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The historical development of ISE from 1971 to 1999☆

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In 1971 the 'Comité International de Cinétique et Thermodynamique Électrochimiques' (CITCE), became the 'International Society of Electrochemistry', commonly known as ISE. The new constitution provided a solid base for continued growth and global reach. It fixed the objectives of ISE and its organizational structure. Three main objectives were enumerated, namely (i) the promotion of electrochemical science and technology and the dissemination of knowledge in these fields, (ii) the promotion of international cooperation and of personal contacts among electrochemists, (iii) the maintaining of a high professional standard. In the following, the historical development of the activities and the organizational structure of ISE shall be retraced and information on the evolution of membership, on meetings, officers and divisions will be given.

1. Membership

ISE has individual members, corporate members (non-profit institutions such as universities, libraries etc.) and corporate sustaining members (industrial companies). Originally, participation at CITCE meetings was by invitation only, but soon these meetings became public, and any qualified electrochemist recommended by two members could become a CITCE member. By 1971 when CITCE was transformed into ISE there were slightly over 400 individual members, 54 corporate members and 61 corporate sustaining members. Surprisingly, following the transformation of CITCE the individual membership at first decreased. However, soon a period of steady growth in membership set in which continues at an accelerating pace up to this time (Fig. 1). In 1997 the number of individual members exceeded one thousand for the first time. At the end of 1998, ISE counted 1100 individual members. On the other hand, the number of corporate members has declined since the mid-eighties, reflecting the increasing budget problems of universities and libraries (Fig. 2). The number of corporate sustaining members diminished slightly in the seventies and eighties but exhibited a marked increase in 1989. It has remained relatively stable since. The increase in 1989 is mostly due to the fact that a number of Japanese companies joined ISE in response to the successful Annual Meeting in Kyoto and the promotional efforts of the organizers.

In 1971 36 countries were represented in ISE, but since then their number has steadily grown (Fig. 3). The strong increase in the early nineties reflects in part the birth of a large number of new countries following the breaking up of the Soviet Union. At the time of this writing ISE has members in 62 different countries. Countries with more than five members are entitled to form a national section with a representative in the Council. The evolution of the number of national sections is also shown in Fig. 3. There are 38 national or regional sections at present.

2. Meetings

Organizing Annual Meetings was the main purpose of CITCE and has remained the main activity of ISE up to this day. From the very beginning, the Annual Meetings were held in a different place each year. The Executive Committee upon invitation by national sections or local groups chooses the location. Fig. 4 indicates the locations of Annual Meetings since 1949. In the early years Annual Meetings were held exclusively in Europe. In 1966 for the first time, an Annual Meeting was held in Japan and this was followed in 1968 by an Annual Meeting in the USA. Since then it has become common to hold Annual Meetings outside of

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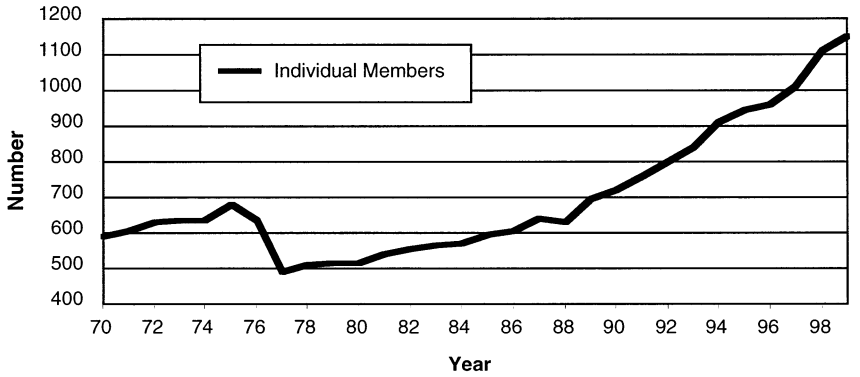

Fig. 1. Individual Member.

