INDUSTRIAL RESEARCH LIBRARIES:
How Can They Put Information to Work in the 1980's?

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An industrial research library is a dynamic unit for the acquisition, organization, dissemination, retrieval, and transfer of scientific and technical information. The library or scientific and technical information center is established to give immediate support to the research and development programs of the industry. Often the main working collection or stock-in-trade of the industrial research library is composed of confidential technical and research reports produced internally by the corporation as well as its group companies and their research centers.

To supplement the resources of its own proprietary materials, the industrial research library always has an extensive selection program to acquire external literature such as textbooks, reference works, trade journals, patents, as well as R & D reports from government agencies, professional societies, and associations. It is essential that such a selection program meet the needs of the company's current research programs or anticipated needs of the future.

To organize the massive input of materials for efficient dissemination and retrieval, the library has to design and implement a computerized bibliographic system for current awareness and document retrieval. By using a computerized system of bibliographical control, traditional library procedures such as cataloging, subject classification and indexing have to be simplified, and most manual operations such as card typing and filing are eliminated. There are generally no card catalogs as you

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are familiar with in most public or academic libraries. Instead, the traditional catalog of unit record with main entry and added entry format is or will be replaced with multi-access approach by using 8 separate indexes, each providing a specific lead for a search or quick look-up. These are: (1) corporate author, (2) title, (3) personal author, (4) series, (5) project, (6) subject category, (7) KWIC (Key Word in Context), and (8) company’s confidential list or internally used bibliographic record. These eight indexes are periodically cumulated on COM (Computer Output Microfilm) microfiche with short interval supplements for the current year also available on COM. Whenever possible, industrial information centers should have on-line cataloging data files for information retrieval through computer terminals.

The search of library holdings for specific items in a retrieval process or the compilation of a bibliography by subject, project, author, or issuing body can be achieved easily and more efficiently by using COM fiche and/or an on-line search of the cataloging data file than by a manual search of any card catalog.

From the machine readable bibliographic data base, the system can generate Current Awareness Bulletins (CAB) of reports and monographs arranged by subject or any other type of the above mentioned indexes every two weeks or once a month to be distributed to researchers of the company at various locations. This CAB will inform or alert the users to what has been received and is available from the library or information center. The CAB also serves the purpose of a mail order catalog from which the users could “order” the items which they would like to see by simply ticking the items on the lists or citing the document number. The requested items would be forwarded to the user through the company’s courier system or postal service.

By actively building up a comprehensive collection on science and technology coupled with an efficient retrieval and delivery system, the library can hope to be able to provide research staff with required scientific and technical information on a corporate basis and to help avoid major duplication by other individual
departments saving both manpower and materials.

The library, rather than being merely the store house in
the traditional custodian sense of the word, works in partnership
with research scientists, engineers, technologists, and technicians
by providing consultation services for their information needs.
The consultation could take place prior to the undertaking of a
project, planning a literature search in a new field of endeavour,
or answering reference questions by giving required information
or data.

The industrial library also has to maintain close contacts
with other major libraries and technical information centers in
the country or around the world through interlibrary loan and
reference communications to supplement its own resources. In
Canada this apply in particular to the national science library,
CISTI (Canadian Institute of Scientific and Technical In-
formation), a division of the National Research Council in Ottawa.
The library can have contract agreements with different national
scientific and technical information centers for use of their SDI
(Selective Dissemination of Information), such as the use of
CISTI's CAN/SDI service. To provide CAN/SDI, CISTI is con-
ducting computer searches regularly of the various bibliographic
data bases of index tapes such as the Chemical Abstracts and
Engineering Indexes by matching individual research interest
profile which an industrial library has constructed against the
data bases. CISTI then sends back to the library the output of
matched references and citations of journal articles, books, and
patents published throughout the world in a specific subject area.
This service helps eliminate the necessity of scanning a large
number of periodicals or abstracting journals by the library staff.

Moreover, many industrial libraries have and will become
a center of a national on-line enquiry network, such as CAN/OLE
(CANada/On-Line Enquiry) network. By using a computer
terminal at the library, the library staff will be able to access the
CAC (Chemical Abstracts Condensates), COMPENDEX (Com-
puterized Engineering Index) and various other bibliographic
data bases and conduct an on-line, interactive literature search on subjects of their interest. A search for journal citations which normally would require hours of scanning through volumes of abstracting journals and indexes could be achieved within a few minutes on the terminal.

