

by the American Physical Society—for instance, “Physical Review Letters”—the journals published by the American Physical Society, the “Journal of the American Chemical Society,” and several other journals in that family.

A journal that is peer reviewed is an authentic journal. One that receives papers that are just accepted by an editor is a sort of second rate operation.

Now, each paper submitted to “Science,” is reviewed by at least two reviewers. We receive approximately 5,000 manuscripts for review a year, so that involves obtaining about 10,000 reviews.

Senator NELSON. How many?

Mr. RINGLE. About 10,000 reviews for 5,000 papers.

We maintain an active file of approximately 8,000 scientists who review papers for us. This file changes. Some people are discarded as reviewers. Additional reviewers are added every year.

Basically, what we want to find out by peer review is “Are the findings reported supported by the evidence in the paper?” In other words, is the paper technically sound?

Now, besides that, to select from all of these papers that we receive, we want to find out if the findings are significant. Does it make a real advance in the field? Has the author given adequate and fair reference to the related work of others? Are his conclusions supported by the evidence in this paper and other published evidence?

That basically is what the peer review system is.

Senator NELSON. Thank you.

Mr. SCHERAGO. The tremendous strides in science and medicine of the last 100 years would not have been possible without strict adherence to peer review and the use of society journals as a means of communicating peer reviewed information to other scientists.

I would like to emphasize that once a piece of scientific work is published in a peer review journal, it becomes forever a part of the archives of science. Consequently, peer review or society journals are often referred to as archival or scholarly journals. Most archival journals are published by nonprofit medical or scientific societies. This is mainly because commercial publishing firms have found that it is very difficult to make a profit with peer review journals.

I think that this committee should know that peer review journals as a group are in serious financial difficulty, so much so, in fact, that more and more meetings are being held by society journal editors to discuss the problem. One such symposium took place at the annual meeting of the American Association for the Advancement of Science, the largest scientific society in the world, in February of this year.

In a paper delivered to this meeting, Robert Day, managing editor of the publications of the American Society for Microbiology, made this statement, and I quote:

But will the current trend of rising costs continue? If they do, the scientific journal as we know it today, that is, a package of research papers which is distributed each month directly into the hands of many of the scientists who are peers of the authors and into virtually all of the departments and laboratories involved with similar research will no longer be endangered; it will be extinct.