Europe, in Japan (1989, 1998), in the USA (1984), in Argentina (1992) and in China (1995). The international spread of its meeting locations and of its membership demonstrate the truly global reach of ISE.

In Fig. 5 the number of participants and of presentations at ISE Annual Meetings is shown, as far as available. In the old days, so called 'Full' Annual Meetings alternated with 'Restricted' Annual Meetings, which covered only a limited range of scientific topics. For example, the restricted focus on molten salt electrochemistry explains the relatively small number of participants at the 1979 Annual Meeting in Trondheim. The somewhat artificial distinction was abandoned in 1980, and since then all Annual Meetings cover a wide range of topics grouped in different symposia. The Kyoto meeting of 1989 attracted the largest number of participants ever (1100) with the exception of the joint meeting with the Electrochemical Society held in Paris in 1997 which had some three thousand participants. This meeting attracted a large number of members of the Electrochemical Society (ECS) and therefore was not typical of an Annual Meeting of ISE. The Electrochemical Society also assumed most of the organizational tasks. The Annual Meeting in Argentina in 1992 had a relatively low attendance, essentially because the number of ISE members in South America at that time was relatively small and because of the long travelling distance for members from Europe and Asia.

At the Annual Meeting in Venice held in 1980 poster sessions were introduced. They have since become a trademark of ISE meetings. Poster sessions permit to limit the number of parallel sessions and they provide a forum for informal exchanges and discussions. Interestingly, at a number of recent meetings the number of presentations, including posters, exceeded the number of meeting participants (Fig. 5). Whether this represents a trend or whether it is part of normal fluctuations is open. Different factors favour an increase in the ratio of papers/participants, including the relative ease for an author to present several posters (sometimes with a corresponding drop in quality) or the increasing difficulty for electrochemists from certain countries to find funds for international travel.

Besides organizing the Annual Meetings, ISE sponsors Divisional and Local Meetings covering specific aspects of electrochemistry. These meetings are nor-

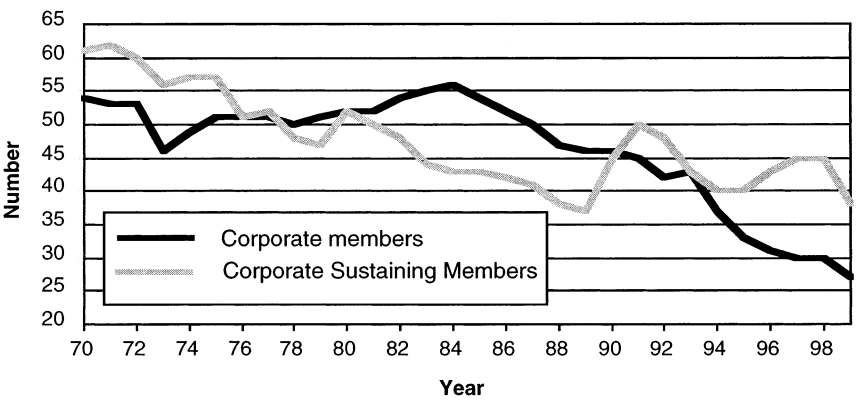

Fig. 2. Corporate and Corporate Sustaining Members.