By using a computer terminal the library can also have direct access to SDC's ORBIT (System Development Corporation On-Line Retrieval of Bibliographic Information Time-Shared) system at Santa Monica, California and Lockheed's DIALOG system at Palo Alto, California, and/or the MEDLINE search of biomedical data base at the American National Library of Medicine at Bethesda, Maryland, for on-line search of the multitude of data bases. These data bases include the NTIS (National Technical Information Service) of R & D reports by various U.S. government organizations and contracted agencies.

The library also can search several data bases for information on business administration, marketing research and forecast, energy conservation, environmental protection, and legal information concerning patents and trademarks for the purpose of providing needed information to facilitate the decision-making of research managers.

In all, the industrial research library may have direct access to almost all bibliographic data bases which are commercially available across the continent and overseas as long as they are of interest to its parent organization's or company's operations. Thus, by using the computer terminal, library staff have extended themselves beyond the confines of their libraries to be within the reach of the immense information resources of world literature and place them literally at their finger tips. It has indeed become an electronic library and switching point for efficient information transfer.

In short, industrial research library is a problem solving department in a corporation. It helps the executive and research staff to solve their problems by putting information to work. This is the library or information center's business. The following
three figures were developed and used by the writer in his "Special Libraries" course at the University of Western Ontario School of Library and Information Science. The writer sincerely hopes these figures will help those who want to set up and operate industrial research libraries with a view to further industrial development in Taiwan.

For concepts in Chinese of system design and information retrieval through on-line search, please consult the writer's two articles published in the Chinese newspaper, Central Daily News, Taipei. They are:

(1) "Computer and Information Control: A System Approach (電腦與資訊控制)," March 12, 1980, p. 11.

(2) "How To Do On-Line Search of Data Bases: A Case Study (資料庫與論文之檢索)," January 28, 1981, p. 10.
ESSENTIALLY

Industrial Research Library Is
A Problem Solving Department

Library Staff & User Interface
- Understand User Request
- Study the problem
- Search & Find

to Track down & Provide

Pertinent & Necessary Information
- Documents
- Facts & Data
- Straight Answers

User Analysis & Synthesis of Information

Problem Solved!

The moral is obvious:
If you have problems or questions, go to the library.

FIGURE 1.
LEVELS OF INFORMATION

<table>
<thead>
<tr>
<th>INFORMATION IS POWER</th>
</tr>
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<tbody>
<tr>
<td>Information is the key essential element for decision-making</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>INFORMATION IS A RESOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information is a commodity</td>
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</table>

<table>
<thead>
<tr>
<th>INFORMATION IS KNOWLEDGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information is knowledge</td>
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</table>

WHAT IS INFORMATION?

SOURCES OF INFORMATION

- Text, reference books, trade journals, meeting papers, conferences
- Professional literature, non-confidential
- Internal communications, memos
- Formal written reports, specifications
- Tax and Confidential Material
- Personal contacts, friends
- Information from the boss

INFORMATION MANAGEMENT

- Search patent or bibliography
- Documents
- Direct
- Facts
- Information & Library Service
- Technical Information Service
- Scientific & Technical Information Center
- Management of information transfer
- Handling techniques for efficient knowledge in information sources
- Specialized with special training
- Stated by professional librarians.
WHAT IS RESEARCH?

Research is a Knowledge-Intensive Business
Research is an Intellectual Process
Research is Innovative
Research is Creative
Research is Invention
Research is Analysis & Synthesis of Information

(The Feedback Loop)
Link: Information Management

Research Input:
- Product Problems
- Market Prospects
- New ventures
- Project Review
- Meetings
- Group Research
- Coordination
- Previously Created Research Information
- Additional Related Information from External Sources

Library & Information Centre
- Information Dissemination
- Storage & Retrieval

Activities of Applied Research
- Analysis of Information
- Experimentation,
- Testing & Verification
- Synthesis of Information

Research Output:
- New Products
- Improved Products
- New Processes
- Improved Processes
- Solutions to Problems
- New Information-Documents
- Reports & Records*

*From this point of view, we could say that the Main output of research is the reports or Information we produced by the research activities.

Information is a Commodity:
A very costly commodity or Wealth.

FIGURE 3
Bibliography


CAN/SDI Manual.
CAN/OLE Manual.
Guide to DIALOG Searching.