

Odón de Buen

FORERUNNER OF SPANISH OCEANOGRAPHY

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Figure 1. D. Odón de Buen, founder of the Instituto Español de Oceanografía, ca 1936, before the start of the Spanish Civil War, when he was imprisoned in Palma by the rebellious fascists. One year later, aboard the British cruiser *Arethusa*, he was released from prison in exchange for one of the sisters of the founder of the Spanish Fascist Party. He was taken to Valencia, but shortly thereafter went into exile, ultimately moving, with his entire family, to Mexico, where he died in 1945. More than 40 years passed before he was able to take his rightful place in the history of Spanish oceanography.

At the beginning of the 20th Century there was a splendid resurgence of Spanish art and science. From the pessimism of the end of Empire¹ sprang a new class of intellectuals dedicated to bringing Spain to a modern era of science and knowledge. Don² Odón de Buen epitomized them. More than a usual scientist, he was a teacher and visionary, who, almost single-handedly, brought oceanography to Spain and promoted it on a European and international scale. Unfortunately the Spanish Civil War (1936-1939) severed that effort and condemned him to exile and oblivion. This article pays a deserved tribute to the status and achievements of this pioneer of oceanography in Spain.

In Banyuls sur Mer, France, a fatigued and saddened old man is hastily writing his memoirs. He has been seriously ill for two months and is afraid of not finishing what he had started to write nearly a year after he and his family walked, like many of his compatriots, on the road to exile. Fearful of a dark future—German troops are already invading other European countries—he tries to abbreviate and synthesize his account, expecting to review and extend it before publication. It is not until some sixty years later that his unfinished memoir is published.

D. Odón de Buen was a man of such high moral and social authority that he represented the paradigm of what Franco's dictatorship hated the most. D. Odón (Figure 1) defined himself as republican, freethinker, atheist, and Darwinist (de Buen, 2003)—any of which was grounds to send him to the firing squad. It can not be said that the victors of the Spanish Civil War were not successful in this, too: most of the Spanish oceanographers born after the Civil War ignored until very recently everything about de Buen who, among many accomplishments, was most proud of introducing and implementing oceanography in Spain and founding the Instituto Español de Oceanografía (IEO).

¹ Although Spain held some North African colonies up until 1975, the loss of Cuba, Puerto Rico, and the Philippines, which became U.S. colonies under the Treaty of Paris of 1898, is considered the real end of the already declining Spanish Empire. The pro-independence fighters in those colonies were supported by the United States, which declared war on Spain in April 1898.

² Don (abbreviation D.) is a courtesy title placed before the first name of a person as a way of showing respect.

STUDENT YEARS: FIRST CONTACT WITH THE OCEAN

D. Odón de Buen was born in 1863 in Zuera, near Saragossa, some hundreds of kilometers from the sea, to a modest family who moved with him to Saragossa to facilitate his high school studies, which he completed with the highest marks. He entered the University of Saragossa to take the “medical preparatory,” but with the firm intention to study Natural Sciences, which at that time could only be studied in the University of Madrid. De Buen then went to the University Madrid with the economic assistance of his hometown city council and a governmental scholarship. As a student he gave private lessons to make ends meet. One of those students was a very young Miguel Primo de Rivera who years later established a dictatorship by a military coup with the consent of the King, and whose family played an important role in the dramatic final years of de Buen’s life. After finishing his graduate studies and obtaining a Ph.D. at the age of twenty-two, de Buen had to find a way to make a living. In that year, 1885, the personal tragedy of his father’s death from cholera was partially compensated by finding a job that dictated his vocation and marked his future.

At that time, the Spanish Navy organized a round-the-world cruise for midshipmen, and assigned them to the *Blanca* (Pérez de Rubín, 2004; Oliver, 2003), an old wooden frigate and a veteran of the battle of Callao³ (Figure 2). It was planned that the ship would carry a Commission of Naturalists, which in the end was reduced to two members: de Buen and a forest engineer. De Buen did not know anything about the ocean

or the art of sailing. He admitted that he was not qualified to investigate, but was well suited as a collector for the museum, full of enthusiasm and willing to work hard. He was put in charge of setting up the on-board laboratory and library.

