

## Symposium on the Literature Chemist in the Chemical Industry\*

By HERMAN SKOLNIK

Research Center, Hercules Powder Company Wilmington, Delaware

Received January 13, 1962

This symposium is unique in the annals of Chemical Documentation. It is the first time that a group of experts in chemical documentation is talking to a group of experts in chemical education. It is our hope that the "talking to" evolves into a "talking with" by the end of the panel discussion which follows this symposium.

Chemical documentation is a relatively new discipline of chemistry. It has no roots in colleges or universities. We must go to the chemical industry to define and to explain the importance of chemical documentation and the literature chemist, the chemist who has adopted chemical documentation as a field of specialization.

Historically, chemical documentation and the literature chemist have arisen in response to the challenges of the size, growth, and complexity of the chemical literature. I like to define chemical documentation as the art and science of putting information to work or alternatively, as the application of the knowledge of documentation to the solving of problems in chemistry. Both definitions require some elaboration.

The art and science of putting information to work and the knowledge of documentation are concerned with (1) selecting and obtaining documents, (2) organizing documents and designing systems for retrieving the information in them, (3) the manipulation of information into concepts and a body of knowledge, and (4) the communication of the information to those who need it.

A literature chemist is a B.S. chemist or chemical engineer or an M.S. or Ph.D. organic chemist, physical chemist, or chemical engineer by education, training, and

experience. He is a literature chemist by adoption and by the acquirement of more than a modest skill in and knowledge of the following:

1. His native language
2. Several foreign languages
3. Information sources and services throughout the world
4. Chemical nomenclature
5. Indexing systems and their design
6. Classification systems and their design
7. Data handling equipment and systems
8. Communication equipment and systems

Most importantly, the literature chemist must have a broad knowledge of chemistry and be an expert in at least one area of chemistry.

These skills and areas of knowledge are the prerequisites to the art and science of putting information to work. They are not possessed in equal measure by all literature chemists any more than are the skills and areas of knowledge of organic chemistry possessed by all organic chemists. A literature chemist, however, must be an expert in one or more of these areas and have these skills and be knowledgeable in the other areas at least to the extent that every chemist should.

This symposium describes the literature chemist from six viewpoints, that of the translator, patent chemist, technical editor, abstractor and indexer, literature research chemist, and documentation research chemist. There are other viewpoints, of course, but with these six we hope to tell you what a literature chemist is, what he does, and the importance of his skills and knowledge in the world of chemistry.

\* Presented at the Fourth Delaware Valley Regional Meeting, American Chemical Society, January 25, 1962, Philadelphia, Penna.

## The Chemical Translator

By BENN E. CLOUSER

Research Center, Hercules Powder Company, Wilmington, Delaware

Received February 12, 1962

The chemical translator is a chemist who specializes in translating. As a chemist he is a product of our educational system. As a translator, he is a product of his own design and scholarship, for, in general, he has not been exposed to a greater formal education in languages than that of his scientific peers. Thus he is a chemist who is different merely in doing full time and for the benefit of others what most chemists do only occasionally to satisfy their own information needs.

To his colleagues, the chemical translator is a fellow chemist with special interests and skills which supplement their own. Consequently, it is not surprising that he is effectively employed in an industrial environment where his language ability serves to bring information directly to laboratory chemists who need it and use it. There is a gratifying and valuable feedback from this relationship between the translator and the laboratory chemist. Although the translator's satisfaction derives mainly from his linguistic accomplishments, he is a chemist, who can appreciate the value of his contribution when he sees it used on the operating level. Most importantly, any

\* Presented at the Fourth Delaware Valley Regional Meeting, American Chemical Society, January 25, 1962, Philadelphia, Penna.

colleague whose time is more profitably spent in other activities benefits from his skills, including other literature chemists.

To management, the chemical translator is the solution to a problem. Somebody who cannot read the original language of a document needs the information in it, and to have it translated is cheaper than to do without the information or to rediscover it in the laboratory.

**What the Translator Does.**—The translator in the chemical industry uses linguistic skills and chemical knowledge to translate the foreign-language chemical literature. His choice of techniques is oral translating directly to the chemist, handwriting, typing, or dictating. Oral translations can be recorded on tape; dictating can be to a stenographer writing shorthand or typing or to a dictating machine.

