Technical Editing and Writing in the Chemical Industry

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One of the tasks falling under the general category of information services is that of editing, and even writing from raw material, reports and other technical documents for the "bench" scientist. In a sense, there is nothing new about either technical writing or editing. Any writer of a scientific article, whether or not he is the original investigator, can properly be called a technical writer—and editors are a breed of people that have been around for a long time, those concerned with the editing of scientific material being properly called *technical* editors.

Not so long ago the title *technical editor* was usually associated with a person who had an office in a publishing house—or who was on the staff of one of the technical journals. The only time a scientist had any business with one of these people was when he submitted a manuscript or a paper for publication. In the last ten years, however, industry, unwilling to accept second-best written material for its own use, has taken to hiring technical editors to *assist* scientists with their writing. Some companies have even gone farther than this and hired technical writers, who entirely relieve the scientist or engineer of the responsibility of writing. The argument usually offered to support this latter practice is that it is not economical to have a number of highly paid research people spend their time writing when one capable writer can do it for them. The validity of this argument probably never will be thoroughly tested. The very fact that technical writers are being used in industry, however, seems to indicate that there must be some advantage to this method of disposing of the writing problem.

Technical writing and editing, as a separate discipline, probably found its initial impetus in the "hardware" industries, and has gained acceptance somewhat more slowly in the chemical industry. In the final years of World War II, manufacturers of electronic equipment were supplying the Air Forces (Army and Navy) with airborne radar devices at an almost unbelievable rate. Time did not always permit manufacturers of this equipment to supply with it adequate written instructions for assembly and operation. The result was that a great deal of "on the spot" circuit tracing had to be done, and correct operating procedures often had to be determined "in the air."

A need arose for technically trained people who could take information on the operation and maintenance of electronic equipment, organize it, and write it up in readable form for inclusion in training manuals. Most of the time the people who had the necessary degree of technical training for this kind of work lacked sufficient facility with the language to enable them to write about what they knew. It was an unfortunate situation. In desperation, the military authorities began offering commissions and high-paying civil-service jobs to college English professors and instructors to help fill this need. These men, it was true, were short-suited in technical training and ability, but many of them had enough native intelligence so that with some assistance from technically trained personnel they were able to produce enough training material for the Services to "squeeze by on."

Today the need for technical writers in specialized fields is even greater. Job opportunities range all the way from such prosaic tasks as describing how to assemble a lawnmower stocked by Sears, Roebuck to setting down procedures for the assembly and operation of some of the highly complex electronic gear used to launch and track artificial satellites. The requisite skills for these writing assignments range over an equally broad spectrum, and parallel those in research and development—from the technician level to the professional engineer or scientist.

Nor is the need for this type of personnel confined to the "hardware" industries. Increased competition in the chemical industry has placed additional emphasis on improved services to customers. Sales-service groups in large chemical companies allocate sizable portions of their budgets to the preparation of attractively designed product bulletins describing multiple uses for products which are sold in bulk form. These bulletins contain such specialized information as important specifications, correct handling procedures, and necessary safety precautions. Persons adept at preparing suitable copy for this type of material are in short supply. Since literature of this sort is directed at engineering and scientific personnel, it is highly desirable that it be prepared by writers who have at least a bachelor's degree in engineering or one of the physical sciences.

Writers of advertising copy, as well as those who produce editorial content for the many publications issued by the public relations departments of large companies, often refer to themselves as technical writers. There is a basic difference, however, between writing which has as its main object the extolling of product quality, and writing of the more objective sort, which purports only to inform—by the use of precise, unemotional language. No one can stop advertising copy writers from calling themselves technical writers. The tenor of most advertising copy, however, makes one wonder if the word technical is not being used slightly out of place when applied to the creators of some of this material. A series of ads prepared recently by Esso Research, and appearing in *Chemical and Engineering News* (see, for example, the issue for March 20, 1961, 1. 110) have helped greatly to set a new standard of excellence for technical advertising. On each ad, the statement, "adapted from a scientist's

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notes" appears in italics. The copy has the sound, at least, of being factual rather than fictional, and is directed at a technical audience. I don't know what the "pulling power" of such ads might be, but they are certainly a breath of fresh air in the stagnant atmosphere of exaggerated, and often false, claims. If this standard is to be maintained, more technically trained people will be needed in advertising in the chemical industry.