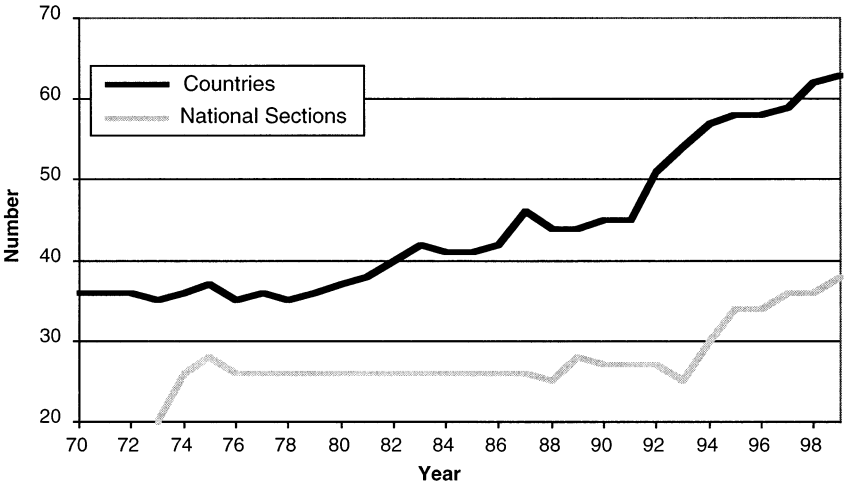

Fig. 3. Countries and National Sections.

mally run without direct participation of the ISE Business Office. To receive sponsorship a formal demand must be approved by the Executive Committee or by the sponsoring Divisions. The number of ISE sponsored meetings has strongly increased in recent years (Fig. 6) reflecting the growing visibility of the Society and the recognition it receives from electrochemists throughout the world.

3. Divisional structure and activities

From the beginning, CITCE formed working groups, called commissions, that dealt with specific areas of electrochemistry. The first commission was chaired by Marcel Pourbaix and was dedicated, not surprisingly, to the establishment of electrochemical equilibrium diagrams. It changed its name in 1967 into 'Commission of electrochemical thermodynamics' and in 1971 became an ISE Division with the same name. An other commission chaired by Van Rysselberghe dealt with electrochemical nomenclature, a topic that today is treated by IUPAC. The year 1953 saw the creation of commissions on experimental methods in electrochemistry, on batteries and on corrosion. Two years later, the commissions on electrochemical kinetics and on semiconductor electrochemistry were created, reflecting the general trend in electrochemical research from thermodynamics to kinetics. By the end of the sixties two more CITCE commissions existed, dealing with high temperature electrochemistry and with organic electrochemistry, respectively. When CITCE became ISE in 1971 the different commissions formed the first set of scientific Divisions of ISE, most of them keeping the same chairman. The eight Divisions of ISE formed at that time are listed in Fig. 7. The figure also shows the evolution of the divisional structure during the subsequent years, up to this day.

The Divisions of ISE represent the different fields of electrochemistry that are of particular interest to the Society. The divisional structure, therefore, has been evolving over the years in step with changes in the relative importance of electrochemical research areas. For example, a new Division 'Bioelectrochemistry and Membranes' was created in 1972 and a year later a Division 'Electrochemical Engineering' was formed, reflecting the growing importance of these branches of electrochemistry. In 1978 the divisional structure was revised with the aim to decrease the number of Divisions and to better represent important research areas. A smaller number of Divisions was thought to simplify administrative tasks and to improve the balance between Division Officers and National Secretaries in the Council. The number of Divisions thus passed from ten to seven. A Division 'Electrochemical Physics' was created reflecting the increasing role of solid state physics for the understanding of electrochemical phenomena. High temperature electrochemistry and experimental methods were included in the Divisions 'Electrolytes' and 'Electrochemical Kinetics', respectively. The Battery Division was renamed 'Electrochemical Energy Conversion' to include fuel cell research. Corrosion and electrodeposition became part of a new Division 'Corrosion and Electrochemical Surface Treatment'. Furthermore, organic electrochemistry and bioelectrochemistry were combined in the new Division 'Organic Electrochemistry and Bioelectrochemistry'. This latter move turned out to be unsatisfactory and a few years later a separate Bioelectrochemistry Division was restored.

