

Nomination of Eugene Garfield, Ph.D.
for a Special Albert Lasker Award in Recognition
of his Service to Medical Information

Few scientists will disagree that information is as important to medical research as is a well-equipped laboratory. Without the right information at the right place at the right time, research work can be slowed down, follow dead-end paths, and even repeat what has already been done. Accordingly, the successful efforts of Dr. Eugene Garfield to make scientific information more readily accessible to the world's medical research community should be recognized as having significant, far-reaching, and permanent impact. For this reason he is particularly deserving of a special Albert Lasker award.

Since the contributions of information systems to research successes are seldom acknowledged in a formal way, it is difficult to measure precisely the full effect of Dr. Garfield's work. There can be no doubt, however, that through his creation of Current Contents[®], Science Citation Index[®], Index Chemicus[®], and the Institute for Scientific Information[®] he has greatly shortened the time required to deliver to the public new and improved ways to prevent and treat illness.

The basis of this claim is the fact that information that used to require many months or even years to become widely disseminated is now, through Current Contents, available around the world just days after publication. Similar support for this claim is also contributed by the unique ability of the Science Citation Index to expose, through citation linkages, significant connections between scientific developments. Prior to the existence of the SCI[®], these connections were all but invisible to the researcher. Additionally, through its ability to alert--in a rapid and simple fashion--research chemists to newly synthesized chemical compounds, the existence of Index Chemicus has unquestionably enabled the pharmaceutical industry to perform its mission more efficiently.

Therefore, to gain a better understanding of the magnitude of Dr. Garfield's accomplishments, it is necessary to consider in greater detail the three most important services he developed, the Institute he founded, and the character of the man himself.

The Services

Deceptively simple in its concept, Current Contents has probably changed the information seeking habits of the medical research community more than any single tool since the creation of the scientific journal. This fact is evidenced by ISI's readership studies that indicate that each week nearly 300,000 people all over the world use CC[®]. It is also supported by

independent studies such as the one conducted at the central medical library for Sweden, the Karolinska Institutets Bibliotek.

That study indicated that Current Contents is the "most frequently used single source of information" for medical researchers.

(See Attachment A.)

The reasons for this acceptance revolve around CC's timeliness, comprehensiveness, and ease of use:

- Current Contents is designed to alert scientists to newly published articles within two-three weeks after their appearance in the primary journals. The significance of this can only be appreciated when one considers that Abridged Index Medicus, the next most current tool, remains three to four months behind the literature.
- Each of the six editions of Current Contents covers about 1,000 journals. Scientists who use CC thus have direct, personal access to information in more journals than previously believed possible considering the cost to obtain and the time required to examine the journals in their basic form.
- CC lets users locate information through browsing or through index look-ups. This means it provides much needed flexibility in approaching the

Current Contents is the primary mechanism by which less developed countries build scientific literature collections. This is done at low cost through a combination of CC subscriptions and requests for reprints of articles of interest. The availability of CC through airmail service has literally brought many countries into the twentieth century as far as their awareness of current medical research is concerned. Current Contents probably accounts for the exchange of 10 million reprints per year throughout the world.

Perhaps the most eloquent way to conclude this discussion of the value of CC to the medical community is to let some of its members speak for themselves:

"The Life Sciences Current Contents is the main basis for this unit being informed of scientific publications around the world."

Dr. M. Tattersall, Director
Ludwig Inst. Cancer Research
Univ. Sydney

"Absolutely indispensable in keeping up with the literature!!"

Clifton E. Dowell, Assoc. Prof.
Univ. Massachusetts
Dept. Microbiology

"I can't be more specific than to say that Current Contents (LS) is an invaluable tool to me and the personnel in my laboratory; as invaluable for solid research as our centrifuge, spectrophotometer -- etc."

Dr. John K. Spitznagel
Univ. of North Carolina
School of Medicine

"CC has become a necessary part of our research effort. Some of the nine professionals in our group say they would be lost without it. An interesting observation of our group is that the older citizens among us have worked our way through journal subscriptions and library searches and settle in on CC as our principal search tool. The younger don't waste time--they go directly to CC."

