

AN ACCOUNT OF THE MOTIVES AND CONSIDERATIONS

submitted by Rear Admiral Ernesto CABALLERO y LASTRES
at the First Ibero-American Oceanographic Conference (Madrid-
Malaga 23-28 April 1935) in support of the Proposal
concerning the

Official Adoption of the appellation PERUVIAN CURRENT

for the Cold Current flowing along the West Coast of South America and for the establishment of a Permanent Committee, presided over by the President of the Scripps Institute of Oceanography, and composed of the Heads of Services dealing with maritime questions in Panama, Colombia, Ecuador, Peru and Chile.

(Communicated by Rear-Admiral E. CABALLERO Y LASTRES, Vice-President of the Consejo Oceanografico Ibero-Americano, at the Fourth International Hydrographic Conference, 21st April 1937).

BRIEF HISTORICAL ACCOUNT OF PAST EFFORTS TO STUDY THE PERUVIAN CURRENT.

Since remote times Spanish Navigators, in their voyages along the west coast of South America, had noted discrepancies between their observed and dead reckoning positions, as well as the drop in temperature shown by the sea water. About 1590, José ACOSTA, in his *Historia natural y moral de Indias*, expressed himself as follows (translation from the Spanish text): "the sea in these regions possesses the property of moderating and lowering the temperature and, as a consequence, the latter is more powerful over the land than over the sea". It was this difference of temperature which was utilised by crews of vessels in certain ports, like Callao for instance, for cooling bottles of wine and fresh water by immersing them in the sea.

In 1882 the illustrious Professor HUMBOLDT showed the drop in temperature of the water along the Pacific Coast to be due to the existence of a current of cold water flowing from the South Polar regions towards the Equator parallel to the west coast of South America.

Humboldt did not visit the southern part of Peru; he was unable to go beyond Ica; from Quito he went overland into the district of Piura in August 1802. During the five months of his sojourn in Peru, of which two were passed in Lima, he was unable to gather many observations. It is certain that the majority of these observations were given him by navigators engaged in the coastal trade off Peru. It was on his voyage from Callao to Acapulco that he recognized the thermal conditions and the colorations which characterize the Peruvian Current.

The *Académie des Sciences* of Paris has since collated all the data furnished by the Commissions sent out by the French Government. The voyages of the *Coquille* (1822), *Bonite* (1826-27), *Venus* (1837) supplied a wealth of information regarding the set and drift of the Peruvian Current.

Numerous Peruvians have studied the current with which we are concerned, among others : PAZ SOLDAN in his *Geografia Fisica* (1863); GARCIA y GARCIA, MELO y STIGLICH in the *Derroteros de las Costas del Peru*; VILLAREAL in his interesting studies entitled: *Corriente peruana o de Humboldt*, and in modern times LAVALLE, GILDEMEISTER PRADO, EGUIGUREN, Commander STIGLICH and Lieutenant TORRICO have published a large number of observations made by themselves.

The large number of shipwrecks which have occurred off the coast of Peru during periods of fog have been attributed to ignorance of this current, being due not only to departures from the course under the influence of the current but still more to other causes, among which is the presence of substances inherent in the soil at certain points along the coast which causes a deviation of the compass needle.

NECESSITY FOR METHODIC AND SYSTEMATIC STUDY OF THE PERUVIAN
CURRENT UNDER THE AUSPICES OF THE SCRIPPS INSTITUTE OF
OCEANOGRAPHY, THIS BEING THE MOST HIGHLY REPUTED INSTITUTE
IN THE UNITED STATES.

It has long been recognized that the Peruvian Current and its low temperature is due to the existence of a cold current directed from the polar regions towards the Equator and flowing parallel to the west coast of South America. This was the theory advocated by Humboldt. It has been called in question of late by recent studies which have been made but which have left much yet to be determined. A systematic research has not yet been carried out, and it is much to be regretted that the deplorable loss of the *Carnegie* left unfulfilled the vast programme which the Scripps Institute proposed to carry out in two years' time with that vessel. Dr. WEYLAND VAUGHAN, Director of the Institute, has stated that this plan is now impossible of realization in its entirety, and that other means will have to be sought to effect this reconnaissance since the available data are not sufficiently extensive to provide a satisfactory degree of security; he feels confident that various organizations and specialists will be incited to fill in the gaps which exist in our knowledge of this region traversed by the Peruvian Current.

