



# A Comprehensive List of Periodicals For Chemistry and Chemical Engineering

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THE VERY LARGE VOLUME OF LITERATURE that is pertinent to chemistry and chemical engineering is scattered throughout the literature of science and technology. To gain effective access to this literature, the user of chemical and chemical engineering information has come to depend upon two types of services—the abstracting and indexing services to make him aware of pertinent literature, and the libraries to supply him with the documents he needs.

No single library has been or can be expected to maintain current subscriptions and back files for *all* of the services, patents, technical reports, dissertations, books, and so on, needed to satisfy fully the document requirements of users of chemical and chemical engineering literature. According to Kruzaz<sup>1</sup> only 35 of 1,480 college and university libraries reported subscribing to more than 2,000 periodicals when he collected data for the *Directory of Special Libraries and Information Centers*<sup>2</sup> between August, 1961, and February, 1963. During this same period over 8,000 periodicals were being monitored for coverage by the Chemical Abstracts Service. As a result, most libraries depend upon other libraries to supply documents through interlibrary lending, and thus there is a great need for bibliographic tools that provide library holdings data. But, just as the literature of chemistry and chemical engineering itself is scattered, so are the bibliographic and document source location data scattered throughout a myriad of bibliographies, union lists, and catalogs. Moreover, these lists and catalogs are most often organized geographically and only rarely by discipline. An exception has been the quinquennial *List of Periodicals Abstracted by Chemical Abstracts*, which has since 1922 included data identifying libraries that received the listed periodicals. Data for these lists have

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been generously contributed by a wide range of academic, public, private, government, and industry libraries, and publication of the lists has been undertaken by the Chemical Abstracts Service (CAS).

As a culmination of these past lists, CAS and the library community are now developing a *Comprehensive List of Periodicals for Chemistry and Chemical Engineering*, which will be a computer-based file of data on the source material of these two disciplines. The list will not be limited to material that has been abstracted in *Chemical Abstracts (CA)*, but will include nineteenth- and twentieth-century journals published before *CA* began. Some four hundred libraries are contributing data to the list, the publication of which is again being coordinated by Chemical Abstracts Service. The *Comprehensive List*, together with the associated computer programs and files, will become an important bibliographic tool not only for the users and suppliers of chemical and chemical engineering information, but also for science and technology as a whole.

The first *List of Periodicals Abstracted by Chemical Abstracts* was published in 1908. This edition and the four revisions that succeeded it contained entries for the periodicals abstracted by *Chemical Abstracts* at the time of publication of the lists. The purposes of these early editions were: (1) to assist the user of *CA* to learn the complete titles of periodicals, which were cited in *CA* only in abbreviated form; and (2) to furnish the names and addresses of the publishers of the abstracted periodicals.

Beginning with the 1922 edition, the *List of Periodicals* was greatly extended with data designating selected libraries in the United States that currently received the abstracted periodicals. These data were generously contributed by 172 libraries. Subsequent quinquennial editions of the *List* reflected the growth in the number of periodicals covered and the increased number of cooperating libraries. For the 1961 edition of the *List*, a total of 334 U.S. and foreign libraries furnished library source-guide data.

To understand what these lists represent, consider the following dimensions of the chemical and chemical engineering literature. Estimates of the total population of the world's current scientific and technical serials range from 26,000<sup>3</sup> to 35,000<sup>4</sup> to 50,000.<sup>5</sup> Depending upon the figure selected as a base, the *Comprehensive List's* approximately 14,000 entries for current serials pertinent to chemistry and chemical engineering represent between 28 percent and 54 percent of the full range of the current scientific and technical serials.

In addition to the current serials being published, there is a similar number of defunct serials and some 4,000 volumes of papers presented at scientific and technical meetings that contain chemical and chemical engineering literature. The total number of new serials and monographs containing such information has steadily been increasing at a rate of some 500 to 600 per year. These serials and monographs are published in more than 100 countries and over 50 languages are presented.

