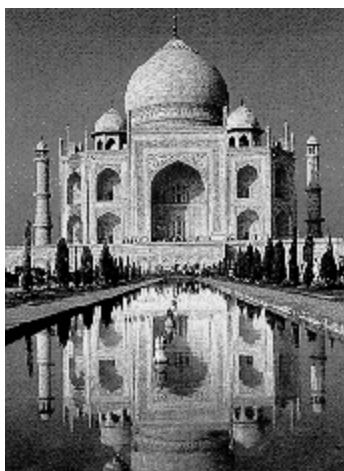


**International Council of Scientific Unions
Committee on Data for Science and Technology
CODATA Newsletter Number 77
August 1997**

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| HIGHLIGHTS | |
| <u>Access to Data</u> | <u>CODATA Conference</u> |
| <u>Asian-Oceanic Data Sources</u> | <u>Globalization of Materials Data</u> |
| <u><i>Bits of Power</i></u> | <u>Fundamental Constants</u> |
| <u>Books/Databases</u> | <u>USNC-CODATA Conference</u> |
| <u>CODATA Calendar (ammended Oct 10)</u> | <u>Visualization of Data</u> |

CODATA '98 -- Scientific & Technical Data and Communication for the Sustainable Development of Nations

The Indian National Science Academy and the Indian National CODATA Committee are extending an invitation to the 16th International CODATA Conference to be held from 8-12 November 1998 at New Delhi, India.



The Conference on "Data Management in the Evolving Information Society" will be devoted to the study of issues related to the use of scientific and technical data in the light of recent advances in networking and virtual engineering, with primary focus on the impact of computer-aided (*insilico*) research on sustainable national development. The Conference will be a meeting point of leading scientists and engineers from the world over, having multidisciplinary backgrounds, but with a common thread of data generation, evaluation, dissemination, and use.

Invited and contributed papers will be complemented by plenary, state-of-the-art lectures given by leaders in their respective fields.

Important Dates

Submission of Abstracts: **1 March 1998**
Notification of Acceptance: **31 March 1998**
Registration **before 30 April 1998: US \$350**
Registration **after 30 April 1998: US \$400**
(Students will be offered 50% reduction of the registration fee.)

Display space will be available for organizations to inform the participants about their products, services and books relevant to CODATA interests. Facilities will be available for database and other online demonstrations via Internet.

Social and cultural activities are being planned for CODATA '98 Conference participants and their accompanying guests.

CALL FOR PAPERS

Papers reflecting original contributions are invited on topics of relevance to the conference. Topics for the scientific sessions will include, but are not limited to:

Scientific Data and Information Systems on:

Agriculture
Medical- and Bioinformatics, Biodiversity
Integrated Material Systems
Astrophysics, Astronomy, Physics and Chemistry
Metrology, Standards, Reference and Derived Data
Environmental Sciences, Hydrology and Land Degradation

Data Evaluation

Heterogeneous Data Frameworks for Industry

Economic, Legal, and Engineering Data

A title and abstract of no more than 250 words should be submitted to Prof. A. S. Kolaskar, Bioinformatics Centre, University of Pune, Pune 411 007, India, by e-mail to: <kolaskar@bioinfo.ernet.in> or codata@paris7.jussieu.fr> or by post, or by Fax +91 212 350087, before 1 March 1998.

Authors are encouraged to augment their paper presentation with live demonstrations of the software or database, for example, and their utility. All abstracts will be made available on the Internet.

Submitted abstracts will be reviewed on the basis of scientific contents in line with the theme of the conference and acceptance will be communicated before 31 March 1998. Selected authors will be requested to submit camera-ready papers for publication.

International Scientific Program Committee

A. S. Kolaskar (*Chairman*), J. C. Ahluwalia, N. Balakrishnan, K. Lal, *India*. M. A. Chinnery, M. Krichevsky, *USA*. J.-E. Dubois, *France*. F. A. Kuznetsov, *Russia*. C-H. Sun, J-L. Wu, *China: Academy located in Taipei*. H. Sun, *China: Chinese Academy of Sciences*. A. Tsugita, *Japan*. G. H. Wood, *Canada*.

