shown in the annexed diagram, while the general arrangement of all boats of this kind is also to be noted in the longitudinal section and plan views. As the five cross-sections of the hull of the "Express" clearly show, the bow is of a very sharp V section so as to cleave the water easily, while this sharp V section is modified and made rounding toward the middle of the boat, and changes gradually to an extremely flat U section at the stern, so that the after body, with its decreasing draft, slides on the surface of the water. The hull of the F. I. A. T. boat, besides being flat, tapers upward at the stern sufficiently to clear the water line for the last four feet of its length when the boat is at rest. When the boat is in motion, however, its stern rests on the water, and its total water line is then 34 feet. The hull draws but 8 inches of water, the point of greatest draft being at the bow. This boat is to race the "Vingt-et-un"—the Smith & Mabley 31-foot racing launch equipped with a four-cylinder 3 13-16 x 5½ American-built Mercedes motor, and a 16-inch three-blade propeller of about 28 pitch—for a valuable cup trophy. The "Vingt-et-un," it is claimed, made a mile on the Hudson River, on November 5 last, and with the wind and tide, in 2 minutes, 26 seconds. She is rated at 18 horse power, but her builders declare she will develop 22. Her weight complete at the time of the trial was 850 pounds. The lines of this boat are more like those of the regular launch than those of the automobile boats here shown.

The Panhard boat consists of a complete French auto boat equipment in an American hull. The hull is built upon a light oak frame, which is double planked with elm and mahogany, the latter being used on the outside. The 15-horse-power, 91 x 130 millimeter (3.582 x 5.118 inch), four-cylinder motor is placed just ahead of the center of the boat, with the operator's seat in front of it. A regular automobile inclined steering wheel is provided. On each side of the operator is a long vertical lever extending upward from the floor of the boat. One of these operates the cone clutch back of the motor, by which the propeller shaft, with its two globular universal joints, may be disconnected, while the other reverses the propeller blades for reversing. Attached to the boat on each side of the steering wheel is a small handle that moves over a notched segment. One of these handles controls the spark and the other the throttle. The motor is fitted with the Krebs automatic carbureter (described in our issue of February 14, 1903), and it is in every respect like the regular automobile motor. A horizontal exhaust chamber is fitted just below the smoke stack, and the exhaust gases pass out of the latter. This is the arrangement used in France, instead of conveying the exhaust through a pipe passing through the hull and into the water. The rear cock-pit has luxuriously upholstered individual seats capable of accommodating six persons. The boat is expected to make 17½ miles an hour at 750 R.P.M. of the motor. As the latter can be speeded up to 1,200 R.P.M., the boat should be good for spurts of 20 miles an hour or over. This speed, which seems to be the average aimed at, was exceeded a year and a half ago by a 55-foot, 120-horsepower launch designed by Mr. H. T. Leighton, of Syracuse, N. Y., and run on Oneida Lake at a speed of 23 miles per hour over a mile course that had been measured on the ice and staked off when the lake was frozen. Mr. Leighton had built several fast launches previously, and had had the benefit of a good deal of experience with this type of boat. The particular launch in question was 55 feet over all and on the water line, 7¾ feet beam on deck, and 6½ feet beam on the water line. She was of the regular launch type, with a torpedo-boat stern, and her engine was an eight-cylinder one of the two-cycle type. This boat, therefore, is the fastest small craft that has yet been built, and her engine is probably the first eight-cylinder gasoline engine to be constructed in the world. Thus it appears that America still holds the palm in the matter of fast launches.

Another launch of this type that has made very fast speed in and around New York harbor, is the "Standard," a 58-foot boat having a regular torpedo-boat hull fitted with an 8 x 10, six-cylinder, slow-speed, Standard marine motor. Despite the fact that the double planked hull of 3-16-inch mahogany warped badly between the timbers, thus making the bottom of the hull corrugated instead of perfectly smooth, this boat made the fast time of 21 miles an hour. The hull is being rebuilt, and the builders hope to exceed this speed considerably in the near future.

Among the motor boats exhibited at the recent Sportsmen's Show in Madison Square Garden was the "Dolphin II.," which was designed by Mr. Graef after experiments last summer with a smaller, 25-foot model. The latter boat, driven by a single-cylinder, two-cycle motor, running at 830 R. P.M. made over 13 miles an hour without producing any side or stern waves. The hull is built on the wedge principle, tapering from a sharp V section at the bow to a straight, horizontal line at the stern, the bottom not rounding in the least. The "Dolphin II." has an over-all length of 31 feet, 8 inches; a length on the water line of 30 feet; a beam on deck of 4 feet, 2 inches; and a beam on the water line of 3 feet, 10 inches. The weight of the four-cylinder, 25-horse-power, Standard motor and reversing gear in this boat is 510 pounds, and that of the hull, 564 pounds. The total displacement, with crew aboard, is 1,770 pounds. Judging from the speed attained with the under-powered "Dolphin I.," the new "Dolphin" should be very fast. In the limited space of the tank at the Sportsmen's Show, she has already shown a speed of over 16 miles an hour.

