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Beilstein and Gmelin

Keep or Cancel

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ABSTRACT

This article examines the decision making process employed at an academic library to evaluate continuing commitments to two important reference sources in chemistry: *Beilstein* and *Gmelin*. A survey was used to ascertain regional subscribers for a potential resource sharing agreement. A second survey was conducted to determine the status of the printed handbooks and usage of the online equivalents at institutions with similar chemistry departments. Results showed half of the surveyed libraries had standing orders for *Beilstein* and 35% had standing orders for *Gmelin*. The negotiation process between the Library and the Chemistry Department is outlined. The Chemistry Department elected to cancel both handbooks, use online databases in their place, and purchase new chemistry materials including periodicals.

INTRODUCTION AND BACKGROUND

In 1989 the University Library at the University at Albany (UA), SUNY, began investigating its continuing commitment to two important chemistry reference sources: *Beilstein* [1] and *Gmelin* [2]. The University Library owns complete sets of the current editions of both. Their location is unique at UA; they are housed in a reading room in the chemistry building. No other books or periodicals are located outside of the University Library's official facilities. After the books are checked in and processed by the library's Technical Services Division, they are shipped to the Chemistry Department. The Chemistry Department is responsible for their maintenance. Chemistry faculty members and their graduate students have access to the reading room. For others to gain access, they must contact a faculty member or the departmental secretary.

The Chemistry Department at UA offers programs leading to the B.S., M.S., combined B.S./M.S., and Ph.D. in chemistry with various options for minors. At the graduate level, programs are offered with concentrations in the subdisciplines of organic, inorganic, physical, and polymer chemistry as well as interdepartmental concentrations with the other science departments. During the 1980s, 45 students were awarded Ph.D.s in chemistry and another 45 received M.S. degrees. With active faculty research programs and graduate level concentrations in

organic and inorganic chemistry, the need for information provided by *Beilstein* and *Gmelin* or comparable sources is evident.

Although the programmatic need for these titles had not been questioned by the library in the past, an assessment of the situation was called for because of the high price of both sets and their rise in cost over several years. Table 1 shows the cost increase for the years 1988 to 1991. There had never been a study to determine use patterns; the changes over the years in faculty constitution could be expected to warrant some modifications to not only journal collections and approval book profiles but also reference sources. Furthermore, the potential to search the online equivalents on demand or to enter into a resource sharing agreement with a local library needed to be explored as alternatives to library ownership. Therefore, the purpose of this project was to evaluate the continuing commitments to *Beilstein* and *Gmelin* and to determine the needs of the chemistry faculty while managing fiscal resources that were either flat or shrinking.

insert Table 1

BEILSTEIN AND GMELIN

Beilstein is the common name for *Beilsteins Handbuch der Organischen Chemie* or *Beilstein Handbook of Organic Chemistry*. It provides critically evaluated and tested information on organic compounds described in the scientific literature. The fourth and current edition has been continuously published since 1918. It includes the basic series (Hauptwerk) and five supplementary series (Ergzungswerke). The Basic Series and Supplements E I to E IV are in German. Supplement E V is in English.

The organic compounds listed in *Beilstein* are arranged according to the Beilstein System. Each of the series consists of 27 volumes. Each volume may be one or more books. Volumes are organized by classes of compounds. The molecular structure of a compound determines in which volume it will appear. A key feature of the Beilstein System is that a compound will appear in the same volume in all of the series. Since each series includes new information, a user has to search in several places to obtain the complete picture on any chemical.

For more information on the scope, arrangement, or use of *Beilstein* see the booklet, *How to Use Beilstein* [3]. *Beilstein* is available as an online searchable database on the STN, Dialog, and Orbit systems.

Gmelins Handbuch der Anorganischen Chemie (*Gmelin Handbook of Inorganic and Organometallic Chemistry*) is the comprehensive and authoritative compendium of the literature for inorganic chemistry. It is generally referred to as *Gmelin*. The first edition of the handbook, entitled *Handbuch der Theoretischen Chemie*, was published by Leopold Gmelin in 1817. This three-volume, 1,588-page handbook, which included inorganic as well as organic chemistry, was considered the sum of chemical knowledge of that time. In 1852, beginning with the fifth edition, organic chemistry was separated from *Gmelin* and covered by *Beilstein*. The last edition of *Gmelin* is the eighth edition; its publication began in 1922. Due to the exponential growth in the literature, the plan to produce a ninth edition was discarded in the late 1950s. Supplements are issued to keep the handbook continually up-to-date. There are actually two distinct supplement series: the Supplement Volumes and the New Supplement Series. Each Supplement Volume is related to an individual volume of the Main Series and is published as a means to keep the Main Series volume current. The Supplements to *Gmelin* are much more current than those of *Beilstein*. The Supplement Volumes often cover the literature up to a few months prior to their dates of publication. Volumes in the the New Supplement Series are not necessarily related to volumes in the Main Series; they are issued as a way to report the latest developments in inorganic chemistry.