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The Conference on Scientific and Technical Data Exchange and Integration

The Conference, sponsored by USNC-CODATA and the National Research Council at the Natcher Conference Center, National Institutes of Health, Bethesda, Maryland, December 15-17, 1997, will involve the exchange of scientific and technical (S&T) data among different computing environments and across diverse scientific and engineering disciplines which present major problems that hinder full exploitation of computer-based modeling, the Internet, modern scientific databases, and new computer technology. This first major interdisciplinary conference on this subject has three main objectives:

To identify areas, with special emphasis on interdisciplinary needs, in which data exchange and integration are important;

To highlight major S&T data exchange and integration efforts already underway or in planning; and

To foster serious and significant cooperation in these kinds of activities among scientific and engineering disciplines, and governmental and non-governmental organizations.

The Conference will consist of four types of sessions: plenary invited lectures; contributed papers (which will be presented as posters); demonstrations; and small break-out discussion groups. Case studies are particularly encouraged. Contributed papers and demonstrations are being provided on the following topics:

Discipline-specific data exchange activities and requirements

Interdisciplinary data exchange activities and requirements

Federally supported data exchange programs

Definitions of scientific and technical metadata issues

The computer science of data exchange and integration

The impact of the Internet and the World Wide Web on S&T data exchange and integration

Future needs for data exchange and integration for S&T data

The contributed papers and demonstrations will play a major role in the conference by identifying existing activities and approaches that will provide direction and insight for further activities. All contributed papers will be considered for publication in the Conference proceedings, which will be published on the Internet soon after the Conference.

Break-Out Discussion Group Sessions

The purpose of the small group discussions, which will be held on the afternoon of the second day, is to address focused topics within the broad conference themes. All conference participants are invited to participate in a discussion group of their choice. Each group will have a designated chair and rapporteur, who will lead and record the discussion. The results will be used by the U.S. National Committee for CODATA and the other conference sponsors for planning follow-on activities. The discussion groups are expected to examine data exchange and integration issues in the following topical areas:

Biodiversity Intellectual property rights

Biophysics Manufacturing/STEP

Space science Earth remote sensing

GIS Civil engineering & construction

Social sciences International research

Additional Background

By data exchange is meant several things: the transfer of large amounts of data from one set of software to other software; extracting small amounts of data from one or more data sources for specific use; and the creation of a linked or integrated data system with multiple data sources. Other possibilities exist. Data exchange has two major components: the stream of bits and bytes that actually represent the data items and fields, and the contextual meaning of individual data items and fields.

S&T disciplines and applications have begun addressing data exchange issues, but progress has been slow and difficult for a variety of reasons. Scientists are often not accustomed to formal standards. Discipline experts, even though they may be quite knowledgeable in computation and database management, frequently lack expertise in information modeling and exchange standards. Metadata are not well defined, complicating the application of data across diverse scientific areas. As a result, interdisciplinary data exchange has been difficult to promote and rarely implemented.

Consider for a moment geographic information. Many applications need such information: to locate physically the sources of samples, to describe the range of a phenomenon, or to specify the location of an event, etc. Today many geographic information systems serve diverse communities of users, and several efforts to develop standards for exchanging data among these systems have been proposed. Yet progress to develop such standards in other areas has been slow. Other types of scientific data, such as biological nomenclature, chemical and engineering material identification and temporal data, suffer the same problem. Many uses for these data exist outside the scientific disciplines that generate them, yet accepted methods for exchanging these data remain elusive.

In *Finding the Forest in the Trees, The Challenge of Combining Diverse Environmental Data*, the U.S. National Committee for CODATA clearly documented case studies in which data interfacing, defined in that report as the coordination, combination or integration of data for the purpose of modeling, correlation, pattern analysis, hypotheses testing, and field investigation at various scales, was necessary to achieve full value of research investment. Data interfacing is founded upon the standards and protocols agreed to by different scientific disciplines to exchange data. Particular emphasis must be put on the role of metadata in this data exchange.

For further information:

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For questions about the conference program, contact:

John Rumble, Conference Program Chair, National Institute of Standards and Technology, Building 820, Room 113, Gaithersburg, MD 20899. Tel: (301) 975-2200; E-mail: john.rumble@nist.gov.