At the Pan-Pacific Conference at Tokyo in 1926, on the recommendation of Dr. WEYLAND VAUGHAN, who reported on the emulation of the South American countries to furnish their contingent and their desire to undertake certain work off Chile and Peru, a resolution was adopted recommending that each country bordering on the Pacific provide at least one oceanic laboratory equipped to carry out research in chemistry, physics, geography and biology. Three years later, at the Congress of Sciences of the Pacific convened at Batavia and again on the initiative of the indefatigable Dr. WEYLAND VAUGHAN, an agreement was reached on the proposal to make all possible efforts to convince the countries of the necessity for establishing oceanographic stations along the Pacific Coast with the object of obtaining a complete international oceanographic survey of the Pacific Ocean, comprising all aspects of oceanographic, hydrographic, biological, meteorological, physical and chemical research, and that these stations should undertake to carry out observations within the limits of the sectors assigned to the supervision of each.

In the various Conferences at which I have been present as the Delegate of Peru and as representative of our Conseil, I have endeavoured to direct attention to this study of oceanic currents pointing out, in particular, the irregularities of the Peruvian Current with the resultant changes in climate which have such disastrous consequences for this region.

The various competent Institutes did not, at the start, render all the support which was needed. In 1926 the Hydrographic Conference of Monaco drew up a report to the effect that the work was incumbent upon the various national Hydrographic Offices, since this work is undoubtedly of an international character. This is the sense of the resolution as it was understood by the late lamented Admiral NIBLACK, the very active and distinguished President of the International Hydrographic Bureau who, in support of my proposal, caused to be brought out Special Publication N° 19 entitled *Ocean Currents in relation to Oceanography, Marine Biology, Meteorology and Hydrography*. This publication contributed very effectively towards the adoption, at my urgent request during the First Supplementary Hydrographic Conference at Monaco in 1929, of a resolution encouraging the study of currents, and since that time the International Hydrographic Bureau has done its part by the publications in its Review.

At Prague (1927), at Seville (1929), at Stockholm (1930) I have already insisted upon the necessity of a systematic study of currents, drawing attention to the disturbances which have their origin in the variations in the Peruvian Current. This question was included in the agenda.

The important work of Professor THOULET was published in the first *Mémoire du Conseil* with the graphs and the profiles of isotherms and isopycnets (lines of equal density). Since then we have had the conscientious studies of Professors SCHOTT, SVERDRUP and VALLAUX, and one of our latest *Memorias* has dealt with the observations of Lieutenant TORRICO, who accompanied the *William Scoresby* Expedition.

In Peru a lively interest is manifested in the exhaustive study of everything pertaining to this current and Sr. WAGNER, Chief of the Meteorological Service, after having analysed

the conclusions of Dr. SCHOTT, has decided that the warning signal for the beginning of the perturbations should be sent out from the Gulf of Panama, followed by uninterrupted telegraphic notices and radio broadcasts from the Malpelo Islands, Cocos and Galapagos Islands, the coasts of Colombia and Ecuador, before these perturbations reach the northern coast of Peru, which is the most affected. He also proposed the organization of an observation service of Peru.

Recently, during the month of August last year, two ships were lost within a short time: the *Pisco* off the Lobos Islands and the *Talara* in the vicinity of Point Aguja; although certain seamen had been informed by navigators familiar with these waters at that time of the existence of currents difficult to determine, and of abnormal phenomena dangerous to navigation. With an efficient observation service, these perturbations might be foreseen and notice given to seamen navigating in the zones which are menaced.

Nor are isolated efforts of any use. It is necessary to enlist the joint action of the United States, interested in the study of currents in the Gulf of Panama, and of all South-American countries bordering on the west coast. How, then, may co-operation be obtained and rules prescribed for the establishment of oceanographic and meteorological laboratories where regular observations may be carried out with similar instruments and identical methods?

It devolves upon the Scripps Institute of Oceanography, which is the most highly developed in America, to take the initiative on a subject of such importance. With the great prestige which this Institute enjoys it might, placing its experience at the service of such an important work, inform the various Institutes of each country which installations should be made, which instruments are required, and prescribe fixed rules for an analytical study.

Dr. WEYLAND VAUGHAN, in his remarkable article on the *Cooperación Internacional en las investigaciones oceanograficas* recognizes the great importance to vessels of the data collated, and points out the necessity for coastal laboratories.

