Klein, is NBS Technical Note 628, which discusses a new model potential function and demonstrates how it can be used to correlate and predict experimental data dealing with transport and equilibrium properties of simple gases. Properties referred to specifically are: viscosity, diffusion, thermal conductivity, second virial coefficients, and the thermal diffusion factor. Gases used as examples are: argon, carbon dioxide, krypton, xenon, nitrogen, oxygen, and methane. Also discussed in detail is the general behavior of the model potential with respect to the fitting of data and the problem of selection of potential parameters. The m-6-8 is the simplest model potential so far proposed which can satisfactorily be used to fit data over a wide temperature range. Finally the relationship of the potential to theory is briefly examined. This note may be purchased directly from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402, USA, using SD Catalog number C13.46:628.

Thermophysical Properties of Helium-4 from 2 to 1500 K with Pressures to 1000 Atmospheres (NBS Technical Note 631) (1973, \$ 1.25, 133 pp, National Bureau of Standards, Washington, D.C) by R. D. McCarty. Data on helium properties used in engineering calculations are covered in as wide a temperature and pressure range as possible. Each table of values has been critically assessed and represents the "best value" currently available. This note may be ordered from: Superintendent of Documents, U.S. Government

Printing Office, Washington, D.C. 20402, by quoting Catalog No. C13.46:631.

Thermophysical Properties of Refrigerants (1973, ASHRAE, New York), P.E. Liley, ed., contains a collection and analysis of information available on 38 refrigerants - viscosity, thermal conductivity, specific heat at constant pressure for the saturated liquid, saturated vapour and atmospheric pressure gaseous states. A table of recommended values is given for 90% of all possible substances and

states. Equations which either were used to generate the tabular values or which can be used as close approximations to such values are quoted.

Thermophysical Properties Research Literature — Retrieval Guide, Supplement 1 (1973, 6 Vols, 2200 pp, Plenum, New York) Y.S. Touloukian, J. K. Gerritsen, and W. H. Schafer, eds., cites 26 000 new references and updates the basic edition to bring the total number of citations to 59 700.

NEW PERIODICALS

Atomic Data and Nuclear Data Tables is a new journal created by a merger of **Atomic Data** with **Nuclear Data Tables**. The first volume of the combined journal is designated Vol. 12 and the contents of Vol. 12 No. 1 (August 1973) 1-142 are: SCF Hartree-Fock results for elements with two open shells and for elements francium to nobelium, J.B. Mann (86 pp). Erratum: Average-energy-of configuration Hartree-Fock results for the atoms helium to radon, C. F. Fischer (14 pp). Beta-decay half-lives calculated on the gross theory, K. Takahashi, M. Yamada, and T. Kondoh (41 pp). Correspondence on contributions to **Atomic Data and Nuclear Data Tables** should be addressed to Dr. K. Way, Department of Physics, Duke University, Durham, N.C. 27706, USA. Subscription details may be obtained from Academic Press, Inc., 111 Fifth Avenue, New York, N.Y. 10003, USA.

COBI Newsletter published by the Committee on Biological Information, U. K., first appeared in April 1973. It is designed to report on the COBI Project which furthers a rational approach to secondary information services for workers in basic and applied biology, including medicine and agriculture. COBI, Institute of Biology, 41 Queen's Gate, London S. W. 7, England.

Diffusion and Defect Data is a new reference periodical grown out of **Diffusion Data** whose rather limited scope has now been expanded to cover the whole field of the defect solid state. The material is a complete account of all new developments published in journals, reports, dissertations, and conference proceedings. The issues on solid and liquid state diffusion and migration cover the following topics: Point defect properties; Permeation of gases, Ionic conduction; Diffusion in solids and liquids which are solids at NTP; Isotope effects; Thermotransport; Electromigration; and Hydrostatic pressure effects. A defect properties retrieval guide, published semi-annually as the fourth issue of each volume, covers all areas of the defect solid state: Irradiation effects; Dislocations; Colour centres; Stocking faults and other planar defects; and Ion implantation effects. American annual subscriptions (\$108.00) should be sent to Trans Tech Publications, 21330 Center Ridge Road, Rocky River, Ohio 44116. For annual subscriptions from the rest of the world (Swiss Fr. 344.00) send to Trans Tech SA, CH-4711 Aedermannsdorf, Switzerland.

Inforcast is the title of a newsletter being published by the UK Chemical Information Service. First appearing in August 1973, it contains details of UKCIS activities and news for users. Available from UKCIS, The University, Nottingham NG7 2RD, UK.