The number of serials containing chemical information has increased from some 8,000 in 1956 to over 11,000 in 1966, and from all indications this number will continue to increase at a similar rate in the future. Figure 1 shows the growth of the chemical and chemical engi-

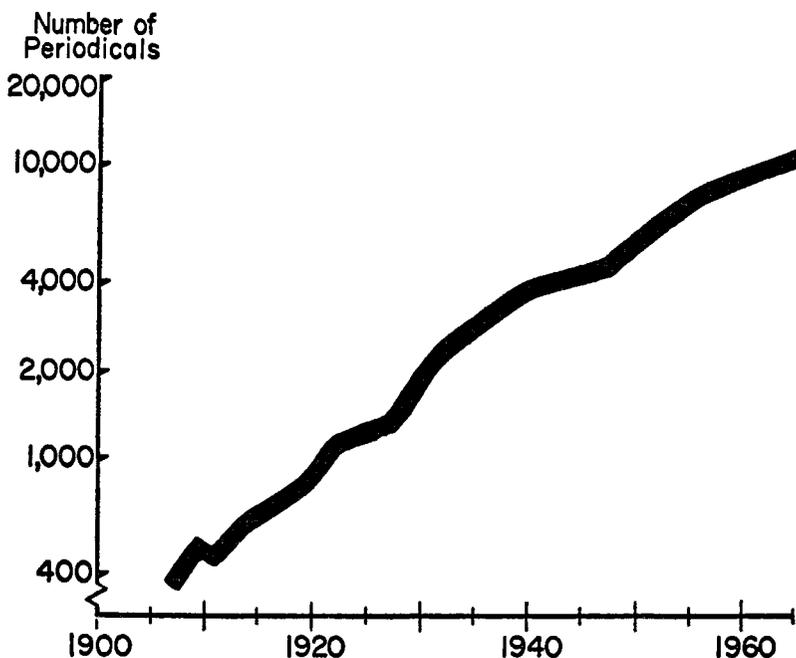


Figure 1. Growth of the world's chemical publications.

neering literature since 1907 based on the number of titles in the various editions of the *List of Periodicals*.

The relative contributions of various journals—that is, the “scattering” of chemical and chemical engineering papers throughout the liter-

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ature—is revealed in data from a computer-based inventory of the original sources of articles abstracted in *CA*. This scattering is shown by the graph in Figure 2. Accumulated data for the past four years

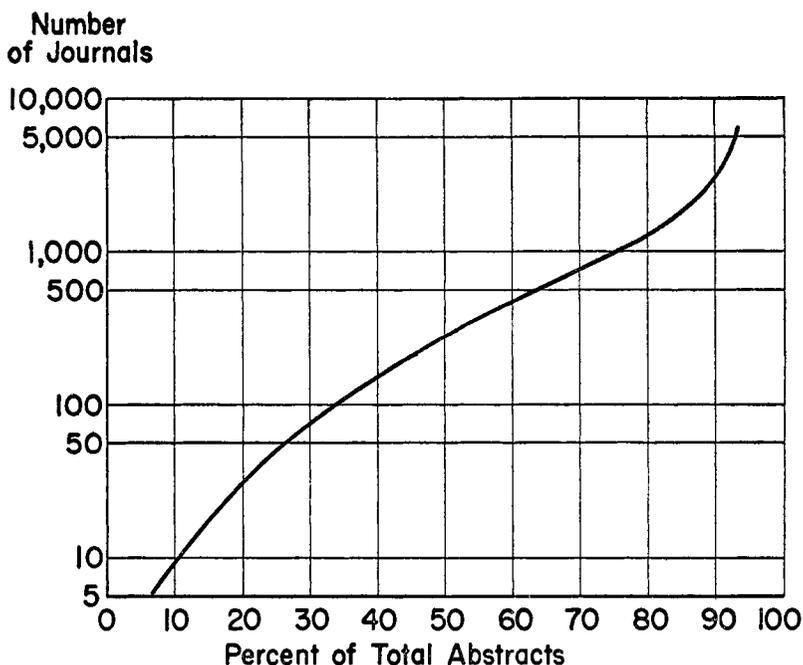


Figure 2. Journal productivity in *Chemical Abstracts*.

show that 25 percent of the abstracted papers were published in only 50 journals, 50 percent of the total were from 250 journals, 75 percent were from 850 journals, while 90 percent came from slightly over 2,000 journals. The remaining 10 percent of the abstracts came from an additional 2,500 journals. However, in order to locate this final 10 percent, CAS must monitor an additional 9,000 journals each year. Even though the majority of the papers abstracted by CAS are to be found regularly in fewer than 300 journals, CAS has found papers suitable for abstracting in over 12,000 journals and 3,500 monographs during the past five years.

This is not to imply that the periodicals listed in the CAS lists are useful only to the users and suppliers of chemical and chemical engineering literature. The content of the recent *Lists* and the *Comprehen-*

sive List reflects a significant percentage of serials covering the full range of science and technology. Studies made at CAS indicate that a high percentage of the serial literature pertinent to chemistry and chemical engineering is also highly pertinent to fields such as biology, medicine, nuclear science, physics, geology, and so on. Thus the CAS periodicals lists have found wide application in many types of libraries. Over 21,000 copies of the 1961 edition of the *List of Periodicals* have been distributed to institutions and individuals.

