

MOTOR BOAT RACES IN IRELAND FOR THE HARMSWORTH CUP.

BY OUR SPECIAL CORRESPONDENT IN IRELAND.

The first International Motor Boat Race for the Harmsworth cup took place in Queenstown Harbor on Saturday, July 11.

The trophy is offered by Mr. Alfred Harmsworth, proprietor of the London Daily Mail, for any type of motor boat not exceeding 40 feet over all, fitted with any form of power and with no limit as to the amount thereof; it is essential that the man who steers the boat shall be a member of a recognized club, just as in the contest for the Gordon Bennett cup.

The more important conditions imposed by Mr. Harmsworth are the following:

The cup shall be for international competition, and the trustees of the same shall be the Automobile Club of Great Britain and Ireland.

The cup shall be competed for annually under the racing rules for the time being of the Marine Motor Association of the United Kingdom.

There shall be not more than three vessels representing each country.

Each competing vessel shall be constructed wholly and in every particular in the country which it represents.

No limitation shall be placed on the form or description of motive power, provided that the motive power is wholly mechanical.

Each vessel shall carry not less and not more than two hands, of whom the helmsman shall be a member of the competing club, and both hands shall be natives or naturalized subjects of the country which they represent. The entries were:

1. Mr. S. F. Edge's launch, 40 feet in length, driven by a 75 horse power, four-cylinder, Napier gasoline motor attached to a two-bladed propeller. The size of the cylinders of the motor used are $6\frac{1}{2}$ inches bore by $7\frac{1}{2}$ inches stroke; its normal speed is 800 R. P. M.; and jump spark ignition is employed.

2. Mr. F. Beadle's launch, 30 feet in length, constructed of cedar wood and driven by a 50 horse power, eight-cylinder, gasoline motor, with two two-bladed propellers on the same shaft.

3. Mr. J. E. Thornycroft's launch, 30 feet long, driven by a 20 horse power, four-cylinder, Thornycroft gasoline motor connected to one 18-inch three-bladed propeller.

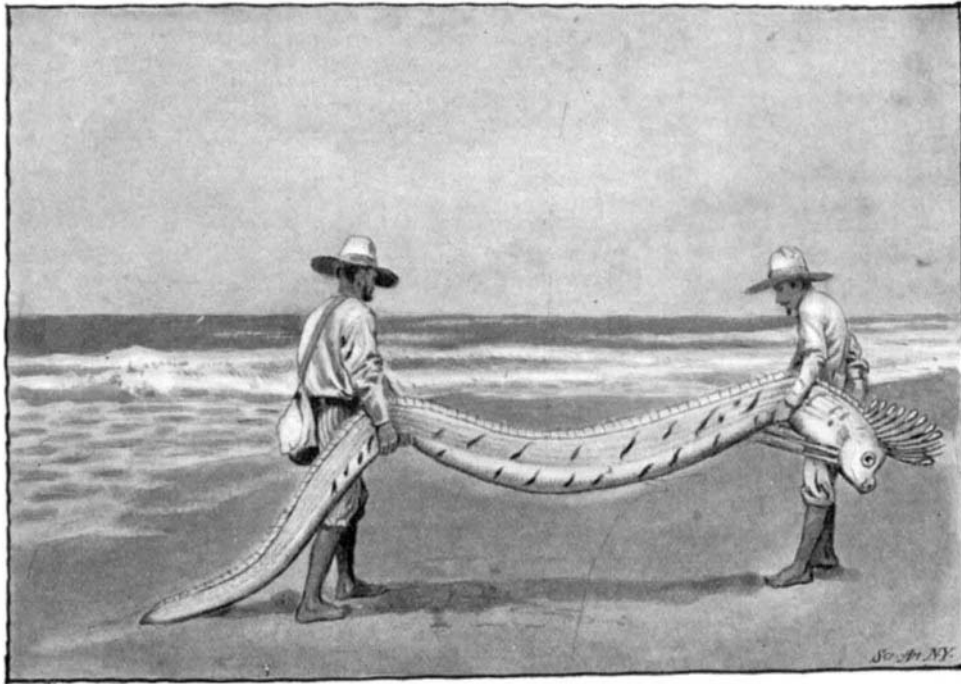
The first winner was Mr. S. F. Edge's Napier racing launch, a photograph of which is here shown.