The last revision of the divisional structure took place in 1988. Electrochemical thermodynamics being a

mature branch of science no longer needed a Division. The 'Interfacial Electrochemistry' Division treated now all phenomena at solid-liquid and liquid-liquid interfaces, including new techniques which permit the characterization of interfaces at an atomic scale. The creation of a Division 'Electronically and Ionically Conducting Phases' provided a forum for research on ionic and electronic conductors including high temperature electrochemistry and solid electrolytes. Division 4 was renamed 'Molecular Electrochemistry' because organic electrochemists had increasingly turned from synthesis to the study of molecular mechanisms of electrode reactions. The development of new types of electrochemical sensors and analytical techniques justified the creation of a Division dedicated to analytical electrochemistry. Finally, Divisions 6 and 7 were renamed, mostly to increase their attractiveness and to better show the scope of their activities.

At the time of this writing, eight Divisions cover the whole field of electrochemistry. Each of the Divisions is

C.I.T.C.E.

No	Year	Location
21	1970	Prague, Czechoslovakia
20	1969	Strasbourg, France
19	1968	Detroit, USA
18	1967	Elmau, Germany
17	1966	Tokyo, Japan
16	1955	Budapest, Hungary
15	1964	London-Cambridge, UK
14	1963	Moscow, Russia
13	1962	Rome, Italy
12	1961	Bruxelles, Belgium
11	1959	Vienna, Austria
10	1958	Amsterdam, Netherland
9	1957	Paris, France
8	1956	Madrid, Spain
7	1955	Lindau, Germany
6	1954	Poitiers, France
5	1953	Stockholm, Sweden
4	1952	London-Cambridge, UK
3	1951	Bern, Switzerland
2	1950	Milan, Italy
1	1949	Bruxelles, Belgium

ISE

No	Year	Location
50	1999	Pavia, Italy
49	1998	Kitakyushu, Japan
48	1997	Paris, France (jointly with ECS)
47	1996	Vezprem, Hungary
46	1995	Xiamen, China
45	1994	Porto, Portugal
44	1993	Berlin, Germany
43	1992	Cordoba, Argentina
42	1991	Montreux, Switzerland
41	1990	Prague, Czechoslovakia
40	1989	Kyoto, Japan
39	1988	Glasgow, UK
38	1987	Maastricht, Holland
37	1986	Vilnius, Spain
36	1985	Salamanca, Spain
35	1984	Berkeley, USA
34	1983	Erlangen, Germany
33	1982	Lyon, France
32	1981	Cavtat, Jugoslavia
31	1980	Venice, Italy
30	1979	Trondheim, Norway
29	1978	Budapest, Hungary
28	1977	Druszba, Bulgaria
27	1976	Zürich, Switzerland
26	1975	Baden, Austria
25	1974	Brighton, UK
24	1973	Eindhoven, Holland
23	1972	Stockholm, Sweden
22	1971	Dubrovnik, Jugoslavia

Fig. 4.

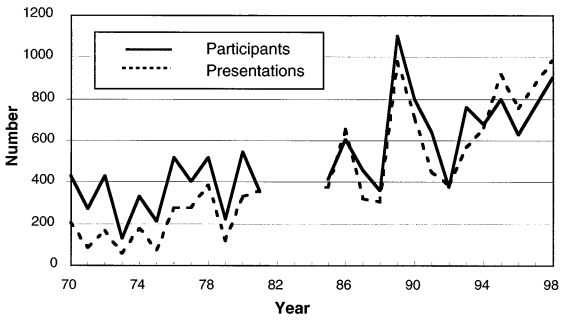

Fig. 5. Participation and presentations at Annual ISE Meetings.

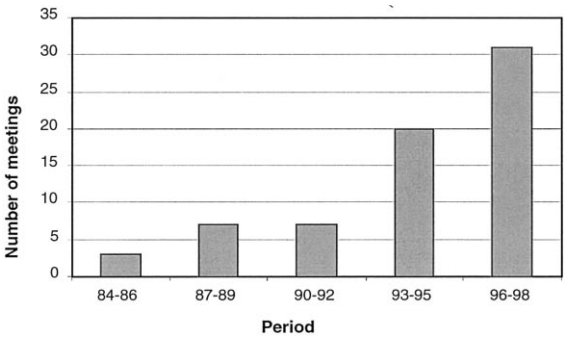

Fig. 6. ISE sponsored meetings.