These data underscore the increasing necessity of a bibliographic tool such as the *Comprehensive List* designed to assist the users and suppliers of chemical and other scientific and engineering literature to locate the documents they need. The *Comprehensive List* will build upon the experience of previous *Lists of Periodicals*, but will offer several new features. The *Comprehensive List* will include for the first time: (1) entries for periodicals not abstracted by CA; (2) a sixty-year cumulation of information on titles that have been abstracted; (3) expanded bibliographic aids and library-holdings data. In addition, the list will for the first time be computer-based.

Previous editions of the *List* have included entries to all serials and conference proceedings volumes covered by *Chemical Abstracts*, and have thus included almost all of the titles pertinent to chemistry and chemical engineering since 1907. Nevertheless, in planning the *Comprehensive List*, CAS considered the inclusion of data for serial publications related to chemistry and chemical engineering that had not been abstracted by *Chemical Abstracts*, primarily those issued early in CA's history or before CA began publication. A survey of *Beilstein's Handbuch der organischen Chemie* revealed some 300 pre-1907 titles not covered by CA. The coverage of the literature of pure and theoretical chemistry from 1830 through 1940 by *Chemisches Zentralblatt* (CZ) was particularly outstanding, and CAS added approximately 500 journals covered by CZ prior to 1940 which had not been covered by CA. The information from both these sources will be included in the *Comprehensive List*. An additional list of approximately 100 excellent but now defunct nineteenth-century chemical journals was included in the *Comprehensive List*.

All told, the *Comprehensive List* will include approximately 24,000 entries for journals, and 3,500 entries for monographs, including titles covered by *Chemical Abstracts*, *Chemisches Zentralblatt*, and *Beilstein*, as well as some nineteenth-century chemical journals that were never covered by any of these services. This extension makes this new

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publication truly a *Comprehensive List of Periodicals for Chemistry and Chemical Engineering*.

The second new feature of the *Comprehensive List* will be its collection of data from the fourteen previous editions of the *List of Periodicals*. None of these editions has been fully cumulative; that is, previously published information about discontinued periodicals, monographs, and title changes was not always carried forward from edition to edition. As a result, all fourteen editions must be searched to obtain complete data on journals abstracted in *CA*. In contrast, the *Comprehensive List* will reflect the sixty-year history of all previous editions of the *List of Periodicals*, thus bringing together between one set of covers pertinent bibliographic data and document source information for the substantive literature of chemistry and chemical engineering.

The *Comprehensive List* will include much more data than did previous editions of the *List of Periodicals*. The new list will bring into a single source much valuable bibliographic data in considerable detail that is now only partially available from a large number of bibliographies, union lists, and individual library files.

The following data elements will be included in the entries in the *Comprehensive List*: (a) the full title of the publication; (b) the title abbreviated according to United States of America Standards Institute (USASI) standard Z39.5;<sup>6</sup> (c) the American Society for Testing and Materials (ASTM) Coden<sup>7</sup> for the publication; (d) a translation of the title into English if the language is other than English, French, German or Spanish; (e) the languages of publication and summaries; (f) the history of the periodical with references to any former titles; (g) current frequency and volume number data; (h) the price; (i) the publisher's address; (j) the title cataloged according to ALA cataloging rules;<sup>8</sup> and (k) a key to the holdings of some four hundred cooperating libraries for each title.

The *Comprehensive List* will contain in addition to bibliographic data on serials, monographs, and patents with library holdings, a number of useful indexes. One index will give the names and addresses of the participating libraries, with codes indicating their loan and photocopy services. Addresses of leading academic and commercial publishers, sales agents, and patent offices, will be included in another. An especially useful index feature will correlate the Z39.5 USASI title abbreviation with the form of entry for the serials cataloged according to ALA cataloging rules. The *Comprehensive List* will also include a

list of frequently used periodical title word abbreviations following the USASI Standard Z39.5.

Perhaps the most significant feature of the *Comprehensive List*—one that will add immeasurably to the improvements noted above—will be the *List's* computer base. By utilizing the computer as a storage, search and retrieval device, CAS has built into the *Comprehensive List* system a much greater degree of flexibility than exists in any of the union lists today. Whereas previous editions of the *List of Periodicals* have been manual files converted through conventional typesetting methods to a printed volume, the *Comprehensive List* will be produced from a computer file of data through the CAS photocomposition system, which offers a full range of type styles and quality comparable to conventional typesetting.

