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NEWS

THE BIRTH OF CITCE☆,☆☆

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I want to thank the Scientific Committee of the Organizing Committee of this 20th CITCE meeting for asking me to recall for you some of my own memories connected with the birth of CITCE, whose 20th anniversary we are celebrating to-day. It is my wish that you will consider these remarks as a witness of gratitude to F.E.C. Scheffer, Professor at the Technical University in Delft, who died in 1954, without whose encouragement the work which led to the creation of CITCE would not have been accomplished. It is also in gratitude to the twelve friends, from seven countries, who were in March 1949 among the founders of CITCE. Thus:

from Belgium:

Carmen Capel-Boute, who is here to-day, enthusiastic and unselfish, who helped particularly in the organization work of the first meeting,
André Juliard, generous, a philosopher and idealist, a man of great vision, who emigrated shortly afterward to the United States.
Jan Gillis, eminent analyst and faithful friend, through whom we came to know Gaston Charlot,

from France:

Gaston Charlot, who was then undertaking his monumental work in the renovation of analytical chemistry,
Gabriel Valensi, also present, who, with enthusiasm and unselfishness, incorporated the methods of CITCE into general chemistry,

from the United States:

Paul Delahay, so young then, who had just left Belgium for the United States where he has found great success first in Eugene, then in Baton Rouge, and now New York,
Pierre Van Rysselberghe, also originally from Belgium, who received Dr. Delahay in Eugene, wise, precise, calm, scrupulous, who proposed the establishment of an "Atlas of Electrochemical Equilibria", who undertook the tremendous task of definitions and nomenclature in electrochemistry, and who was our first president,

from Great Britain:

John O'M. Bockris, also present, who was at that time at the Imperial College. and who, dynamic, polyvalent and incisive, made afterwards a prestigious career in the United States,
Thomas Percy Hoar, clear and practical, whose work and very brilliant papers have developed at one and the same time the scientific aspects of the study of corrosion and the practical techniques to be used in the fight against corrosion,

☆ Commemorative lecture given at Strasbourg, 19 September 1969, during the 20th meeting of CITCE (Comité International de Thermodynamique et de Cinétique Eloctrochimiques). Translation by R.M. Hurd [1] of Rapport Technique RT. 162 of Centre Belge d'Etude de la Corrosion CEBELCOR. Manuscript received 15 October 1970.

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[1] The almost literal translation by Dr. Hurd preserves something of the essential linguistic flavour to be found in all Dr. Pourbaix' communications—Ed.

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from Italy:

> Roberto Piontelli, also generous and enthusiastic, dynamic, always the "Grand Seigneur", and who, at the time of our second meeting (held in Pallanza, Varenna and Milano), transformed our little committee into a truly international organisation, and who undertook the publication of the meeting reports,

from Holland:

> Willy G. Burgers, Colleague and friend of Professor Scheffer, from whose initiative took place the first meeting which led to the creation of CITCE,

and finally from Czechoslovakia:

> Jaroslav Heyrovsky, the most eminent among us, the only one lost by death this twenty years, the only one who, even though his ideas were constantly with us, could never attend a single of our meetings.

Herewith are three photos, of Heyrovsky and Mrs. Heyrovská, of his office, and of his very first polarograph with his very first polarogram. I took these photos in Prague in 1965, just one year before his death.

Besides Heyrovsky, three of the other non-Belgian founders of CITCE were unable to attend the first meeting: Paul Delahay, Roberto Piontelli and Pierre Van Rysselberghe. However, 16 of our Belgian friends, among whom several joined the initial organization right away, took part in all or part of this meeting in Brussels: Daniel Bermane, Florent Bouillon, Robert Breckpot, Lucia de Brouckère, Claude Decroly, Raymond Defay, who quickly brought us faithful co-operation, Louis d'Or, Georges Duyckaerts, Eugène Frenay, Lucien Gierst, Alfred Gillet, Ivan Gillet, Claude Herbo, Francis Meunier, Ilya Prigogine, M. Van Cakenberg.

