eigner will be able to understand this sentence from a medical paper on blood grouping, "The grouping sera may be prepared by immunizing rabbits and drying and using them in the powdered form," but why should he have to stop and straighten out such a statement?

Editors of scientific writing, whether technical reports, research papers, books, or popular articles, have obligations to both author and reader. For the sake of the reader, the editor must help the author to say what he means in the simplest way; to eschew jargon when it is merely high sounding, for then it is bad jargon; to use technical terms in technical writing when they lead to clearness and conciseness, for this is good jargon; to recognize the advantages of acquiring "the habit of paying all words the compliment of respecting their peculiarities." Good writing comes hard, but the gain is worth the labor. There is sound advice in the words of Isaac Watts:

> Smooth be your style, and plain and natural,
> To strike the sons of Wapping or Whitehall.
> While others think this easy to attain,
> Let them but try, and with their utmost pain
> They 'll sweat and strive to imitate in vain.

Publishing as Applied Science

Ralph B. Smith

McGraw-Hill Publishing Company, New York

The advancement of science depends upon publications that keep scientists in communication with one another. The advancement of civilization depends upon publications that keep the rest of mankind in communication with scientists.

If such verdicts tempt you to a good yawn, can I stop it with an accusation: That our publications often overlook their own dependence upon some of the science that they communicate. I feel that I am in a particularly good spot to see that publishing must apply science to its own job and that this application must go far beyond the mechanical and chemical processes which put that job into print.

I work for 27 publications that are read principally in the United States and eight publications that are read only in foreign countries, four of them in foreign languages. Dealing wholly with the world's work, not one of them offers a reader escape from his work. They provide entertainment only if they lapse into entertaining errors. No professional society lassos an audience for the words of any one of them—not a sinful practice, but not a practice at all in our case. Not one of them enjoys a franchise to channel to its reader group through its pages all the wisdom of the research or convention papers that emanate from the wise men of that group. Most decisive, not one of these publications may put into its audience a single customer who has not paid to come in and who cannot go out if he does not like the show. This is true for the whole line—from *Business Week* with its 250,000 readers to *Electrical Wholesaling* with its 9000—from the "horizontal" papers, such as *Electronics* or *Product Engineering,* to the "verticals," such as *Coal Age* or *Textile World.*

This is free enterprise with a vengeance. It is free of any protection against bankruptcy if its editors fail to ascertain what selection of content and what choice of presentation techniques will bring into their show enough of the people and only the people who should be there. It is no enterprise in which to play hunches, gamble on sheer editorial intuition, trust to tradition, or bet that habits do not change.

Nor is any business, industrial, professional, engineering, or science publishing enterprise whose journals are not simply given away to people on its advertisers' prospect lists. The cold facts that, perhaps, hit us first in our exposed position must also blow upon the somewhat less naked society and institutional publications. Indeed, I imagine that an ill-wind blowing upon them from some quarter of reader-discontent can be noisier, if not more disturbing, than the quiet dropping of renewal percentages that has been our historic warning of trouble. I am told that hell hath no fury like a dues-paying professional society member grown scornful of his society publication.

But complaints and cancellations come too late, and their absence is no proof that we are being read today —much less that we shall be read 5 years from today.

We are all meeting new competition for time—from new channels of communication and from new distractions. Our news trickles through a rising flood of information from other sources. Our readers are harassed by an acceleration of the tempo of living and of the rate of change. This is an unconventional world in which to do the conventional publishing job, and the whole situation seems to be forcing upon us—despite our present unprecedented success—the question of how much we know *scientifically* about *what* our readers now want of us and *how* they want it.

We at McGraw-Hill believe that we still have a lot to learn and a lot that we can learn by applying scientific research to reading. For a long time, we have been sending out Research Department interviewers to ask scientifically selected samples of our "populations" what they have read and what they have skipped in particular issues of our magazines; then calculating how all the pages of these issues stack up in relative headline-readership, starting-readership, and complete readership; then collating our information to determine how results for every page were influenced by type of content, by technique of presentation, and by classification of reader. We are now proceeding to code our accumulation of such data on punch-cards under a great variety of categories to get better and faster answers.