Journal of Physical and Chemical Reference Data, a new quarterly journal of critically evaluated physical and chemical property data and critical reviews of measurement techniques. Contents of **Vol. 1, No. 1** (1972) are as follows: Editorial; Gaseous diffusion coefficients, T.R. Marrero and E.A. Mason (117 pp); Selected values of critical supersaturation for nucleation of liquids from the vapor, G.M. Pound (17 pp); Selected values of evaporation and condensation coefficients for simple substances, G.M. Pound (13 pp); Atlas of the observed absorption spectrum of carbon monoxide between 1060 and 1900 Å, S.G. Tilford and J.D. Simmons (43 pp); Tables of molecular vibrational frequencies. Part 5, T. Shimanouchi (29 pp); Data compilation abstracts (3 pp). **Vol. 1, No. 2** (1972): Selected values of heats of combustion and heats of formation of organic compounds containing the elements C, H, N, O, P, and S, by Eugene S. Domalski (59 pp); Thermal conductivity of the elements, C.Y. Ho, R.W. Powell, and P.E. Liley (145 pp); The spectrum of molecular oxygen, Paul H. Krupenie (113 pp); A critical review of the gas-phase reaction kinetics of the hydroxyl radical, W.E. Wilson, Jr. (41 pp); Data compilation abstracts (5 pp). **Vol. 1, No. 3** (1972): Molten salts: Volume 3. Nitrates, nitrites, and mixtures. Electrical conductance, Density, Viscosity, and Surface Tension Data, G.J. Janz, Ursula Krebs, H.F. Siegenthaler, and R.P.T. Tomkins (177 pp); High temperature properties and decomposition of inorganic salts: Part 3, Nitrates and nitrites, Kurt H. Stern (27 pp); High-pressure calibration: A critical review, D.L. Decker, W.A. Bassett, L. Merrill, J.T. Hall, and J.D. Barnett (65 pp); Data compilation abstracts (3 pp). **Vol. 1, No. 4** (1972): The surface tension of liquids, J.J. Jasper; Calculated values for viscosity and thermal conductivity coefficients of gaseous and liquid fluorine, H.J.M. Hanley and R. Prydz; Osmotic coefficients and mean activity coefficients of uni-uni-valent electrolytes in water at 25°C, W.J. Hamer and Y.C. Wu; Microwave spectra of molecules of astrophysical interest. I. Formaldehyde, formadine, and thioformaldehyde, D.R. Johnson, F.J. Lovas, and W.H. Kirchhoff; Data compilation abstracts. **Vol. 2, No. 1** (1973): Microwave spectra of molecules of astrophysical interest. II. Methylenimine, W.H. Kirchhoff, D.R. Johnson, and F.J. Lovas (10 pp); Analysis of specific heat data in the critical region of magnetic solids, F. J. Cook (14 pp); Evaluated chemical kinetic rate constants for various gas phase reactions, K. Schofield (60 pp); Atomic transition probabilities for forbidden lines of the iron group elements. (A critical data compilation for selected lines), M.W. Smith and W. L. Wiese (36 pp); Tables of molecular vibrational frequencies. Part 6, T. Shimanouchi (41 pp); Compilation of energy band gaps in elemental and binary compound semiconductors and insulators, W. H. Strehlow and E. L. Cook (31 pp); Data Compilation Abstracts (3 pp). **Vol. 2, No. 2** (1973): Microwave spectra of molecules of astrophysical interest. III. Methanol, R.M. Lees, F.J. Lovas, W.H. Kirchhoff, and D.R. Johnson (10 pp); IV. Hydrogen sulfide, P.

Helminger, F. C. De Lucia, and W. H. Kirchhoff (9 pp) ; Tables of molecular vibrational frequencies. Part 7, T. Shimanouchi (32 pp).

Energy levels of neutral helium (He-4), W. C. Martin (9 pp) ; Survey of photochemical and rate data for twenty-eight reactions of interest in atmospheric chemistry, R. F. Hampson, ed. (46 pp) ; Compilation of the static dielectric constant of inorganic solids, K.F. Young and H. P. R. Frederiksen (97 pp) ; Soft X-ray emission spectra of metallic solids: critical review of selected systems, A.J. McAlister, R.C. Dobbyn, J.R. Cuthill, and M.L. Williams (16 pp) ; Ideal gas thermodynamic properties of ethane and propane, J. Chao, R.C. Wilhoit, and B.J. Zwolinski (11 pp) ; Data Compilation Abstracts (3 pp).

