

The oars are 16 ft long and always used double banked. The steering oar is generally 3 to 4 ft longer than the others.

The boats cost from £ 90 to £ 100 each fitted for sea as follows.

Hull about Reales 5000 or £ 50.

Spars, oars and sails Reales 4000 or £ 40.

The maintenance of the boats in good order is incumbent on the owner; also the supply of nets, but the fishing lines, hooks and other necessary gear is to be provided by the fishermen. The produce of the sales of fish after deducting, expenses, buying bait, etc., and the *Cafradia* rights, are divided into equal parts called *crews rights* and from those parts are made up three more, one quarter of which belongs to the *patron* of the lancha, and another quarter to the watch woman or *llamadora*, whose duties are to call the crew and place all the fishing gear ready in the boat. The balance of the three parts becomes what is termed owners rights.

The time employed in fishing is generally 12 hours viz: from 3 to 4 a.m. until 3 to 4 p.m. and according to the state of the weather.

Fishing the Tunny fish or «Atun» *Thymmus pelamys* de Lin of the *acautopterigios* order and known generally by the name of «Bonito».—The season for fishing the *Bonito* commences on June 15th. The boats sail to about 90 miles off the land and run back before the wind (prevailing W. to N. N. E.) to about 9 miles from land where they generally lose the fish. The quantity of this class of fish landed by the boats engaged is, for the season, about 800 tons (English) and the price realized will average 5 cuartos or about 1¹/₂^d pr. lb.

There are large quantities of this fish preserved in various ways in factories arranged for the purpose.

The *modus operandi* of fishing the *Bonito* is viz: by line, which line is divided into 4 parts, the 1.st part or *vaiven* is 20 fms long, the 2.nd or *Socala* 20 fms long, the 3.rd or 2.nd *Socala* (which is of lighter make) 16 fms long, and the 4.th or *wire* of 3¹/₂ fms long and to which is attached the hook which is covered by filaments of the straw of the maize which also answers for bait. The whole of this gear is used during the months of September, October and November when the fish assume their fullest size and during the months of June, July and August the line no: 2 is used being lighter, and the fish are not so large.

In the centre of the boat are fixed two long slight poles at an angle of some 45° over the side and to which are attached three small blocks on each at about 7 ft apart. The first being on the extreme point: through these blocks the lines are passed and the

inner ends are held by three men who are seated in the stern of the boat so that each man works the line corresponding each side of the boat. As soon as a *bite* is felt the man holding the line *slacks away* and calls to the *patron* to ease the sheets of the sails to *deaden* the boats way through the water, as soon as a ring which is fixed on the line joining the *vaiven* and *Socala* comes to the block on the pole, a man who is seated in the bow of the boats takes the line and hauls away until the fish is brought along side when it is hooked up by the gaff or *caco*, and put on board. (There is a model of this implement at the Exhibition.)

Another method is sometimes adopted which is called *a la caza* or *to the hunt* the boat sailing at a high rate of speed during a fresh wind, and the lines are held by hand over the boats stern.

Fishing the Bream or «Besugo», Pagellies, Cuvier, of same family as the Esparidos.—The season for taking this fish commences on November 13th and ends on February 15th but there are a second family that make their appearance, and are fished from March 15th to April 24th. The ground is generally some 9 to 12 miles off the port in a N. N. E. direction, there is also good ground near the coast of France (Grancanto) about 60 miles from the port where a great many fish are taken.

The quantity fished yearly averages 370 tons (English) and is generally sold at about 3¹/₂^d pr. lb., a large quantity is sold fresh and the remainder preserved in a similar manner to the *Bonito*.

Two methods are employed in fishing the Bream. One with a line called a *Tersa* which is 50 fms long and at the distance of about 16" apart on this line are short lines to which are attached the hooks (See gear no 3 in exhibition) Each man in the boat takes three lines when the weather permits. On reaching the fishing ground or *cala* soundings are taken and the line end to which a small stone is attached is put over and gradually *payed* out until bottom is felt; then another stone is fixed and repeated. On feeling a *bite* the line is slacked freely, This is continued until about 500 yds. are played out and from the continuous, jerking of the line the men conclude they have a good *haul* when the line is lifted and the operation repeated.