Compounds in *Gmelin* are arranged according to the Gmelin Classification System. Basically, each element is assigned a system number corresponding to its position in the Periodic Table of the Elements. The element and its compounds are contained in a single volume (often several books) and its supplements.

Compounds are contained in the volume of the element which has the highest system number. As a means to facilitate its use, the compilers currently recommend that *Gmelin* be shelved by atomic symbol rather than by system number. As a result, volumes from both supplement series are shelved adjacent to the respective volumes of the Main Series. Consequently, volumes that deal with a particular element or compound should be nearby.

Until 1982 *Gmelin* was published mostly in German. Table of contents, marginal headings, summaries, and indexes in English have provided those less fluent in German with a mode of access. The decline of German as the key language for the natural sciences led to a significant change in *Gmelin*. Since 1982 *Gmelin* has been published entirely in English.

For more information on the scope, arrangement, and use of *Gmelin* consult the booklet, *This is Gmelin* [4]. *Gmelin* is available as an online searchable database on the STN and Dialog systems.

LITERATURE REVIEW

A review of the literature on *Beilstein* and *Gmelin* finds descriptions of the printed handbooks, reports concerned with teaching the skills of use, reviews on the historical developments, and accounts of the online databases including design considerations and search strategies. A thorough search of *Library Literature*, *Library and Information Science Abstracts*, and *Information Science Abstracts* uncovered only two items related to the acquisition or collection development aspects of *Beilstein* and *Gmelin*. The first was a survey by Jochum and Moricz [5] of the Beilstein Institute, that questioned some 4,007 chemists worldwide to determine information needs and use in organic chemistry. Two of their findings are of particular interest: (1) *Chemical Abstracts* was confirmed as the principal source (*Beilstein* was second) and (2) the increasing importance of the online environment was validated. These findings are significant because they also support the outcome of this study.

The second article described a six-month use survey of *Beilstein* by Chrzastowski, Blobaum, and Welshmer [6]. Their study, which was conducted at the chemistry libraries of the University of Illinois at Urbana-Champaign and the University of Delaware, also included a cost/use analysis. They found *Beilstein* to have low usage at both sites (fourteen documented uses at Illinois and nine at Delaware). The results of their cost/use calculation showed

\$960.75/use at Illinois and \$1,494.50/use at Delaware. The investigators concluded that *Beilstein* was a cost-ineffective subscription for both locations. As a postscript, they reported that the University of Delaware canceled their subscription in 1991 and the University of Illinois was in the process of negotiating cancellation with their organic chemistry faculty.

LOCAL SURVEY

The first step in the process of determining the future of the UA commitment to purchase these titles was a survey of libraries in the Capital District of New York to find out who were *Beilstein* and *Gmelin* subscribers and consequently potential partners for a resource sharing agreement. Only libraries supporting graduate programs in chemistry and/or chemical research were questioned. Table 2 summarizes the findings. It was clear from the findings that in addition to UA, there were two institutions that might benefit from a resource sharing arrangement: New York State Library and General Electric. General Electric was eliminated from consideration because as a corporate research library, their primary function is to support the company's research and development programs. Access by UA users would most certainly be limited and since our chemists were used to day, evening, and weekend access, waiting for an interlibrary loan would have been unacceptable. The New York State Library (NYSL) was a better alternative. Although access to NYSL is limited to daytime weekday hours, they are in close proximity and allow all users to access their collections. In the interim, however, the worsening fiscal situation in New York caused the State Library to cancel both *Beilstein* and *Gmelin* before resource sharing negotiations could take place.

| ***insert Table 2*** |

NATIONWIDE SURVEY

The next phase of the process began as a discussion between the Director of Libraries and the Chairman of the Chemistry Department. At that meeting the Director requested advice on the possible effect of canceling *Beilstein* and/or *Gmelin*. The Chairman responded with a request for additional information on the status of the handbooks and online systems at universities with similar chemistry departments. This led to the second survey.