Reprints of individual contributions to the **Journal of Physical and Chemical Reference Data** may also be ordered.

The *Journal of Physical and Chemical Reference Data* is published by the American Chemical Society and the American Institute of Physics for the U.S. National Bureau of Standards. Subscription information, single copies and reprints of individual articles are available from: American Chemical Society, Subscription Service Department, 1155 16th St., N.W., Washington, D.C. 20036, U.S.A. Potential contributors are invited to submit an outline of the nature and scope of the proposed compilation, with criteria for evaluation of the data and other relevant factors to: David R. Lide, Jr., Editor, J. Phys. Chem. Ref. Data, National Bureau of Standards, Washington, D.C. 20234, U.S.A.

Selected Data on Mixtures is a new and continuing publication on thermodynamic, physical and transport properties of non-electrolyte mixtures, published and distributed by the Thermodynamics

Research Center, Department of Chemistry, Texas A & M University, College Station, Texas 77843, USA. This publication is the first of a new **International Data Series** and features: Raw experimental data for a given property of a binary system, either new or already published; Smoothed, derived, and correlated data; New tabular format, fully documented; bound volumes of loose-leaf sheets; Two or more supplementary volumes annually of approximately 75 sheets each. Editor-in-Chief is Dr. H. V. Kehiaian Université de Provence, Centre de Microcalorimétrie, 26, rue du 141e RIA, 13003 Marseille, France, from whom guidelines and information on technical contributions may be obtained.

Thermophysics Newsletter is a new bimonthly news medium (first issued January/February 1972), published by the Thermophysical Properties Research Center (TPRC), 2595 Yeager Road, West Lafayette, Ind. 47906, U.S.A. The Newsletter is conceived as an informal and flexible two-way channel of communication, and includes items such as editorial, calendar of U.S. and international meetings and conferences, names and events in thermophysics, general interest notes, announcement of new thermophysical data compilations and news of TPRC and other data centres in the field. *Thermophysics Newsletter* is available free of charge from TPRC at the above address.

TRC Current Data News is a new bimonthly newsletter (first issued May-June 1973) published by the Thermodynamics Research Center, Texas A & M University, Department of Chemistry, College Station, Texas 77843, USA, claiming to contain "all the data news that's fit to print". **TRC Current Data News** is available from the above address to those interested in the activities, news, and staff of the TRC.

MISCELLANEOUS NEWS

EIGHTH INTERNATIONAL CONFERENCE ON THE PROPERTIES OF WATER AND STEAM (8th ICPS CONFERENCE)

The Eighth International Conference on the Properties of Water and Steam will be held in the South of France, at Giens (near Hyères, Var, 83) from the 23rd to the 27th of September 1974.

The Conference will deal with all the properties of light and heavy water or their mixtures in all their physical states, their physical states, their experimental determination, their correlations and formulations. One special session on some selected topics on the behaviour of dilute solutions will be included. General presentation of experimental methods and of theoretical developments regarding the properties of polar fluids are planned.

Intention to attend the Conference should be expressed as early as possible and registration made not later than May 1st, 1974.

SOLUBILITY DATA PROJECT

International Union of Pure and Applied Chemistry (IUPAC) Subcommittee V.6.1. on Solubility Data in cooperation with the Committee on Data for Science and Technology (CODATA) of the International Council of Scientific Unions (ICSU) and the Gmelin-Institut of the Max-Planck-Gesellschaft zur Förderung der Wissenschaften, is undertaking a project on compilation, tabulation,

critical evaluation and publication of solubility data in all physical systems. The data generated by the program will serve not only chemists but scientists and engineers in all branches of science, medicine and technology.

The scientific responsibility will be solely that of IUPAC, as well as the recruiting, organization and direction of the compilers, who will be experts in their particular assigned areas. CODATA will ensure that the usefulness of the scientific material generated by the Project is not restricted to users in chemistry and chemical engineering, but that it represents reliable scientific information of interest to science, medicine, technology and engineering in general. Gmelin-Institut will undertake the technical editing, publishing and marketing of the volumes.

This information is brought to your attention with the aim to enlist the cooperation of IUPAC units having specific interests in the Project. Suggestions are invited concerning the particular needs in this type of data for the different branches of chemistry and chemical technology.

The Subcommittee is now recruiting compilers and evaluators, motivated experts who wish to contribute to the success of the Project by doing scientific work in their specific field of interest.

