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A new Method of Fishing in the Northwest of Spain.

By

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Preface.

Some years ago, in 1947, a method of fishing Tuna by use of live bait, began at the Basque Coast, and from there, this way of fishing spread all along the Cantabrian coastline.

The Cantabrian fishing fleets lengthen their range normally to the northwest of the Peninsula, taking on supplies at La Coruna, but specially at the port of Vigo, where they landed their catches because of better prospects of sale than at other ports, by reason of the large Fish Canning Industries that exist in this city, and the facilities of the magnificent installations of the fishing port, one of the biggest and best in all Europe.

In the last Tuna fishing season, these Cantabrian fishing boats arrived equipped for live bait fishing, causing great interest among the local fishermen. These fishermen, more devoted perhaps, to the traditional methods of fishing than those of other places on the Spanish coast, viewed disregardfully the innovations they suposed went with the new mode of fishing, and were sceptical about the results. The meetings at sea of the two types of craft resulted in competition and rivalry between the Galician fishermen, using the traditional methods, Asturians, Montaneses and Basques fishermen, using the new system.

In this article we describe briefly both methods, comparing one with the other. In as much as we have at our disposal the daily figures of the Fish Auction Market, of fish landed at this port, we thought it interesting to attempt to compare as well the yield, expressed in numerical statistics, of the two systems. However, we were unable to do this, or at least not in a very satisfactory manner. Our article then, is limited to a purely descriptive character.

The species of the Scombridae family that are landed at the port of Vigo, resulting from fishing with hooks, are tuna, generally of a large size. Among these, the most abundant are those called "bonito del Norte" and "albacora", this last name being the official name more used by the Canning Industry ("longfin", Germo alalunga Gml.). Less frequent are the real tuna or "atún rojo" ("shortfin", Thunnus thynnus L.), the "bonito de altura" ("skipjack", Euthynnus (Katsuwonus) pelamys(L.)) and the "melva" ("plain bonito", Auxis thazard (Lacep.)).

Description of the traditional Method of Tuna Fishing in Northwest Spain.

We refer, under this title, to the method of fishing traditionally used by the Tuna fishermen on the Cantabrico and Northwest coasts of the Peninsula, a method which is being replaced by the use of live bait fishing. We will not, therefore, describe the different ways of Tuna fishing used in other parts of Spain. ("Almadrabas", "Cercos", "Salto", etc.).

Type of Craft. The craftsused are wooden hulled ships of 30, 50 or up to 80 tons, larger ships being usually not used for this type of fishing. Nearly all are steam driven, using coal or fuel.

These boats are not used only for this work, that is,not only for Tuna fishing, which takes place during the season June to November. During the rest of the year, they are used for other classes of fish, specially sardines and horse mackerel, and also ray's bream, utilizing purse seines or drift - gill nets, in the first case, and trawl (set) lines in the second.

From June to November these boats are preferably being used for tuna fisheries, catching Tuna, (Bluefin, Shortfin), Albacore, (Longfin) and Skipjack. These fish are caught by the process of "Cacea" with trolling lines.

Equipment and its use. When fishing with trolling lines, it is usual to use large fish-hooks of white steel, single pointed, or more frequently with a pair of equal points. These hooks, without eyes, are held together by a binding of hemp of about three centimetres, to a fine wire line of 3 or 4 fathoms length, called the "Alambrada" or Wiring. This is attached to a ropo of long or short length, (always of various tens of fathoms) according to the criterion of the skipper, and depending on the speeds of the boat. This is followed by a thick line of about 40 fathoms length, the main

part of which is kept on board, coiled up on deck, running out when the fish bites.

The ship carries on each side a long boom called the "Vara" or "Ala", made of wood 3 or 4 metres long, not horizontal, but elevated so that the extremities do not touch the water with the rolling of the boat; these booms are fitted in holders on the gunwale, and the ends fixed on the deck. Each boom carries two stays (drizas or vientos) one to the prow and one to the stern, adjustable so that the boom can be moved forwards or backwards by adjusting one or other of the stays, so that the boom is in the most convenient position to fish depending on the speed of the ship and the state of the sea.

On each of these booms are fixed four rings, regularly spaced along the length of the boom, and through each runs a rope called the "Andarivel" (Fish-back), or sometimes the "Regidera", and on this rope is attached another ring; the two ends of the Fish-back are joined thus forming a continous loop around the rail of the ship, in a manner so that this loop can circulate round and round the rail and the corresponding ring on the boom (See Figure 1.). Just under this ring hangs the ring on the Fish-back, and through this ring passes the line of the trolling line.

The fishing hooks are not actually baited; the only thing done is that the hooks are covered with tufts of corn straw, and attached to each hook is also a ribbon of a bright colour, either red, blue, green or black, etc. Each master fisherman has his own preference for one colour or another, which he considers most effective. Some, however, employ another colour in different circumstances, depending on the state of the sea (colour, transparency), and if the line is to be used far from, or close to the boat etc., some colours are more convenient than others.

To signal the instant the Tuna takes the hook, a device is provided called the "Trampa" or Trap. Attached to the fishing line is a fine cord ending in a loop, and this loop is fixed to the rail of the ship by several turns of fine gage iron wire. The shock on the line as the fish takes the hook, breaks the wire holding the "Trampa", or more frequently unrolls the turns of wire, leaving the line free to uncoil. To guard against accidental loss of the line as it runs out, by the man in charge of it, the line finishes in a thick cork stop that will not pass through the ring on the Fish-back. Normally, however, the "Trampa" warns the fisherman in charge of the line that the fish has bitten the hook. The line is held by hand, and when the fish does not resist, the fisherman pulls in the line until the wiring arrives at the ring on the Fish-back. Then the loop of the Fish-back is pulled to bring the ring and the equipment of the trolling line to the side of the ship. The first work is being done by the above mentioned fisherman, who is called the "Varero" or Boomman, but once the wiring is up to the ring, another man takes over, and continues to draw in the wiring by a method called "Codeándola", that is to say, not pulling the wire with his hands, which would be cut by the force of the resistance of the hooked fish, but drawing it in between the forearms of both arms which are protected by the sleeves of strong waterproof clothing.