To determine which universities had similar departments of chemistry, the *ACS Directory of Graduate Research* [7] was consulted. The table on pages xii-xxi entitled, "Statistical Summary; Departments of Chemistry" was employed. For each institution, the columns marked "full-time staff," "total graduate enrollment," and "Ph.D. degrees granted" were compared to the values entered for the University at Albany. The UA values are shown in Table 3. The universities that most closely matched these values were selected for the study. Originally, thirty-one institutions were found to be near matches for the criteria above. This number was pared down to twenty-five universities by eliminating Canadian institutions. Although this small population would hamper a sophisticated statistical analysis, it was expected to provide enough data to inform a decision.

| ***insert Table 3*** |

Chemistry or science librarians were the targets of the questionnaire. When their names could not be ascertained, it was sent to either the head of reference or the head of collection development. The questionnaire along with a cover letter was sent via facsimile transmission (FAX). The cover letter briefly explained the study, provided directions on the method of return, and requested that the questionnaire be returned in two weeks. Most of the respondents returned the questionnaire via FAX; a few were returned after the deadline. Figure 1 displays the questionnaire.

| ***insert Figure 1*** |

RESULTS AND DISCUSSION

Twenty of 25 libraries responded to the questionnaire; one additional survey was returned after the results were tallied. The answers from that questionnaire are not figured into the totals. The totals do not always add up to twenty because it was not necessary for the respondents to answer all of the questions. From the high rate of return (80%) and the comments, it is evident that many libraries are very much concerned with this issue.

Half (50%) of the responding libraries have current standing orders for *Beilstein*. Six have cancelled it within the last five years, including two that indicated they cancelled within the last year. One additional library stated that they cancelled it before 1981 and one reported that they will be dropping their subscription to *Beilstein* during the next fiscal year. Only one library knew if their patrons were using *Beilstein* at another site. Eleven of 18 libraries (61.1%) are accessing *Beilstein* Online. For the question on funding online costs: two said the library pays the entire cost, seven said the user pays the entire cost, three said the library and user share the cost but the library pays more, one said the library and user pay equal shares, and one indicated another method of funding is employed. Only seven of twenty (35%) of the libraries have current subscriptions to *Gmelin*. Five indicated that they cancelled *Gmelin* in the last five years; three more dropped it sometime

before 1981. One library said they plan to cancel *Gmelin* during the next fiscal year. As with *Beilstein*, only one respondent knew of their patrons using *Gmelin* at another institution. The same respondent also noted that they were accessing the online version of *Gmelin* and charging their users full-cost. Eight of 18 (44%) responded positively to the question on accessing the online database. On the question concerned with funding the online costs: two said the library pays the entire cost, six said the user pays the entire cost, one indicated that the library and user share the cost but the library pays more, and one noted that they use another method of funding.

From the data, it appears as though libraries are using a variety of approaches to meet the information needs of chemists. A few rely on just the printed handbooks, others have cancelled the handbooks and are using the online databases, and yet others are employing a combination of both the print and online versions. Some of the surveyed libraries never had subscriptions to either or both of the handbooks. However, the trend seems to be heading toward reliance on online information sources. This confirms one of Jochum and Moricz's [5] findings mentioned above; that is, the increasing importance of the online environment.

The results of the survey along with the comments were forwarded to the Chairman of the UA Chemistry Department. Four options were

also identified (options 2 and 3 were suggested before the cancellations at the New York State Library were known):

1. cancel both *Beilstein* and *Gmelin* and provide the department with funds to search the online version,
2. cancel *Gmelin* and rely on the copy at the New York State Library and provide funds to search the online version when it is more appropriate. Retain *Beilstein* until Supplement V is complete before beginning a similar online arrangement,
3. cancel *Beilstein* and rely on the copy at the New York State Library and provide funds to search the online version when it is more appropriate. Retain *Gmelin*,
4. cancel neither and reconsider the situation in each of the forthcoming years.