For further details please contact the Chairman of the Subcommittee, Professor A. S. Kertes, Department of Chemistry, McGill University, Montreal, Canada. After June 1974 please use the address: Institute of Chemistry, The Hebrew University, Jerusalem, Israël.

PROTEIN DATA BANK

The repository system for protein crystallographic data, announced in the scientific press in October 1971, is now operational. The data bank is administered jointly by the Cambridge Crystallographic Data Centre and the Brookhaven National Laboratory. The atomic coordinates for the following proteins are available for distribution on magnetic tape in machine readable form:

1. Cyanide Methaemoglobin V from sea lamprey
2. Cytochrome b_5
3. Basic Pancreatic Trypsin Inhibitor
4. Subtilisin BPN (Novo)
5. Tosyl α -Chymotrypsin
6. Bovine Carboxypeptidase A_α
7. L Lactate Dehydrogenase
8. Myoglobin
9. Rubredoxin

They can be obtained on request from Dr. Olga Kennard or Dr. D.G. Watson at the University Chemical Laboratory, Lensfield Road, Cambridge CB2 1EW, England or from Dr. R.F. Koetzle at the Brookhaven National Laboratory, Upton, New York 11973, U.S.A. Dr. E.F. Meyer of the Texas A & M University was primarily responsible for the initial development of the file and input of data for the structures listed above, and was assisted in this work by Dr. H.M. Berman of The Institute for Cancer Research, Philadelphia.

The usefulness of the system will depend on the response of protein crystallographers supplying data. Further contributions are invited and details of how to submit data are available. To simplify the organization of the Data Bank, all contributions should be sent directly to Dr. T. F. Koetzle who has assumed responsibility for the primary input.

The total holdings of the file will be announced annually in the organic bibliographic volumes of the reference series *Molecular Structures and Dimensions* published for the Crystallographic Data Centre and the International Union of Crystallography by Oosthoek's, Utrecht, starting with Vol. 5 to be published early in 1974.

CAMBRIDGE CRYSTALLOGRAPHIC DATA CENTRE CURRENT AWARENESS SERVICE

The Cambridge Crystallographic Data Centre, supported by the Office of Scientific and Technical Information (OSTI), is now offering a current-awareness service relating to organic structures determined by crystallography. The service is likely to be of interest to crystallographers, chemists, biochemists, pharmacologists and molecular biologists. The Centre maintains two principal data bases — a bibliographic file of 8500 entries which is fully retrospective and a numerical-data file of 8000 entries covering data published since 1960. The current-awareness service is provided from the bibliographic file. Every six weeks the customer receives a batch of new classified entries — usually about 250 — either on magnetic tape or as hard copy. The magnetic-tape service is offered in 1973 at a basic fee of £120 (English Pounds), which includes an annual subscription (£20) plus the rent of the bibliographic file up to the end of 1972. In addition there is an "updating" fee of £50 (English Pounds) a year for the provision of 1973

data on batch tapes at six-weekly intervals. A customer who wishes to continue receiving the service in 1974 will pay the subscription and updating fee only (i.e. £70). The hard-copy service takes the form of lists produced by line-printer in upper and lower case, and it costs £15 (English Pounds) a year.

The data provided in the service includes compound name, indication of polymorph type, molecular formula, author's name, journal reference, chemical classification code, ring index notation and cross reference to pre-1960 publications ("Interatomic Distance" and "Structure Reports"). More information from: The Cambridge Crystallographic Data Centre, University Chemical Laboratory, Lensfield Road, Cambridge CB2 1EW.

NSF SUMMER COURSE ON DATA EVALUATION

A short course entitled "Treatment and Critical Evaluation of Experimental Data" was held with financial support from the National Science Foundation, June 24-29, 1973, at Pennsylvania State University, University Park, Pa., U.S.A., for thirty college teachers of physical science subjects. Its purpose was to provide college teachers with an understanding and appreciation of the process of numerical data evaluation and to acquaint them with the sources of reliable data. The subject matter was divided into five areas: importance of critically evaluated data; treatment of experimental data; presentation of data in the primary literature; critical evaluation of data; and the sources of critically evaluated data.

Faculty speakers included: J. Ross McDonald, Texas Instruments, Inc.; Brian Joiner, Pennsylvania State University; E.L. Brady, National Bureau of Standards; L.J. Kieffer, JILA Information Center; Edgar F. Westrum, Jr., University of Michigan; H. William Koch, American Institute of Physics; Anneke Sengers, National Bureau of Standards; William Steele, Pennsylvania State University; Dr. William L. Lawton, Eastman Kodak; C.Y. Ho, Purdue University; H. Van Olphen, National Research Council; Joseph Hilsenrath, National Bureau of Standards; John Mandel, National Bureau of Standards; Alan Laster, University of Tennessee; and Gerald G. Johnson, Jr., Pennsylvania State University, Director of the course.