As the translator extends his function as a linguist, other productive activities are open to him. In his industrial environment, teaching is a concomitant function of the translator both in the training of other translators and the development of latent linguistic talent in other chemists. A related function in the scientific tradition is to pass on his knowledge and skill in the form of textbooks such as J. W. Perry's "Scientific Russian," and dictionaries such as A. M. Patterson's "German-English Dictionary for Chemists," and other publications. The translator, who makes his living learning and using languages, will naturally be consulted by his colleagues who have language problems.

The dual nature of the chemical translator's world further helps in extending his usefulness. As a chemist, he is the logical person to abstract or index the foreign-language literature for his nonlinguistic colleagues. With a chemist's attitudes and in the research environment, he has the opportunity and duty to improve the equipment, methods, and techniques of his profession by research and creative effort.

The tools of the technical translator have not reached the stage of development enjoyed by his brother scientific specialists, for example, the physical-analytical specialist with his polarographic, spectroscopic, and chromatographic apparatus, or even the information specialist with his punched cards, computers, and indexes. However, research is in progress on the possibilities of machine translation. In all probability the translating machine, like the polarograph or spectroscope, will not replace the specialized scientist but will increase his range of activity and output, and permit him to give attention to more creative aspects of his work. The translator, if not actively engaged in this research, must at least keep abreast of it.

As a professional man, the translator also devotes time and energy to the activities of his professional organizations, for example, the ACS and the American Translators Association.

#### THE TRANSLATOR'S SKILLS AND KNOWLEDGE

**Linguistic Skills.**—The linguistic skills of the translator are: mastery of English and a competent reading knowledge of the language from which he is translating, *i.e.*, a wide recognition vocabulary and a working knowledge of the grammar.

By mastery of English is meant ability equivalent to that of a technical writer, with the additional requirement of being able to think in English and to have at his command the facility of expression of a native speaker of English while exposed to the stimulus of a foreign language.

To develop this ability is most difficult for the translator whose mother tongue is not English. The ability to think in the foreign tongue is not only unnecessary, it may deter or completely block translation. On the other hand, the translator whose mother tongue is English must pay careful attention to the grammar of the foreign language. In this way he compensates consciously for his inability to grasp subconsciously, as a native of the language would, the grammatical relationships among the words.

Otherwise, there is no need for the translator to have a thinking, speaking, or even writing acquaintance with the niceties of the language he is translating. Furthermore, a reading knowledge is the easiest language skill to acquire: the writer has made all the decisions and the written word awaits the reader's understanding.

In using his command of English and his reading knowledge of a foreign language, the translator differs only in motivation and degree from his laboratory colleagues. Every chemist, in the course of his education, studies one or two languages likely to be useful to him. These the laboratory chemist considers well learned if he can read them well enough to get the gist of a chemical article. The residue, from language training in many laboratory chemists, is often only an awareness of his problem and of his own reluctance to do much about it.

Those who have learned well even several languages are still only somewhat better off than their non-linguistic colleagues, for a knowledge of German is of little help to a polymer chemist who needs to know the work of Natta, *et al.*, in the Italian chemical literature.

The translator, motivated toward languages rather than toward the laboratory, finds it easy and gratifying to study and learn languages. When he has learned several languages well enough to translate them, he finds that, among similar languages, knowledge of one is synergistic in the learning of others. For example, knowledge of chemical German and English and 200 words of Swedish is adequate background for translation of Chemical Swedish.<sup>1</sup> Experience in Swedish is transferred readily to Norwegian and Danish. A key to the translator's usefulness, therefore, is his adaptability in applying his general linguistic skill to the learning of different languages as the need arises.

**Chemical Knowledge.**—The chemical translator's chemical knowledge, by education, is basically the same as that of the laboratory chemist. It is in the linguistic side of his training that he is essentially self-educated. His chemical knowledge is subject to the same variations of extent and specialization as that of the laboratory chemist. The translator's use of his chemical knowledge is different, however, and his technical growth follows a different pattern.