Once the fish is brought alongside the boat, the boomman's assistant or "Second Boomman" takes over and with a gaff-hook brings the fish on deck, and immediately proceeds to "desenmalle" that is to unhook, kill and bleed the fish, whilst the Boomman proceeds to replace the trolling line in the fishing position by pulling the loop of the Fish-back in the opposite direction.

Each boom, as we said before, has four trolling lines, each with a special name. The outer line is called the "Punta" or Point, or sometimes the "Primera" or First, and the others the "Segunda" or Second, the "Tercera" or Third and the "Cuarta" or Forth or the "Mura". (See Figure 2.).

The boats also carry two other booms called the "Chingolos", smaller and situated nearer the bows. Each "Chingolo" has two rings fixed to the boom, attached to which are two more trolling lines, the "Primera" or First and the "Segunda" or Second, the first of which only needs the use of a Fish-back, as the line of the second trolling line, as with the fourth on the larger booms can be worked from the deck by the use of a gaff-hook.

The equipment of the boat also includes at least four other trolling lines situated at the stern, at each wing, and the other two at each side of the stern post; the first of these called the "Recodos" or Corners, and the other two the "Moscas" or Flies. Frequently also appear two more trolling lines attached to a small pole, the "Obenquillos", fixed vertically on the upper deck of the boat. On the contrary, the other two lines, "Recodos" and "Moscas", pass over the gunwale.

A single ship can operate successfully, up to 18 trolling lines, 9 on each side, these being situated in lines in such a way, and so accurately, that they never interfere with each other, neither when trailing in the water, nor when on board.

Crew. In addition to the skipper, the master fisherman and at least two mechanics, an engineer and his assistant or stoker, the following personel are necessary on these ships.

The large booms or "Alas" are attended by a Boomman whose job we have already described. The ends of the first and second lines run to the bow side of the boom, and are attended by one sailor, and another cares for the third and fourth lines which run to the stern side of the boom.

Each "Recodo" or Corner line is in the charge of one fisherman who has to attend and assist the Boomman, when called, abandoning his line, and landing the fish with a gaff-hook, as we indicated earlier, and being designated the "Second Boomman".

The two lines of each "Chingolo" are attended by one man, with one extra man to assist either of the "Chingolo" men.

In the stern are one or two other to attend the "Moscas", as well as the men attending the "Recodos", the Second Boomman.

We see then, that the minimum fishing personel necessary, are a dozen sailors, and frequently some more, it being understood that during the actual operation of fishing, specially if the fish are very abundant, the fishermen are assisted by one of the mechanics, and also by the master fisherman whilst the skipper remains on the bridge.

Ancient Use in Spain of Live Bait.

In the maritime province of Cartagena and specially in the district of Mazarron in the south-east of the Peninsula, Plain Bonito have been caught since ancient time, using live horse mackerel as bait.

This method of fishing for the Plain Bonito, is by the use of "Volantin", a type of trolling line around 15 fathoms long, of cord ending in fine wire, with hook and without leads. Fishing is done with the boat stationary, and the lines thrown (four or five) as far as possible. The hooks are baited with live horse mackerel (Trachurus trachurus L.). The fish take the bait "Al salto" (or "On the jump"), the habit of the Bonito being to go for the bait as the hook enters the water, and if the first cast is unsuccessful, the line has to be drawn in and cast again. At the same time, one of the crew is continously throwing into the water live horse mackerel that are carried on board in a tub.

However, the most interesting thing about this way of fishing is the means utilized to obtain the live bait employed. The horse mackerel are caught under buoys placed in position for this purpose at the beginning of May, buoys that are called "Panas". These buoys consist of pieces of cork connected by a net of straw and bound to a rope 100 or 200 metres long (depending on the depth), that is tied to a large stone. A green branch of a pine tree is tied to the rope about 10 metres below the surface. Under this branch, and among the leaves, the horse mackerel gather, and remain there indefinitely.

The season for the Bonito begins in June, and the boats dedicated to this type of fishing, raise the pine branch carefully to the surface so that the horse mackerel remain with it, and these fish are then easily captured by the use of landing nets, and brought on board; or better still, the pine branch is released from the rope holding it to the buoy, and then fixed to a float attached to the stern, where the mackerel remain until it is convenient to bring them on board. The horse mackerel are kept alive, on deck, in tubs or casks, in which the water is changed whenever necessary. With this live bait on board and with the rest under the pine branch attached to the stern, the ship proceeds slowly, in order not to disperse the horse mackerel, until the Bonitos appear and the ship heaves to, to begin fishing. The mackerel also under the branch, help to attract the Bonito near the boat, or are netted and used as bait on the hooks,when the supply in the tubs on deck is finished.

The places, to which the buoys or "Panas" can be anchored, to obtain the horse mackerel are limited. These sites are divided out among the fishermen in order of preference. The buoys carry identification marks consisting of a number assigned to the owner, and his initials, allowing fishermen to recognize their buoys, and preventing confusion and robbery. The buoys are anchored at convenient distances apart, in lines perpendicular to the coast, and are left permanently in position until the end of July. Each time the branch is removed, a new one is put in position (it is important that the branch is green, as otherwise the mackerel will not be attracted to it) and immediately a new batch of mackerel begin to accumulate for later use.

In North Africa, around the Chafarinas Islands, near to Melilla (Spanish possesions), "Panas" are also used to catch live bait, which are used for Tuna fishing.