composed of divisional members and is run by three Officers, namely a Chairman and two co-chairmen. The Officers of all Divisions meet once a year at the occasion of the ISE Annual Meeting in order to co-ordinate the activities of the Divisions and to define the main themes of coming Annual Meetings. The Division Officers are responsible for the preparation of the scientific program of the Annual Meetings in co-ordination with the Local Organizing Committee. The scientific quality of Annual Meetings therefore depends heavily on the involvement and competence of Division Officers. Future revisions of the divisional structure should aim at broadening the involvement of divisional members in the scientific activities of the Divisions.

4. Administrative structure

The constitution adopted in 1971 defined not only the objectives of ISE, but also its legal status and its administrative structure. To underline its politically neutral status ISE was registered in Switzerland, its legal status being that of a non profit association. The administrative structure and election procedures were further specified in Bylaws adopted in 1980. The supreme authority of the Society lies with its members who form the General Meeting. The General Meeting elects the members of the Executive Committee and votes on changes in the constitution. It normally acts

1971-72	1 Electro-chemical Thermo-dynamics	2 Electro-chemical Kinetics	3 Experimental Methods in Electro-chemistry	4 High Temperature Electro-chemistry	5 Corrosion	6 Batteries	7 Electro-chemistry of Semi-conductors	8 Organic Electro-chemistry		
1972-73	1 Electro-chemical Thermodyna mics	2 Electro-chemical Kinetics	3 Experimental Methods in Electro-chemistry	4 High Temperature Electro-chemistry	5 Corrosion	6 Batteries	7 Electro-chemistry of Semi-conductors	8 Organic Electro-chemistry	9 Bioelectro-chemistry and Membranes	
1973-77	1 Electro-chemical Thermo-dynamics	2 Electro-chemical Kinetics	3 Experimental Methods in Electro-chemistry	4 High Temperature Electro-chemistry	5 Corrosion	6 Batteries	7 Electro-chemistry of Semi-conductors	8 Organic Electro-chemistry	9 Bioelectro-chemistry and Membranes	10 Electro-chemical Engineering
1978-85	1 Electrolytes and Electro-chemical Thermo-dynamics	2 Electro-chemical Physics	3 Electro-chemical Kinetics and Electro-analysis	4 Organic Electro-chemistry and Bioelectro-chemistry	5 Electro-chemical Energy Conversion	6 Corrosion and Electro-chemical Surface Treatment	7 Electro-chemical Engineering			
1986-87	1 Electrolytes and Electro-chemical Thermo-dynamics	2 Electro-chemical Physics	3 Electro-chemical Kinetics and Electro-analysis	4 Organic Electro-chemistry and Bioelectro-chemistry	5 Electro-chemical Energy Conversion	6 Corrosion and Electro-chemical Surface Treatment	7 Electro-chemical Engineering	8 Bioelectro-chemistry		
1988-99	1 Interfacial Electro-chemistry	2 Electronically and Ionically Conducting Phases	3 Analytical Electro-chemistry	4 Molecular Electro-chemistry	5 Electro-chemical Energy Conversion	6 Corrosion, Electro-deposition and Electro-chemical Surface Treatment	7 Industrial Electro-chemistry and Electro-chemical Engineering	8 Bioelectro-chemistry		

Fig. 7. ISE Divisions.

