the European Economic Community. At least two other countries, Canada and Germany, are considering similar programs.

There is every reason to believe that other programs, similar to these, will be developed. The driving force for such new programs most likely will be a growing awareness of the importance of technology transfer, the implementation of a Patent Cooperation Treaty, and the growth of international bodies responsible for searching and granting of regional patents. The latter will alter the role of many patent organizations by relieving them of some of their current work load.

In addition, a number of commercial databases now exist which, by virtue of their availability and flexibility, should promote the use of patent information in ways others than that for which historically it has been used. Many of these exist on-line and can be accessed in a number of ways, including categories of invention (e.g., International Patent Classifications (IPC) and/or U.S. Patent Classifications), keywords, and/or by assignees. The major limitation of these, for some studies, is the limited size of the databases. None now permit patent analysis across the whole spectrum of technology for more than a few years. As more data are added to these bases, this limitation will lessen.

We are encouraged by these other efforts. Hopefully, through these and our efforts, described above, the goal of making patent information readily accessible to the public will be realized.

LITERATURE CITED

(1) J. Schmookler, "Invention and Economic Growth", Harvard University Press, Cambridge, Mass., 1966, Chapter II.
(2) William Lawson, U.S. Patent and Trademark Office, private communication.

The Role of the American Chemical Society Committee on Patent Matters and Related Legislation†

WILLARD MARCY
Research Corporation, New York, New York 10017

Received April 20, 1977

The activities of the present Joint Board–Council Committee on Patent Matters and Related Legislation since its appointment in its present form in 1966 are summarized with particular emphasis given to those matters related to the patent literature and educational activities directed toward developing a more comprehensive understanding of the patent system and its proper use in the transfer of chemical technology. So-called patent "reform" legislation, its present status, and its possible future influence on the content of patents are discussed.

While the history of the American Chemical Society published in 1976 indicates that an ACS committee on patents has existed almost continuously since 1899, the present Joint Board–Council Committee on Patent Matters and Related Legislation held its first meeting in March 1966 with Dr. Pauline Newman as its chairman. A precursor ad hoc committee of the ACS Council, also under Dr. Newman's chairmanship, was organized in the fall of 1963 on the recommendation of the Committee on Professional Relations. The major raison d'être of the ad hoc committee stemmed from the earlier introduction into Congress of various bills to reform the patent laws. It was soon apparent to the ACS Board of Directors that continuing liaison of the ad hoc committee with members of Congress and their staffs would be necessary and that a formal Joint Board–Council Committee should be appointed. This was accomplished at a Board meeting in June 1965.

COMMITTEE CHARGE AND GOALS

The Board charged the Committee with the responsibility for advising both the Board and Council on policies and programs relating to patents. Under this charge the goal of the Committee has been "to develop programs in the area of patents and other subjects related to intellectual property that serve the intent of the patent system, as provided in the Constitution of the United States, and that encourage invention and innovation in chemistry".

In carrying out its charge with this goal in mind the Committee has been actively interested in patent legislation, patent office practice, copyright legislation and practice, licensing of patents, U.S. Government patent policy, international patent agreements, trade secret legislation, employment agreements, compensation of employed inventors, including those who made inventions when previously employed, awards to inventors, and, last but not least, publications on patent practices and the proper use of the patent system.

In studying the many facets of these subjects the Committee members have made a conscious effort to bring to their deliberations the point of view of the Society member, modified by the constantly changing requirements of society as a whole, all within the framework established by the Constitution as expressed in the implementing laws passed by Congress. This has been a tall order as the Committee members are all fallible human beings with conflicting ideals, allegiances, and opinions. Nevertheless, the Committee has accomplished a number of interesting and important tasks in its 11-year life, many of which are pertinent to the theme of today's symposium.

PATENT "REFORM"

Before discussing the Committee's role as it relates to publications and the scientific and technical literature, however, I should like to summarize briefly the present situation of patent "reform" legislation, since it has an indirect bearing on the dissemination of patented or patentable information.