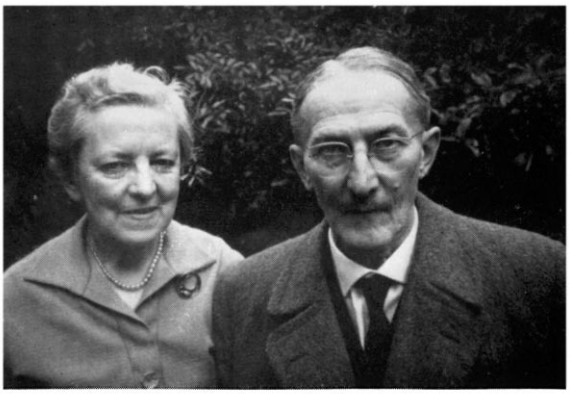
Madame Capel-Boute accepted the difficult task of collecting the elements of discussions which occurred during the first meeting, with a view towards eventual publication of the proceedings of this meeting, but events have prevented this publication, at least up to this time.

The creation of CITCE was an act of reason and of faith.

I urge some of you who completed your studies some thirty years ago, to recall what was generally taught as electrochemistry then, particularly that part concerned with what Bockris has called "electrodics", in opposition to "ionics": confused, diffused, isolated and totally disorganized. In spite of the prophetic papers produced by Fritz Haber in 1898 and in 1900, the concept of an "electrode-potential" was seldom grasped, and a great confusion reigned then concerning the sign of this potential. Because of this, electrochemical thermodynamics remained essentially a theoretical science, the notions of electrochemical equilibrium and electrochemical affinity reaching only rarely into the domains of the experimentalists and engineers. The development of electrochemistry thus fell considerably behind that of the two sciences from which it derives, electricity and chemistry, which thanks to Maxwell and Gibbs, had already benefited greatly from the illumination which the use of energetics brings to all sciences. The courses in electrochemistry were amusing, full of mysteries and marvels, but the poor students, when they were seriously interested in learning and understanding, were left hungering. And the professors often understood very little more, in spite of the great advantage they had over the students through the power of choosing the topics and the examination questions.

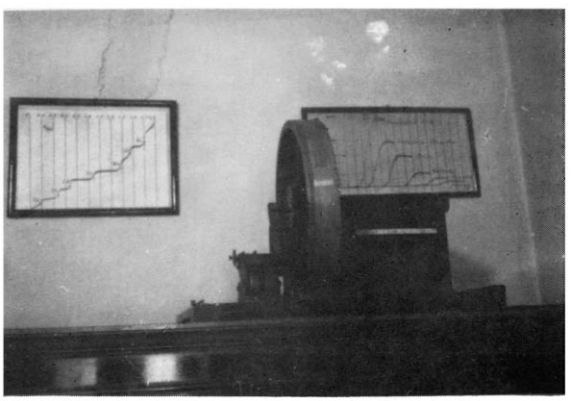
As for me, a young assistant, timid and respectful, in striving to understand, I had drawn some electrochemical equilibrium diagrams as the subject or a memorandum entitled "Thermodynamics of dilute aqueous solutions. A graphic representation of the role of pH and potential". This was offered as an accessory thesis to an essentially experimental Dissertation presented for the doctorate. It was too early, and even though this occurred at a time when Carl Wagner, with Wilhelm Traud, had just published his celebrated mémoire on the interpretation of corrosion phenomena by means of polarization curves, my thesis was in fact rejected, and I was not even allowed to speak to it, because of this accessory thesis, which was considered to be completely in error. Corrosion at that time had a reputation in certain circles of being mysterious and complicated, to the point even of not following thermodynamic principles.[2] Now it happens that though thermodynamics is never mistaken, thermodynamicists, unfortunately, may often be. And we were not too far from the moment in 1925 when Georges Urbain, in the introduction of his "Energetics of Chemical Reactions", had written: "Chemical thermodynamics had been a part of physical chemistry for a long time. In the future it will be classed among the fundamental doctrines of pure chemistry. In France, this important reform is due to Le Chatelier. It is not

[2] Not, however, in *all* circles. Dr. Pourbaix visited Dr. U.R. Evans shortly before the 1939–45 war, and several workers in the laboratory, notably J.N. Agar, the late O. Gatty and T.P. Hoar, found themselves greatly stimulated by contact with Dr. Pourbaix and his work—Gatty (with E.C.R. Spooner) had published work involving metal/water equilibria, and Hoar was looking at tin corrosion from the thermodynamic point of view.—Ed.



