Status of Chemical Information Activities in Japan*

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The development of scientific journals in Japan pertinent to chemistry is reviewed, and the current status of abstracting activities in Japan is described.

Nippon Kagaku Soran (Complete Chemical Abstracts of Japan) was started in 1923 by the organic chemist, Riko Majima, and this abstract journal in Japanese is now being published from the Japan Information Center for Science and Technology (JICST). Japanese chemical literature has been abstracted in this journal almost completely since 1877, and the number of abstracts published is shown in Figure 1. In 1971, approximately 38,000 abstracts were printed, about 25,000 of which were abstracts of original papers and the rest those of patents. These papers are of course abstracted in *Chemical Abstracts* (CA), and the ratio of Japanese papers was around 6 to 8% of the total abstracts published in CA up to 1966. It is said that the rate of Japanese papers abstracted in CA is around 8% of the total in recent years, and this fact suggests that 90% of chemical papers published in Japan are being abstracted in CA.

Society journals in which these papers are published and the number of chemical papers printed are listed in Table I. The total number of papers printed in 31 journals published by 18 main academic societies of a nationwide scale was about 5350 in 1968. Since the total number of papers published in that year was over 20,000, journals of main academic societies covered only one-quarter of the whole. As can be seen from Table II, the largest sources of chemical information, *Bulletin of the Chemical Society of Japan* (English language) and *Journal of the Agricultural Chemical Society of Japan* (Japanese language), printed less than 4% of the total chemical papers. Even the four journals taken together of the Chemical Society of Japan, the largest academic society, publish only 8.3% of the whole. The Pharmaceutical Society of Japan and the Agricultural Chemical Society of Japan, which follow, have only 4.5% and 3.9%, respectively, of the share. Thus, there are no major societies or major journals in Japan, and the number of minor journals is tremendous, there being about 800 journals being abstracted by the *Complete Chemical Abstracts of Japan*.

Of these papers abstracted in CA, about 150 journals are being abstracted by the *Chemical Abstracts Services* in Columbus, Ohio. Of these 150, 135 journals had been abstracted by abstractors in Japan. The Journals now being abstracted in Japan number 350, as shown in Table III, and the number of abstracts was 4,350 in 1971. This is an average number of papers of 12 per journal, a very inefficient portion. The journals being processed in CAS yield about 100 papers per journal.

There are no major journals in Japan, as noted above, but there are many journals published by the main academic societies that correspond to those published by American societies. For example, differentiation of the journals published by the American Chemical Society is as shown in Table IV. Approximately corresponding journals published by Japanese societies are given in Table V which indicates that these journals are being published by 10 academic societies and one semigovernmental organization in Japan. Although there is such a vast difference

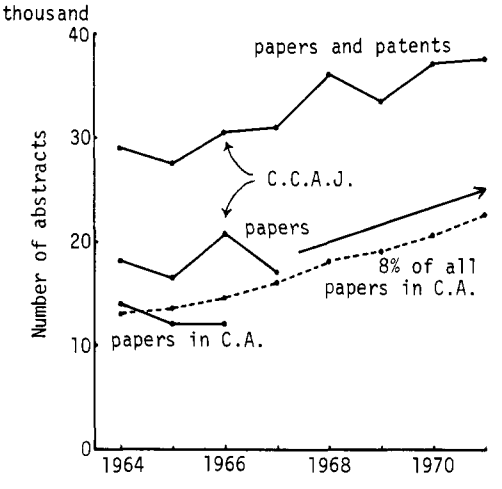

Figure 1. Abstracts of Japanese chemical literature

Table I. Chemical Societies in Japan and Their Publications (1968)