A large steamship company in the United States has vessels which ply constantly along the coasts of Panama, Colombia, Ecuador, Peru and Chile. The observations carried out by them might be combined with those of the steamship companies of Chile and Peru, and, as Professor WEYLAND VAUGHAN remarks, in view of the small number of practical oceanographers, care should be taken to enlist the aid of apt young men for oceanographic research.

Several scientists in Peru devote themselves to this type of research and have made studies of the climatic variations in correlation with the perturbations of the Peruvian Current: for instance, Sr. GILDEMEISTER PRADO published quite recently an article entitled: *El cambio de clima y el aceleramiento de la corriente peruana* in which he elucidates the necessity for oceanographic and meteorological observations to determine whether there exists a progressive or a retrograde evolution of the waters. Further, it should be noted that the Corriente del Niño, which always makes itself felt about Christmas time, was not perceived until about the middle of January in 1935, when Señor GILDEMEISTER PRADO published his report.

PROPOSALS *

The formation of a Permanent Committee for the Study of the Peruvian Current.

By virtue of the reasons set forth above and in order to ensure a rational study of the Peruvian Current, I request that the Delegates present at this Conference adopt a resolution recommending the formation of a permanent Committee, presided by the Director of the Scripps Institute of Oceanography and composed of the Chiefs of Services engaged in maritime affairs in Panama, Colombia, Ecuador, Peru and Chile, for the purpose of making the necessary provision for installing coastal laboratories and meteorological stations, prescribing rules for the installations and outlining uniform methods for the oceanographic studies of the Peruvian Current and all pertaining thereto.

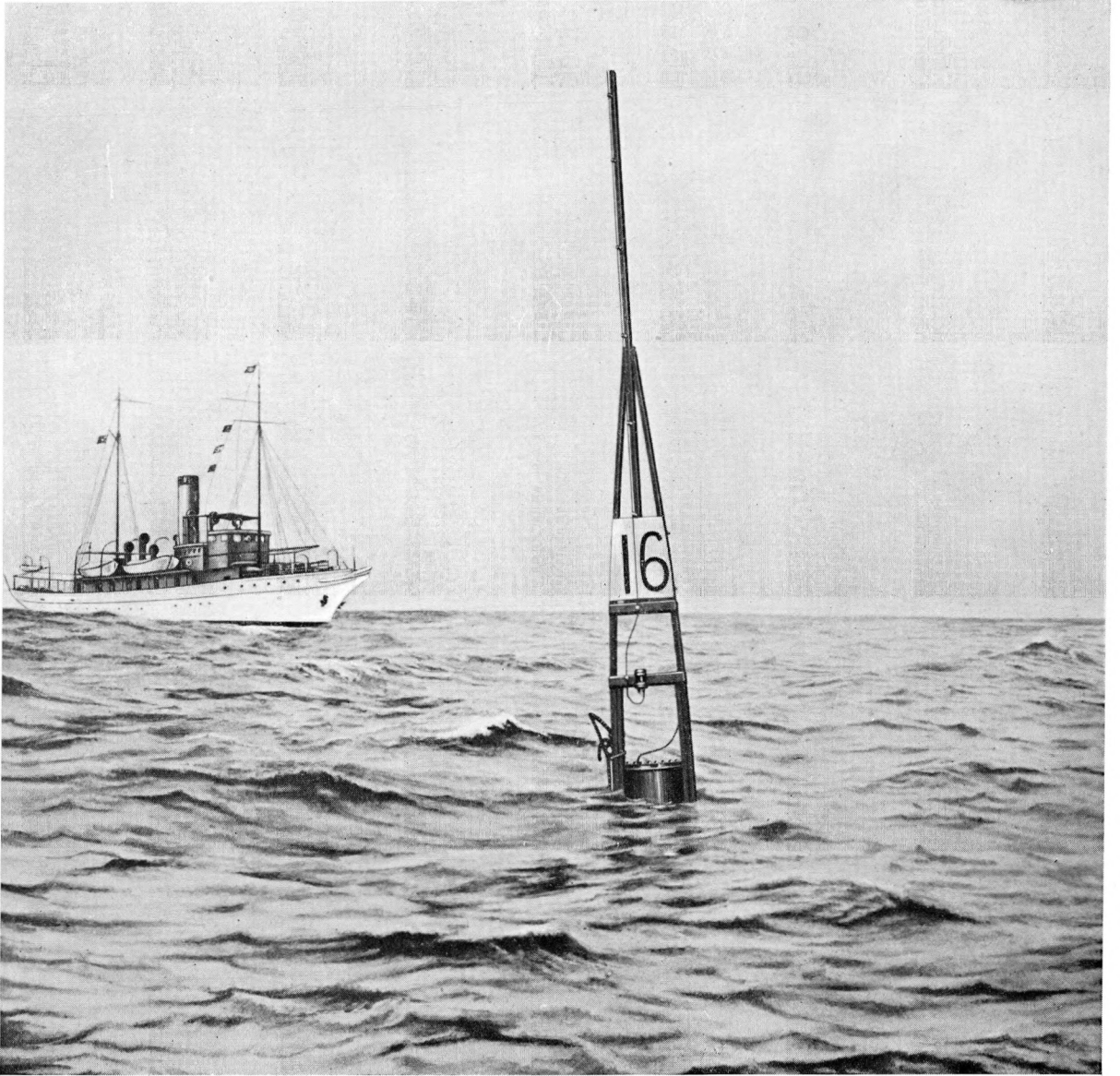
* These two proposals, after an interesting exchange of views, were unanimously approved by the First Ibero-American Oceanographic Conference at Malaga in April 1935. At this Conference the American countries and European States having colonies on that Continent, were represented.