The course extended from the quarters of the Royal Cork Yacht Club, Queenstown, up the River Lee to Cork, a distance of $8\frac{1}{2}$ miles. In the draw, Thornycroft's boat got a bye. Edge, who covered the distance in 24 min., 44 sec., beat Beadle, who took 27 min., 44 2-5 sec. Thornycroft was then pitted against Edge, the boats returning to Queenstown so as to travel to Cork over the same course. Edge was an easy victor, beating Thornycroft by 5 min., 8 3-5 sec. The winner's time was 26 min., 6 sec. A handicap race for the Yachtsman's cup (given by the proprietor of a yachting newspaper) was next contested, the entrants being the same as in the previous race. Edge was scratch, Beadle had a handicap of 6 min., 55 sec., and Thornycroft 11 min., 50 sec. The last-named won in 33 min., 51 1-5 sec., Beadle's time being 33:12 3-5, and Edge's 27:9 1-5.

The 40-foot Napier launch entered for the race

was designed by Mr. Linton Hope and built by Mr. S. F. Edge.

The hull is built of 20 B. W. G. steel, and the frames and floors of light angle and plate, while two longitudinal girders run fore and aft to carry the



THE RIBBON FISH, OFTEN MISTAKEN FOR THE MYTHICAL "SEA SERPENT."

motor and separate thrust bearings. There is no deck to the craft, but merely a covering of canvas stretched tightly over the hull. She has a beam of 5 feet, molded depth of 2 feet, and an over-all length of 40 feet; her total displacement is $1\frac{1}{2}$ tons.

H. Stassano has collected measurements of as many lines as possible which have been observed by various physicists, and compared them with Liveing and Dewar's measurements of the spectrum of the most volatile gases of the atmosphere. He has also done the same for the chromospheric and prominence spectra of the sun. He comes to the conclusion that the aurora consists of helium, hydrogen, neon, and argon. Many of Liveing's and Dewar's lines he selects are yet unassigned.

THE RIBBON FISH AND THE SEA SERPENT.

BY CHARLES F. HOLDER.