Name of Society	Publication	Articles per year	Pages per year	Circulation per year
Soc.Chem.Engrs.Japan	Chem.Engg.(M)	101	1,250	10,500
	J.Chem.Engg.Japan(Ba)	42	234	1,000
Japan.Tech.Assoc.Pulp Paper Ind.	J.Japan.Tech.Assoc.Pulp Paper Ind.(M)	105	1,420	5,100
Metal Finish.Soc.Japan	J.Metal Finish.Soc.Japan(M)	79	528	4,700
Soc.Polym.Sci.Japan	High Polym.(M)	183	1,322	12,000
	Chem.High Polym.(M)	117	864	2,700
Japan Soc.Colour Mater.	Colour Mater.(M)	45	638	3,600
Japan Petrol.Inst.	J.Japan Petrol.Inst.(M)	103	994	4,000
	Bull.Japan Petrol.Inst.(A)	11	76	4,000
Electrochem.Soc.Japan	J.Electrochem.Soc.Japan (Japanese)(M)	118	1,271	4,000
	J.Electrochem.Soc.Japan(Q)	33	291	3,200
Chem.Soc.Japan	J.Chem.Soc.Japan,Pure Chem.(M)	286	1,460	4,450
	J.Chem.Soc.Japan,Ind.Chem.(M)	567	2,572	5,850
	Bull.Chem.Soc.Japan(M)	771	3,254	4,850
	Chem.Educ.(Q)	83	490	3,000
Soc.Rubber Ind.Japan	J.Soc.Rubber Ind.Japan(M)	50	1,288	3,800
Soc.Sci.Phot.Japan	J.Soc.Sci.Phot.Japan(Q)	20	240	1,300
	Bull.Soc.Sci.Phot.Japan(A)	6	60	300
Agr.Chem.Soc.Japan	J.Agr.Chem.Soc.Japan(M)	781	1,092	7,700
	Agr.Biol.Chem.(M)		1,565	3,700
Japan Soc.Anal.Chem.	Japan Analyst(M)	235	1,594	6,800
Pharm.Soc.Japan	J.Pharm.(M)	324	1,672	7,600
	Chem.Pharm.Bull.(M)	467	2,595	5,500
	J.Hyg.Chem.(Bm)	65	403	3,000
	Arch.Pract.Pharm.(Q)	57	356	4,000
Japan Oil Chemist's Soc.	J.Japan Oil Chemist's Soc.(M)	62	704	2,650
Fuel Soc.Japan	J.Fuel Soc.Japan(M)	117	910	2,000
Soc.Syn.Org.Chem.Japan	J.Syn.Org.Chem.Japan(M)	109	1,130	4,400
Ceram.Soc.Japan	J.Ceram.Soc.Japan(M)	66	432	5,700
	Ceramics	71	1,060	5,850
Japan.Biochem.Soc.	J.Japan.Biochem.Soc.(M)	36	370	5,300
	J.Biochem.(M)	240	1,721	2,300

M = Monthly; BA = Semimonthly; A = Annually; Q = Quarterly; BM = Semimonthly

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Table II. Number of Papers Published in Journals of Three Major Societies and Their Percentage to Total Chemical Papers in Japan (1968)

Name of society / Name of journal		No. of papers	Ratio to total
Chem.Soc.Japan	total	(1707)	(8.5)%
J.Chem.Soc.Japan, Pure Chem.		286	1.4
J.Chem.Soc.Japan,Ind.Chem.		567	2.8
Bull.Chem.Soc.Japan		771	3.9
Chem.Educ.		83	0.4
Pharm.Soc.Japan	total	(913)	(4.5)
J.Pharm.		324	1.6
Chem.Pharm.Bull.		467	2.3
J.Hyg.Chem.		65	0.3
Arch.Pract.Pharm.		57	0.3
Agr.Chem.Soc.Japan	total	(781)	(3.9)
J.Agr.Chem.Soc.Japan		781	3.9

Table III. Abstracts of Japanese Chemical Papers in CA (1971)

No. of Japanese journals abstracted by CAS:		150 titles*(?)
No. of abstracts from these journals:		18,000
No. of journals being abstracted in Japan:		350 titles
No. of abstracts from these journals:		4,350
Breakdown of these journals:		
Society journals	50	
Association journals	24	
Institution reports**		
Governmental	68	
Private	19	
University memoirs***	153	
Commercial journals	12	
Others	5	

* Of these, 135 titles had been abstracted in Japan.
** Including those from experimental stations.
*** Including those from attached institutes.

in the number of societies publishing these journals, the year of initial publication and the number of journals published are approximately the same in Japan and U.S.A. as shown in Figure 2.

The presence of a large number of academic societies is one of the characteristics of Japan, and this is an inevitable consequence of history. Chemistry, pharmaceutical chemistry, and agricultural chemistry all stemmed from the alchemy of medieval times, and the Europeans and Americans know that these sciences are of the same origin. When European chemistry was introduced into Japan during the middle period of 1800's, this science was already differentiated into chemistry and pharmaceutical chemistry, and the Japanese accepted them as different sciences, setting up separate academic societies for them. Later, agricultural chemistry was imported as another different science, and a separate society of agricultural chemistry was founded.