PRESIDENTS, GENERAL SECRETARIES AND TREASURERS OF C.I.T.C.E. AND OF ISE 1949 - 1999

YEAR	PRESIDENT	SECRETARY GENERAL	TREASURER
1970	E. Yeager		
1969	G. Bianchi		
1968	J.A.A. Ketelaar	H. Tannenberger	N. Konopik
1967	N. Ibl		
1966	A.N. Frumkin		
1965	J.P. Brenet		
1964		M. Fleischmann	M. Fleischmann
1963			
1962	H. Fischer		
1961			
1960			
1959			
1958		N. Ibl	N. Ibl
1957	M. Pourbaix		
1956			
1955			
1954	T.P. Hoar		
1953			
1952			
1951			
1950			
1949	P.Van Rysselberghe	M. Pourbaix	M. Pourbaix

YEAR	PRESIDENT	SECRETARY GENERAL	TREASURER
1999	E. Cairns	A.R. Hillman	
1998			
1997	K. Niki		
1096		E. Kalman	
1995	J.W. Schultze		
1994			
1993	A.J. Arvia		
1992			
1991	M. Froment		
1990		E. Heitz	
1989	S. Trasatti		
1988			
1987	D. Landolt		
1986			
1985	J. Koryta		
1984		M. Breiter	
1983	G. Hills		
1982			
1981	R. Parsons	K. Kordesch	
1980			O. Dossenbach
1979	P. Gallone		
1978			
1977	C.W. Tobias		
1976			R. Keller
1975	G. Wranglen	D. Landolt	
1974			
1973	M. Fleischmann		
1972			
1971	H. Gerischer	H. Tannenberger	N. Konopik

Fig. 8. Presidents, general secretaries and treasurers of C.I.T.C.E. and of ISE 1949–1999.

by mail ballot. Some of the prerogatives of the General Meeting such as approving the accounts are delegated to the Council. In addition, the Council can adopt Bylaws and it approves the candidates for Officer of the Society, proposed by a Nominating Committee. The Council is composed of the National Secretaries and of two thirds of the Division Officers. The administrative responsibility of the Society lies with the Executive Committee, which reports to the Council. It is chaired by a President elected for 2 years. Its elected members include further the Immediate Past President, the President Elect, the Secretary General, the Treasurer and four Vice-Presidents. The Editor-in-Chief of Electrochimica Acta is an ex-officio member of the Executive Committee. Fig. 8 lists all Presidents, General Secretaries and Treasures with their terms of office since 1949. Up to 1990 the administrative burdens were shared between the Secretary General and the Treasurer. With the increase in the number of members it became necessary to centralize administrative duties in one place. This led to the creation of a Business Office, which operated under the supervision of the Treasurer. The Business Office handles all routine contacts with members, Divisions, National Sections and with other organizations and it is in charge of organizing the elections and mail ballots among members. Starting in the year 2000 an Executive Secretary paid from ISE funds will head the Business Office.

5. Outlook

When CITCE was founded 50 years ago electrochemical science and technology was quite different from today. Experimental methods were simple, not even potentiostats were available, and interfacial electrochemistry was in its infancy. Some 20 years later, when CITCE became ISE, electrode kinetics, semiconductor electrochemistry and electrochemical engineering had become established fields and a wealth of new methods such as transient methods and spectroscopic methods had been developed and were widely used. At that time, the first electronic calculators had just appeared on the market, but the PC was still years away and even

simple numerical simulations required the use of big main frame computers. Today electrochemical science and technology has developed into a recognized discipline that finds many challenges and innovative applications in such divers fields as advanced energy conversion, corrosion control, sensors, micro-and nanofabrication, medical technology, and pollution control. ISE has played and will continue to play an important role in the development of electrochemistry and its applications in advanced technology. ISE provides a unique forum for exchange of scientific knowledge and it contributes to international co-operation and friendship among electrochemists and electrochemical engineers from all over the world. The scope of electrochemistry is expected to widen even more in the future, increasingly overlapping with other disciplines such as materials science, solid state physics, biology and nanoscience. New theoretical and experimental methods, not necessarily electrochemical in nature, will continue to appear and enlarge the choice of tools available for the elucidation of electrochemical phenomena on an ever finer scale. Numerical simulation and powerful information systems including Internet will open exciting new perspectives for research on electrochemical systems and for international collaboration. As it enters into its second 50 years, ISE can look forward to a bright future.