The cruise around the world was reduced to a trip around Europe and to North Africa. De Buen visited many research institutions, where he met scientists, among them the young Norwegian Fridtjof Nansen. During that trip, de Buen acquired what he called “definitive orientation for his future life.” He became aware of the scientific backwardness in Spain and “forged a temperament and will of an innovator” (de Buen, 2003). Almost fifty years later he reminisced of that trip: “I met the sea, I contemplated it: magnificent, imposing, despising the insignificance of our wooden ship, but I also met expert men, conscious of the superiority of the human intelligence... And I felt an insatiable eagerness to know the hidden secrets below the waves and the causes of the origin and life of the oceans; ...and made the firm decision to devote myself to Oceanography that back then was at its dawn...” (de Buen, 2003).

PROFESSORSHIP: BARCELONA YEARS

One year after the *Blanca* cruise, de Buen became Professor of Natural History at the University of Barcelona. He initiated field excursions with students to collect marine specimens and geological samples (“To study natural history in the museum is like studying literature in dictionaries,” he said [de Buen, 2003]). De Buen extended these visits to Banyuls sur Mer where Henri de Lacaze-Duthiers

had founded the Laboratory Aragón. De Buen built and cultivated a very close friendship with Lacaze-Duthiers, with whom he collaborated in many of his cruises and projects; de Buen used this laboratory as a model for his own future laboratory in Mallorca. During his years in Barcelona, de Buen published a three-volume textbook on natural history and began his practice of bringing scientific knowledge to all social sectors. Throughout his life, de Buen made a tremendous effort to popularize scientific themes. Using slides, movies, and even living specimens, he shared his knowledge at meetings of unions, fisherman brotherhoods, and agriculture cooperatives, and at schools.

During that period, de Buen became directly involved in the turbulent political life of the epoch: as a member of one of the republican parties he became councilman and later senator. Reactionaries of the time asked that de Buen be expelled from the university as what he was teaching was against the Catholic dogma (de Buen, 2003; Oliver, 2003). He evaded the agents carrying the suspension order and for a time taught in social clubs; sympathy for his case crossed all social levels. Once, when waiting for his alumni in the restaurant of a train station, the waiter, asked by de Buen for the bill, answered: “While D. Odón de Buen can not have his chair back he can come to lunch here for free” (de Buen, 2003). De Buen was also an outspoken opponent of the torture practiced by the police and “Guardia Civil” in a time when

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³Callao, Peru was the last Spanish bastion in South America. The battle took place in 1866, during the war between Spain and the republics of Chile and Peru.

political turmoil touched all aspects of everyday life. Once back at the university, he continued sharing his time between teaching and politics, until in 1911, de Buen moved to the University of Madrid where he held first the chair of geology and botany and later that of biology. In Madrid he implemented the same plans he had in Barcelona, extending the curriculum and modernizing the facilities. Simultaneously, de Buen devoted himself to establishing and developing oceanography in Spain.

FOUNDING OF THE INSTITUTO ESPAÑOL DE OCEANOGRAFÍA

From his first visit to Banyuls, de Buen decided to create a similar laboratory in Spain. In 1908, thanks to his efforts, the Marine Biology Laboratory at Palma de Mallorca was founded (Oliver, 2004). The laboratory's first research vessel, provided by the Treasury Department, was a 9-ton "laud" taken for smuggling and justly renamed *Lacaze-Duthiers* for de Buen's close friend and mentor. Systematic, periodic cruises were carried out along the coast of the Balearic Islands, the mainland, and the Spanish colonies in North Africa. Professors and investigators of diverse countries continued their research during their visits to Palma. In 1913, a laboratory was created at Málaga (Pérez-Rubín, 2004). At first, this laboratory was considered part of Palma, but later it became independent.