This shift to a computer base has several important implications. File maintenance will be simplified. It will be much easier to update the file, so that less work will be required to prepare the data for an updated *Comprehensive List* or a supplement. In the past, after each *List of Periodicals* was printed, the type was melted down and lost. Revised editions have required complete reentry and reverification of all the data regardless of whether any of the data had remained unchanged. By switching to a computer base, it will be possible to reissue a revised *Comprehensive List* at any time without complete reentry of data. Maintenance of the computer-based system requires only the replacement of data which changed and the input of new entries. The computer-based system is therefore much simpler to keep up-to-date than a manual system. Such a system spreads the maintenance load evenly over the full period of operation. In contrast, the old system involved periodic reentry of the entire file and consequently caused high peaks in workload and monetary expenditure on the part of both the participating libraries and CAS.

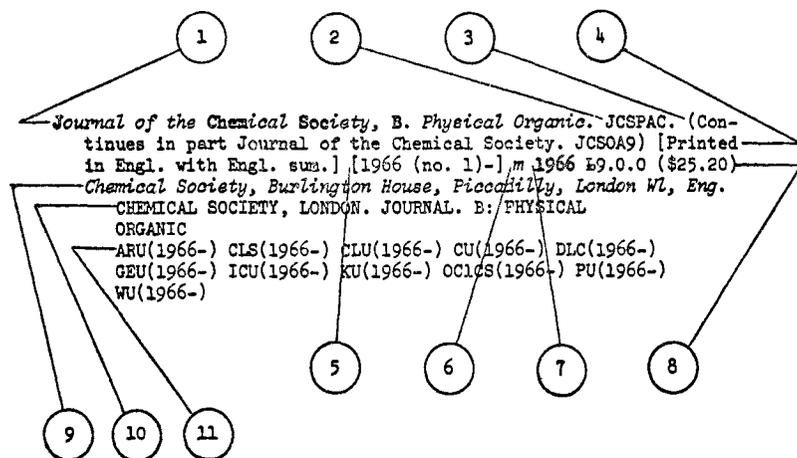
Another powerful advantage the computer system will offer is the capability to search the file either to answer specific questions or to produce specialized listings of data. Since each of the bibliographic elements in each entry can be identified by the computer, users can select or repress any combination of elements to produce a wide variety of listings. For instance, one might list the journals in the *Comprehensive List* file that are held by a given library or a group of libraries within a region, or, conversely, construct lists of journals not held in specific areas. One could also list journals by language, by country of publication, by frequency of publication, or by type of

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journal. Similarly, the computer-based *Comprehensive List* is designed so that it can be expanded. For example, users could expand the *Comprehensive List* data base to include additional bibliographic data elements, entries for new or not previously listed journals and additional library holdings data. Thus, *Comprehensive List* tapes can be the basis of automated serials files for individual libraries.

It is evident that the *Comprehensive List* will serve librarians in many more ways than merely identifying which libraries hold which journals.

As a final point, it should be emphasized that the computer-basis of the *List* will in no way affect the printed version. The primary output of the computer system will be a printed *Comprehensive List* to



*Legend:*

1. Full title with abbreviation in bold face.
2. ASTM Coden with check character.
3. Former title with ASTM Coden and check character.
4. Languages of publication and summaries.
5. History of publication.
6. Frequency of publication.
7. Current volume number and year.
8. Price.
9. Publisher's address.
10. Title cataloged according to ALA cataloging rules.
11. Library holdings data.

Figure 3. Typical entry for the *Comprehensive List*.

be distributed in the same way as previous editions of the *List of Periodicals* have been. Use of this printed version will not require any user to have access to a computer. However, for those who do have access to a computer and do wish to make use of the computer version of the *List*, the programs and computer file will be made available on a subscription or fee basis. The system is being developed for IBM 360 computers. The programming is being done in PL1.

A typical entry in the *Comprehensive List* will appear as shown in Figure 3. The important features of each entry are noted by the circled numbers and identified in the figure legend.

Not all entries will contain all of this data. In general, the *Comprehensive List* will distinguish three kinds of publication: (1) current serials, (2) monographs, and (3) defunct serials. The data elements to be included for each type of entry are indicated in Tables 1, 2, and 3.