NIMH
National Institutes of Health

"Current Contents permits me to remain up to date in the literature of biochemistry and nutrition and do so at my leisure without prolonged hours of library searching."

Steven D. Clarke, Asst. Prof.
Dept. International Health
John Hopkins Univ.

"For the type of work I am doing (clinical work, research, teaching), I find that Current Contents is the only practical way to keep abreast with the world literature. I save time by having on my desk with a minimum of effort the current literature. I use unusual hours to screen CC, which saves me time during the daytime work hours."

Dr. Gilles Richer
Hosp. St. Luc
Immunol. Dept.
Montreal

"Can't do without it. That sums up everything."

B.S. Ahluwalia, Ph.D.
Howard Univ. College of Medicine

While it is not as widely known as Current Contents, the Science Citation Index (SCI®) is currently used in nearly 1,000 libraries -- including almost every major medical library in the world. SCI has enabled researchers to solve two problems that had tended to frustrate their attempts to use the literature. By using an article's reference citations as indicators of the subject content of that article, the SCI avoids much of the wasted effort that occurs when standard subject terminology is inadequate for the search task at hand. SCI's multidisciplinary coverage also makes it possible to more thoroughly research the multifaceted problems that are so common in today's medical world.

Although primarily designed for information retrieval, the existence of the data base from which the SCI is derived has also made it possible to objectively examine various aspects of science and science communication.

For example, a relatively new service extracted from the SCI data base, known as the Journal Citation Reports® (JCR™), provides the first large-scale compilation of objective data on the use of journals by the scientific community. The availability of this service adds a whole new dimension to rational management of current and retrospective journal

collections. Based on the concept that frequency of citation is a valid indicator of journal use, JCR provides carefully compiled tables of citation counts. These make it possible to study a number of important aspects of the use made of individual journals and the role each one plays in communication between scientists. This means that JCR can help librarians in judging the need to add or drop subscriptions to individual journals and in determining how long back issues should be kept. It also helps in identifying and evaluating journals for inclusion in special medical collections. With JCR, medical researchers and others are better able to select journals in which it is most appropriate to publish articles that deal with subjects on new interdisciplinary boundaries.

Through his development of the SCI data base and various techniques for displaying citation relationships, Dr. Garfield has also made it relatively easy to write the history of a specific medical field or development. Since much of the determination of the linkages between events and ideas can be simplified by citation analysis, historians can now eliminate much of the drudgery involved. Those not specifically trained as historians also find it possible to do a creditable historical account using citation relationships. (Attachment B contains a recap, written by Professor Robert K. Merton, of how the SCI emerged as a "specialty-specific" research tool for the study of the sociology of science.)

While Current Contents and Science Citation Index are multidisciplinary in nature, Dr. Garfield has long been concerned about the specific problems of chemical documentation. The result of this interest is ISI's line of chemical information services, the most well-known of which is Index Chemicus (recently renamed Current Abstracts of Chemistry and Index ChemicusTM (CAC/ICTM).

CAC/IC is a weekly printed service that contains graphic abstracts of the articles reporting new compounds (including intermediates), reactions, or syntheses. Emphasis is on ease of browsing, through liberal use of structural diagrams, and rapid coverage of the literature. Most compounds are reported in CAC/IC within 45 days after their initial appearance in the journal literature. Not only has CAC/IC enabled pharmacologists and medicinal chemists in commercial firms to work more efficiently, it has also been a boon to academic chemists interested in developing new drugs.

Over the years, the ISI chemical data base has been continually improved and made available in an increasing variety of formats. It is now accessible through print and microform publications, computer-generated reports, and magnetic tapes--all of which are functionally integrated and cross-referenced. This flexibility means that a wide variety of organizations, ranging from national institutions to multi-national companies to comparatively small institutes, are able

to make use of the data base in the form best suited to their needs.

