

LOOKING AT THE ORIGIN OF THE BOLETIN AFTER 20 YEARS OF UNINTERRUPTED PUBLICATION

Before June, 1971, the Instituto de Química will have a new Director. At that time I will have been in tenure for 18 years, which is the maximum allowed by the University by-laws. On leaving the direction of the Instituto, I will leave, also, the responsibility of publishing the Boletín, which has been in my hands for the last 20 years. In this last issue under my care, I would like to comment on the aims I have followed, both as a Director of the Instituto, as well as an Editor of this journal.

The Instituto de Química was created by Dr. Fernando Orozco in 1941, its first Director (1941-1953). As a student just out of the School of Chemistry, I was fortunate enough to have been nominated its first assistant. Reminiscing on the facilities available at that time, one wonders how we could be so enthusiastic to come to work at a place that had two small laboratories, a few pieces of glassware and, in the "library" consisting of a very old copy of Beilstein, in four volumes. Under the leadership of a Spanish emigree, Dr. Antonio Madinaveitia, Octavio Mancera, Humberto Estrada, José Iriarte and myself, began to work in very primitive programs of research, which were, nevertheless, the only ones that were carried out in Mexico in the field of chemistry, at that time. In older times there had existed another research center, the Instituto Médico Nacional, that had collapsed in 1915, at the onset of the Mexican Revolution.

The first paper from the Instituto, "Estudio químico de los lagos alcalinos" by F. Orozco and A. Madinaveitia, appeared in the *Anales del Instituto de Biología de la Universidad Nacional Autónoma de México*, 12, 429 (1941). From that time, papers began to appear in whatever journals were available: *Ciencia (México)*; *Anuario de la Comisión Impulsora y Coordinadora de la Investigación Científica*; *Anales de Física y Química (España)*, etc. But all these

journals had great objections: either they were specialized in other fields, or they were general, or they were short lived and with a very limited circulation.

In consideration of these arguments, Dr. Fernando Orozco took, in 1945, the crucial step of starting this Boletín, dedicated, almost exclusively to research papers in the field of chemistry. Due to its origin, from its start up to our present days, it has contained, mostly, some of the results obtained by the staff of the Instituto proper. For two years it was a painful struggle: the finished research programs were negligible and, therefore, few papers were available for publication. Worse still, at that time Dr. Fernando Orozco took another crucial step: to send some of the young researchers abroad, for training in the best research centers of the U. S. A. and England. In this way, the already low possibilities of getting results for publication were diminished even further. The natural effect was that, after two issues were published (Año I number 1 in December 1945 and Año II number 2 one year later), it was discontinued. But then, things began to happen in México: the researchers sent abroad came back with considerable training in research methods; the Rockefeller Foundation took an interest in the Instituto and began to help in obtaining equipment and Syntex Laboratories were created, and undertook some joint research efforts with the staff of the Instituto.

In 1951, with the help of Prof. Carl Djerassi and under my editorial directorship, the Boletín was started again. Utilizing sometimes original papers, and some translations into Spanish of papers that had been published, mainly in the *J. Amer. Chem. Soc.* or *J. Org. Chem.*, *Tetrahedron*, *Tetrahedron Letters*, *Chemistry and Industry*, etc., it began to thrive and, from that time it has appeared regularly. It has not been an easy job, while being devoted almost exclusively to the results obtained by the Instituto's personnel, great concern had to be exercised in the course of refusing papers which did not meet the highest possible standards, in order to avoid great animosities or everlasting hostilities.

From the beginning to date, 118 original papers have been published in the Boletín; from 1951 to 1962, 63 authorized translations into Spanish were included. In 1963 the editorial policy

changed; the output was enough to omit translations, although at the end of each number, a list of papers by Instituto members, published elsewhere, was included. Then, in 1969, the contents were divided into two sections: those papers that contributed to the advance of chemistry, in a first section and a second one, devoted to "new compounds, new methods and their physical constants". Also, in 1969 for the first time, a contribution from a foreign University was published.

In the course of this period of time, I have received enthusiastic collaboration in the editing of the Boletín from several colleagues:

From 1951 to 1953, Dr. Octavio Mancera.

From 1954 to 1958, J. F. B. Humberto J. Flores.

From 1959 to 1961, Dr. José Luis Mateos.

And from 1962 to date, of Dr. Fernando Walls.

Vol. 16 (1963) was assembled in its entirety by Dr. Jesús Romo.