***"Bits of Power"* Study**

To help understand the impact of advances in computer and telecommunications technology and to learn what actions are needed to ensure full and open exchange of scientific data worldwide among researchers in the natural sciences, the U. S. National Committee for CODATA set up a Committee on Issues in the Transborder Flow of Scientific Data to undertake a study responding to the following charge:

Outline the needs for data in the major research areas of current scientific interest that fall within the scope of CODATA--the physical, astronomical, geological, and biological sciences.

Characterize the legal, economic, policy, and technical factors and trends that have an influence--whether favorable or negative--on access to data by the scientific community.

Identify and analyze the barriers to international access to scientific data that may be expected to have the most adverse impact in discipline areas within CODATA's purview, with emphasis on factors common to all the disciplines.

Recommend to the sponsors of the study approaches that could help overcome barriers to access in the international context.

The Committee, which was chaired by Prof. R. Stephen Berry and included information specialists, legal experts, and economists as well as working scientists, completed its work early this year, and the final report was released in April 1997. The full report has been published under the title *Bits of Power: Issues in Global Access to Scientific Data* (National Academy Press, Washington, DC, 1997).

The study addresses issues in effective access to data in numerical, symbolic, and image forms by scientists for scientific research purposes, rather than to bibliographic or purely textual information, in the natural sciences. The focus is on digital rather than analog data, since practically all scientific data are now collected and stored digitally, and most older data are being transferred to digitized electronic formats. The scope of inquiry also is limited to data in the natural sciences, since this is the principal subject-matter focus of CODATA.

Because the sponsors of the study are U.S. federal government science agencies, the committee emphasized those trends, issues, and barriers that have an impact on international access to data collected and used in publicly funded, basic research programs--that is, scientific research conducted as a public good. Despite this emphasis, the committee took into account the continuums between fundamental and applied research, between raw data and processed information, and between public and private uses of scientific data. Indeed, the most vexing public policy issues facing the international scientific community in the exchange of data involve defining the appropriate balance of divergent interests.

Underlying the committee's approach, however, and informing its conclusions and recommendations, is the principle that full and open exchange of scientific data--the "bits of power," on which the health of the scientific enterprise depends--is vital for advancing the nation's progress and for maximizing the social benefits that accrue from science worldwide.

Based on its deliberations and understanding of the issues involved, the committee proposed that the following overarching principle should guide all policy decisions concerning the management and international exchange of scientific data in the natural sciences: The value of data lies in their use. Full and open access to scientific data should be adopted as the international norm for the exchange of scientific data derived from public funding. Governments should seek to minimize restrictions on access to and scientific use of data.

The report contains a list of recommendations addressed to both national and international groups. The major recommendations are summarized below:

1. Governmental science agencies and intergovernmental organizations should adopt as a fundamental operating principle the full and open exchange of scientific data. By "full and open" exchange the committee means that the publicly funded data and information are made available without restriction, on a nondiscriminatory basis, for no more than the cost of reproduction and distribution.
2. The International Council of Scientific Unions (ICSU), together with the scientific Specialized Agencies of the United Nations, the Organisation for Economic Co-operation and Development Megascience Forum, and the national science agencies and professional societies of member countries, should consider developing a distributed international network of data centers. Such a network should draw on the strengths of successful examples of international data exchange activities, including, in particular, the ICSU World Data Centers, and become a prominent part of the global information infrastructure that has been proposed by the "Group of Seven" nations. To facilitate the international dissemination and interdisciplinary use of scientific data, including all public scientific data activities, the network of data centers should plan for and commit to providing the human and financial resources sufficient for carrying out the following functions:
 - a. Involve experts from the relevant disciplines, together with information resource managers and technical specialists, in the active management and preservation of the data;
 - b. Develop and maintain up-to-date, comprehensive, on-line directories of data sources and protocols for access;
 - c. Provide documentation (metadata) adequate to ensure that each data set can be properly used and understood, with special attention given to making the data usable by individuals outside the core discipline area. This

problem is particularly acute within the biological sciences, in which imprecisions in taxonomic definitions and nomenclature pose significant communication barriers, even among the biological subdisciplines. The committee suggests that the CODATA Commission on Standardized Terminology for Access to Biological Data Banks be enhanced into a true international consultative body and that similar mechanisms be developed for other disciplines, as needed;

d. Incorporate advances in technology to facilitate access to and use of scientific data, while overcoming incompatibilities in formats, media, and other technical attributes through vigorous coordination and standardization efforts;

e. Institute effective programs of quality control and peer review of data sets; and

f. Digitize all key historical data sets and ensure that every important condition for the long-term retention of data be met, including the adoption of appropriate retention and purging criteria and the timely transfer of all data sets to new media to prevent their deterioration or obsolescence.