Our individual magazines are—and long have been —supplementing such reader-traffic field-studies by somewhat less valid, but still suggestive, mail surveys that poll readers on the relative interest of their various articles and departments.

We are also engaged in split-run experiments. This rather new research technique involves splitting the

press run of an issue of a publication to present the same editorial material in one way to one group of subscribers, in another way to a comparable group. Then we send out our Research Department interviewers to collect information on the readership of the issues on each side of the split. They tell us whether one version of the varied material gets more attention than the other. By varying the presentation of as many as six articles or departments in a single issue and by supplementing field interviews by mail surveys and by preference studies, in which we ask readers to choose between the two versions of the same material reprinted side-by-side, we check this experimentation from every angle.

We also devise specialized types of research to serve narrower purposes: to test our magazines against their competitors; to explore the potentialities of a projected new publication, or the value of expanding an existing one into a new field or of splitting an existing magazine; for example, *Product Engineering* was born for design engineers from *American Machinist,* our metalworking publication.

I have had to draw on my own experience for illustrations in support of a plea for the application of science to publishing. It would take more space than is available to record the pioneer work along the same lines for which some other publishers—notably in the general magazine field—should be given the credit. Reciting the full history of our own false starts and trials and errors, which leaves me with a feeling that we are only just beginning to make research pay off, would also take too much space, but the job that can be done is ahead of all of us.

If it is true that the eye-camera, the one-way mirror, split-run experiments, the use of specialized techniques to determine reader-preferences, reader-traffic surveying, and informed application of functional logic to editorial presentation are establishing scientifically verifiable facts about how readers react to content, how articles should be structured, illustration handled, and display editing used to the best advantage, what does this mean to the editor?

It means that editing is acquiring that body of learning which marks a true profession. It means that, however much our sources of information or our contributors may know about *their* subject matter which *we* edit, we stand to know much more than they do about when, where, and above all how it should be presented to the reader. It means that, if we can establish our right to their respect for this superior professional knowledge, we must demand that respect or sacrifice our integrity.

Conversely, it means that, in the face of the evidence, the expert in any subject matter with which we deal in our publications need not feel that he is sacrificing some integrity by an admission that he can be even drastically rewritten, or have his illustrations reworked, or his approach changed, or his headings reworded. It is my hope that science, in our hands, can bring him willingly, even eagerly, to such a conclusion, to the greater service of greater numbers of readers who need his help and ours.

News and Notes

Science News

Organizations throughout the nation are celebrating the **100th anniversary of the founding of the profession of entomology in the United States.** In 1854, the first two entomologists ever employed in this country were appointed, one by the Federal Government and one by New York State: Towend Glover was assigned to the U.S. Patent Office where he studied insects that attack orange trees and cotton; and Asa Fitch, employed by New York State, focused his attention on its local insect problems. From these small beginnings, the profession has grown until there are now 4500 men and women engaged in the science of insect control in the United States.

Atomic particles passing near to an **atom's nucleus** set up undulations over the nucleus surface; similarly, the moon regulates tides on the earth. Clyde McClelland and Hans Mark, working under Clark Goodman, associate professor of physics at Massachusetts Institute of Technology, have discovered that the waves on the nucleus surface take the shape of bulges that travel around the nucleus at definite speeds. The research group has found that tungsten nuclei absorb little energy when accelerated through 1 megavolt in an electrostatic generator; the energy absorbed appeared as pure rotational energy. The investigation is being sponsored by the Office of Naval Research and the Atomic Energy Commission.

High manufacturing costs in the publishing field make it increasingly difficult to place manuscripts likely to have a limited sale. Big commercial houses are more and more unwilling to risk financial loss and university presses, which were once the recourse of the scholar, find it necessary to ask for large subventions and guarantees. The **International Scholars Forum,** sponsors of a series of books by American scholars, has been organized in the belief that many first-rate manuscripts are circulating in vain search for a publisher. Publishing costs are much lower on the European continent than in this country; but unfortunately, American authors do not know much about European publishers, and these publishers, for their part, find it difficult to evaluate the American manuscripts submitted to them. The Advisory Board of the International Scholars Forum has therefore entered into an agreement with Martinus Nijhoff of