Other firms that are building automobile boats, and that exhibited high-speed, four-cylinder, automobile type motors for the same at the Sportsmen's Show, are the Lozier Motor Company and the American Darracq Company. The former company now has under construction a 25, a 36, and a 37-foot boat of this type, fitted with its 4½ x 5½, 24-horse-power motor; and the latter is fitting up a 32-foot hull designed and built by Herreshoff, with a 3¾ x 4-inch, 20-horse-power engine.

The above description of some of the automobile boats, or high-speed launches, that have been built in this country, shows how the desire for rapid pleasure boats by men of wealth, stimulated by the use of modern and speedy automobiles, has caused the designing of a new type of craft which has been made possible by the development of the high-speed, light-weight automobile motor. In fair weather, this new type of boat may yet be used for business as well as for sporting and pleasure purposes, and it will doubtless open a new era of speed on the water, such that the largest and speediest boats afloat may have to look well to their laurels.

THE JAPANESE DESTROYERS.

Never, surely, in the history of strife upon the sea did an engine of destruction justify its name with such terrible emphasis as when the Japanese torpedo-boat destroyers made their ever-memorable attack upon the Russian fleet at Port Arthur, and in a few minutes time put out of action two modern battleships and one of the finest protected cruisers afloat. Practically no particulars of the fight, or rather of that special part of it that fell to the lot of the torpedo-boat destroyers, have reached us, and it may be several weeks, if not months, before we are authoritatively told in what formation and using what particular tactics the destroyers made their bold raid upon the Russian fleet. According to present accounts, they dashed into close quarters and came within such short range that they could not well miss their mark. The puzzling feature, if this be true, is that the boats should have been withdrawn practically unscathed; for it is a pretty generally accepted maxim that the torpedo boat that comes so close as to make perfectly sure of its quarry is equally sure of paying the penalty of its own destruction. If the attack was made at short range, the immunity of the destroyers could only be explained by the probable fact that in ignorance of the imminence of war the officers were ashore, the crew in their hammocks, and only an ordinary peace-time watch was being kept. In such case, it would be possible for the torpedo boats to make the circuit of the battleships and escape before the gun detachments could reach their stations and open fire with any kind of accuracy.

On the other hand, it is quite possible that the Russian fleet, being anchored near the harbor entrance, was rather closely bunched together. The destroyers may have discharged their torpedoes at a long range of say 2,000 yards, and simply directed a stream of them into the fleet, with the certainty that although some might pass through, other torpedoes would be sure to find a mark.

The Japanese fleet of destroyers, like the rest of their navy, is brand new, and embodies the latest ideas of the two leading torpedo-boat builders of the world—Thornycroft and Yarrow. The oldest of their boats, represented by the destroyer "Usugumo," is not more than five years old. The "Usugumo" is one of six similar vessels built by Thornycroft at Chiswick, England, and launched in 1898-1900. The dimensions are as follows: Length 210 feet, beam 19.5 feet, and draft 7.2 feet; displacement, 275 tons. The speed of these six vessels varied from 30 to 30.55 knots per hour on trial. Each is armed with one 12-pounder rapid-fire gun, mounted forward, and five 6-pounders. They carry a complement of fifty-four officers and men, and have a coal capacity of 80 tons. These half-dozen Thornycroft boats are distinguished by having two large elliptical funnels, most of the other Japanese destroyers having four smaller circular funnels. Each boat carries two 18-inch torpedo tubes.

In 1901-1902, Thornycroft launched for the Japanese government two other destroyers, named respectively "Shirakumo" and "Asashio." They are larger and more powerful boats, 216.7 feet in length, 20.7 feet in beam, and with a draft of 8.3 feet and a displacement of about 300 tons. Twin engines of 7,400 horse power drive them at a maximum speed of 31 knots an hour. The armament is the same as that of the six boats above described. The contribution of the Yarrow firm at Poplar, London, to the Japanese navy is seven destroyers of the following dimensions: Length 220 feet, beam 20.6 feet, draft 9.6 feet, and displacement about 360 tons. With 6,000 horse-power these vessels have shown speeds on trial of from 31 to 31.62 knots an hour. They carry the same armament of one 12-pounder, five 6-pounders, and each mounts two torpedo tubes. The latest of these are the "Kasumi" and "Akatsuki," both of which were launched in 1902. They carry 95 tons of coal and a complement of fifty-five officers and men. All of these vessels have four funnels and a single pole mast forward. The Japanese themselves launched in 1901 at Yokosuka four destroyers of the same dimensions and speed as the last-named Yarrow boats, and these are at the present time believed to be all in commission, making a total of nineteen destroyers.