The buoys are the same as those of the Mazarron district. They are set up in March and are maintained until autumn, conveniently marked for identification purposes. When the horse mackerel are required they are captured by lowering another pine branch as close as possible to that fixed to the buoy, and then the original branch is shaken, and this causes the mackerel to transfer to the new branch which is then carefully raised and the fish is captured as described previously, by the use of landing nets or left under the branch until ultimately required. The Tuna are attracted to the branch to attack the mackerel, and the fishermen take advantage of this by throwing their hooks, baited with live fish close to the branch.

Description of Live Bait Fishing on the Cantabrico.

We shall now describe this method of fishing, as practiced by the fishing boats that disembark their catches at the port of Vigo.

Type of Craft. These crafts are exclusively from Cantabrico, although some boats based on the galician ports of the occidental coast, are beginning to be so equipped. The boats vary between 30 and 70 tons in size, although the most characteristic are 50 tons registered weight.

Their size (25 m. long, 6 m. beam and 3 m. depth) makes them small among the various fishing craft that enter this port.

Their system of propulsion is by Diesel or semi-Diesel motors of about 200 hp., and they have a fuel capacity of about 8000 litres which allow them to stay at sea for about 30 days. This working period of 30 days, was originally much longer, but a large part of of the fuel tanks had to be sacrificed to make room for the tansk to hold the live bait, tanks that also occupy part of the original cargo holds.

Even with this sacrifice of useful space, these boats have not been converted, much less, into exclusively Tuna fishing boats of the Californian Tuna-clipper type which would be able to follow the Tuna to African waters throughout the whole year. In fact, not only is their range insufficient for this work, but there is also insufficient space for the refrigeration installations necessary for a fishing undertaking of this type. For maximum use to be made of these boats, it is necessary that outside of the Tuna fishing season, they can be used to catch other kinds of fish, by the use of trawl (set) lines and other methods, as used before their conversion for live bait fishing, and in the same way as the boats which continue with the trolling line system, we have described.

The live bait tanks constitute then, the most characteristic feature of these boats. Each boat has two, three or four tanks situated in such a manner that the balance of the ship is not upset when the tanks are full. On those boats which have only two tanks, the tanks are situated one on the port side, and the other on the starboard side; when there are three or four tanks, the two additional tanks are situated at the stern.

The details of the installations of these tanks are the result of progress and step by step improvements since the initial constructions, and it is interesting to note that the Cantabrian fishermen have adopted - as a result of their experience and observations - modifications and details coinciding with the latest innovations in the tanks of the most modern Tuna-clippers. Thus, all the angles that form the walls of the tank(generally of prismatic form) are round, because observations have shown that this prevents in part the enclosed fish from hitting the sides as they circulate continously, following the contour of the sides; the tanks are illuminated day and night as otherwise the fish collide with each other with fatal results; this bulb must, however, be shaded in order that the fish are not dazzled, as this would result in collision; to obtain the most uniform diffusion of light in the tank, the walls are painted white or any light colour.

The size of each tank varies between small limits, from 3000 to 4000 litres. Actually, there are a number of skippers whose experience has shown that there is a better yield in the amount of vitality of the bait kept in tanks of 2500 litres capacity, and those skippers who have ships with the larger size of tanks, are considering reducing them to smaller dimensions, maintaining, however, the same total amount of bait carried, compensating for the reduction in size, by carrying a larger number of tanks.

The renewal of the water, is carried out by a pump driven from an auxiliary motor, independent from the main motor, with the object that, as usually this latter motor is not running continously at a constant speed (which is absolutely necessary to maintain the bait alive), during the actual fishing, the boat is stopped on many occassions, and it is impossible to keep the motor at a constant speed. For this reason, it is necessary to have auxiliary motors with sufficient power to pump the water and make the required change in the tanks. The various types of fish used as live bait have different requirements as to frequency of having the water renewed. Experience has shown, according to information acquired from the skippers of some of these boats, that sardines require much more frequent changes of water than horse mackerel, whilst the Spanish Bream (Pagellus bogaraveo), the Saury Pike (Scombresox saurus) and the Sand Eel (Ammodytes lanceolatus) have requirement somewhere between the two.

The fish are fed with fish roe and fresh ground fish, the same elements that are used in other types of fishing, to attract the fish (fishing "Al caldeo"). There is no object in supplying food for some hours after the fish have been put in the tanks, as during this time, the fish won't feed, and the food falling to the bottom only contributes to pollution of the tank.

The transfer of the fish from the nets to the tanks is done mainly with landing nets. It has been proved that, although more work, it is more convenient to take the fish from the sea, and put them into the tanks, by means of pails. In fact, the fish receive better treatment, and thus reduces the high rate of mortality during the first moments of the stay of the fish on board. It is not advisable to let injured, or even slightly damaged fish enter the tanks, as it is almost certain that in this condition they will die immediately.

The live bait has the tendency to accumulate on the surface of the water, where they begin to die through lack of breathing space, when the accumulation is excessive. To prevent this, water is sprayed over the tanks, agitating the surface and thus frigthening the fish, which then submerge.

Having deposited the bait in the living tanks, the skipper controls the amount of water entering the tanks, to ensure that the aeration is not so excessive as to allow bubbles of air to adhere to the gills of the fish, causing them to breathe with difficulty, which may cause mass mortality. The sailors estimate the aeration of the water by an empiric method. To estimate it, they submerge their hand in the water, and if any bubbles of air adhere to it, it is considered that the aeration is excessive.

The tanks must be kept clean, removing as quickly as possible and as soon as they appear the dead fish and the remains of food, to prevent decomposition. To assist with this, the deposits at the bottom of the tank are siphoned out, using a thick hose to do so.

The different species of fish used as live bait have distinct vital resistance, some enduring better, some worse, their period in the tanks. Experience has shown the fishermen to attend correctly to the tanks; (cleaning the bottom, not feeding excessively, continous renewal of the water, etc.). Horse mackerel can be kept alive from 10 to 12 days, sardines and anchovies from 4 to 6 days; the saury pike will live only about two hours in the tanks, the fragile structure of its mouth making it susceptible to collision against the sides.