3. The ICSU and other professional scientific societies should encourage the study of, and publication of peer-reviewed papers on effective data management and preservation practices, as well as promote the teaching of those practices in all institutions of higher learning.

4. All scientists conducting publicly funded research should make their data available immediately, or following a reasonable period of time for proprietary use. The maximum length of any proprietary period should be expressly established by the particular scientific communities and compliance should be subsequently monitored by the funding agency.

5. As a corollary to recommendation 2.a above, publicly funded databases should be maintained either directly or under subcontract by the government science agencies with the requisite discipline mission and need. In the United States, the Office of Science and Technology Policy should develop an overall policy for the long-term retention of scientific data, including a contingency plan for protecting those data that may become threatened with the loss of their institutional home.

6. With regard to improving access to scientific data in less developed countries, the committee makes the following recommendations:

a. Foreign aid agencies should (i) make available to individual scientists in less developed countries more direct, peer-reviewed grants that include support for access to data, and (ii) facilitate the involvement of scientists in such nations in their own countries' capacity-building initiatives, research policy decisions, and national database construction efforts.

b. Scientists in less developed countries should be encouraged to organize to promote the policy of full and open access to data in their own countries, as well as data available internationally.

c. The ICSU, together with funding agencies and non-governmental bodies, should strengthen its efforts to assist developing countries in undertaking their own scientific studies and to encourage scientists engaged in such studies to take active roles in the international scientific community, where their efforts can be appreciated and used. Legal and procedural protocols must be developed to provide for fair and equitable sharing of any resulting intellectual property.

d. Until affordable and ubiquitous electronic network services are available, national and international scientific societies and foreign aid agencies should establish or improve their existing efforts to send extra stocks of scientific publications to libraries and research institutions in the less developed countries.

7. Finally, the ICSU, together with the principal national and international scientific organizations mentioned in recommendation 2 above, should convene a series of major international meetings to initiate meaningful action on these recommendations.

The body of the report contains detailed analyses of present and potential barriers to data access of a technical, legal, and economic nature. The technical issues discussed include growing problems of Internet congestion, lack of standards for data exchange, obsolescence of storage media, and network security issues. The section on economic factors addresses pricing policy for data obtained with public funds, and recommends charges based, at most, on the incremental cost of storing and distributing the data to users. A major part of the report deals with intellectual property issues, especially the trend toward protectionist measures that might restrict the uses that could be made of data extracted from electronic databases. This section of the report has already served as a basis for strong protests from various parts of the scientific community against such measures.

Globalization of Materials Data--a CODATA Workshop

Materials data experts from around the world need to convene and determine how--individually and collectively--to meet the needs of materials data users over the next two decades. CODATA is sponsoring a workshop on October 12-15, 1997, in Chambéry, France, to provide for a dialogue among those for whom materials data will play a central role in their careers well into the 21st century. Leading developers, managers, and purveyors of materials data, plus those scientists and engineers with the greatest interest in the use of these data, will gather to consider, assess, debate, and plan for the full impact of the Globalization of Materials Data. This workshop continues the tradition of international discussion of materials data issues, beginning in 1982 with the Fairfield Glade workshop which defined initial challenges of computerizing materials data, and continuing with the 1985 CODATA workshop at Schluchsee which identified specific opportunities for international collaboration. These earlier workshops played a major role in achieving the progress so evident today.

In the last 12 years, computerized materials data systems have progressed far beyond anything imagined in 1985. In just five years the World Wide Web has made the Internet a global resource of information and an everyday tool for worldwide communication and data dissemination. Organizations everywhere now develop materials databases almost routinely, and distribute these databases internally via corporate intranets and externally via the Internet. International standards designed to automate the exchange of materials data are now being generated.

Today we are faced with the challenge of how to exploit these developments to realize the tremendous potential offered by computerized materials data.