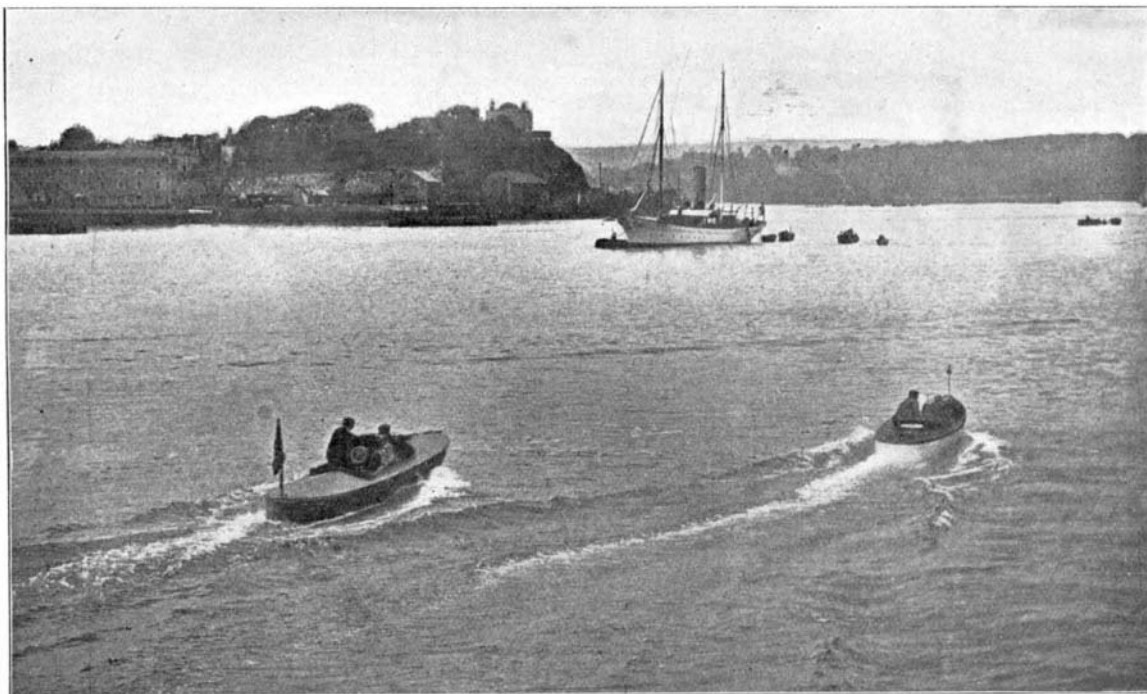
One of the most interesting questions relating to the sea and its inhabitants, and appealing strongly to popular fancy, is that of the sea serpent, which, literally, will never down. Hardly a month passes but some strange creature is seen by the men who go down to the sea in ships; everything that is seen is reported as a sea serpent. It is inconceivable that these people are always mistaken, or that a large percentage are plain prevaricators, or that a still larger percentage are practical jokers. In a word, something is observed out of the common, reported as a "sea serpent." Some see a giant squid, fifty, perhaps seventy feet in length, darting along the surface, tail first, the latter out of water at times. I have seen a wounded squid, two feet in length, moving in this way, occasionally projecting its tail a few inches out of the water; its tentacles forming small "undulations" behind, and from a distance of thirty feet presenting a marvelous resemblance to a snake or serpent. A large squid could easily simulate a sea serpent. Some observers see lines of porpoises; others, whales in a line or seaweed, or birds, and the unskilled observer firmly believes he sees something strange and uncanny, which he assumes to be the sea serpent.

That there is a literal sea serpent is not believed by scientists, but that there may be some large and unknown, or uncaught fish, long, slender, and serpent-like, inhabiting the ocean, attaining a large size, is not beyond possibility. An animal that doubtless has figured as a sea serpent is shown in the accompanying photograph. Specimens sixty feet in length have been observed, and if this fish should attain a length of seventy or eighty feet and be seen rushing along at the surface, one could hardly picture a more remarkable "sea serpent." The subject of the illustration is an oar or ribbon fish (*Regalicus*), and was, possibly, the largest ever taken in American waters. It came inshore at Newport, on the Santa Catalina Channel, opposite the island of that name. An

Indian was riding up the beach when he observed a large fish in the surf, and after considerable difficulty hauled out what he supposed to be a sea serpent high on the sands. Not being aware of the value of the specimen, he stripped off some of its beautiful "plumes," or dorsal fins, and carried them to the town. Crowds soon went to the shore to see the monster, which was duly reported in the daily papers as thirty feet in length and weighing one thousand pounds. When the excitement had subsided, Mr. Horatio J. Forgy an attorney of Santa Aña, measured the strange fish. The length was found to be twenty-one feet; its weight was estimated at between five and six hundred pounds, but judging by the photograph, and an "angler's guess," three hundred pounds would seem ample, though the writer has no desire to trim the wonders of this remarkable fish. The creature was, fortunately, photographed by Mr. G. T. Peabody, and probably this is the only photograph extant of a large specimen of *Regalicus*. From this photograph the accompanying illustration was made. Unfortunately, no one present realized the importance to science of saving the fish. It is estimated that hundreds of persons saw the remains, and none recognized it as a ribbon fish.



THE NAPIER LAUNCH OF S. F. EDGE, ESQ.



THE FIRST RACE FOR THE HARMSWORTH CUP IN QUEENSTOWN HARBOR.
Mr. Edge's Boat Appears on the Left; Mr. Beadle's on the Right.