The actual Fishing. The first objective of these boats and the crews in charge of them, is logically to obtain the necessary amount of live bait.

At the beginning of the Tuna season (June and July), the Tuna do not show preference for any particular bait. The ships go to sea at midnight to fish either by the "Cerco" method, "A la ardora" (recognizing the banks by the phosphorescence caused by the movement of the fish in the water) or by "Al caldeo" method, attracting the fish with fish roe, catching horse mackerel, Spanish bream, saury pike or sardines.

Towards the end of the season (September to November), the Tuna near the coast of the northwest of the Peninsula, continue to go down along the coast of Portugal. Then it is no use throwing the bait so eagerly, and it is necessary to be more particular about the kind of bait used; it would appear that the bait preferred at this time is the anchovy. As this fish mostly frequents the Riás of the north, the ships proceed to sea some hours earlier than normal in order to have sufficient time to complete their bait fishing and continue during the day their searching for the Tuna and Bonito with their tanks containing sufficient bait.

In the search for the Tuna, a trolling line is run out from the stern, and if some Bonito is hooked, it indicates the presence of the bank; others are localized by sight, by various indications known to the fishermen. On encountering the Tuna, the boat is stopped, and live bait is thrown into the sea on the leeward side of the ship. The voracious Tuna rush to this authentic banquet. The different species used as bait, then show differing reactions. Horse mackerel show the advantage of remaining close to the hull of the ship, this bringing the Tuna nearer to it and making for more comfortable fishing. It is interesting to note that the Tuna when nearing the boat, always submerges, passing deep under the hull of the ship. The saury pike, however, although preferred by the Tuna, has the disadvantage that it swims rapidly from the ship. The Spanish bream presents another type of inconvenience; in this case on striking the water it immediately submerges, and the Tuna submerges in pursuit thus going out of range of the fishermen. The sardines and the anchovy also have these tendencies to scatter and swim rapidly from the ship, and to prevent this, the fishermen break a gill cover of each fish, thus diminishing their activity and ability to swim.

After the initial period, the bait is scattered more slowly, and at the same time, a strong jet of water is sprayed over the surface, using a thick hose with a metal nozzle similar to a shower rose. The surface of the sea is disturbed and agitated as if by heavy rain. Under this treatment, the Tuna, heat up or "Calienta", using a local expression, that is to say that the fish are infuriated in such a manner that they take the unbaited hooks, just as though the hooks carried bait. It is difficult to find an explanation for this behaviour of the Tuna under a shower of water. Fishermen, to whom we have commented on this subject, think that the Tuna are mislead by the agitation of the surface of the sea to think that it is caused by a shoal of fish of those types which constitute their favourite food, and that the rainlike shower of water causes a sparkling on the surface similar to that caused by a bank of these small fish swimming at a shallow depth.

The Tuna fish are caught by means of fishing rods operated from on board. These rods are thick, and from 2 to 3 fathoms long. The line used is of nylon (preferably of a blue green colour) about a fathom and a half long, and finishing on its corresponding fish hook. These hooks are large, made of white steel, and have very small barbs in order to allow the spontaneous release of the Tuna as it falls on the deck.

The hooks are baited, to begin with with live bait, hooking the fish through the tail so that it remains alive in the water. The fish used for bait are removed from the tanks in landing nets, and are placed in small boxes alongside each fisherman, who baits his hooks with the fish from these boxes.

The Tuna bite almost immediately, and then the fishermen strike quickly, if the hook has taken, raising their rods to bring the fish to the height of the gunwale, and then with a pendular movement swing the fish over the side onto the deck, where the Tuna automatically unhook themselves, as we said earlier. The line is cast again, after hooking on a new bait. This bait becomes unnecessary after the Tuna have become infuriated by the free bait, and the water jet, as described earlier, and take the hook unbaited.

When the number of Tuna caught begins to lessen, or when the live bait scatter away from the ship, causing the Tuna to disperse, the fishermen change to longer fishing rods of some 3 fathoms in length, having in this case to use gaff-hooks to land the captured fish from the hooks. This work is extremely exhaustive, and can only be done by strong men in good training, because, as well as the violent nature of the work, it continues throughout the whole period of fishing. For this reason, it is necessary to replace fairly frequently the five men doing the actual fishing, and the ideal way is to establish a turn of four shifts, requiring a crew of twenty men. Thus, whilst five men, the remainder, until it is their turn, rest, or occupy themselves with the work of killing, bleeding, cleaning and storing the catch, and at the same time, keeping the working fishermen supplied with live bait.

The Possibilities of Live Bait Fishing in the Vigo Fleet.

Vigo possesses a magnificent fishing fleet, in fact a bigger and better one than any other Spanish port, but it is primarily a deep sea fleet - contrary to most Galician fishing boats (not only those of this port) used for Tuna fishing, which are old out-dated and steam-driven.

These boats, even those that burn oil instead of coal, cannot be adapted for live bait fishing due to lack of available space for tank installations, without great loss of range owing to the coal bunkers having to make room for the bait tanks. This being impossible, and the number of diesel boats (of this tonnage and class) being few, it is difficult for any great number of the Vigo fleet to be transformed for live bait fishing.

The social side of the question must also be considered. On the Cantabrian coast, it is usual for the skipper, and sometimes for the actual crew to own the boat they operate, contrary to Galicia, where the boats are owned by large concerns and not by the skippers. In these circumstances, it is understandable, that the Galician fishermen are not so directly interested in the yield of the ships, and consequently react against any new innovation, not so much because of increase in actual physical labour, which does not frighten them, but because of the mental and physiological efforts necessary to loose old habits and traditional customs and to learn new methods.