In recognition of the ISI chemical information services and his continued attention to this field, Dr. Garfield recently became the second recipient of the American Chemical Society's award for "outstanding and sustained service to chemical information." This was a unique tribute to him from one of ISI's leading competitors.

The Institute

The Institute for Scientific Information® (ISI®) has become a unique information resource for those involved in medical research. Thriving without subsidy or favored status of any type, the Institute now has massive data bases for the sciences and social sciences, and has started to build one for the arts and humanities. Each year nearly a million new articles together with their detailed bibliographic descriptions are added to these data bases.

Humble in its origins, ISI has grown from a one-person operation to an organization with over 400 employees in the United States and abroad. ISI facilities have also progressed from a converted chicken-coop to the point where it will soon move into its own custom-designed building.

In the less than 20 years that ISI has existed, it has become the hub of an international scientific communications network used in one way or another by most of the world's scientists. Among its many services is the world's first commercial system for selective dissemination of information (SDI). It remains the largest service of its kind serving thousands of organizations and individuals. Many additional scientists receive SDI services through the use of ISI data bases on magnetic tape which are made available to governments and other large organizations. By its continued, exuberant existence in an area where few thought it could survive, ISI has become the spur that drives other medical and scientific information services to new heights. Realizing that ISI stands ready to do what others cannot or will not, services such as Index Medicus and others have improved their timeliness, format, and other user features.

Indeed, the impact of ISI's services has also provided strong impetus for beneficial changes in formats and editorial policies of even the most prestigious journals. For example, the extreme currency of ISI services has made journal editors and publishers work harder to cut article backlogs and meet stated publication dates. Other changes influenced by ISI include adoption of English as the language of choice for scientific publication, the use of English abstracts with non-English articles, increased information content in article titles, and adherence to international standards for refereeing and citation ethics. As a result of all this, the entire process of scientific communication has benefitted.

The Person

"A pioneer in the field of information science, he has uniquely combined the seeking of a scientist, the knowledge of an information professional, and the acumen of a businessman. He has succeeded in developing and applying basic, user-oriented innovations to the solution of scientific and technical information problems. He has provided basic objective methodologies for the evaluation of scientific progress and the guidance of science policy. His pioneering work in the design and development of chemical notation systems, citation indexes, and table of contents services has had and will continue to have a significant and far-reaching impact on the everyday information and communication activities of the world-wide scholarly community and on the field of information science."

Citation from the 1975 Award of Merit of the American Society for Information Science given to Eugene Garfield.

Dr. Garfield has frequently had to fight uphill battles to achieve acceptance of his innovative ideas. He has accomplished this through extensive user education efforts and progressive promotional and distribution techniques seldom employed by other information organizations.

One example of this is his qualitative rather than quantitative approach to covering the literature. Ignoring conventional wisdom of the times, Dr. Garfield decided early on that it was not necessary to cover all the literature to offer effective information services. He realized that by covering only that portion of the literature which is significant, it is possible to produce cost-effective services that are viable in the marketplace without subsidy. Accordingly, he has continuously called out the shortcomings of information services sponsored by government and professional societies as they became unresponsive to user needs and unnecessarily

expensive. Furthermore, his constructive criticisms of his competitors have made the information industry flourish.

Needless to say these efforts have not always won him the friendship of those in "high places." As a result he has generally been excluded from deliberations concerning the establishment of regional and national scientific information networks. Nevertheless, as the attached biography shows, whenever called upon he has been more than willing to serve on countless committees and task forces.

In trying to describe the nature of Dr. Garfield, Joshua Lederberg said:

"I have never ceased to be amazed at the energy Gene has been able to exert to make his dreams into a tangible reality in a way that has already altered both our practice and concept of scientific communication today."

Dr. Garfield's "dreams" about improved access to medical information go back at least twenty-five years to the little-known part he played in developing the Medical Subject Heading (MESH) authority list and the MEDLARS (now MEDLINE) service. Since then, he has continued to turn dreams into realities through his own work and through his leadership of those at his Institute. The result is that all of us who work in the medical professions are better able to render our own services.