In the summer of this same year, within the programmed activities of the Oceanographic Society of Guipuzcoa, de Buen was invited to give two conferences open to the public in San Sebastian. The venue was a movie theater and, unexpectedly, the King of Spain attended



Figure 2. *Blanca*, an old wooden frigate and veteran of the battle of Callao. It was the first Spanish vessel to carry a marine biology laboratory (1886). De Buen—22 years old and recently graduated from the university—was responsible for the on-board laboratory and library. It was his first sea voyage, during which he decided his future profession: "...and took the firm decision to devote myself to Oceanography that back then was at its dawn..." (de Buen, 2003).

them.⁴ The conferences were such a success that D. Odón believed that "they led the political authorities to make the decision to support my project to found the Instituto Español de Oceanografía" (IEO) (de Buen, 2003). The King was already aware of this project, having attended the previous year's lecture given by Prince Albert of Monaco at the Spanish Geographical Society. De Buen had cultivated the Prince and, as with *Lacaze-Duthiers*, he maintained a very close and lifelong friendship with him. The Monaco Institute was used by de Buen as the model for the creation of an oceanographic institution in Spain. He and the Prince also worked successfully together in many other international venues, in

particular, the CIESM (official acronym, in French, of the International Commission for the Exploration of the Mediterranean Sea) and the International Union of Geodesy and Geophysics (IUGG).

In 1914, the IEO was created and attached to the Ministry of Public Education. The IEO's principal aim is the study of the ocean's physical, chemical, and biological conditions and its application to marine industries. Another goal is to popularize the oceanographic sciences and their applications (Oliver, 2003; Pérez de Rubín, 2004). At first, the IEO included the laboratories of Palma⁵, Málaga, and the Maritime Station at Santander (founded by González de Liñares in 1889). Its headquarters were

⁴ San Sebastian, in the XIX and early XX centuries was the Spanish royal summer resort.

⁵ The Kaiser Institut für Biologie from the Dahlem Kaiser Wilhelm Gesellschaft zur Förderung der Wissenschaften rented a working space in Palma.

established in Madrid. Two more laboratories in Vigo and the Canary Islands were planned. De Buen envisioned these laboratories to be different from those existing in Europe at the time: they were to be either sites for temporary visits of university professors or purely dedicated to marine biology. Besides teaching and providing facilities to investigators, the laboratories would be observatories of ocean variables. “Their changes obey laws and cycles that must be known, it is necessary to gather data for a very long time...as a means to forecast the weather at sea to the advantage of seafarers and farmers” (de Buen, 2003). Furthermore, “...without knowledge of the fluctuations of the liquid environment the weather on the continents can not be forecast with precision” (de Buen, 2003).

The first scientific staff was recruited from the faculties of sciences. Some of them had been trained in the Laboratory of Naples, others at Monaco; some scientists had participated in the Monegasque *Hirondelle II* cruises and others in some legs of the around-the-world *Dana* cruise led by Johannes Schmidt (Pérez de Rubín, 2004). The Spanish Navy made its ships available for the first cruises; actually, de Buen, fed up with what he perceived as a hostile attitude of the Ministry of Education, managed to move IEO to the Ministry of the Navy (Figure 3).

CONSTITUTION OF THE INTERNATIONAL COMMISSION FOR THE EXPLORATION OF THE MEDITERRANEAN SEA

That same year, 1914, a meeting was called at the Academi dei Lincei in Rome to create an international commission for the study of the Mediterranean. At that meeting, participants decided to ask

to the Spanish government to convene, the following year, a conference to establish the projected commission, but a few months later the Great War (World War I) broke out. During the war years, though Spain was a neutral country, the IEO conducted several cruises, which were geographically limited because of fear of submarine warfare. Cruises were multidisciplinary, and included activities such as water column hydrology, biological collection, selective fishing, and sediment coring.

In 1916, crossing a war-torn Europe, de Buen made a dramatic trip to Messina, Italy (just recovering from a violent earthquake) to attend the inauguration of the Central Institute of Marine Biology. In a room dimly lit as a precaution against air raids, a group of Mediterranean oceanographers decided to establish the Mediterranean Commission (Pérez de Rubín, 2004). The culmination of the project had to wait until the final acceptance of the CIESM constitution in Madrid in 1919 under the chairmanship of the King of Spain and Prince Albert of Monaco. De Buen, in his opening address, emphasized the application of research (“...in our times science is obligated to contribute to the improvement of the economical conditions of the peoples...” [de Buen, 2003]) and put forward some tasks, including submarine navigation, communication between Europe and Africa across the Strait of Gibraltar, and the wise exploitation of living resources (de Buen, 2003).

A period of great activity followed. The IEO, according to the CIESM agreements, focused its work in the Strait of Gibraltar, although it did not neglect other areas; it collaborated with the Italians in the Dardanelles, studied the cur-

rents between Balearic Islands and Corsica by deploying drifting floats, and did classical hydrology on board the Spanish royal yacht *Giralda* in what it was the last cruise of Prince Albert, who died in 1922 (Pérez de Rubín, 2004).

INTERNATIONAL ACTIVITY

In 1924, de Buen, at the suggestion of the British Admiral Perry, substituted for Alberto de Monaco as chair of the IUGG Oceanographic Section (which at that time included practically all the present oceanographic disciplines except biology). De Buen as well as Albert had always thought and proposed, without success, that this section should constitute, together with the Biological Section of the Union of Biological Sciences, an international oceanographic union independent of the IUGG. They were very conscious of biological oceanography as “a science of meticulous analysis but also of relation with many factors and of synthesis as wide as the sea... Is not the separation of two branches of a same science prone to make impossible the solving of the wider problems because of excessive specialization?” (de Buen, 2003). De Buen also encouraged the incorporation of Iberoamerican countries and the inclusion of German oceanographers. In 1930, Martin Knudsen replaced him. De Buen’s proposal to convert the Oceanographic Section into a confederation of oceanographic institutions with a more diplomatic character—he always thought those academic institutions, with some exceptions, had neither means nor were they appropriate to implement its mandate—was defeated.

In 1924, British and French ambassadors asked the Spanish government to be a member of the International Council

for the Exploration of the Seas (ICES), which was expanding southwards from the Nordic seas. The Spanish government, after requesting de Buen to report on the advisability of the incorporation, followed his favorable view and appointed IEO as the Spanish delegate. De Buen was very active in ICES works and had fond memories of some of the people involved: Henry G. Maurice of the UK and president of ICES from 1920 to 1938; Theodore Tissier from France; Otto Petterson from Sweden, and in particular, Johannes Schmidt from Denmark who had invited him to sail in the *Dana* Expedition (which he had to decline with deep regret). Instead, de Buen's son sailed for part of the cruise; a photo of de Buen was in Schmidt's cabin during it (de Buen, 2003).

In 1929, the Spanish government, responding to de Buen's unceasing requests, organized a conference to constitute the Ibero American Oceanographic Council. The Council, in its 1935 assembly, was defined as an integrated institution of the Iberian states, those of the American continent, and those European states with territories. It was agreed to make a first collective cruise in the "Gulf of Mexico current in the Atlantic" (Gulf Stream) and a second in the Peru Current. The Spanish Navy would provide the ship and the interested countries would contribute to the expenses (de Buen, 2003). The Spanish Civil War, however, ruined these plans.

On the initiative of the IUGG Section of Oceanography, then chaired by de Buen, the First International Congress



Figure 3. Cruise on board the Spanish Navy gunboat *Hernán Cortés*, 1916, in the coastal waters of north-west Spain. Launching the plankton net, D. Odón is the first one on the right with the white cap.

of Oceanography took place in Seville in 1929. At that event, the areas of Marine Hydrography and Continental Hydrology were added to the Congress (Congreso Internacional de Oceanografía, Hidrografía Marina e Hidrología Continental, 1930⁶). Later, because of difficulties with the planned venue in Prague, the Exhibit of Oceanographic Instrumentation and Documentation was combined with the Congress. De Buen considered this event as one of the most prestigious activities of the IEO. An interesting fact was the way Germany attended. At that time, Germany did not want to adhere to IUGG, or even to attend its international meetings, but because the IEO was in charge of the Congress, de Buen invited the German

representatives using direct diplomatic channels with great success. The German delegation was relatively numerous, led by Carl Heinrici and with, among others, Albert Defant, Bruno Schultz, and F. Lenz. Representatives from 34 countries attended: most from Europe but also from China, Japan, Australia, British India, the United States, and South America. They included Otto Petterson (Sweden), Mr. Nichols (Australia), Jan Smetana (Czechoslovakia), Was W. Shoulejkin (USSR), Tchang-Si (China), T. Thissier, Eugene Fichot, G. Lecourbe (the three of them from France), Michel Siedlecki (Poland), Mario Picotti, Giovanni Magrini (both from Italy), G. Antipa (Rumania), and Bruce Wade (Switzerland). Harald U. Sverdrup⁷

⁶ It should be noted that each contribution to the congress was written in the language of the contributor, basically French, English, German, Italian, and Spanish, except for those from the Eastern and Nordic European and Asian countries who wrote them in any of these languages.

⁷ During a visit to the Jerez cellars made with a famous sherry vine grower (Domecq), Sverdrup suggested being locked up one night in the cellar would be one of the biggest satisfactions of his life (de Buen, 2003).

spoke, and also made a presentation on behalf of B. Helland-Hansen. G.W. Littlehales reported on the results of the last *Carnegie* cruise, which had just blown up in Apia (Samoa) that same year.

Around the same time, the new IEO laboratory building in Málaga was inaugurated. DeBuen was not successful installing the International Hydrographic Bureau there. Instead, in 1935 he created in that same building the International Centre for the Study of the Sea, which he described as "...a home for international services and the respective educational disciplines; to establish a real focus of dissemination and popularization, all with the broadest and most generous spirit" (de Buen, 2003). Teaching was to be carried out by eminent professors from different countries. A. Defant, the Director of the Roscoff Laboratory and others contributed to teaching. IEO scientists joined cruises aboard the *Meteor*⁸ and *President T. Tissier*. Students from every country were welcome to participate. In essence, de Buen tried to implement a sort of university of the sea in the Málaga laboratory.

Lost among these important issues were other activities that showed de Buen's vision and societal interests. In 1929, he suggested that CIEMS should pay particular attention to oil spills in the ocean. He dedicated part of the IEO effort to the acclimatization of the gambusia (*Gambusia holbrooki*), the small North American native fish that feeds on malaria-carrying mosquito larvae. All the gambusia that inhabit Europe come from a population acclimated by IEO in the swamps of Cáceres in western Spain.

THE END: SPANISH CIVIL WAR

Just when de Buen said, "everything smiled upon me" —he had achieved many of his career expectations, his children were respected professionals, he was surrounded by grandchildren, and he welcomed the proclamation of the Republic—tragedy struck. During the summer of 1936, the fascist coup ignited the Civil War. De Buen was in Palma preparing some work in the laboratory. Rebels took power in the Balearics a few days later and de Buen was jailed. Cruel hardship and privations aggravated his diabetes; he was sent to a hospital where he recovered with the help of doctors who were his former students. Soon, every evening after dinner he gave talks, mainly on marine biology, to other patients. Meanwhile, ICES⁹ and CIEMS officers initiated the first steps to gain his release. The Danish and British consuls got in direct contact with him. After two failed release attempts during his one year in prison, de Buen was finally exchanged for the daughter and sister of the now-dead general and dictator M. Primo de Rivera whom he had prepared for the military academy in the 1870s. De Buen and his wife were taken to Valencia aboard the British cruiser *Arethusa* where the whole family was reunited, except for his favorite son who had been murdered by the fascists.

Immediately he began to reorganize the IEO, but a few months later had to follow the route of most of the Spaniards—fleeing the advance of Franco's army—Barcelona, Figueres, across the Pyrenees into France...the Exodus (de Buen, 2003). In comparison with most

of the Spanish refugees he was lucky. He was taken in by his friends in Banyuls sur Mer, and later he moved his family to Toulouse. There, in 1940, de Buen finished his memoirs, in spite of the death of his wife, the annihilation of his life's work, the break up of Czechoslovakia, the invasion of Poland by Hitler and Albania by Mussolini, and the strengthening of the Franco's dictatorship. Some of his children had fled Europe; they were already in New York, prior to settling in Mexico, where de Buen would later join them in 1941 and where he would die four years later. In his last will and testament, de Buen wrote, "Our religion centered on a great rectitude of conscience, cult of good, family, science, freedom, justice and work" (de Buen, 2003). None of his family returned to Spain; his name during the dictatorship was consigned to oblivion, surreptitiously whispered by the old hands in the IEO when the newcomers wished to know about its history.

During the first decades after the Civil War, Spain existed in an oppressive, daunted, and niggardly atmosphere. It was not until mid-1960s that the situation started to change. IEO and the marine institutes of the Consejo Superior de Investigaciones Científicas (CSIC) incorporated young scientists. New international cooperative projects were initiated, budgets increased, and the oceanographic fleet grew. Several milestones illustrate Spain's progress in oceanography: the 1972 launching of the first modern Spanish open sea research vessel, *Cornide de Saavedra*, which increased the geographical and scientific range of our community; and the Hispano-U.S. Treaty of

⁸ Actually, due to the difficulties *Meteor* had in going out on cruises, the IEO and the Berlin Institut für Meereskunde prepared an agreement to install the *Meteor* equipment on board Spanish vessels and to initiate a cooperative effort starting in Gibraltar. The proposal failed, according to de Buen, because of the opposition of the British and French ambassadors (de Buen, 2003).

⁹ Which awarded him the Schmidt prize at this time.

Friendship and Cooperation (late 1970s, early 1980s) contributed to a better education of Spanish oceanographers. This agreement allows Spanish scientists to work at the most prestigious U.S. institutions, learn about new technologies, and establish long-lasting cooperation.

In the 1980s and 1990s, the establishment of several new faculties of marine science increased substantially the presence of oceanography in Spain's academic world. Spain's integration into the European Union (EU) was crucial; it permitted Spain to profit from the EU scientific programs and directly collaborate with other member state's research. Finally, the launching in the early 1990s of the polar RV *Hespérides* and the establishment of a national marine program opened many more opportunities to the growing Spanish oceanographic community. Nowadays, IEO has a permanent scientific staff of more than 200 people distributed among nine centers (Figure 4), immersed in a national community of some 1,000 marine scientists whose scientific output places Spain tenth in world in publications (Delgado et al., 1999). De Buen would have been pleased with the current situation, but also saddened because Spain's high status in oceanography could have been reached decades earlier.

Oceanography should, in the future, be the common ground of our work; it will be the science that completes and agglutinates all the conclusions of Geodesy and Geophysics, limited as these have been, up to now, almost exclusively to the continents. I dream of that empire of oceanography, since the oceans have been everything in the past of the earth and they still dominate. As the oceans belong to everyone and nobody

owns them, they belong to the most daring thoughts, to the most enterprising scientific spirits, to the harder human work and the best organized, to the most civilized peoples and to the most powerful ones; it will constitute the general field of all the efforts of science and its exploration should be collective and its exploitation rationalized by common agreements. It still keeps transcendental scientific revelations and unexplored wealth. Oceanography is, then, an international science and it must always be so... (de Buen, 2003)

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Figure 4. IEO is headquartered in Madrid and has nine research laboratories—called “centros oceanográficos”—(blue dots) along the coast and the archipelagos. Consejo Superior de Investigaciones Científicas (CSIC) has four institutes fully dedicated to marine research and two doing complementary activities: Blanes and Palma de Mallorca (CSIC institutes marked with black dots). Nowadays there are five faculties of marine sciences (red dots), although there are departments with marine disciplines in many others. Note that the Canary Islands have been displaced northward to shorten the map.

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