Nevertheless, various boats, having the necessary technical conditions, have already been adapted for this mode of fishing. But we can say that the live bait method of fishing will be introduced in Vigo for the afore mentioned reasons, not by the modification of existing boats, but by the construction of new ones, primarily designed for this type of fishing.

Actually, some of the more powerful and go ahead fishing industrialists of this city, have in the local shipyards ordered the construction of Tuna fishing boats complete with live bait tanks, and refrigerator installations on a par with true Tuna clippers. The intention being to use these boats for Tuna fisheries throughout the whole year, and not only during the usual season in nearby waters, following the Tuna to the African coast from our possessions of the Sahara to the regions of the Canary Islands in the south. This, as in California, will substitute the sardine fishery, which is now very small, for that of Tuna and Bonito, and thereby help to minimize the crisis in the fishing cannery industry, caused by this scarcity of sardines.

Numerical Data. The data collected at the auction market of the Vigo Fishing Port, refer solely to the landings in this port, and gives the approximate number of Tunas and their total weight for each landing, ordered by days and months. From those two figures we can calculate the average weight for each Tuna.

However, as these data from the market do not indicate species of fish, but include the whole lot under the name of "Bonito", the approximate average weight gives us a slight indication of the proportion of various species. So we can see, that during the month of September, the average weight is very high, indicating that during this month a bigger quantity of Tuna and Albacore of large size are caught, whilst in other months, the Skipjack and Plain Bonito predominate.

Unfortunately, we could not obtain the details of every ship at Vigo of the number of days spent at sea. If obtainable, we could have included the yield of this fishery.

However, taking that the stay at sea is approximately the same in all cases (about two weeks) and considering the large number of boats occupied in this type of fishing during the season, we think, using total data, that it can give us a small idea of this yield by means of the relationship between the weight of fish landed and the number of catches unloaded per month. These data figure in the adjoining tables per month, for each of the fishing methods by live bait and by trolling line, respectively. However, these figures are not conclusive, as the Cantabrian ships commence fishing on the trip to Vigo landing their catches at intermediate ports. Only during the month of September, when the fish are in close proximity to Vigo, do all the fishing fleets land their catches at this port, and it is precisely in this month, that one notes a much higher yield from the boats fishing with live bait. But moreover, we have to note that in general and in spite of the time spent fishing for bait, these ships are to complete the same yield fishing at sea much less time (some five or six days) than those using trolling lines.

Relationship, per month, of the Tuna fish landed at the port of Vigo during the "Bonito" season of the year 1954.

Table 1.

Fish caught by trolling lines

Number of craft using this method - 181.

Month	Number of fishes	Total weight	Average weight	Number of landings	Total weight No. of landings
June	45.540	217.402	4.7	129	1,685,2
July	169.525	851.292	5.0	209	4.073.1
August	128.943	738.231	5.7	156	4.732.2
Sept.	65.901	580.949	8.8	166	3.499.6
Oct.	12.376	75.451	6.1	39	1.934.6
Nov.	10.425	58.333	5.6	45	1.296.3
Totals	432.710	2.521.658		744	3.388.2

Table 2.

Fish caught by Live Bait

Number of craft using this method - 30

Month	Number of fishes	Total weight	Average weight	Number of landings	Total weight No. of landings
June	3.273	14.329	4.3	15	995.2
July	27.300	133.447	4.9	28	4.765.9
Aug.	3.600	20.517	5.6	5	4.103.4
Sept.	18.300	222.600	12.2	32	6.956.2
Oct.	1.683	9.647	5.7	7	1.378.1
Nov.	2.237	12.219	5.4	4	3.054.7
Totals	56.393	412.759		91	4.536.7

Résumé.

Les thonidés sont pêchés, depuis quelques années, dans la mer Cantabrique à la canne et à l'appât vivant, avec des bateaux fournis de viviers pour emporter cette amorce vivante.

Les embarcations cantabriques arrivent, pendant leur pêche, au port de Vigo, où ils débarquent les poissons capturés.

Les pêcheurs de ce port n'ont pas encore adopté la pêche à l'appât vivant par les raisons exposées dans le texte.

On décrit les deux techniques de pêche tel qu'elle est faite dans les bateaux qui utilisent le port de Vigo.

Les antécédents en Espagne de la pêche à l'appât vivant sont décrits. L'amorce vivante le plus usitée fut toujours le chinchard (Trachurus trachurus), celui des appâts vivants le plus usité aussi aujourd'hui par les bateaux thoniers de la mer Cantabrique.

On avait désiré de faire une étude comparée du rendement de la pêche des thonidés suivant les deux méthodes, la traditionelle et celle à l'appât vivant; cependant, il n'a pas été possible, parceque les données, que nous avons cru pouvoir obtenir, ont manquées. Nous nous bornons donc à exprimer dans les deux tables, l'une relative à la pêche à l'appât vivant, l'autre à la ligne trainante, les pêches quotidiennes débarquées à Vigo, totalisées pour chaque mois, autant que le nombre de débarquement realisé et celui des bateaux déstinés à cette pêche. Comme une donnée approximative du rendement de la pêche on presente le quotient pêche débarquée/nombre de débarquements.