The technical writing business has been too juicy a plum for many consulting firms to pass up. And, like many an advertising copy writer, some technical writers have had dreams of starting their own agencies. For a not-too-modest fee, these firms will provide a staff of writers to undertake almost any writing assignment. Many industrial organizations prefer to deal with such an agency rather than attempt to train their own writers—particularly if the writing must conform to Government specifications. The agency then assumes all the risk associated with writing to Government "specs." If a company choosing to avail itself of this type of writing service employs a technical editor, this person can serve a liaison function between the agency and his own company, thus seeing to it that the interests of his company are protected. The services of technical writers, therefore, if they are needed on a large scale, can be obtained when and as needed, and they need not be paid for on a year-round basis. Several organizations in New York City specialize in the preparation of brochures and technical bulletins for the chemical industry. For a small company this type of service may be the answer

The use of technical writers to prepare research reports for scientists raises a few questions of a much more serious nature. What are the ethics of such a practice and how does it affect the professional status of the researcher? For it can certainly be asked: If the significance of research is to be reported and interpreted by one who has not participated in the experimental work, from information received secondhand, who is to be given credit for creativity? The meaning of "creativity" in common usage has become less and less clear. But it seems to correspond, in part at least, to the idea of fullness and to the *completion* of effort.

Conscientious and painstaking research people probably will resist any movement in the direction of having their reports written by others—the less conscientious may not. The research scientist deserves considerable help with his writing problems, but I believe that any attempt to entirely unburden him of these matters can result only in a restriction of his own usefulness to himself and, eventually, to his company.

Assistance in the discovery and communication of meaning, however, can ethically be given to a research scientist by another person—especially by a person *trained* to look for meaning in written material. It is this sort of thing that the technical editor tries to do for writers of research reports. Technical editors can, and do, serve a useful function in the research laboratories of the chemical industry, although, as in the case of the technical writer, they probably are not as prevalent as in other industries.

The extent to which an editor is able to *assist* a given writer is, of course, limited by his knowledge of the author's subject. But as he gains experience from reading hundreds of reports, the technical editor learns to make exact and helpful queries based primarily on the principles of logic, syntax, and rhetoric. Such queries, if taken in the proper spirit, can often lead the writer to a clearer statement of his own meaning. However, it is not enough for an editor just to indicate that a given piece of technical writing is unsatisfactory in some respect. The technical editor in industry is unable to dismiss an unsatisfactory report with the customary short, but polite, note of rejection used by the editors of scientific journals. One of the primary skills associated with the critical reading of technical writing in an industrial concern, therefore, is an ability to propose ways in which it can be improved. Rewriting portions of a weak section in a report is an ideal way of illustrating an improved form. This can and should be done from time to time. For one editor to offer this kind of assistance as a regular service to *every* scientist in a large research organization is, of course, neither practical nor possible. Nevertheless, while he is not expected to serve as a scribe or literary valet for the research scientist, the technical editor's general writing ability should certainly exceed that of all others in the organization of which he is a part.

I spend much more time now than I used to helping individual members of our research staff write for easy, informative reading. It is always my hope, however, that once I have put a philosophy and basic approach across, the engineer will be inspired to take up pen or pencil and help himself, for this is evidence that I have been able to generate some interest and enthusiasm for a task that is so often looked upon as an unrewarding chore. It is this role as a catalyst that I find most satisfying.

The editor should never lose sight of the fact that in the research laboratory he fulfills a service function. Yet, to serve well he must do so with some authority—if only of a practical sort. This means that in the case of controversy over generally accepted editorial practices he must be assured of the full support of management. An editor who finds it necessary to make too frequent use of this type of authority, however, had better examine his own system, for good will is not built by engaging in daily battles with research personnel.

The degree of responsibility to be assumed by the technical editor in his review of written material for internal and external distribution is a management decision and should be well-defined. Some responsibility for the correctness and accuracy of technical material should be accepted by the editor, and in this respect his value to an organization increases with each year of experience.

