

Computers and the information explosion

A latch for Pandora's box

Identifying compounds at the CODATA symposium using a computer system which compares the infrared spectrum of the unknown with 90,000 reference spectra at the rate of 1,000 per second.

Au symposium, on a identifié des substances chimiques très rapidement au moyen de l'ordinateur. Ici, le spectre infrarouge de l'inconnu est comparé à quelque 90,000 spectres de référence à raison de mille par seconde.



While today's scientists fret over the mushrooming information explosion and struggle to keep their heads above the 50,000 journals and periodicals now being published, could all the data they need be as close as their telephone? Would they have expert scientists and engineers using high-speed computers to ensure that the data they want is accurate and up to date?

Impossible dream? No. Imminent reality!

Such was the theme of a symposium held in Ottawa at the National Research Council of Canada under the sponsorship of the Canadian and United States National Committees for CODATA and the CODATA Task Group on Computer Use. The Chairman of the Canadian Committee is Dr. R. N. Jones, Head of the Organic Spectrochemistry Section of NRC's Division of Chemistry.

CODATA (Committee on Data for Science and Technology) was established in 1966 by the International Council of Scientific Unions to promote international cooperation in tackling the problem of compiling,

evaluating, storing and disseminating numerical scientific information.

Dr. F. D. Rossini of Notre Dame University and President of CODATA, says the numerical data in the ever-growing volume of scientific publications is the lifeblood of science. But the magnitude of this information makes it impossible for individual scientists to review all the data being published in their fields. In addition, most scientists usually do not possess the expertise necessary to reduce the data to an understandable and useful form.

But the computer working on an international basis can meet the challenge of the information explosion. Practical demonstrations at the symposium have shown that the equipment and technology now are available for the establishment of such an information transferal system.

The numerical values available will be of much higher quality than those produced by the sporadic efforts of scientists primarily interested in other problems and can be continuously brought up to date. This latter point is very important for technology and

industry today, where the precise control of temperature, pressure and other variables makes possible the conduct of industrial processes heretofore considered impossible.

The symposium showed that the current rapidity and versatility of data transmission by computers are such that, by "plugging into" existing networks, computers can in a matter of seconds provide such data as fundamental constants, atomic and molecular weights, transition points and ionization potentials for atoms, etc., in addition to searching for and identifying substances from these and other physical properties.

At the symposium it was demonstrated that a scientist using a telephone with a Touch-tone keyboard can feed a question to a computer and receive an answer a few seconds later voiced over the telephone. Two other demonstrations involved computer-aided recording and identification of infrared spectra and X-Ray diffraction patterns — an analyst's pipe-dream come true. ■