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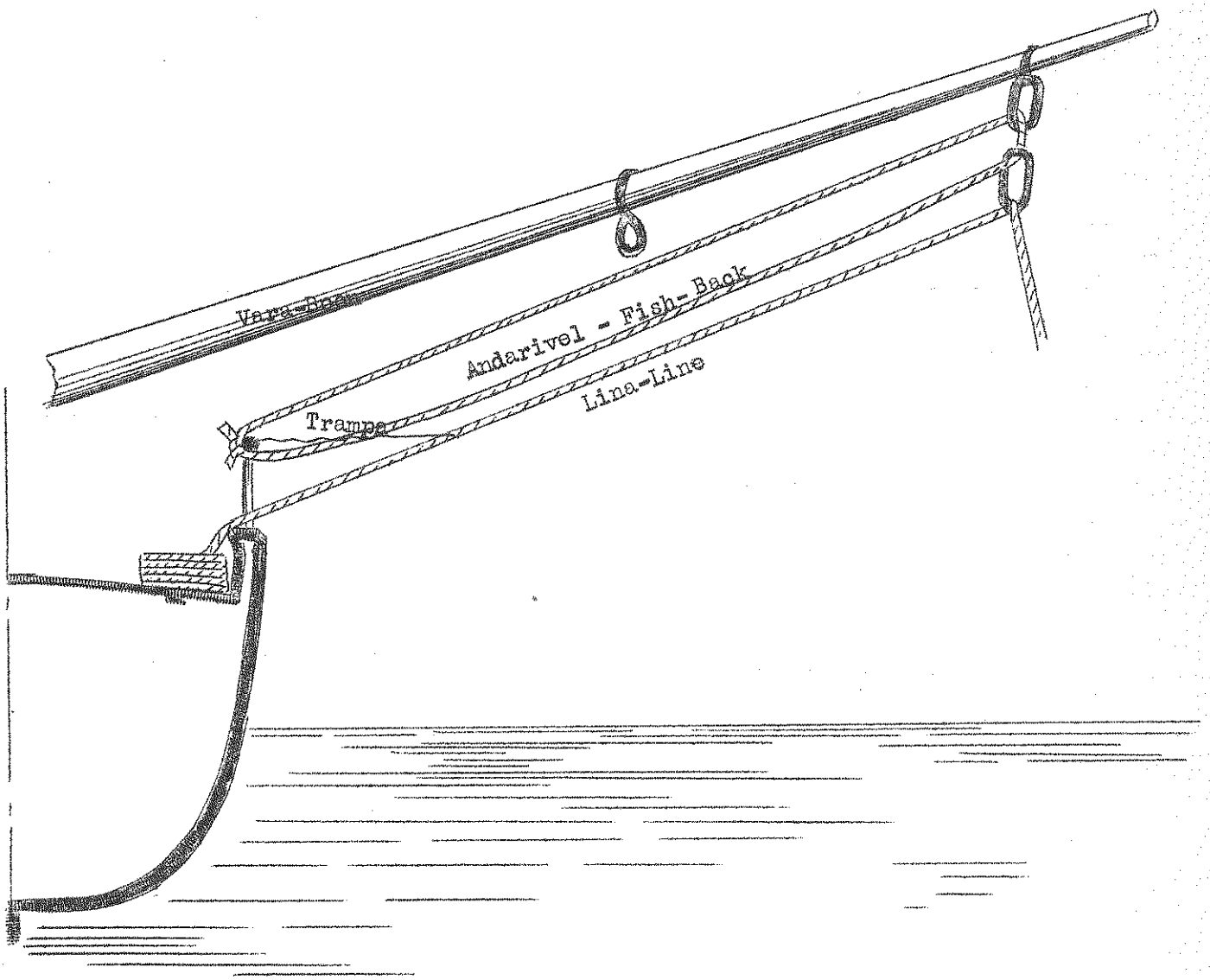

Fig. 1. Diagram showing the positions of trolling lines and their names.