The cold current which exerts its maximum effects along the coasts of PERU should be designated by the name PERUVIAN CURRENT.

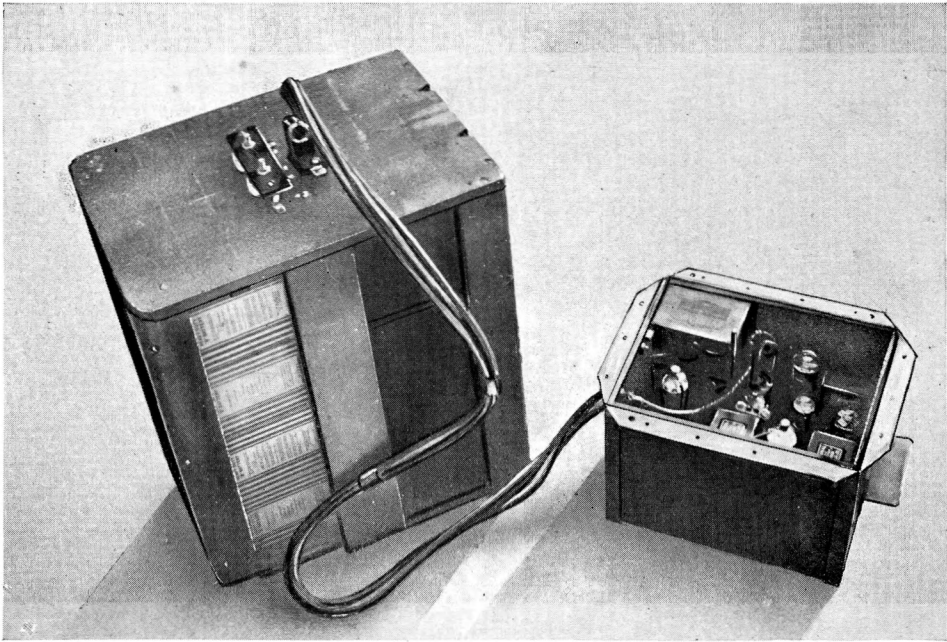
The geographical locality where the principal phenomena caused by this current flowing along the west coast of South America are manifested being where it is, one should designate this current by the name *Peruvian Current*, as employed by certain oceanographers, among whom is the distinguished Professor SCHOTT. It is off the coast of Peru that this current reaches its maximum intensity and it is there that the perturbations occur which are so disastrous to Peruvian agriculture. Further, in the international agreements which have been reached with regard to the nomenclature of maritime currents it has been recommended that geographical designations be used and not proper names.

For these reasons I request that the Conference adopt the name Peruvian Current to designate the cold current off the west coast of South America. This resolution does not tend to diminish the prestige enjoyed by the distinguished Professor HUMBOLDT whose memory is still venerated in Peru.





Sono-Radio-Buoy. — *Bouée Radio-Sonore.*



Radio and Audio Parts. — *Eléments Radio-Audio.*