TABLE 1

DATA ELEMENTS TO BE INCLUDED IN CURRENT TITLE ENTRIES IN THE COMPREHENSIVE LIST

- a. Complete title and subtitle in original language of publication. Original titles in non-Roman alphabets will be transliterated into the Roman alphabet.
- b. Title abbreviation according to the American Standards Association, USASI Z39.5 (1963) "American Standard for Periodical Title Abbreviations."
- c. Five-character Coden plus a machine-calculated check digit.
- d. English translation of complete title if title is in a language other than English, French, German, or Spanish.
- e. Reference to former title if there was one.
- f. Languages of publication.
- g. Languages of summaries of papers.
- h. Volume number, issue number, date of first issue published.
- i. Frequency of issue publication and number of volumes per year.
- j. Current volume number and year.
- k. Price.
- l. Identification of publisher.
- m. Title listed according to ALA cataloging rules.

TABLE 2

DATA ELEMENTS TO BE INCLUDED IN ENTRIES FOR MONOGRAPHS (CONGRESS AND SYMPOSIA PROCEEDINGS VOLUMES) IN THE COMPREHENSIVE LIST

- a. Complete title and subtitle in original language of publications. Original titles in non-Roman alphabets will be transliterated into the Roman alphabet.
- b. Title abbreviation according to the American Standards Association USASI Z39.5 (1963) "American Standard for Periodical Title Abbreviations."
- c. Five-character Coden plus a machine-calculated check digit.

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- d. English translation of complete title if title is in a language other than English, French, German, or Spanish.
- e. Frequency for meetings of established frequency.
- f. Which meeting it is if one of a series.
- g. Place where meeting was held.
- h. Date of meeting (month, day, and year).
- i. Number of volumes.
- j. Editor's name.
- k. Price if volume is in print.
- l. Identification of publisher.
- m. Title listed according to ALA cataloging rules.
- n. References to previous meetings of same group if entered under different titles.

### TABLE 3

#### DATA ELEMENTS TO BE INCLUDED IN ENTRIES FOR DEFUNCT SERIALS IN THE COMPREHENSIVE LIST

- a. Complete title and subtitle in original language of publication. Original titles in non-Roman alphabets will be transliterated to the Roman alphabet.
- b. Title abbreviation according to the American Standards Association USASI Z39.5 (1963) "American Standard for Periodical Title Abbreviations."
- c. Five-character Coden plus a machine-calculated check digit.
- d. English translation of complete title if title is in a language other than English, French, German, or Spanish.
- e. Reference to former title if there was one.
- f. Languages of publication.
- g. Languages of summaries of papers.
- h. Volume numbers, issue numbers, dates of first and last issues published.
- i. Title listed according to ALA cataloging rules.
- j. Reference to successor if entry is for a former title.

CAS began work on the *Comprehensive List* in early 1965 by establishing the file of serial and non-serial titles to be included in the computer-based file. This file currently consists of the full titles, USASI Z39.5 abbreviated titles, and ASTM Coden for approximately 14,000 current serial titles, 10,000 titles of discontinued serials or former titles, and approximately 4,000 monographs. Another computer file under development contains the entries for these titles cataloged according to the 1949 *ALA Cataloging Rules for Author and Title Entries*. On September 1, 1967, this file contained entries for 13,500 of the currently published titles and 3,000 of the discontinued and former titles. The file also contained the publication history for the majority of these 16,500 entries. From these tapes, computer-printed "Comprehensive List Checking Editions" were produced for the libraries to use in recording their holdings.

The libraries will be working with these checking editions throughout the last quarter of 1967 and the first half of 1968, checking their holdings of each listed title and transcribing this information onto the check sheets. A great deal of effort will go into this project, and so the checking procedure has been made as uncomplicated as possible. In general, libraries will indicate only the date their file of a title begins and, if the title is not currently received, the date it terminates.

Fragmented holdings will be recorded only for rarely held titles, and pre-1956 defunct titles will be checked only in a selected number of major resource libraries. But, even though the job has been made as simple as possible, the cooperating libraries will together contribute an estimated million dollars in effort to developing the holdings data.

As the checking editions are returned to CAS, the data will be keyboarded, input to the computer, checked for accuracy, and then added to the *Comprehensive List* data bank. According to the present schedule, the final "camera-ready" copy will then be computer-composed and sent to the printer by November 1968 with distribution of the *Comprehensive List of Periodicals for Chemistry and Chemical Engineering* scheduled for late December 1968.

Plans are currently being made to keep both the bibliographic and selected parts of the library holdings in the *Comprehensive List* data base up to date. Libraries participating in this updating program will be able to receive in either machine-readable or printed form a complete record of all the changes in the data base in return for their inputting data on the changes in their collections. These updated tapes and printed supplements will also include the full range of file input generated by the CAS Library, where currently over one thousand serial and conference proceedings volume titles are being added annually to the file.

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