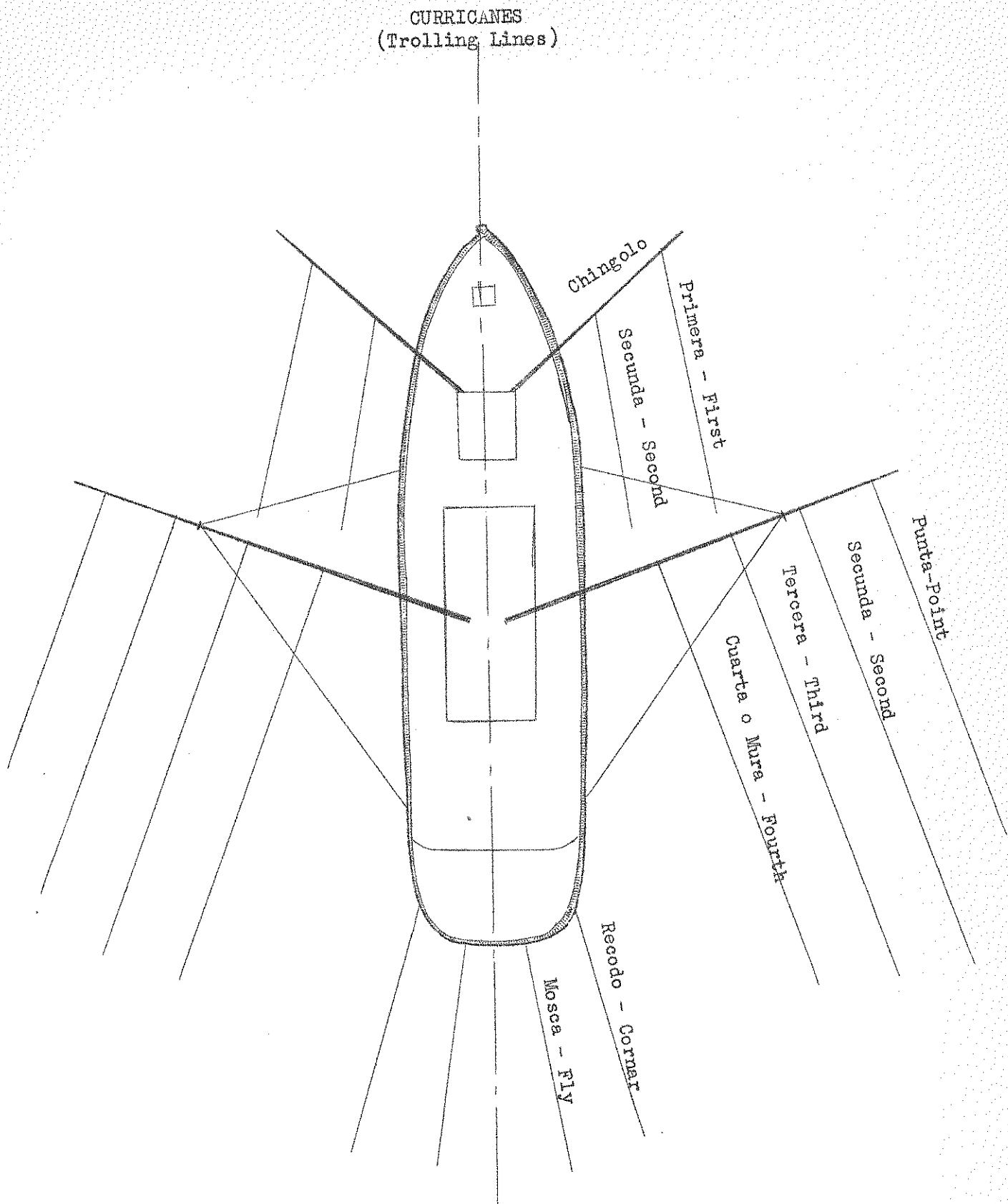

Fig. 2. Diagram of the Disposition of the Trolling Lines on these boars, with their respective names.

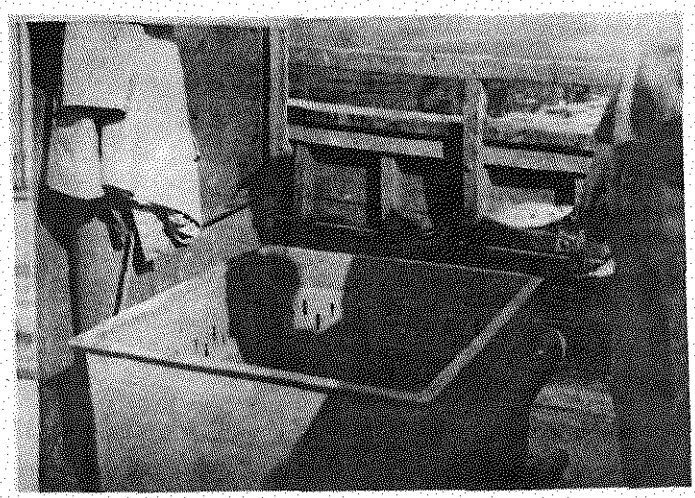

Fig. 3. - Hatchway of a Tank for Live Bait. The Main Outlet for the water near the Surface being visible.

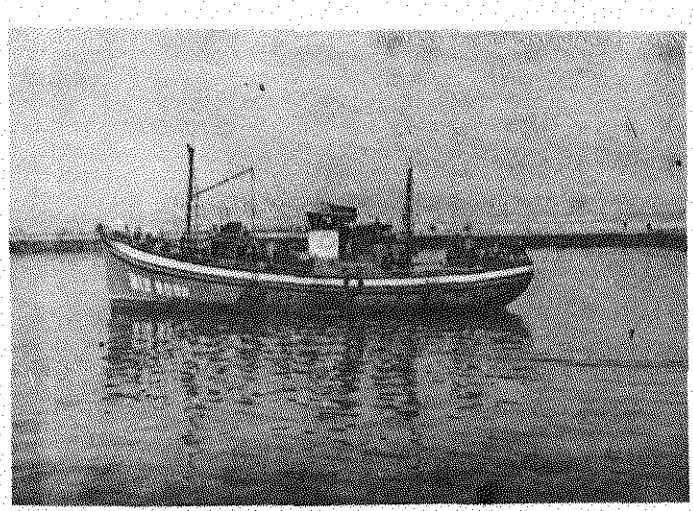

Fig. 4. - One of the Craft adapted to Fish with Live Bait.