Another method is by *Palangra* in which the same lines are used and are buoyed at the end of each length of line until some 50 lengths are laid. There is a long line rove through each buoy and kept onboard of the boat and after waiting about an hour the line is hauled in with whatever fish there may be. There are many objections to the latter method so that it is not much resor-

ted to by fishermen from this port. The principal objections are loss in cost of bait, should there be few fish and should bad weather come on with such a length of line out.

It generally results in losing a large quantity of the line hooks and buoys. The bait used in this fishing is the anchovies.

Fishing the Cod or «Merluza» of the Melacopterigious order, and of the Gádidos family. *Melurius. vulgaris*. Cuvier.

—The season for fishing the *Merluza* commences on January 15th and ends on June 30th and the ground is about 9 miles off the port in a N. N. E. direction. The quantity taken each season averages 360 tons. and is sold at an average of 6^d pr. lb. It is generally sold fresh, but there are places where some are preserved in tins. The gear used in fishing is as per. model núm 5. for calm clear weather, and when the sun is strong the fish do not bite readily; under these circumstances a very long line is used at the end of which is a line of a green colour to which is attached the hook. The green piece of line is called a *champela*; at the season when the *Merluza* is large the line and gear no 6 is used and the *champela* is then black. The hooks so fixed to the *champela* that they may not be cut through by the bite of the fish. In ordinarg weather the lines are held in a direct line from the boat to the bottom, the boat being either kept head to wind or at anchor. The bait is generally the anchovy or the *Jibia* (specie of cuttle fish) but the best bait are the both mixed. It requies very expert men to fish the *Merluza* as they never bite close to the ground and the slowness of the catching deters all but good fishermen from going to the grounds, hence the scarcity at times of men for this class of fishing,

Fishings boats. 2nd class or «Traineras».—These boats are specially built for the fishing of the *Sardine* and anchovy but, in fine weather, they often go to the fishing of the Atun, Besugo and *Merluza* in company with the large boats. The first *traineras* were built at this port, since which the neighbouring ports have also adopted them. They are easily distinguished from the *Lanchas de altura* by their light and graceful shape. The sternposts of these boats are curved similar to the stems, all have a fine regular sheer and the keel is *cambered* to a great extent. The bottom is very flat inclining downwards towards the bilges, giving them a very light draft of water, all this enables them to turn quickly on their centre, a necessity in the fishing they are adopted for. The dimensios of the *Traineras* range as follows.

Length from	38	to	42	ft.
Beam »	7	»	7	6»
Depth »	2	2»	2	10»

The crew consists of 15 men for fishing with the *traina* net, and for the Bream fishing. The sails and gear are much the same as employed in the larger boats, with the exception they only have four sails instead of six. The mainlug has an area of about 90 square yards. The forelug about 50 square yards. The smaller ones in proportion. The fine weather masts are generally, Main 36 ft: and Fore 22 ft long: The oars are 12 ft long: the steering, oar 15 ft: the bow oar 13 ft:

The average cost of the *Trainera* is as follows.

Hull	Reales 3200	or about	£ 32	} £ 122
Sails gear and oars.	» 3000	»	» 30	
Nets and gear attached.	» 6000	»	» 60	

The repairing and maintenance of these boats and their nets and gear is incumbent upon the owner. The sums obtained from the sale of the fish (*Sardines* and *anchovies*) after deducting the cost of bait and *Cofradias* rights, are divided into two equal parts between owner and crew. The part belonging to the crew is then divided into as many portions as there are men, and the owner gives one fourth of his share to the crew, except the *patron* who receives two fourth shares of the share so given by the owner. The rules established for the governance of the large boats in respect to other fish, apply in the same manner to the *Traineras*.