Thereafter, the Japanese scientists seemed to have had greater interest toward differentiation rather than unification of learned societies. As a consequence, there are many academic societies and many society journals dealing with chemistry, and Japanese scientists are forced to join several societies and subscribe to several journals individually. Such persons, when wishing to publish a paper, will weigh the circulation of journals and evaluation of such journals in the academic world, and decide on the journal to which his or her paper is to be sent, with consideration on the ease of acceptance and lag time of publication. As a result, Part I of a series of papers may appear in journal A, Part II in journal B, Part III in journal C, and so on. Even if a scientist is a member of several academic societies, it would be highly difficult for him to know the status of chemical development in Japan on a current basis. In order to know the trend in current scientific research in Japan, it would be necessary to read many minor journals with few papers per journal because there is no major journal and because the abstracts appear in the Complete Chemical Abstracts of Japan with a long lag period. In addition, society journals with less circulation, which would be commercially impossible, take up about one-third of the journals listed in Table I, and not a few societies find it difficult to publish journals.

Table VI. System of the Journals Published by the American Chemical Society

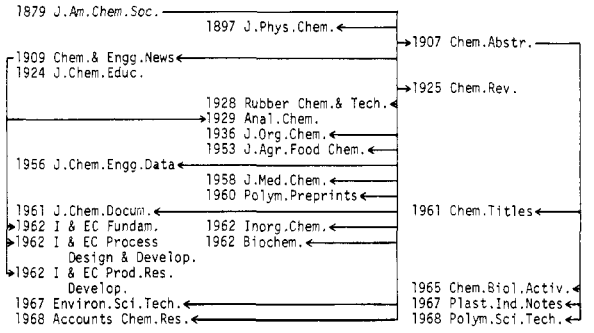
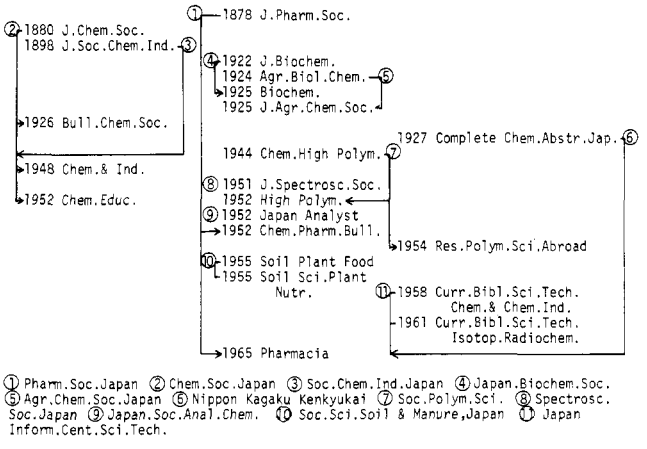


Table V. System of the Chemical Journals Published in Japan



① Pharm.Soc.Japan ② Chem.Soc.Japan ③ Soc.Chem.Ind.Japan ④ Japan.Biochem.Soc. ⑤ Agr.Chem.Soc.Japan ⑥ Nippon Kagaku Kenkyukai ⑦ Soc.Polym.Sci. ⑧ Spectrosc. Soc.Japan ⑨ Japan.Soc.Anal.Chem. ⑩ Soc.Sci.Soil & Manure,Japan ⑪ Japan Inform.Cent.Sci.Tech.

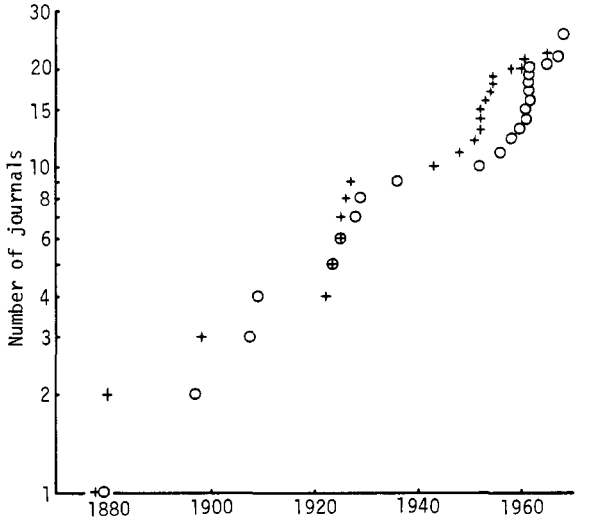


Figure 2. First publishing year and number of journals published by American Chemical Society (indicated by O) and by Chemical Society of Japan (indicated by +)