After reviewing the findings and options with a few members of the Chemistry Department, the Chairman called for a meeting to discuss the options. The Director of Libraries, Assistant Director for Collection Development, this author, the Chairman, and two members of the Chemistry Department were present at the meeting. It was disclosed at this meeting that resource sharing with the New York State could not transpire because they were in the process of cancelling *Beilstein* and *Gmelin*. The chemists, however, wanted to explore an alternative plan; that is, cancel both handbooks, rely

on the online versions as well as *Chemical Abstracts* online, and purchase other materials to support chemistry research and curriculum including new journals. The Director of Libraries was supportive of this plan and committed 60% of *Beilstein* and *Gmelin's* 1992 subscription costs to fund the plan. Since it was summer, the chemists wanted to wait until fall to discuss it among the full chemistry faculty before reaching a final decision. Later in the fall semester, the chemists' plan, as outlined above, was adopted with the Director pledging \$30,000 for online searching and the purchase of chemistry materials in 1992/93.

CONCLUSION

The chemists' decision to cancel *Beilstein* and *Gmelin* and rely on online databases agrees with the findings of Jochum and Moricz [5]; that is, *Chemical Abstracts* is the principal source for chemistry and there is an increasing importance of the online environment. This decision also follows the cancellation of *Beilstein* at the University of Delaware [6] as well as cancellations of both handbooks by several libraries that participated in the nationwide survey. At the outset of this project, one of the prime objectives was to ascertain the current needs of the Chemistry Department while at the same time to manage fiscal resources to get the most out of available dollars. The chemists should be able to meet their information needs by using a combination of our current holdings of *Beilstein* and *Gmelin* along with their online equivalents and *Chemical Abstracts* online to keep current. In addition, new chemistry journals will be purchased which our budget has not allowed for several years. Moreover, the library will be saving \$20,000-\$30,000 which can be allocated to other areas in need. Siegfried Ruschin's [8] thoughts on this subject aptly illustrate the dilemma presented here.

"It is regrettable that we find ourselves in the quandary of having to decide between cancelling a reference work of unquestionable quality or cancelling some overpriced journals

that are momentarily used heavily, but of which we otherwise know little and whose permanent significance one may question. We struggle with these questions and deplore that we do not have the wisdom to answer them unequivocally. But it would be ironic and hardly in keeping with our responsibility as librarians were we to derive a sense of satisfaction or success for having to forego one of the dependable and important reference sources in the sciences... We do not find the sacrifice of a reference work of unquestionable high quality an easy decision."

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Table 1. UA Costs of <i>Beilstein</i> and <i>Gmelin</i> , 1988 to 1991		
	<i>Beilstein</i>	<i>Gmelin</i>
1988	\$20,720	\$13,846
1989	21,784	19,256
1990	21,893	11,684
1991	34,511	28,450

Table 2. *Beilstein* and *Gmelin* subscribers in the
Capital District of New York (1989)

	<i>Beilstein</i> holdings/subscription	<i>Gmelin</i> holdings/subscription
Univ. at Albany/SUNY	entire collection/ yes	entire collection/ yes
NY State Library	entire collection/ yes	entire collection/ yes
Rensselaer Polytechnic	entire collection/ yes	missing volumes/ no
Sterling Drug Co.	through 4th supp./ no	none/ no
General Electric	entire collection/ yes	entire collection/ yes
Schenectady Chemicals	none/ no	none/ no
Albany Med. College	none/ no	none/ no
Union College	through 1986/ no	none/ no
Albany Coll. of Pharmacy	none/ no	none/ no
NY State Dept. of Health	through 3rd supp./ no	none/ no

Table 3. University at Albany Chemistry Department (as of September 1988)			
full-time staff	total graduate enrollment	Ph.D. degrees granted	
		1986-87	1987-88
21	59	11	5

Figure 1. *Beilstein* and *Gmelin* Questionnaire

	<i>Gmelin</i>	<i>Beilstein</i>
1. Do you have a standing order for either of these reference tools?	Yes _____ No _____	_____
2. If you had a standing order at one time and no longer have one, please indicate approximate date of cancellation.		
	(date) _____	(date) _____
3. If you do not have a standing order, do your patrons use copies at another library?	Yes _____ No _____ Not sure _____ Not applicable _____	_____
4. Does your institution access either of these reference tools using an online vendor such as STN, Dialog, or Orbit?	Yes _____ No _____	_____
5. If your institution uses an online version, which of the following best describes the method of funding a search for an individual user (check appropriate space):		
A. Library pays the entire cost.	_____	_____
B. User pays the entire cost.	_____	_____
C. Library and user share the cost, but the library pays more.	_____	_____
D. Library and user share the cost, but the user pays more.	_____	_____
E. Library and user pay equal shares of the cost.	_____	_____
F. Other (please describe): _____	_____	_____
G. Not Applicable.	_____	_____

Comments: