


OBITUARY

DONATIEN COT (1873-1961)

Donatien COT, Ingénieur hydrographe général of the French Navy, died at Fatouville (Eure) near Honfleur on 23 March 1961, at the age of 87.

He was born at Fontenay-le-Comte, Vendée, on 15 October 1873 and in 1892 he entered the *Ecole Polytechnique*, which he left two years later to join the Naval Surveying Corps. He spent all his career in this Corps, reaching the highest grade in 1932 when he replaced Ingénieur hydrographe général FICHOT as Director of the Hydrographic Office, which position he held until he reached the age limit in 1938.

During the first 26 years of this long period of activity, he carried out, almost without interruption, a series of hydrographic surveys at sea which led to the publication of numerous nautical charts and various studies on the instruments and the methods in use in French hydrography. In fact, at the time when Donatien Cot joined the Surveying Corps, the Hydrographic Office had to face, in spite of a shortage of staff, a double task : firstly, it was necessary to re-survey the French coast, various accidents having shown that the surveys made by BEAUTEMPS-BEAUPRE were no longer adequate for the latest navigational needs; and secondly, nautical charts were urgently required for thousands of kilometres of coastal waters in the new French overseas territories, to ensure the safety of navigation in those areas, an essential condition for the development of those territories. To carry out these tasks, the Hydrographic Office created permanent survey missions : the Madagascar mission in 1887, the French coast mission in 1897. Also, in Indochina, where hydrographic surveys had been carried out from time to time since 1857, accidents due to navigation led to the creation of a regular hydrographic mission in 1905. All these missions functioned permanently, and the young engineer of 1894 went tirelessly from one to the other, first of all as subordinate, then in charge of the work, only spending short periods in Paris between cruises to record the results obtained during the surveys. From 1895 to 1899, he worked along the south coast of France, and then in the approaches to Brest, in 1900-1901 in Madagascar, in 1902 along the west coast of France in the difficult region of the Raz de Sein, in 1903-1904 again in Madagascar, in 1905-1906 along the south coast of Brittany, in 1907-1908 in Indochina, from 1910 to 1913 at the mouth of the Loire, then in the roads of Brest and in the bay of the Seine, and finally in 1914 in Indochina where the declaration of war interrupted his work at sea for a time.





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It was during the latter mission that he greatly improved the methods of sounding of that time by replacing the old lead line of the sailing ships, which was always of uncertain length in spite of laborious calibration before and after each time it was used, by a flexible line of galvanized steel wire of which the length was stable enough for sounding of depths of up to 100 metres with an accuracy until then unknown. It is interesting to note that this improvement later enabled Ingénieur hydrographe MARTI to create a new form of lead sounding, the fish lead, and to perfect a semi-continuous sounding apparatus which was used by all the hydrographic missions until it was replaced by reliable, strongly built acoustic sounding apparatus.

He was also interested in the determination of rocky bottom below the ooze covering the sea bed; by taking sample cores he was able to draw a chart of the rocky bottom below the mud of the river Penfeld, and of water-resisting bottoms below the sands of the Seine Estuary.

During his hydrographic missions, above all during those in overseas territories, Donatien COT took a particularly active part in operations concerning geodesy and astronomical geodesy which led to the establishment of the network of triangles forming the grid of the nautical chart. Notably in 1903 and 1904 in Madagascar and in Reunion he carried out, with Ingénieur hydrographe en chef Ludovic DRIENCOURT, the first determinations of geographical positions which were made in the field with the prismatic astrolabe, of which Ludovic DRIENCOURT was one of the inventors. Also, during the 1914-1918 war, the skill which he had acquired in these subjects decided his activities : firstly he was surveyor and cartographer in the *Canonnières marines*, and then he was in charge of a unit in the Army Gunnery Range. On cessation of hostilities, he was put in charge of a geodetic mission in the Landes with a view to establishing a firing range for very long range weapons. In this flat and very wooded country where it is impossible, without great difficulty, to raise oneself above the forest to take bearings for triangulation survey, he devised a means of replacing the classical type of signal by projectors carefully set to point vertically so that their beams, visible at great distances, could be sighted and their bearings determined like ordinary beacons.

When peacetime came, Donatien COT resumed his position in the Hydrographic Office and again embarked on the direction of a mission in the approaches to Cherbourg. His considerable hydrographic experience led to his being put again in charge of the hydrographic surveys which had been interrupted during the hostilities, and for which the engineers used certain new techniques discovered during the war. Thus it was that he had the idea of using aerial photographs to facilitate topographic work and for research on shoals particularly by observing the turbulence in the currents which they cause. The wide use of aerial photographs is well known and has been used systematically in all hydrographic surveys since this time.

At the end of this mission, Donatien COT went back to Paris, where he directed one of the most important sections of the Hydrographic Office from 1920 to 1930. In 1930 he became Assistant Hydrographer, and in 1932 Hydrographer, which position he held until his retirement in 1938 at the age of 65.

But his retirement did not mean the end of activity for this tireless worker. Throughout his career, he had occasion to take an interest in scientific problems in the field of astronomy, geodesy and oceanography, not always having time, between his ceaseless work at sea, to publish the results of his studies. No longer burdened with professional obligations, he devoted himself to his scientific career, more especially within the framework of the Bureau of Longitudes and the Academy of Sciences.

Member of the Special Service of the Bureau of Longitudes from 1932 to 1938, he became an assistant member in 1939 and an honorary member in 1942. In 1935 he was put in charge of the annual publication of the Aeronautical Ephemerides, which were specially adapted to astronomical aerial navigation, a task which he carried out almost until his death. During the course of this work, in agreement with the aeronautical technical services, he had occasion to perfect the methods best adapted for the rapid calculation of an aircraft's position. He was thus led to study the astronomical refraction near the horizon, taking into account the composition of the atmosphere revealed by upper air soundings, and to prepare tables for the calculation of certain elliptical functions, with a view to numerical application.

In 1945, he was elected to the *Académie de Marine* and in 1946 to the *Académie des Sciences* in the section for geography and navigation.

He then devoted his time to various questions of astronomy and oceanography, welcoming and gladly guiding all those who sought his advice during the course of their work.

Donatien COT was a member of several scientific organizations, notably the *Comité national français de Géodésie et de Géophysique* of which he was Vice President from 1947, then President of Honour from 1956. Within this Committee he was also President of the Section of Physical Oceanography from 1954 to 1959.

Ingénieur général COT collaborated actively with the International Hydrographic Bureau. He was a member of the French delegations at the Ist Extraordinary International Hydrographic Conference in 1929 and at the IIIrd International Hydrographic Conference in 1932, when he was a member of the Committee for the Work of the Bureau and the Chart Committee. At the IVth International Hydrographic Conference in 1937, he was head of the French delegation and had the honour of being elected Vice President of the Conference. He presented to the Conference two interesting papers on the Aeronautical Ephemerides and on gravity, which were reproduced in the International Hydrographic Review of November 1937.

Donatien COT held many honorary distinctions : Grand Officier de la Légion d'Honneur, Officier de l'Ordre du Dragon de l'Annam, Officier de l'Instruction Publique, Chevalier du Mérite Maritime, Grande Médaille d'Honneur de la Société de topographie de France, etc...

He leaves behind him the memory of a dedicated man, an untiring worker devoted to his tasks, whose loss is felt as deeply in French and foreign scientific organizations as it is in the Hydrographic Office to which he devoted 44 years of his fruitful activity.