ELECTRONIC PROPERTIES DATA CENTER

On June 1, 1973, the Thermophysical Properties Research Center (TPRC) was assigned by the Department of Defense the responsibility of operating the Electronic Properties Information Center (EPIC), formerly operated by the Hughes Aircraft Co., Culver City, Calif. TPRC will now add basic electrical, electronic, electro-optical, and magnetic properties to its coverage of the thermophysical properties. The new EPIC will initially concentrate its efforts on materials of primary interest to the electronic industry. These include semi-conductors, insulators, metals, superconductors, ferromagnetics, ferroelectrics, ferrites, electroluminescents, thermionic emitters, and laser materials. The EPIC collection holds 49 000 references to the open and report literature. Questions concerning the new EPIC should be addressed to Dr. Y.S. Touloukian, director, TPRC, 2595 Yeager Road, West Lafayette, Ind. 47906.

CODATA PUBLICATIONS

International Compendium of Numerical Data Projects

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

The "CODATA Compendium" provides a comprehensive world-wide survey and analysis of the organisation, coverage, services and publications of the existing data analysis centres in the physical and chemical sciences. In addition to its usefulness as a directory, the book provides a "key" or index to the substance-property content of the published data compilations. A descriptive brochure is available on request.

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 \$12.—, FF 60.—.

CODATA Newsletter (twice a year) :

No. 1 (Oct. 1968), 12 pp; No. 2 (Aug. 1969), 12 pp; No. 3 (Dec. 1969), 8 pp; No. 4 (May 1970), 16 pp; No. 5 (Dec. 1970), 28 pp; No. 6 (June 1971), 20 pp; No. 7 (Dec. 1971), 20 pp; No. 8 (May 1972), 16 pp; No. 9 (Dec. 1972), 12 pp; No. 10 (June 1973), 12 pp.

CODATA Bulletin (irregular):

- No. 1 (Oct. 1969), 12 pp, *Automated Information Handling in Data Centers*
(Report of the CODATA Task Group on Computer Use, June 1969), superseded by Bulletin No. 4.
- No. 2 (Nov. 1970), 6 pp, *Tentative Set of Key Values for Thermodynamics - Part I*
(Report of the CODATA Task Group on Key Values for Thermodynamics, Oct. 1970), superseded by Bulletin No. 5.
- No. 3 (Dec. 1971), 28 pp, *A Catalog of Compilation and Data Evaluation Activities in Chemical Kinetics, Photochemistry and Radiation Chemistry*
(Report of the CODATA Task Group on Data for Chemical Kinetics, Sept. 1971).
- No. 4 (Dec. 1971), 12 pp, *Automated Information Handling in Data Centers*
2nd Edition (Report of the CODATA Task Group on Computer Use, Nov. 1971).
- No. 5 (Dec. 1971), 6 pp, *Final Set of Key Values for Thermodynamics - Part I*
(Report of the CODATA Task Group on Key Values for Thermodynamics, Nov. 1971), superseded by Bulletin No. 10.
- No. 6 (Dec. 1971), 8 pp, *Tentative Set of Key Values for Thermodynamics - Part II*
(Report of the CODATA Task Group on Key Values for Thermodynamics, Nov. 1971), superseded by Bulletin No. 10.
- No. 7 (Aug. 1972) 4 pp, *Tentative Set of Key Values for Thermodynamics - Part III*
(Report of the CODATA Task Group on Key Values for Thermodynamics, June 1972), superseded by Bulletin No. 10.
- No. 8 (Dec. 1972), 32 pp, *Geological Data Files: Survey of International Activity*
(Report of COGEODATA, 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*
(Report of the CODATA Task Group on Publication of Data in the Primary Literature, Sept. 1973).
- No. 10 (Dec. 1973), 12 pp, *CODATA Recommended Key Values for Thermodynamics, 1973*
(Report of the CODATA Task Group on Key Values for Thermodynamics, Nov. 1973).
- No. 11 (Dec. 1973), 8 pp, *Recommended Consistent Values of the Fundamental Physical Constants, 1973*
(Report of the CODATA Task Group on Fundamental Constants, August 1973).

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