Should there be a person who asked, "why or what is the reason for going to the trouble of publishing this Boletín, when actually there are so many hundreds of journals?", my answer would be the following:

a) There are very few chemical journals in Latin America. Therefore, the Boletín serves the need of some of the Institute's researchers to publish their results in a national journal.

b) The Boletín, published in Spanish, makes other researchers from abroad aware that there is a center of research, comparable in its importance to many others in the U. S. or Europe, where pure research is carried out. At the same time some recognition is gained for the fact that Spanish is a living language suited to both our scientific and cultural interests.

c) The Boletín, totally sponsored by the Instituto Nacional de la Investigación Científica, affords luxuries to its authors seldom found in other journals: full reproduction of spectra, photographs in black and white or colored; no pagination charges and last, but not least, affording us the opportunity to publish in our native language.

d) Although there are many hundreds of journals, this one does not affect the purse of other institutions, since it is distributed free of charge. This fact has some disadvantage, if one is inclined to equate cost and value, but this is overcome by maintaining as high a quality as possible.

e) Having the Boletín as a recognized journal in the files of foreign Universities helps to build the cultural status of México, in general, and of the University and the Instituto in particular.

In recent times it has become fashionable to talk and evaluate the worth of "applied research" as compared to "pure research". Since I have had, in the 18 years of tenure as Director of the Instituto very strong points of view of these concepts, I would like to finish this retrospective look at the past to leave in writing the objectives I have pursued during these years.

a) I do not believe there can ever be "applied research" unless there is a very strong organization dedicated to the ideals of "pure research" in any given country. That is to say, it is not possible to create an "applied research" body based on the "pure research" carried out in another nation.

b) There is a great tendency to confuse the term "applied research" with "technology". When a country finds it has to import knowhow, it must recognize that it lacks technologists. They can be prepared by sending young men to foreign countries, to factories, where the products are manufactured, or to factories where they are used. When they come back, they will be able to handle such factories or equipment, and the country will no longer need to pay for the knowhow. But if such a country finds it has to pay countless millions in royalties for patents necessary for her development, putting a lot of people to work in "applied research" to substitute for the foreign concerns hardly will have any effect: usually the big foreign companies have invested a great amount of money in finding the best methods, with the help of a lot of "applied research men" who have been working on the original ideas of pure scientists. Besides, a patent is generally based on a concept that has already gained acceptance with passage of time.

While this concept has been applied, a number of new methods, new processes and new equipment have been developed, which in turn give rise to newer patents. However, only through developing a great amount of pure researchmen can new concepts germinate and from which the activities of "applied research" can be derived. A country like México, with close to 50 millones inhabitants, should encourage, first, the development of many academic institutions: that the institutes of chemistry might not be one, as is the case now, but hundreds; that many institutes of physics, mathematics, geophysics, geography, geology, etc. were formed, preferably in conjunction with every university. Only under such circumstances will it be possible to attain genuinely high levels of academic training, where it might be possible to interchange places, to talk about new developments, to originate ideas that might have application to the industrial development of the country *from within*.

c) Following this policy, I have always given the greatest support possible, to any kind of pure research, regardless of whether it is "economically productive" or not. I have accepted almost all the students that have come to the Instituto requesting admission and I have refrained from getting involved in complicated international projects that would limit our capacity for doing our research and for teaching Mexicans who are badly needed in México. But this does not mean we are a nationalistic body. Constantly we have accepted, in limited numbers, foreign students, mainly from Latinamerica. We have even had some from France and the U. S. A., but this has been done without international agreements to accept a predetermined number of students whose academic attainments might be quite inadequate. Over 330 students have gone through our teaching and research programs, and I feel proud of the fact that many of them hold high positions in other departments or other universities, from where they can also exert their influence in promoting research and higher learning for the betterment of our country, and taking small, imperceptible steps towards the economic emancipation of México.

Before ending, I wish to express my gratitude to my colleagues who have given me their support in carrying out these projects, and to express gratitude on my personal behalf as well as on the

Instituto's to many institutions from México and from abroad that have given us their most generous support, and to the foreign scientists whose help to bring this Instituto to its present academic level have been of tremendous importance: Dr. Harry M. Miller, Jr., from the Rockefeller Foundation and Drs. George Rosenkranz and Carl Djerassi from Syntex Laboratories; to many visiting professors, from American and European Universities who have come to share their knowledge with us and, finally, to Prof. Harold Kwart of the University of Delaware whose help in the last 5 years has had a deep effect on our development.

What the Instituto develops into, and whether the Boletín continues towards the objectives delineated above, will be in the hands of my sucesor. To him, my best wishes.

ALBERTO SANDOVAL L.