Fishing of the «anchoa» or anchovy *Engraulius Cuvier*.—

The season for fishing the anchovy commences on March 1st ending June 30th and again from September 15th to December 30th. The anchovy is generally fished for about 9 miles from the land and sometimes they come in much nearer. The quantity fished each year averages 600 tons. Many are sold fresh, others salted and sent into the country, many used for bait, and in times of plenty they are sold for manure. The greater part are however conserved in barrels and tins, and sent to France and England. The gear used for the fishing is the net called *traina*, as also named *Copo* and *Cerco* which was first introduced at this port. The neighbouring ports soon afterwards adopting the same style of net.

The particulars of the *traina* net are given with the model núm. 18 and also in the drawing annexed to this little sketch, and to which latter we refer you in the following explanation. The head **A B** has a length of from 32 to 40 fms. and here are

fixed the corks which float the net, and in the arch or *foot* **C D** are the leads to sink the *foot*. The depth of the net is 10 fms. from the centre of the arch to the top of **A B**. In the centre of the arch is fixed a ring and on each side of it towards the wings, four more at equal distances. The wings of the net have a depth of 7 fms. To the end **A** is made fast a line of from 10 to 14 fms long and another to the opposite side **B**. These are passed through the rings of the arch **C D** and fastened to the ends of same; at **M** and **N** is another line of about 14 fms long. It may here be mentioned that the mesh of this (*mallá*) is about $\frac{1}{2}$ for fishing Sardines and about $\frac{3}{8}$ for anchovies.

The method of using this net is as follows. Three men in the stern arrange the net, the corks in a spiral pile on one side and the leads in same form on the other side, with the net arranged in the centre. Once the net is folded upon the *Braqueros* **A C** the ropes fixed to the ends of same, which is in the charge of two men, the two other lines are passed through the upper and lower hooks of a pole of $2\frac{1}{2}$ fms long and attached to the bow of the boat (this is called the *chardango*) the pole is then placed obliquely across the boat towards the post side and the line from the corks, end **B**, passing through the upper hook, is held by a man in the bow; the line going from the ends of the leads **D**, is held by another man situated between the *chardango* and the man at the bow. As soon as the shoal of anchovies or Sardines are sighted the boat is pulled to, within a few fathom of the shoal, with the stern towards the sun, and then turned very swiftly round paying out the net until the shoal is enveloped. when the men haul taut the ropes in their charge, take off the *chardango* when all the rings come together and the net forms a large bag. The lead of the net is then lifted out of the water and the fish placed on board by small hand nets of the same size mesh as the *traina*.

Fishing of the Sardine, culpea, Cuvier.—This fishing commences on July 1st and lasts until December. The principal ground is from 2 to 10 miles off the coast line, and the quantity taken annually is about 300 tons, and the price realized about $2\frac{1}{2}$ ^d pr. lb. The Sardine is fished with the same gear as the *anchoa*, when they appear in shoals, but they are often fished with bait consisting of the liver of the cod fish (which is called *Raba*) when the nets núm.^s 19. 20. 21 and 22 are used (see models). The length of these nets are about 200 ft and about 18 ft wide, and the size of the mesh varies according to the season and size of the fish, the smaller mesh being in general use during summer.

The manner of fishing is as follows.

The net is folded and lays on the corks and leads, it is then put over the side until it assumes a perpendicular attitude and the whole is *payed out*. The patron holds in his right hand the line fast to the head of the net and with his left he keeps throwing the bait on both sides of the net, as soon as the Sardines appear he throws the bait on the opposite side of the net, when the fish *mesh* themselves. The patron can generally tell the amount of fish so caught by the weight upon the rope in his hand and, as soon as he considers it expedient, the net is hauled onboard by both head and foot lines. These nets are also used at night without bait, being buoyed during the whole night and got in next day. This method is only adopted when the sardine is very scarce, which generally is the case during March.

Botines de Altura or boats of 3rd class.—This name is given to boats built for fishing of various classes by line, also at times they fish the Sardine with the nets, using bait, but their principal work is fishing the *Congrio* or *Conger*. The dimensions of these boats are.

Lenght from	28	ft	to	35	ft.
Beam »	7 1/2	»	»	8	»
Depth »	2'-6	»	»	2'-8	»

and they are rigged in same manner as the larger boats, with fore and main lug sails of about 16 and 30 square yds. area respectively. The crews consist of 4 men, when fishing Sardines, with 8 men, when fishing Conger and Cod.

