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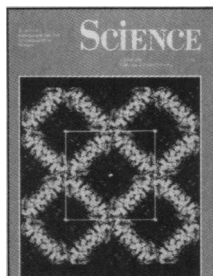
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**COVER** The arrangement of the electron density in a tetragonal crystal of human serum albumin. Prominent features of the molecular packing arrangement are large (90 Å by 90 Å) solvent channels (shown in purple) that pass through the crystal parallel to the crystallographic c-axis. The unit cell and symmetry operations parallel to the c-axis are illustrated. See page 1195. [D. C. Carter *et al.*, NASA, Space Sciences Laboratory, Code ES76, Marshall Space Flight Center, AL 35612]

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## Combating High Journal Costs

The number of journals devoted to science and medicine continues to expand, and their cost to libraries has escalated. Librarians have complained for many years about the phenomenon and have found it necessary to make painful curtailments of expenditures for other periodicals, books, salaries, and equipment. In their travail they earlier had few allies and were not well organized to deal with the mounting problems.

But librarians are now more effectively united and are finding allies among scientists and among chancellors of universities. Perhaps most important, they have identified major contributors to their financial problems—the international commercial publishers. These companies now print much of the scientific literature and in many specialties hold monopolistic positions. A series of recent studies concluded that the companies have exploited their business opportunities to raise prices much faster than inflation.

Another factor influencing a revolt against monopolistic pricing is growing recognition that some high-priced journals have little impact. That is, the average number of citations listed in the *Science Citation Index* to past articles may be small.

Henry Barschall, a retired professor of physics at the University of Wisconsin, has surveyed the “cost effectiveness” of about 200 journals related to his discipline.\* He found that the cost per 1000 characters varied from 0.39 cents to 31 cents. The ratio of cost to impact varied from 0.63 to 54, that is, by a factor of 850. Articles in some of the high-priced journals each received, on average, less than one citation. The group of journals published by the American Physical Society had on average a “cost effectiveness” more than 12 times that of the best group averages for any of several major publishing houses.

The present situation has developed during more than 35 years, and scientists have been partly responsible. In the earlier days, most scientific publishing was conducted by the scientific societies. But some of the societies and their editors were slow to recognize new developing fields, thus creating an opportunity for private enterprise. Many of the societies in effect levied page charges. The companies did not, and they quickly came to have an important role in publishing exciting new material. The scientists also demanded that libraries subscribe to the new journals. Thus a monopolistic position was established, and librarians later found they were paying huge prices for the subscriptions.

A study commissioned by the Association of Research Libraries (ARL) and recently released† has noted that the phenomenon of escalating costs has created a crisis for its members. The study also points to the “key role of commercial, profit-seeking publishers, especially the international publishers.” The study makes a number of recommendations for action. One is for the development of publisher- and subject-specific cost indexes for critical serial titles and for a mechanism to maintain and distribute such indexes.

Another recommendation is that the ARL should strongly advocate the transfer of publication of research results from serials produced by commercial publishers to existing noncommercial channels. The study also recommended that ARL should encourage the creation of innovative nonprofit alternatives to traditional commercial publishers. The study points out that most research that is published is supported by public funds, but that a large proportion of the research results must be purchased from commercial channels. As a step toward remedying this anomaly, it was recommended that ARL urge university and granting agencies to explore the feasibility of making publication through a noncommercial channel the preferred means for reporting the results of publicly funded research. The study also urged ARL to present its position to the House and Senate committees specifically involved in the funding of the federal granting agencies.

The study also recommends a major effort to minimize pressures for excessive publication. This goal could be achieved only slowly. However, the proposal to give publicity to the poor “cost effectiveness” and lack of impact of some of the international journals could have substantial effects, and soon. Libraries would have a basis for choice of serials to cancel. Scientists would become more aware of the obscurity that their papers might encounter. Granting agencies and universities would have a yardstick for measuring and discounting the likely impact of grantees’ publications.—PHILIP H. ABELSON

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\*H. H. Barschall, *Physics Today* 41, 56 (1988). † Association of Research Libraries, “Report of the Association of Research Libraries Project on Serial Prices” (Washington, DC, June 1989).