SCIENTIFIC JOURNALS—WHITHER OR WITHER?

Since mid-Summer, I have been acutely aware of an increasing concern by many chemists with the scientific journal structure. This concern has been expressed in terms of dissatisfaction with the growth of the journal literature and with the failure of scientific journals, including the abstract journals, to escape from their commitment to the past. Publishers of journals are expressing concern with rising costs and decreasing revenue (subscription and advertising). Authors, for the most part, have not become involved to any appreciable extent, although they might prefer a faster publication schedule and less interference from the editor and reviewers.

In addition to the three parameters, reader, author, and publisher, there is another: science, which, in my opinion, is the most important of the four. The force and meaning of science lies in its journal literature. A scientist's research and discoveries are meaningless if not based on the past scientific achievements of others as reported in the evolving journal literature. There is a journal literature because the primary occupation of scientists is the obtaining of facts, and it is these facts, which were the results of experiments and observations, that constitute the journal literature. And it is in and through this literature that scientists inform their professional colleagues of the results of their continuing research. It is the cumulating facts in the literature on which other scientists formulate hypotheses and theories, and advance the frontiers of science. It is the empirical facts in the literature by means of which scientists resolve ambiguities and find solutions to problems. It is the evolving journal literature that allows a scientist to maintain his professional growth and increase his knowledge beyond the limits of his education. To be the world's expert and authority in a narrow field and in which there is no research activity is like being a blacksmith on Interstate-95.

It is difficult for me to conceive of any science without a journal literature. I find it equally difficult to understand how a scientist can remain a scientist without being a constant reader of the journal literature. And, to a certain degree, a scientist cannot remain a scientist without contributing to his journal literature. A man becomes a scientist for a variety of reasons: he wants to be useful, but he cannot be useful in science unless he has knowledge; he enjoys the excitement of experimenting and exploring, but he cannot experiment and explore meaningfully unless he knows what has been experimented and explored; he hopes to find order in the results of his work, but he cannot unless he knows where order is not yet achieved; he desires to test established knowledge, but he cannot unless he knows the established knowledge. A scientist is nurtured by his literature.

I would be concerned if the chemical journal literature were not growing. A mature science is dominated by text books. A growing and viable science moves too rapidly to be significantly based on text books; it must move primarily through an active journal literature.

Nevertheless, it is fair to ask: "If we did not already have the journal structure we do, what should the structure be?" There may be many answers to this question depending upon our frame of reference: the reader, author, publisher, or the science.

If journal publishing were like any other business enterprise, the publisher would find out what the readers want, and provide it. But journal publishing is not like any other business. Because scientific journals evolved through shared attitudes and values of research scientists, there is a feeling within the scientific community that the scientific literature grows to accommodate what authors choose to write. This feeling, however, is not based on fact as authors are readers first and authors second. Nor is the journal literature dominated by the kind of work most scientists do, for most scientists are not authors.

Readers of scientific journals are not a uniform class. Indeed, no scientist is consistent in his reading of the journal literature primarily because his needs are not constant. We know little about how and why scientists read the journal literature, and we certainly do not know what he wants. We do know, however, that scientists need to read their literature, if they are to grow professionally.

This is not to say that the style and format of journal articles are sacrosanct. There will be changes as there have been changes, even though the resistance to change is great. But what to change, how to change, and when to change are not easy questions. Those of us who insist on easy and simple answers tend to aggravate the problem, whereas we should be directing our energies to finding out what the problems really are. Then, rather than solving problems we can solve, we might solve those that need to be solved.

HERMAN SKOLNIK