As mentioned previously several bills designed to "reform" the patent system had been under Congressional consideration in the early 1960s. These bills reflected a general uneasiness

† Presented in the symposium on "Meeting the Challenges of the Changing Patent Literature", Division of Chemical Information, 173rd National Meeting of the American Chemical Society, New Orleans, La., March 21, 1977, and the 11th Middle Atlantic Regional Meeting of the American Chemical Society, Newark, Del., April 20, 1977.

about a perceived, but not real, conflict between the antitrust and restraint of trade laws and the so-called limited monopoly afforded by the patent system. In addition there was some dissatisfaction with the growing bureaucracy, which had grown to obviousness in the Patent and Trademark Office, as well as with the increasing time and cost required to obtain patents. A third major concern was the large percentage of patents declared invalid when brought into litigation. The absolute number of these was small when compared to the total patents issued (less than 1%), but critics of the system claim that this situation reflects lack of frankness by potential patentees on filing applications and a less than adequate examination in the Patent Office. With a proliferation of bills claiming to correct these real or imaginary flaws, it was only natural for the Committee to spend most of its time on studying the proposed legislation during its first few years of existence.

At first individual bills addressed specific issues, but within a few years, omnibus bills were introduced into Congress in which the various issues were addressed together in single bills. Needless to say, all shades of opinions expressed by proponents and opponents arose as to each of the issues in each of the bills. Multiple Congressional hearings were held periodically in order to bring these diverse opinions into the open for consideration. New omnibus bills were introduced into each succeeding Congress, culminating in five bills being introduced into the Senate during the last Congress which expired in 1976. During this session of Congress these five bills were consolidated into one bill which was finally passed by the Senate early in 1976. The bill was never considered by the House of Representatives, however, and thus died without enactment. The result is that patent "reform" has yet to be accomplished, and the country is still operating under a Patent Act passed over 25 years ago.

During this entire period the Committee has studied and analyzed each bill presented to Congress and has on six occasions since 1972 recommended to the ACS Board that the Society's president present the Society's views, prepared by the Committee, concerning patent legislation to the Congress. Such statements were issued in 1972, 1974, and 1975, and are published in the ACS booklets entitled "Official Public Policy Statements and Communications". In general these statements have consistently held to the thesis that the patent system over the years has successfully accomplished its primary purpose but that certain key parts of the system need strengthening to prevent the issuance of frivolous and invalid patents, to reduce the cost to inventors, and to encourage the more rapid introduction of inventions and innovations for the public benefit. The issue of conflict with antitrust and restraint of trade laws was felt by the Committee to be outside the scope of the issue of "reform" of the patent system. Study of this issue could and should be carried on in forums other than those concerned with patent legislation.

At present it is not possible to predict when patent "reform" eventually will occur, nor what form of new legislation, if any, may emerge from Congress. New bills have not yet been introduced into the present session of Congress and no action in this direction is expected for several months. For these reasons it is not possible to anticipate what changes, if any, will occur in the structure and content of the patent document itself as a result of passage of such legislation.

In the meantime the United States Patent and Trademark Office has been issuing administrative regulations relating to procedures to be practiced by patentees or their representatives. These regulations, so far, are expected to affect the nature of the patent as literature only in minor ways. Since some of these and others yet to come may well have major undesirable effects, the Committee is devoting some time to studying these regulations as they appear. The latest group of these, in fact, occupied the Committee for considerable time at its executive session held during the ACS National Meeting in New Orleans (April 1977).

I would like now to turn to matters more directly related to the topic of this symposium.

QUALITY OF PATENTS AS TECHNICAL LITERATURE

The earliest involvement of the Committee in this area was with the quality of patents as technical literature. For several years beginning in 1968 there was discussion at every meeting directed to uncovering possible ways which might be tried to improve and simplify the stilted and stylized language of patents so that they would be more readily understandable as technical and scientific literature. Several attempts were made to bring Patent Office and Chemical Abstracts practices closer together, but a mutually satisfactory way to accomplish this was not found. Concurrently, several Committee members gave considerable thought as individuals as to how the literary quality of patents could be improved, also without success. The Committee finally concluded that further effort in this direction would probably be unproductive since patents and technical and scientific papers serve different purposes and are directed to different audiences.