To solve such a contradictory situation, autonomic movement on the part of academic societies is desirable but, lacking any large and powerful society, no definite result has been obtained to date. In February, 1971, Japan Association for International Chemical Information (JAICI) was set up, with Shiro Akabori as Chairman,

from 11 major academic societies concerned with chemistry for cooperation at least in chemical information. JAICI plans to publish an abstract journal containing author abstracts printed in the journals published by these 11 academic societies, with Hideaki Chihara of the Chemical Abstractors' Association of Japan as the editor, because the *Complete Chemical Abstracts of Japan,* which has been abstracting all of the Japanese chemical information in Japan since 1877 with good coverage, has a very long lag period in the publication of abstracts. The new abstract journal hopes to extend its coverage to other journals when its publication starts. By so doing, abstracting of papers in minor journals will improve, and these abstracts can be offered to CA for publication more comprehensively and rapidly.

There is, of course, JICST which deals with information in science and technology in general. This organization was set up in 1957 and its part in chemical information includes the publication of the *Complete Chemical Abstracts of Japan* (monthly, circulation 1750) and *Current Bibliography on Science and Technology, Chem. and Chem. Ind. Section* (published every 10 days, circulation 2150). The latter contains abstracts of foreign literature, about 100,000 abstracts per year, and the length of each abstract is about one-half that of CA. Although the publication of each abstract is slightly later than that in CA, foreign literature is abstracted in the Japanese language, and the journal is utilized, especially in the industry.

The Japanese Patent Law was revised in 1971, and all the patent applications will be publicly disclosed *in toto* 18 months after the date of filing. Patent applications for which an examination has been demanded (expected to cover about one-third of the total applications) will be examined by the Patent Office, and be patented after about 2 years on the average. A Patent Information Center was established in 1972, and the Center is now preparing to set up retrieval of patent information.

The Japanese government considered the idea of setting up the National Information System for Science and Technology (NIST) in 1970 for effective flow of scientific and technical information, but nothing definite can be said about it at the present stage.

Introduction. Comparative Evaluations of Existing Chemical Information Services Critique Symposium*

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Several years ago, the Division of Chemical Literature initiated a critique symposium in which speakers were invited to examine and evaluate available information systems and services, and report how effectively these services met the needs of their particular user community. This type of symposium entailed a broad characterization of the various information services and an objective evaluation of each service in terms of its advantages and disadvantages. However, very few, if any, chemical information systems can survive many years without changes concomitant with the evolving nature of chemistry. And indeed, the last few years have seen the increasing growth of chemistry in new directions. This growth has been reflected in the number of computer-based information services available to the chemist. Also, during this period, we noticed the advent of large information processors, who as "middle men" attractively packaged and provided a comprehensive variety of information services. Therefore, these newer events prompted the revival of this critique symposium to update our thinking as to the relevant factors affecting the dissemination of chemical information.

The broad objectives of our symposium were: (1) to determine the value and acceptability of existing chemical information services to chemists; (2) to determine how effective these information services met the needs of the users; (3) to ascertain what effect, if any, does the operating environment of the ultimate user have on the usefulness of these services—i.e., Federal, State, academic, industrial or commercial service centers; (4) to determine what degree of overlap can be tolerated from one service to another with regard to journal coverage, timeliness, etc., and (5) to determine, if possible, what differentiates chemical information handling from other scientific and technical information handling.

In examining the merits of this continuing critique symposium, Herman Skolnik[1] asked "How and in what way are we reacting to new tools, especially computers, and to newer services which are based upon computerized system?" He further asks the question "Are we satisfied that these new services are responding to the needs of those we serve----." The answers, in part, lie in the four succeeding papers which were delivered before the Division of Chemical Literature in April 1972.

The papers have been organized to cover both the information processor's and ultimate user's evaluation of various commercially available information services. We have attempted to bring out the advantages and disadvantages, value and cost, as well as various modifications to existing services that were made by individual information organizations to best serve their user community. The experiences thus related have touched upon many factors on how certain chemical information systems have performed in different subject areas and for different types of questions. We have tried to evaluate and discuss what deficiencies were encountered and how they might be overcome. Our sincere hope is that the producers of chemical information, the processors of chemical information, and the ultimate users of chemical information will benefit from these experiences.

*Presented in part before the Division of Chemical Literature as Chairman of the Symposium on "Evaluation of Existing Chemical Information Services and Systems," 163rd Meeting, ACS, Boston, Mass., April 10, 1972.

LITERATURE CITED

(1) Skolnik, Herman, Editorial, *J. Chem. Doc.*, 11, No. 4, 194 (1971).