The ribbon-fish is one of the most beautiful and interesting of its kind, and up to this time was generally supposed to have been unknown in American waters. The writer has seen several dead specimens, and one live specimen at Santa Catalina Island, but all were very small. Doubtless such come inshore after storms in winter, though the specimens observed were found in summer. The large one taken at Newport came ashore in February after a severe storm, which strewed the beach with numbers of fish strange to the inhabitants, including several small ribbon-fishes.

The ribbon-fish is a deep-sea form. As it attains a large size, it doubtless has been seen and chronicled as a sea serpent. Its appearance is remarkable. The fish is literally like a ribbon. Those handled by the writer were beautiful diaphanous creatures, clear and jellylike. The color was silver, tinted with blue and splashed with black tigerlike stripes. The forehead is very high, and from the top of the head rise a series of dorsal spines, eight in number (*Regalicus Russelli*), a vivid coral in color, and when erect resemble pompons, or a red mane, giving the fish a most fantastic appearance. The fin continues the entire length of the body, and just below the pectoral fins extend two long rays which represent the ventral fins. The head is long and oblong; the teeth absent; the body ribbonlike, that is, flat, gradually tapering to the tail.

The history of this rare fish is extremely interesting. While fairly well known in other localities, it was not reported in American waters until the writer observed the Santa Catalina specimens and wrote to Dr. G. Brown Goode regarding them several years ago; other finds have been so rare that it is believed that all are known. Goode and Bean say: "Within the past one hundred and fifty years individuals have visited the shores of Norway, Finmark, the Faroe Islands, Scotland, Ireland, England, France, Mediterranean, Bermuda, the Cape of Good Hope, Hindostan, and New Zealand." Gunther reports forty-four, seen by naturalists, and doubtless others have been observed and not reported. The exact size to which *Regalicus* attains is not known, but specimens ranging up to sixty feet in length have been examined, and may be considered, so far as known, giants of the tribe. Goode and Bean, referring to a specimen twenty feet in length, state, "and it is more than probable that they grow much larger, and that many of the creatures popularly identified with the sea serpent are only large animals of this type." In 1860 an individual seventeen feet in length went ashore in Hungry Bay, Bermuda. The giant of the tribe is chronicled by Dr. Andrew Wilson, of the University of Glasgow, who states that Lord Norbury engaged the smack "Sovereign," Capt. Baillie, of Hull, to trawl for him in the Frith of Forth, and among other fishes they one day hauled up an oar-fish, which when stretched upon the deck of the smack, which was of 40-ton burden, was larger than the vessel, or sixty feet in length; and some of the men stated that they had seen much larger specimens. Lord Norbury did not realize the value of the catch, and as it was an interference to the work, he ordered the men to throw it over. This fish at the surface, with its waving red plumes, would fully have realized the ideal "sea serpent."

The royal yacht "Astern" once reported having seen a remarkable sea monster near Sicily, which in all probability was a ribbon-fish. The writer has never doubted that some remarkably large animal had been observed in Massachusetts Bay after receiving the following letter from one of the most intelligent men in Essex County, and has thought this "sea serpent" a *Regalicus* approximating the one observed by Lord Norbury. The letter is as follows:

"Lynn, Mass., June 26, 1881.

"Mr. C. F. Holder:

"Dear Sir: Yours of the 24th instant came duly to hand, and, in reply to that part of it relating to the account given by myself of a strange fish, serpent, or some marine animal called a sea serpent, I have to say that I saw him in a pleasant, calm summer morning of August, 1819, from Long Beach, now Nahant.

"At this time he was about a quarter of a mile away; but the water was so smooth that I could plainly see his head and the motion of his body, but not distinctly enough to give a good description of him. Later in the day I saw him again off 'Red Rock.' He then passed along one hundred feet from where I stood, with head about two feet out of the water, and his speed was about the ordinary of a common steamer. What I saw of his length was from fifty to sixty feet. It was very difficult to count the bunches, or humps (not fins), upon his back, as by the undulating motion they did not all appear at once. This accounts in part for the varied descriptions given of him by different parties. His appearance on the surface of the water was occasional, and but for a short time. The color of the skin was dark, differing but little from the water or the back of any common fish. This is the best description I can give of him from my own

observation. And I saw the monster just as truly, although not quite so clearly, as I ever saw anything.