QUALITY OF PATENT ABSTRACTS

About the same time that the Committee addressed itself to the literary quality of patents, the Patent Office rules of practice were changed to require an abstract to the patent to be written and included at the beginning of the text of each issued patent. It was felt this abstract could then be included in the Official Gazette and serve as a short and comprehensible reference for interested readers. The abstract, however, was to be written by the patentee, or his agent, usually a patent attorney. The result was that the abstracts were frequently couched in patent or legal jargon as difficult to understand as the patent itself. To try to alleviate this problem the Committee attempted to bring the Patent Office and Chemical Abstracts together, but again with no success. The main reasons for this appeared to relate to projected high costs and lack of adequate personnel who could be relied upon to translate patent and legal jargon into technical or scientific jargon or into lay language. Today, some six or seven years later, the language of the patent abstracts appears to have improved with experience in writing them, and the technical and scientific community has adjusted its criteria, so that the problem is no longer perceived to be urgent.

PATENT ABSTRACTING

The Committee has explored with Chemical Abstracts whether adequate attention is being given to the patent literature as a source of information for Chemical Abstracts. Abstracting patents poses several problems for this journal, since, unlike technical and scientific publications, patents may contain speculative and unsubstantiated or extrapolative information which is difficult to distinguish from proven facts. A second problem is that many patents in the chemical arts have a very large amount of data which is difficult to abstract. After several discussions with Chemical Abstracts personnel it was mutually concluded that improvements could and should be made in abstracting patents, but that the problems noted probably could never be completely solved.

SEARCHING THE PATENT LITERATURE

In 1974 the U.S. Patent and Trademark Office suggested to ACS that a study be undertaken to determine whether searching the patent literature would turn up more or less references as compared with searching the technical and

scientific literature. The Committee agreed to act as a monitor for such a study and to referee, at least for a first-stage evaluation, the results of the study. It was agreed that two relatively narrow areas of technology would be searched: Nitrogen Fixation and Non-lead Antiknock Additives for Gasoline. Searching would be carried out by experienced Patent Office searchers in Washington and by the technical library staff at Universal Oil Products Corporation in Des Plaines, Ill. The searches have now been made and a report of the subcommittee assigned to evaluate the results was given at the full Committee's executive session on March 19, 1977. The conclusions will soon be available along with a recommendation for possible further activity of this nature.

DEFENSIVE PUBLICATION PROGRAM

In 1969 the U.S. Patent and Trademark Office announced a new defensive publication program. The Office had noted that an appreciable percentage of patent applications were being filed by major corporations on peripheral, secondary, or minor modifications of basic inventions in order to enlarge the scope of the basic invention, thus making it more difficult for possible competitors. Examination of these applications was taking a large amount of time with little perceived benefit to the general public or even to the patentees. The program eliminated the examination but, by publication, in essence, disclosed the subject matter, thus precluding others from obtaining patents. Provision was made for later examination if desired by the patentee. The Committee spent some time studying the merits of this program and concluded that it would probably have little beneficial effect for any participants. This has proven to be the case, since the defensive publications neither disclose important technical or scientific advances nor do they have a firm status as intellectual property as compared with patents.

INCREASING THE USE OF PATENTED TECHNOLOGY

The Committee devoted some time in 1972 endeavoring to determine whether it should play a positive role in trying to find ways to enhance the technology transfer of patented inventions. The Committee concluded that, since the matter was of very broad scope well beyond the Committee's charge or goal and since many other seemingly capable organizations and groups were being formed or were operating in this area, further consideration by the Committee was not warranted.

