

WINE TECHNOLOGY AND DISTILLATION IN CATALUNYA IN 1800

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In this paper, some technical aspects of the Catalan viniculture during the transition between the XVIIIth century and the XIXth century are described within a general framework of technological change. In the production of wine and its derivatives, a certain number of theoretical concepts, laboratory experiments and technical skills complemented each other through a network of academic chemists, craftsmen, mechanics or liqueur tradesmen who considerably transformed the study of the wine, its production and its preservation. In particular, and under the French influence, several new proposals were made by some of the genuine representative members of the technical Schools of the Commerce Council.

Just as from a historical viewpoint and during the first part of the XIXth century these institutions can be regarded as antecedents of the Industrial School of Barcelona, so the new wine-producing techniques in 1800 could analogously be partly considered an antecedent; that is, they could be regarded as some kind of "proto-engineering" upon which the synthesis between the Chemistry and the Mechanics of the future profession of chemical engineer in the late XIXth century was based.

CHEMICAL INDUSTRY AND TECHNOLOGICAL CHANGE: SOLVAY'S ELECTROLYTIC PROCESS IN TORRELAVEGA

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At the end of the XIXth century, Spain was a country that imported alkali for its glass, textile and paper industry. Almost all these importations were done by Solvay group. Solvay sent sodium carbonate (soda) and sodium hydroxide (caustic soda) from its companies in Belgium, France and England to the harbours of Barcelona, Málaga, Sevilla and Bilbao. At the same time, the European electrolytic industry was born which obtained caustic soda from the electrolysis of the brine. The first cells (with a vertical diaphragm and mercury) did not develop their productive capacity to the full. This made them become not very efficient models that still had to improve their design and function if they wanted to compete with the two prevailing technologies of alkali obtention at that time -Leblanc and Solvay.

Three of the first vertical-diaphragm cells were installed by many other companies in our country at the beginning of the XXth century in order to counteract the Spanish productive deficit in this period. Afraid of losing a considerable part of its market in Spain, Solvay decided to install an ammoniac soda-producing plant near Torrelavega, thus creating a fierce competitiveness that caused two of the electrolytic companies to close down. Only the privileged situation of Electroquímica de Flix, near the Catalan and Valencia market, allowed Solvay to remain in the alkali Spanish market until the beginning of 1930.

The introduction at this time of a new and more efficient cell in Solvay's installations in Flix forced Solvay to install its own electrolytic process in order to protect its interests both in the case of caustic soda and in the chlorine one (the latter being a product exclusive to Flix till then). This work aims to describe the process of technological competitiveness between these last two electrolytic

methods of soda production. It also tries to describe the procedure of study, installation, and formation of both technical and worker staff that Solvay carried out when establishing a new process within its premises.

TECHNOLOGICAL POLICY VERSUS SCIENTIFIC POLICY DURING FRANCO'S REGIME

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This paper analyzes how politics during Franco's regime institutionalized scientific and technological research. In this process, science and technology were confronted, though one would have expected complementarity relationship between them. This fact made the Spanish science and research system a case difficult to compare with the European models. Therefore, a previous and very general expository work about what happened turns out to be necessary. For this reason, we have grouped the events into two periods. The first one began with the reconstruction of the system that had been built up at the beginning of the XXth century, and finished when conflicts between military engineers and technocratic economists appeared (1939-1958). The second stage begins with the new orientation of the scientific and technological policy of the so-called "desarrollismo". Here, special emphasis has been made on the end of the monopoly that state-owned companies had on all the public expenditure on R+O. Finally, we support the idea that science and technology policies during Franco's regime have bequeathed us a number of problems in our science and technology that even today are too manifest.

ALARM IN BARCELONA: THE TRANSFER OF THE SCHOOL OF INDUSTRIAL ENGINEERING TO MADRID (1881)

Guillermo Lusa Monforte

After the Real Instituto Industrial of Madrid was closed down in 1867, the School of Industrial Engineering of Barcelona becomes the only centre in Spain where the education system of industrial studies as established in 1850 survives. The school of Barcelona remains open thanks to the stimulus from the manufacturing environment and the economic support that local corporations (Diputación and Town Hall) have been giving since 1866. However, during its first years of existence, many difficulties arose which also affected the careers of the engineers graduated during those years. These difficulties reflected in most cases the problems that restrained the industrialization process in Spain.

At the beginning of 1880 decade, the picture was considerably different; the school of Barcelona was quite consolidated, kept contact with homologous foreign institutions, and was at the same level of the scientific and technical movement that opened the new stage of the European industrialization. Not only did the school have prestige but also the profession, which was now socially recognized. It was during that time that some groups in Madrid tried to open the School of Industrial Engineering of Madrid again; the actions taken in spring 1881 by the Association of Industrial Engineers gave rise to the idea that the school of Barcelona was going to be moved to Madrid. For some days -which coincided with an important campaign

for tariff protectionism supported by the industrial bourgeoisie- uneasiness grew in Barcelona. In Barcelona, nobody seemed to know anything about the matter. In the end, everything turned out to be a false alarm ... or so it seemed.

This event -which is to be repeated a few years later- illustrates the existing friction between the political capital of the Kingdom (Madrid) and the industrial capital (Barcelona), and poses questions -some of which are answered- about the political system of the Restoration, and about centralism-regionalism. In this paper, the correspondence regarding this matter between Ramón de Manjarrés (director of the School) and Gumersindo de Vicuña (president of the Association of Industrial Engineers) is reproduced and analyzed. Here, several aspects related to the School, the technical education in general, and the Spanish industrialization process are shown.

Traducció Marta Aguilar