"This matter has been treated by many as a hoax, fish story, or a seaside phenomenon, to bring trade and profit to the watering-places; but notwithstanding all this, there is no doubt in my mind that some kind of an uncommon and strange rover in the form of a snake or serpent, called an ichthyosaurus, plesiosaurus, or some other long-named marine animal, has been seen by hundreds of men and boys in our own, if not in other waters. And five persons besides myself—Amos Lawrence, Samuel Cabot, and James Prince, of Boston, Benjamin F. Newhall, of Saugus, and John Marston, of Swampscott—bore public testimony of seeing him at the time. Yours truly,

"NATHAN D. CHASE."

A Forty-Thousand Volt Power Transmission.

BY EMILE GUARINI.

The Oerlikon Construction Works, at Oerlikon, near Zurich, Switzerland, have recently received an order which commands attention as much on account of its importance as because of its special character. The order in question rests upon the utilization of the water power of the River Caffare and the transformation of that power into electric energy.

The Caffare River rises in the Alps on the border between Italy and the Tyrol, and falls into the Chiese River. The installation is calculated to deliver a total of 15,000 horse power to turbines disposed in two generating stations.

The upper station, the building of which will be undertaken at some later period, will furnish 5,000 horse power, while the lower station, which is to be situated upon Italian territory, near the town of Bagnolino, will be commenced within a few days. It is expected to deliver 10,000 horse power. When the two stations are finished, they will work in parallel, and the tension at the terminals of the three-phase current generators will be 9,000 volts, with a frequency of 42. This tension will be raised by transformers to 40,000 volts for transmission over the main line. The current, at this high tension, will be carried to Brescia, about 25 miles distant, and there a part will be used to feed the reducing transformers, a part for electric lighting in the province of Brescia, and the rest will be sold to the large electro-chemical establishments there. At the lower hydro-electric station the estimated flow of water is about 876 gallons a second, which, with a fall of 833 feet, is calculated to deliver 10,160 effective horse power at the turbines.

To lead this water to the penstocks it will be necessary to build a canal 14,760 feet long, which will pass through four tunnels, one of which will measure 7,544 feet in length.

Five groups or power units will be installed at the lower hydro-electric station, each having a capacity of 2,500 horse power. Each unit is to consist of a turbine, making 350 revolutions a minute and connected direct with a three-phase current dynamo. At a convenient spot in the main building, near the above-mentioned units, will be installed two smaller turbines of 160 horse power, each making 600 revolutions a minute; their function will be to run the exciters, one each, to which they will be also directly connected. Since one exciter is sufficient to energize four of the power units, the plant will thus be provided with one large generator and one exciter as a reserve in case of accident.

Five transformers each will also be provided to raise the tension to 40,000 volts. At the point of consumption this current must again be reduced by five other transformers to a tension suitable for distribution.

This power plant is the more interesting since it is the first plant of the kind in Europe to make use of a tension of 40,000 volts as well as of transformers of a capacity exceeding 2,000 kilowatts.

The Current Supplement.

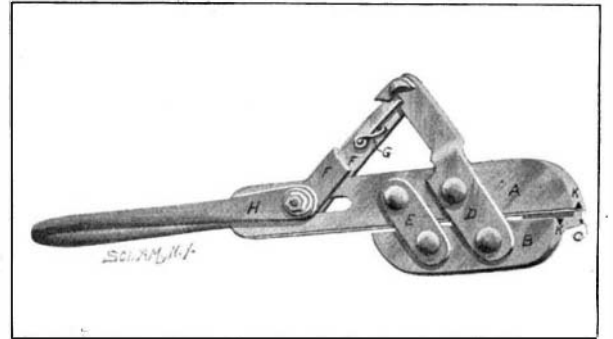
The current SUPPLEMENT, No. 1440, opens with an illustrated article by Emile Guarini on the power plant of the Metropolitan Street Railway of Paris. Dr. Franz Meyer reviews the history and commercial development of the Schroeder contact process of sulphuric acid manufacture. Of technical interest are articles on "An Unrecorded Property of Clay," "The Coloring of Metals," and "The Preservation of Wood." The English correspondent of the SCIENTIFIC AMERICAN describes the Hattersley automatic loom. In a very full and well-illustrated article, the magnetic observatories of the United States Coast and Geodetic Survey are excellently described. Prof. J. Reynolds Green discusses vegetable physiology. An article on impurities and purification of acetylene will probably be found of value.