The translator uses his chemical knowledge to help him understand the work he is translating and to improve his communication with those for whom he is translating. First, because he serves a community of specialists, his

(1) E. van Haagen. "Advances in Chemistry Series," No. 10, 529 (1954).

knowledge will be broadened by contact with a multitude of variations on many chemical themes. Second, because the work he translates usually represents a report of research at the frontier of knowledge at the time it was written, his knowledge will be deepened as he continually seeks to understand what he is translating by returning to fundamentals of his early chemical training, by seeking relationships and associations between the familiar and the unfamiliar, and by adding to his knowledge the new facts he learns. Third, because he must communicate effectively with his readers, he will be interested in and keep up to date with the language of chemistry as it develops in all the specialities with which he comes in contact.

Whereas the laboratory chemist, who spends his time mainly seeking and doing, must make a special effort to keep in touch with the chemical world in general, the translator is surrounded by the written world of chemistry as he works. If he takes advantage of this opportunity to grow as a chemist, he becomes better able to exercise critical judgment in his translating. Selection and

rejection is most difficult for the translator in translating for the permanent record or in a broad spectrum of disciplines. Tailoring a translation to widely different specialists' needs or to the future needs of even a single specialty is a problem that is often sidestepped by a complete translation, unselective except for obvious irrelevancies, such as polemics or political eulogies. In his closer contact with research people, however, the translator may know his reader's interests and the subject matter well enough to dispense with the translation of a worthless or irrelevant article. Between these extremes the translator finds many opportunities to save time and effort with critical use of his chemical knowledge.

With this critical use of his chemical knowledge, the translator functions as a chemist first and as a linguist second. His goal is the discovery and communication of chemical information rather than the duplication of chemical literature in another language. Thus, too, he escapes the physical limits on his output as a translator by distilling the foreign-language literature to isolate its essential information.

---

## The Patent Information Chemist\*

By F. W. GLAZE, Jr.

Patent Division, Textile Fibers Department, E. I. du Pont de Nemours & Company, Wilmington, Del.

Received January 29, 1962

*A patent is to make money.* In other words, a patent is a form of property and represents money already spent in hope of money to be made. The money is not always in current dollars—frequently it is in research ideas, lead time over the competition, increased prestige and morale of the inventor. Patents are similar to any other phase of industrial research where economic advance pays the salary of all technical people.

Work with patents is a rewarding and creative experience no matter what phase of patent work the individual follows. To my mind a *PATENT INFORMATION CHEMIST* can be one of the most creative persons of all and he needs the combined talents of a competent researcher and a well-rounded businessman.

Now, let us first define our preferred species of Patent Information Chemist. His primary purpose is to be a bridge to promote the free flow of patent information and strategy to the different operational areas of technical, legal, manufacturing, and marketing. Specifically, he is a technical person who is business-oriented toward making money from patent information activities.

He is usually part of an organization which provides a service. To furnish adequate service and to handle any specific assignment he must be conversant with research, manufacturing, marketing and legal policies to insure that he can interpret his results accurately to arrive at meaningful conclusions. He is thus able to assist in the development of the short- and long-range patent strategy

that will provide the greatest profit potential for his organization. In simplest terms, the Patent Information Chemist helps you get the most mileage from the information available in the patent literature. He gives business-oriented patent information on specific problems to the people who have to live with the results. The information and conclusions must be tempered with good sound economic principles, leavened with company policies, and geared to the needs of the people requesting the information.

To help you decide on the education and training of a future "Patentee" let us look at the skills required to do a competent job in the chemical industry.

1. Education—organic or physical chemist, chemical engineer
2. Know-how of
  - a. Technology—of his employment
  - b. Economics—of business problems and research and manufacturing developments
  - c. Humanics—of winning friends and influencing people
  - d. Patents—law, terminology—a working knowledge
  - e. Company policies—and philosophies
3. Diplomatic Communicator—oral and written and to this imposing list we must add
4. Initiative and imagination, without these two ingredients our "Patentee" is just a craftsman, with them he can be an artist

In short, then, our preferred Patent Information Chemist is chemically trained and industrially seasoned.

\* Presented at the Fourth Delaware Valley Regional Meeting, American Chemical Society, January 25, 1962, Philadelphia, Penna.