Promising payoffs include:

computer-aided discovery and design of *new materials*
informed selection/application of *existing materials*
automated design and control of *materials processing*
rapid adaptation of *existing materials* to new uses
accurate modeling/simulation of *materials performance*
reliable optimization and testing of *virtual materials*

To maximize these payoffs, the materials data community must successfully address four important problems:

computerizing all relevant materials information
integrating that information within the practice of scientific and engineering disciplines that generate or use materials data
developing new means for disseminating those data, and
devising new algorithms and software that draw on materials data

Prime movers include J. E. Dubois (France); J. G. Kaufman (USA.); C. P. Sturrock (USA); W. C. Carter (USA); D. Bassetti (France); J. Jovanovic (Germany); M. Schuckert (Germany); K. Halada (Japan); P. Murray-Rust (UK); T. M. King (Japan); Y. Monma (Japan); J. P. Caliste (France); and J. Rumble (USA).

For further information, contact: Dr. Charles P. Sturrock, Standard Reference Data Program, National Institute of Standards and Technology, Building 820, Room 113, Gaithersburg, MD 20899, USA. Phone: +1 301 975 6027; Fax: +1 301 926 0416; Email: sturrock@nist.gov

Data and Information Visualization. Where Are We and Where Do We Go from Here?



Over 70 people from Europe, USA, Canada, and Asia participated in the CODATA Euro-American Workshop on Data and Information Visualization. The workshop took place at the Ministère de l'Éducation Nationale de l'Enseignement Supérieur de la Recherche in Paris, France, on 24-25 June 1997. Based on the experience and results of this Workshop, a second workshop on visualization of information and data is planned for the 16th CODATA International Conference to be held in New Delhi, India in Fall 1998.

Increasing amounts of data and information and the availability of fast digital network access (*e.g.*, the World Wide Web) have created a demand for querying, accessing, and retrieving information and data. Unlike most scientific numerical data, information is abstract having no physical form or representation. Information visualization involves the conversion of the abstract into concrete visual representations using among others computer graphics and imaging techniques.

Information visualization is an increasingly important research area and is crucial for the success of the information revolution. Effective visualizations will enable users from all walks of life to use the information highway easily and efficiently.

The Keynote Address, *Engineering Effective Visualizations*, by S. G. Eick (Lucent Technologies Bell Labs) reviewed the state of the art of information visualization. "Just as spreadsheets revolutionized our ability to understand small amounts of data, visualization is revolutionizing the way that we understand large information spaces. Information, unlike physical data, has no natural shape or form." He illustrated the progress of this field with examples that included network and software visualizations. The systems developed were applied at Lucent for solving real-world problems, such as understanding telephone network operations and sifting through huge arrays of COBOL software to find out what parts are sensitive to the year 2000 transition.

Sessions on *Visualizing the World Wide Web and Telecommunications Networks* (S. Feiner, G. Wills, C. Huot and H. Budd, N. Gershon, and M. Hasecoet-Zizi), as well as *Visualization of Database Information* (led by S. Roth, D. Keim, and S. Truv) were followed by a video session, posters and short papers.



The second day started with a Keynote Panel on *Visualization of Information: Where We Are and Where Do We Go From Here?* with K. Andrews (Graz Univ. of Technology), S. Feiner (Columbia Univ.), A. Gagalowicz (INRIA), R. Spence (Imperial College), and B. Shneiderman (Univ. of Maryland) [by video]. Subsequent sessions were on *Applications Across International Boundaries* (S. Noll, P. Mueller, and A. Plathe), *Visualization in Industry and Commerce* (by M. Chalmers, A. Chesnais, and W. Wright), posters, and general open discussion on *Present and*

Future. The main issues discussed in the latter session were:

Business Activity. There is a growing activity of information visualization in the commercial market. According to a survey conducted by Jim Wise, there are 50 companies doing business on what could be classified as

information visualization. Out of these, 12 are working on text or "almost" text visualization.

Seriously Considering the Users And Usage. This was a theme that developed in the open discussion and during other sessions at the Workshop. Typically, not much effort is involved by visualization developers and researchers to learn what the real users need--what is the real problem to be solved, and what are the users' real needs. We need to understand the context and the constraints and work with both friendly and unfriendly users (K. Boff).