In addition to greatly reducing the amount of time that must be spent by research personnel, supervision, and management in writing and reviewing miscellaneous technical documents intended for wide distribution, the editor is responsible for seeing to it that a balance of quality and economy is maintained in obtaining printed copies of this material. Such matters can be delegated to an editorial assistant, as can the mechanics of grammar, punctuation, and format which fall in the general category of proofreading. Ideally, this person should have some familiarity with the symbolism of mathematics and chemistry.

Training is another important assignment. From time to time I have given short courses in report writing. Success in this activity has always depended upon the degree to which I have been able to detach myself from

the actual conduct of the course and the extent to which I have been able to elicit discussion from the participants. These sessions have been limited to about eight engineers at a time, and have dealt primarily with the writing of summary-type items. Each participant is asked to prepare a short write-up describing the nature and significance of one of his active research projects. These are then interchanged, read, and their merits or shortcomings as a piece of scientific writing openly discussed by the group. At times the cross-fire gets quite intense. I serve primarily to keep the discussion on course.

The editing of papers for external publication has long been an editorial service. One might ask why it is necessary to edit papers for submission to journals that have their own editorial staffs. Aside from the desirability of maintaining a consistently high standard in papers that are released from a research laboratory, there is the fact that a well-edited paper stands a much better chance of being published as written. Authors also receive the benefit of having the majority of necessary corrections made by a person who is more familiar with the work reported than a staff editor of a journal; this saves the author the time that would be required to decipher numerous cryptic queries made on galley proofs. Finally, there is a need for someone to check on editorial matters related to Company policy. Words and phrases which have meanings that are clearly identifiable by the technical community sometimes acquire strange new implications when they are used out of context.

Only recently I have been exposed to the rigors of writing proposals to obtain government contracts. Many papers have been given on the subject of proposal writing, so I will have very little to say about it here. In the past ten years, millions of words and dollars have been poured into these documents by industry and academic institutions. Unfortunately, because of the conjectural nature of most of this material, very little of it will ever reappear in the scientific literature. This seems like an appalling waste in the face of the very great shortage of technical talent. Still, without the assistance of professional writers and editors in this costly guessing game, technical personnel would be subjected to a much greater drain on their time. One can only hope that in the future some better system of letting government contracts can be found that will allow the efforts of all concerned to be employed more gainfully.

The government proposal is typical of a style of technical writing that is done for a very highly specialized and limited audience. In this same category is the patent memorandum, which in effect is prepared for reading by *one* person—the patent attorney, who will eventually use it to prepare a patent application. With the increased emphasis on new products and diversification in the chemical industry these documents have become quite important. The problems encountered in their preparation are very much the same as in report writing. Somehow, technical information which exists in an amorphous, and often incomplete, form must be transferred to paper as a well-organized and logical argument. As in the case of report writing, there is no single formula for achieving this goal. The patent liaison man, who is a very special sort of technical writer or editor, employs many devices to extract the necessary information from the aspirant inventor. This is a relatively new area of activity for me, in which I have been engaged only part time. I still haven't decided on the most effective method of operation. But it seems only reasonable to approach the writing of a patent memorandum in the same manner that one would produce a report. An outline or rough draft is needed first. Hopefully, this can be supplied by the inventor, after preliminary discussions with the patent liaison man. The final draft, it seems, should be solely the reponsibility of the patent liaison man, who is better acquainted with the technical qualifications and needs of the attorney.

I have skimmed very briefly over several of the services provided research personnel by technical editors. They constitute a fair sampling of the duties attendant upon this relatively new specialty, and the degree of flexibility that they require. Compared to other types of scientific employment, technical editing affords an excellent opportunity to keep abreast of the constantly changing scientific scene. It is the only field that I know of which offers this advantage in these days of increasing specialization. As the different scientific disciplines continue to subdivide and become even narrower in scope, more and more people will be needed who can gather, summarize, and interpret the information developed by many workers. I heartily commend the fields of technical writing and editing to young engineering and scientific graduates.