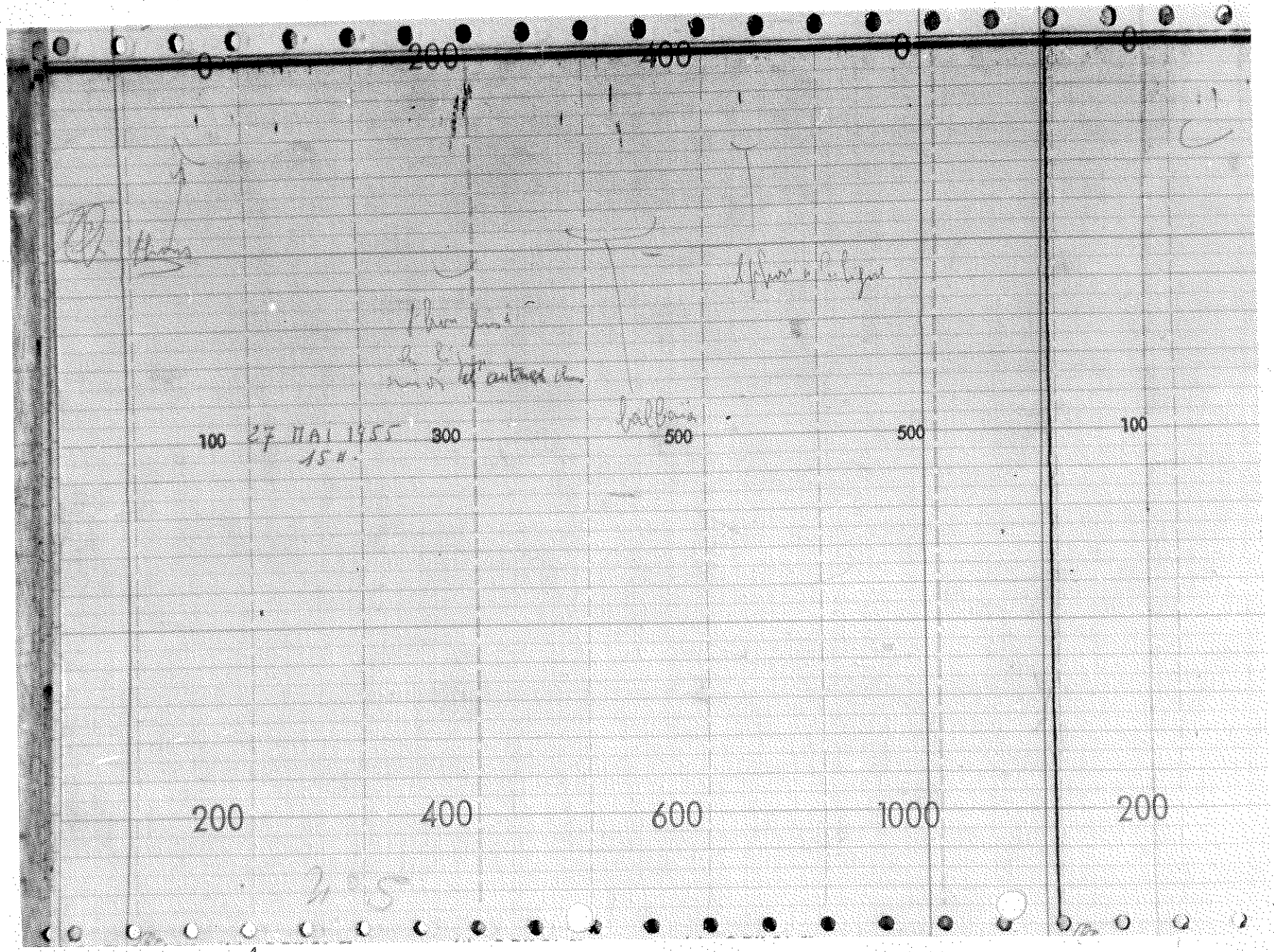

Fig. n° 5

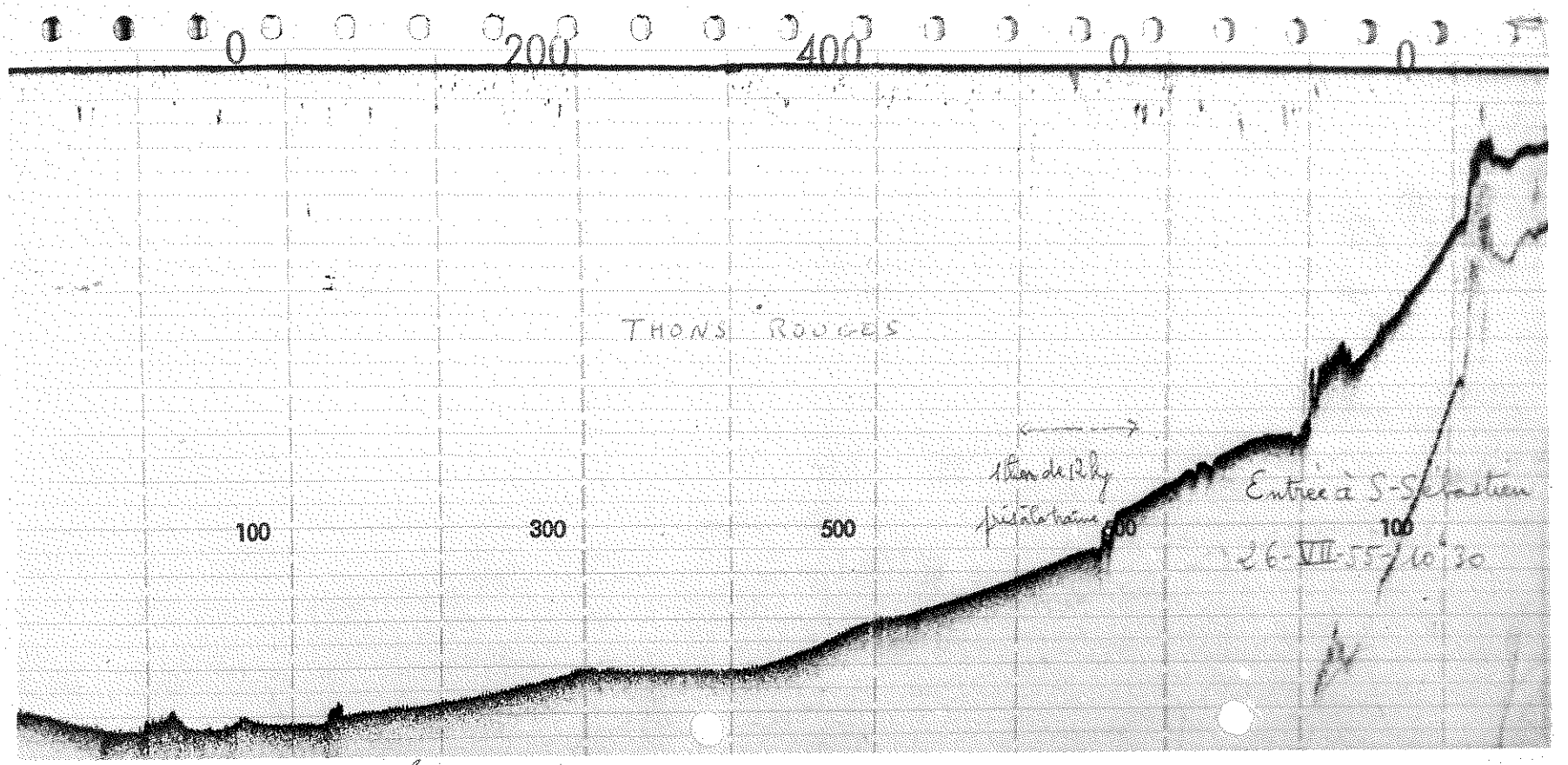

Fig. n° 6