The Science of Information Visualization. S. Eick and S. North brought up the need to develop and understand the science behind information visualization. This will make the development of particular solutions easier and more straight forward. N. Gershon stressed that we need some art in addition to science. L. Friedland noted that anthropologists should be involved in the process of information visualization. Anthropologists and social psychologists have been successfully involved in user-centered design (K. Boff) but not much in visualization. Perception and cognitive engineering principles should be used to predict what will be derived by the user from the display (K. Boff, M. Chalmers, and A. Mockus).

The Workshop closed after the Capstone Address, *Making Visualization Work: How Abstract is Too Abstract, How Real is Too Complex?*, given by K. Boff (US Air Force Research Lab). Boff stressed that visualization should be a *means* rather than an *end*. A big problem is how to make the existing bag of tricks of visualization methods useful in the real world. In a user centered visualization, information, task, and the user are taken into account. "The design of effective visualizations in real-time interfaces... must be considerate of the risks and consequences associated with time constraints, misinterpretations, and environmental stressors as well as the cognitive processes engaged by users in acquiring, processing, and sharing information within this context." Boff then illustrated these principles and recommendations in the field of cockpit design and implementation.

Participants came from major institutions and laboratories around the world (*e.g.*, Alias/Wavefront, AT&T, Columbia Univ., Cornell Univ., Imperial College, INRIA, Lucent Technologies Bell Labs, NIST, Univ. of Maryland, Xerox PARC, etc.). The workshop, co-chaired by N. Gershon (MITRE) and J.-E. Dubois (President, CODATA) and the operational arrangements group was chaired by J.-J. Royer (CNRS, Nancy).

The Workshop was supported by the French Ministère de l'Education Nationale de l'Enseignement Supérieur de la Recherche, the US Defense Advanced Projects Agency (DARPA), the US National Science Foundation (NSF), Univ. of Kaiserslautern, Univ. of Iowa, CODATA France, CODATA Data / Information Technology and Visualization Task Group, and the IEEE Computer Society Task Force on Human-Centered Information Systems.



The Workshop was conducted in cooperation with The IEEE Computer Society Task Force on Digital Libraries was made possible by the efforts of many individuals including Dr. H. Bestougeff, Mrs. J. Brown, Dr. J.-P. Caliste, Mrs. B. Dubois, Ms. M. Egea, Dr. S. G. Eick, Dr. M. Hasecoet-Zizi, Dr. H. Hagen, and Mr. A. Pernick.

CODATA's Recommended Values of the Fundamental Constants--"15,000 queries a month?"

Yes! Fifteen thousand queries a month is the number of site hits that the 1986 CODATA recommended values of the fundamental constants of physics and chemistry receives on the home page of the Physics Laboratory of the National Institute of Standards and Technology (NIST), in Gaithersburg, MD. The 1986 CODATA set of recommended values was compiled by the CODATA Task Group on Fundamental Constants and published in

1986 in CODATA Bulletin Number 63; it is the most-up-to-date, self consistent set of constants currently available. In October 1994, the NIST Physics Laboratory put the CODATA set of values on its Web server at <http://physics.nist.gov/fundcon>, and the number of visits has increased continually ever since. Two current activities promise to extend this trend indefinitely.

First, NIST staff members Drs. Peter J. Mohr and Barry N. Taylor, together with Michael A. Douma, are making significant improvements to the NIST fundamental constants Web site. These include increasing the ways that users can find the values of the constants in which they are interested, enabling users to download values of the constants, and making it possible for users to easily and interactively convert an energy expressed in one unit to an energy expressed in another unit--for example, to convert an energy expressed in joules to one expressed in electron volts. Currently, the 1986 values of the constants are only in the form of scanned images available in graphical table form and cannot be downloaded--they must be copied by hand.

Second, the CODATA Task Group on Fundamental Constants, of which Taylor is currently Chairman, is compiling a new set of constants to replace the 1986 set. It should be available early in 1998 and will be the direct result of a least-squares adjustment of the constants being carried out by Mohr and Taylor in collaboration with the Task Group. The 1998 set of constants promises to be a major improvement over its 1986 counterpart. Because of the significant advances in both experiment and theory achieved over the last decade, the uncertainties of the new values will in general be one fifth of the uncertainties of the corresponding 1986 values, and in some cases one hundredth of the 1986 uncertainties.