The large fleet of United States sailing vessels which hitherto has been employed in the petroleum oil deep sea trade has recently almost completely been driven out of the field by the subsidized French sailing craft.



WIRE GRIP FOR LINEMEN.

Our illustration shows a simple form of wire grip for the use of linemen in stringing electric wires. Provision is made, in connection with the grip, of a simple device for holding a length of wire while twisting its ends around the wire held in the grip. The grip comprises a fixed jaw *A* and a movable jaw *B*. The jaw *B* is movable at all times in parallelism with the fixed jaw by reason of its double pivotal connection therewith through the lever *B* and the link *E*. To the outer end of the lever *B* are pivoted the links *F* which extend to a bolt movable in a slot formed in the outer end of the fixed jaw. Secured to this bolt is a loop *H* to which a draw-rope or strap may be attached. A spring *G* arranged between the

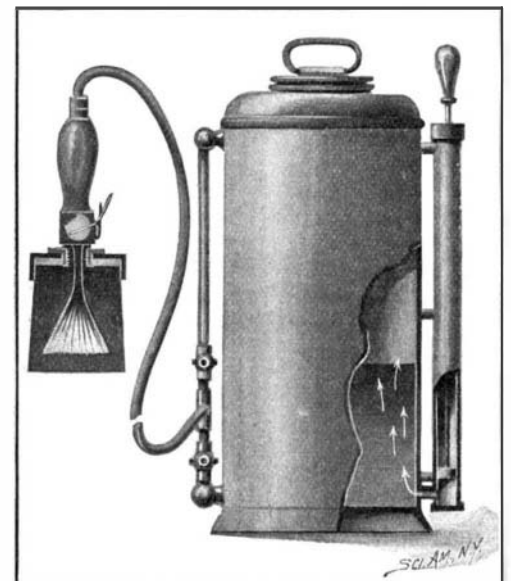


WIRE GRIP FOR LINEMEN.

links *F*, and engaging the upper end of the lever *D*, serves to normally close the jaws sufficiently tight to frictionally engage a wire which is held in the V-shaped slots *K*. When, however, strain is put upon the device the jaws will be drawn tightly together through the medium of the lever and the links connecting with the loop *H*. On one side of the jaw *B* is a keeper *C* for the wire which is designed to have its end turned around a wire engaged by the jaws. In operation, the main wire is clamped between the jaws and then the wire which is to be twisted around the main wire is placed in the L-shaped keeper *C*, thereupon, with the ordinary tool, the end of the wire may be twisted around the main wire. The keeper *C* will prevent the wire engaged therein from swinging outward. Our readers will recognize as commendable features of this device the extreme simplicity of its construction, the provision of the useful retainer for the wire which is to be twisted about the main wire, and the peculiar arrangement of the jaws, which, by reason of their parallel movement, present a gripping surface throughout their entire length. Mr. James C. Logue, of Haze Hill, Canada, is the inventor of this improved wire grip.

A FOUNTAIN PAINTING APPARATUS.

The time consumed by a painter in dipping his brush into a paint bucket and removing any excess of paint taken up thereby is greater than might at first appear, and any device which would do away with this irksome detail would surprisingly increase the amount of work that a painter could accomplish in a given time. Such a device has been invented by Mr. John Grahn, of Stoughton, Wis., and an illustration of the apparatus is shown herewith. The apparatus comprises a reservoir for the paint, which is led to the brush through a flexible tube by air pressure. The air



A FOUNTAIN PAINTING APPARATUS.