COPYRIGHTS

While the Committee considered the copyright situation when the proliferation of copying machines and the widespread multicopying of documents began to be an urgent issue, it felt that the necessary expertise to deal with the problem was not available in its membership, and it approved a recommendation by the Board and Council to form a Joint Board–Council Committee on Copyrights. The Board appointed the new Copyright Committee in 1969. Since that time no further study of the copyright issue has been undertaken by the Committee on Patent Matters and Related Legislation.

EDUCATIONAL ACTIVITIES

Beginning in 1966 the Committee has consistently felt it has an obligation to the ACS membership and the chemical profession to encourage the dissemination of knowledge about patents, the patent system, and its uses.

The first effort in this direction was to counsel and comment on an audio short course being developed by the ACS Department of Educational Activities. The Committee participated in the selection of the commentator and development of the script, and reviewed the tapes and accompanying text before publication. The tapes and accompanying reference text were made available publicly in 1974 under the title "Introduction to Patents".

A suggestion was made in 1971 that the Committee sponsor a symposium on patents at a national ACS meeting. The last previous time this had been done was in 1963. The papers presented at that time were compiled into a book entitled "Patents for Chemical Inventions", No. 46, Advances in Chemistry Series, published by Applied Publications, ACS. This book had become a "best seller" by ACS standards, but had also become out of date. It was thought that a new symposium might serve as a basis for a revised edition. The Committee decided that near-term timing for such a symposium was not optimum in view of the extended on-going debate on patent reform, and deferred considering arranging for such a symposium until a more appropriate later date after revision of the patent law had occurred.

The deliberation on the symposium, however, led to the notion that a different kind of book, written by a single author with the needs of the practicing chemist in mind, might be a valuable addition to the ACS publication program. This concept was accepted by the ACS Publication Department, and one of the speakers in this symposium, Dr. John T. Maynard, was engaged as author. I am happy to announce that the first draft of a very easy-reading, short but comprehensive book has now been submitted with publication expected later this year.

A symposium jointly sponsored with the Committee on Professional Relations was organized and held in April 1976 on the general topic of "Legal Rights for Chemical Scientists". The papers given at this symposium will shortly be available in book form from ACS.

In the belief that a greater intimacy and understanding of Patent Office procedures and personnel would be valuable to chemists and chemical engineers the Committee arranged for a Patent Office briefing session in September 1971. The session was well attended and was felt to be worthwhile. Since that time the Patent Office has held, on its initiative, additional periodic briefings for both professionals and the general public.

In 1975 the ACS Board authorized the establishment of a program of legislative counseling to provide information and background material relative to the profession of chemistry to all members of Congress. This program was just beginning to get underway in 1976. The Committee has furnished some information to the counselors relative to patent "reform" legislation and expects to continue providing the legislative counselors with pertinent material as appropriate in the future.

AWARDS TO INVENTORS

One of the more imaginative members of the Committee suggested in 1973 that an annual ACS Award for Creative Invention be established. The Committee felt that this award would serve both as a substantial spur to innovative research and as a well-deserved recognition of inventors in chemistry. The ACS Board agreed with this and established such an award. The ACS Corporation Associates agreed to sponsor the award for five years at the gratifying level of $2000 per year. The award was given for the fourth time at the ACS National Meeting in April 1977.

In 1974 the National Council of Patent Law Associations organized the National Inventors Hall of Fame with nomination and election to be made by over 30 national professional societies. At least one living and one deceased inventor is to be elected annually with recognition to be the installation of suitable plaques located at the Patent and Trademark Office in Arlington, Va. By direction of the ACS Board the Chairman of the Committee is designated as the ACS representative and elector. After due consideration the Committee

has selected appropriate inventors in chemistry and has provided recommendations to the Chairman as to nominations and election for this honor. As a result Charles M. Hall was elected to the Hall of Fame in the 1976 ACS Centennial year, and George Eastman and Edwin H. Land were elected in 1977.

The Department of Commerce has recently reestablished a civilian Patent Office Advisory Committee which began to function in 1976. If the life of this Advisory Committee is extended beyond its present two years, the Committee has recommended that the ACS seek to have at least one professional chemist or chemical engineer appointed to serve as a member.