Jaroslav Heyrovsky and Marie Heyrovskà (Prague 1965).

The office of Heyrovsky.



The first polarograph and the first polarogram.

without difficulty however that his ideas have become accepted. There was opposed to him a tradition which knew nothing of thermodynamics. He was reproached for encouraging the encroachment of physics and mathematics into a science which could in fact do perfectly well without them. But in scientific matters, it is always a ticklish matter to make ignorance a weapon in your arsenal''. But we were far removed from the moment in the 16th century when Francis Bacon could say: ''Truth will sooner come out from error than from confusion'', and from the moment in the 17th century when René Déscartes summarized his philosophy in the following phrase: ''To arrive at the truth it is necessary, at least once in life, to rid one's self of all the opinions he has received, and to construct anew, and from the fundamentals, all the systems of his knowledge''.

These matters, over thirty years old, now belong to the past, and are only a chapter among many others in the history of scientific thought. They could have had tragic consequences. Fortunately, thanks to F.E.C. Scheffer, I was able to defend the disputed Mémoire as a thesis at Delft, and it was then published. Then thanks to U.R. Evans and J.N. Agar, it was translated into English, and finally in 1949, following a suggestion of W.G. Burgers, it was the central topic of the meeting in Brussels which gave birth to CITCE.

Considering this as background, the founders of CITCE took particular pains to constitute it in such a way that young researchers could easily find a comprehensive and sympathetic audience there, so that an experience such as mine could never, ever be repeated among them. It was with this goal in mind that, among the first by-laws or CITCE, the dues of membership were made optional, and we consciously attempted to create an atmosphere in which the young participants would feel as much at ease as their elders: no ''referees'' for the communications, which were not required to be edited. No requirement for publication, either on the part of the author or the conference, no stipulation that the communications be entirely original: we wanted the communications to express essentially the present state of the author's work, and the authors of course to accept all the friendly and constructive discussion. It was also in this spirit that a ''moral charter'' was drawn up for CITCE, which you may recall from the ''proceedings'' of most of our meetings as: ''CITCE is essentially a group of researchers interested in the same problems and collaborating on the base of the most complete cordiality and frankness to the achievement of a given research programme''.

Many of us think that international meetings are above all an opportunity to *serve*, to meet people of different backgrounds and make them our friends. From this standpoint, the officially stated theme of the meeting may be considered a secondary purpose. It is necessary to come to these meetings thinking first of what one can give rather than of what one can receive. And that, I think, is one of the keys to the considerable scientific and moral success which has come to CITCE, whose very name is, to those who have watched its birth and growth, to those who have lived with it during the years 1949–1962, to all who know it well, the symbol of a kind of human behaviour in scientific communications.

I sincerely hope that those who carry forward the work of the founders will not forget this.

SYMPOSIUM ON ELECTROCRYSTALLIZATION

A Symposium on Electrocrystallization Processes will be co-sponsored by the Electrodeposition and Theoretical Electrochemistry Divisions at the 1971 Fall Meeting of the Electrochemical Society during 3–8 October in Cleveland, Ohio. Papers concerning experimental or theoretical aspects or electrocrystallization kinetics, nucleation, growth, and *dissolution* processes in both aqueous and *non-aqueous* media should be within the scope of the symposium, which will be organized along the following broad outline:

I. Nucleation phenomena
   1. Formation and growth of two- and three-dimensional nuclei
   2. Deposition on like and foreign substrates
   3. Growth of new phases.

II. Growth (including electroless deposition) or dissolution processes
   1. Step interactions and development of ledges and facets
   2. Changes in morphology due to growth or dissolution
   3. Dendritic growth phenomena
   4. Factors affecting the integrity of deposited material
   5. Relationships between structures of substrates and deposits.

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