The average cost of these boats is,

Hull	Reales 1500	or about	£ 15	} about £ 40
Gear sails etc	» 1000	»	» 10	
Nets an lines.	» 1300	»	» 13	

Other fishing boats of 4th class but of various names and for separate uses.—The first of these are the *Botines menores* which are used for similar work to the *Botines de Altura*, but close to the harbour and shore. They vary in size being from 20 to 23 ft long and 6 ft beam and about 2: 6" deep and cost about £ 15 complete, but without nets and lines which are generally the same as used by the larger boats. This class of boat only pays *rights* to the *Cofradia* upon Sardines and not upon any other class of fish.

The second class of the small boats or *Botacorres* are used generally in fishing the *Berdel*, *Chicharro* (a species of herring but of which there are none in England), the *Calamar* (specie of Cuttle fish and used for bait) and the *Aguja* or needle fish. The *Batacorres* are from 15 to 18 ft long 5 ft beam and 2 ft deep and cost

about £ 12. The third class or *Bateles* are very powerful small boats principally used by one man, they carry very large sail and generally fish the *Gibia* or cuttle fish for bait for the use of the fishermen in the large boats. They are from 13 to 16 ft long $5\frac{1}{2}$ ft beam and over 2 ft deep having a small well in the middle for keeping the fish alive. It may be here mentioned, the whole of the fishing boats, large and small, carry no ballast and are of a very shallow draft of water and the amount of sail carried is very surprising. The fishermen, through the whole coast as also the pilots who have lanchas very similar to the *trainera*, regard ballast as a very useless appendage to a sailing boat.

Conger fishing.—The season is generally from March to June and from October to end of November.

The bait used is chiefly the Sardine and Berdel.

The quantity taken during the year is about 30 to 40 tons. It is generally sold fresh, but small quantities are sometimes conserved.

Lija fishing.—Lija *Squalus*, Lin: is fished generally during the months of July, August and September, and at night, about 24 miles from the land. The gear employed (see model no 9) is similar to the gear used for cod, but stronger. It is fished in 60 to 70 fms: of water. The bait employed is the *Cod* and *Bonito*. The Mairago, *Squalus curnubicus*, is also fished with the same gear, principally by the *lanchas de altura* when fishing for cod and Bream. The prices realized for this class of fish are small, about $1\frac{1}{2}$ pr lbs.

Gibia fishing, *Sepia* Lin.—This fish is used solely for bait for cod and other large fish and are fished from the small boats before mentioned. The bait used for them is the *berdel* but, when the bait does not give good results, the female gibia, which are always kept alive in the boat, is tied by the tail and placed for bait and by this means they succeed in catching the male Gibia.—There is a small species of this fish sold for food. They are taken by a peculiar hook (see model no 11) being a large piece of lead surrounded by common pins bent.

Berdel and Chicharro fishing.—These are fished by boats under sail and close to the coast from April to September, (gear used see model núm. 12) The hook is covered with a feather for bait.

Aguja fishing.—This fish, the horn or needle fish, *Sygnathus*

acus, Lin: is taken with gear similar to the last named (see model núm 13) and during the months of April, May and June. (Model núm. 14) is used for the Aguja, also fishing at night, when the fish are attracted to the boat by a light, when they are harpooned

Calamar fishing.—This fish, a species of cuttle fish, Calamaries *Soligo vulgaris*, is fished during June and July. (See models of gear 15 and 16.) No bait is used but, the gear being kept constantly in motion, the colours of the threads attract the fish, when it takes firm hold of the hooks with its tentacles.

Lobster fishing. (See model of apparatus núm. 17.)—This fish is taken in the same manner as in England, but often four and five miles from land and in very deep water.

The whole of the lines, nets and other gear are thoroughly saturated in a strong salution made from the bark of the pine, which grows near Port Mahon, in the Mediterranean, and it has singular preservative powers against wet, keeping the lines and nets soft and light, but for some reason it is seldom applied to the sails.