OTHER ACTIVITIES

This brief summary gives an overview of the more important Committee activities related to the subject of this symposium. In addition to the items cited here the Committee has been involved in a number of other matters related to patents but which are not pertinent directly to the theme of this meeting. Of these I wish to speak briefly about two.

For some years the United States Government, along with the governments of most of the other countries having patent systems, have been working toward international cooperation on patents. A treaty has been drawn up and is being adopted slowly, the U.S. being one of the first signatories. The Committee has been following this activity and believes that the implementation of the treaty will be a constructive move leading to substantial reduction in both the cost and time required to obtain international patent coverage.

The second activity, consideration of the proper compensation for employed inventors, has been discussed in some detail at the previously mentioned April 1976 symposium on legal rights for chemical scientists. This matter is an on-going concern of the Committee with final resolution of the issue not expected for some time in the future.

Chemical Abstracts as a Patent Reference Tool†

JOHN T. MAYNARD

Elastomer Chemicals Department, E. I. du Pont de Nemours & Co., Inc., Experimental Station, Wilmington, Delaware 19898

Received April 20, 1977

Chemical Abstracts is the major permanent reference source for retrospective searching of the patent literature. Coverage is quite thorough for patents in the chemical field, although it must be recognized that CA is selective in the sense that patents are chosen for inclusion on the basis of whether new chemical information is presented. Abstracts appear about four to five months after publication. Abstracts are not repeated when equivalent patents issue in other countries than the first to publish, but a concordance is provided for newly issuing counterpart patents. CA is not as inclusive or as current as the Derwent abstract bulletins, but its permanence and widespread availability make it the principal reference tool for most people in the chemical fields.

Many chemists and chemical engineers approach the patent literature with some reluctance because they find the language and structure of patents unfamiliar and perhaps because of a widely held belief, especially common in academic circles, that patents are not an entirely reliable source of technical information. Those who have a problem with using patents can be helped by an understanding of the nature and purpose of this kind of document.

Perhaps the most important difference between a patent and a typical paper in a scientific journal is that each patent is an individual document that must stand on its own. Whereas the journal article is often one of a series and can assume prior knowledge of its subject area by the reader, patent law requires that the applicant provide in the disclosure a complete teaching of how to practice the invention. Therefore a patent will give far more detail on materials, procedures, and test methods than the usual scientific paper.

In addition, the goal of a patent applicant is to provide the basis for claims that will give him an exclusive right to every practical way to practice his invention. The disclosure therefore will include speculative information as well as a report of experiments actually carried out. If three compounds of a class have been made or used, the disclosure will include dozens or even hundreds of related compounds that can reasonably be expected to serve the same purpose. This expansion of the teachings of a patent as well as the unfamiliar legal expressions that patent attorneys introduce to ensure the precision of meaning necessary for a legal instrument tend to make literal-minded technical people uncomfortable with patents.

Familiarity solves these problems, however, and it is important that those of us in chemistry learn to use the patent literature because many important developments are published in patents long before they begin to appear in the journal literature. In both the spectacular finding of Ziegler and Natta that olefins can be polymerized under mild conditions by the use of coordination complex catalysts and in the proliferating chemistry of isocyanates and polyurethanes, disclosures in patents preceded journal publication by almost ten years. In the competitive world of chemistry, one cannot afford not to follow the patent literature.

But how does one do it? Patents are individually issued documents. There are no neatly sorted packages of related patents bound together as are the articles in our many specialized journals, except in the files of the public search room of the Patent and Trademark Office at Arlington, Va. There are collections of U.S. patents in a number of public libraries, as shown in Table I, but these are nearly all filed in numerical order and thus are not suitable for searching by subject matter.

† Presented in the symposium on "Meeting the Challenges of the Changing Patent Literature", Division of Chemical Information, 173rd National Meeting of the American Chemical Society, New Orleans, La., March 21, 1977, and the 11th Middle Atlantic Regional Meeting of the American Chemical Society, Newark, Del., April 20, 1977.