In carrying out the new constants adjustment, Mohr and Taylor are incorporating a great deal of computer automation to greatly simplify the process. It is expected that in the future, a new set of constants will be issued by CODATA no less than every four years, and possibly as soon as two years after the issuance of the previous set if new data warrant it. This will be in marked contrast to what was done in the past--the first CODATA set of recommended values of the constants was issued in 1973, the second in 1986, and the third will be issued in 1998. The modern and highly beneficial trend towards making new information immediately and widely available, especially on the World Wide Web, clearly implies that such long periods between the issuance of new sets of values of the constants are no longer acceptable.

Mohr and Taylor have also recently put up on the NIST Physics Laboratory's Web server at <http://physics.nist.gov/fundconbib> a searchable bibliographic database that gives the bibliographic citations of published papers on the fundamental constants and closely related precision measurements. Currently, this database lists nearly 2000 relevant papers, most of which have been published since the mid-1980's but some of which go back to the early part of the century. Although it is unlikely that this database of papers on the constants will become as popular as the values of the constants themselves, it is already proving itself to be a valuable resource to workers in the precision measurement-fundamental constants field.

Books and Databases

Properties of Organic Compounds. D. R. Lide and G. W. Milne.

Properties of Organic Compounds on CD-ROM, Personal Edition (POC PE) focuses on 27,500 of the most commonly used organic compounds. The disk can be used to locate additional data and references for a known compound or to identify an unknown compound that meets a given search criterion. The database features a Windows interface, an extensive help utility, and can download to printers and Windows-compatible word processors. While the data compilation is the core of *POC PE*, the accessibility of the data including simple and combined query capabilities provides the user with enhanced features that were unavailable in the previous version.

It will export data and structures (WYSIWYG) to your printer or Windows-compatible word processor and will display subscripts, superscripts and all special characters. It will also get help when and where you need it--on-screen, on-line, in a detailed user's manual, or from our technical support experts at CRC Press.

ISBN: 0849304083, Cat. #408, Pubdate: 09/17/1996, Price: \$129.00. From: CRC Press LLC, 2000 Corporate Blvd. N.W., Boca Raton, FL 33431.

Bits of Power. Committee on Issues in the Transborder Flow of Scientific Data USNC-CODATA and Commission on Physical Sciences, Mathematics, and Applications, NRC. [b]

ISBN: 0-309-05635-7 1997. Bits of Power is available at the Web site of the National Academy Press (<http://www.nap.edu>), 2101 Constitution Avenue, N.W., Washington, DC 20055 (1-800-824-6242). Price: \$44.95 + \$4.00 for sending and handling first copy, and 50 for s & h each additional copy.

CODATA Calendar

1997

October

12-15 Globalization of Materials Data--A CODATA Workshop. Chambéry, France

November

25-26 Data Sources in Asian-Oceanic Countries Meeting/Workshop (together with KORDIS '97). Taejon, Korea

1998

January

19-20 Officer's Meeting. Paris, France

20-21 Meeting of Task Group on Outreach, Education and Communication

April

20-21 CODATA / ESOP Conference. Paris, France

May

4-5 CODATA Executive Committee Meeting. Paris, France

November

8-12 CODATA 16th International Conference. New Delhi, India

13-14 CODATA 21st General Assembly. New Delhi, India

Data Sources in Asian-Oceanic Countries

The CODATA/DSAO Task Group will hold a workshop/meeting in Taejon, Korea, November 25-26, 1997 jointly with KOSTI '97, the Workshop on Korean Science and Technology Information (KORDIS '97) (November 25-28). Both are hosted by KORDIC (Korea R&D Information Center, represented by its President, Dr. Jin Hyung Kim, Korea's National Delegate to CODATA. This is the eighth such workshop/meeting and participants in previous meetings can readily appreciate the effective role this group has played and continues to play in the development of Asian Pacific Rim information technology, information processing, and scientific database management.

Database Protection Activities

Nota bene:

The ICSU Ad-hoc Group on Data and Information has prepared a summary of database protection activities for the forthcoming Geneva meeting in view of the great change during the past few months. The information in *Bits of Power* (cf. pp. 3,4) is supplemented by this update. Although the World Intellectual Property Organization may not likely produce new treaty language until next year, the European Union's Database Directive will come into force on 1 January 1998 and new legislation will likely be introduced in a few months. What is being discussed is presented on the CODATA Access Home Page.

http://www.codata.org/codata/data_access

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