FIGURA Nº 1.
IRUDI Lº 1.
FIGURE Nº 1

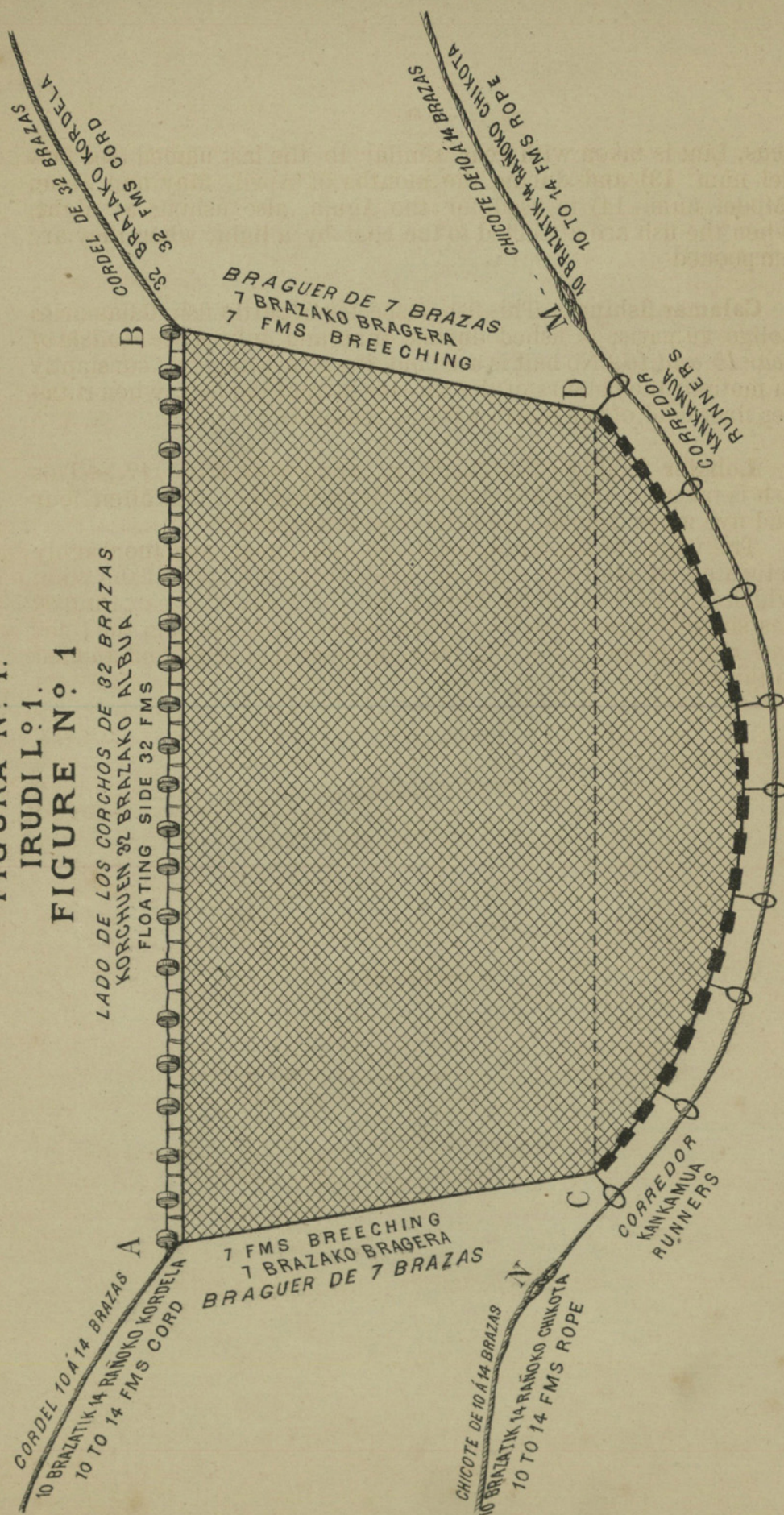


FIGURA Nº 2.
IRUDI Lº 2.
FIGURE Nº 2.

CHARDANGO
CHARDANGUA