In closing our description we would say a word with regard to the seaworthiness of these ships. Popularly they are supposed to be suitable only for use in quiet seas and practically calm weather. As a matter of fact, in their long journey from England to the Orient, they showed remarkably good sea-going qualities. This is due largely to their increased size over early torpedo boats, and to the generous freeboard that each of them, as can be noticed from our photographs, possesses. Of course, in heavy weather it is necessary for these boats to slow down to a lower speed than would be required in the case of gunboats, scouts, or small cruisers, and it is in recognition of this fact that the navies are beginning to build vessels of the scout type possessed of an extremely high speed, the most celebrated representative of this class being the Russian cruiser "Novik," which, with a displacement of 3,000 tons, has a speed of 26 knots an hour. It is probable that in rough water the "Novik" would be able to overtake, and destroy with her 4.7-inch guns, any destroyer that she might sight in the open.

The Pele Club.

The Pelé Club, which is an organization comprising the newspaper and magazine correspondents and artists, the army and navy officers and the scientists of the United States who went to Martinique directly after the great eruptions of May, 1902, held its second annual meeting at the New Willard Hotel, Washington, D. C., on Saturday, February 27. The members of the club, now about eighty in number, are scattered all over the world, so that the attendance at the meeting, though small, was considered very good and those present made up in enthusiasm what they lacked in numbers.

Prof. Robert T. Hill, the president of the club, in the course of his remarks in opening the session, spoke of the large amount of information regarding the characteristics of explosive volcanoes which had been assembled through the efforts of the members of the club. One feature of the record is the great number of photographs taken which have permanent value through the many geological and human phases of the phenomena which are thus preserved. About 1,500 such negatives and prints have been assembled at the American Museum of Natural History which are accessible to all the members. President Hill advanced the proposition that the time was ripe for the expansion of the Pelé Club from the nucleus already in existence so as to include all persons interested in the scientific study of volcanoes and vulcanology. There is no society in this country having for its primary object the study of volcanoes, in spite of a wide interest in the subject. The idea was received with favor and the organization of the new society will be pushed vigorously.

The club has in course of preparation and expects to issue this year a book upon the eruptions, which will be the composite work of many contributors relating largely personal experiences. Dr. E. O. Hovey, the chairman of the editorial committee, reported that chapters had already been submitted by Major H. J. Gallagher, U. S. A., of the general staff, on the organization of the United States relief expedition and the assembling of the stores; by Lieut. Commander J. B. Barnadou, U. S. N., on the nature of the exploding cloud; by Prof. Israel C. Russell, of the University of Michigan, on the contributions to the science of vulcanology resulting from the study of the eruptions; by Prof. Robert T. Hill, formerly of the United States Geological Survey, on the geological history of the Caribbean islands; by August F. Jaccaci, formerly of McClure's Magazine, on Pére Mary, the brave parish priest of Morne Rouge, the real hero of the time; by H. H. Smith, relating how the correspondents did their work; and by other members of the club, relating personal experiences or contributing scientific observations.

During the evening Dr. Hovey related the history of the wonderful spine which rose above the top of the new cone of eruption and dominated the mountain from October, 1902, to July, 1903, full description of which appeared in the Scientific American and SUPPLEMENT for December 5, 1903. He also brought the description down to date.

After the destruction of the slender spine in the latter part of July and the early part of August, 1903, the "dome" of the new cone rose bodily until it had regained a large part of the height lost by the spine. Then after the great activity of September, 1903, had lessened, the dome was seen to be altering its contour from day to day, the southwestern side of the top being blown away by the numerous small eruptions, leaving a pronounced narrow ridge along the northeast side of the top of the new cone. In December this showed an almost overhanging face toward the southwest, while a new spine or obelisk was becoming prominent on the site of the earlier one. In January, 1904, the reports state that the new cone presented a double summit, the one very sharply conical and the other jaggedly turreted. There is but little activity now, though steam rises copiously from time to time, and an occasional "dust-flow" descends upon the upper portion of the Rivière Blanche gorge.

The slopes of the mountain which were protected from the fury of the volcanic hurricanes are now thickly covered with grass, and the greater part of the town is green, too. Comparatively few walls are standing, and the site of St. Pierre looks like a plowed field.

The officers of the club are: President, Prof. R. T. Hill, geologist, and secretary, Mr. H. H. Smith, of the Washington bureau of the World. The next meeting will be held in New York in the fall.

The Commercial Far East.

"Commercial Japan in 1904," "Commercial Russia in 1904," "Commercial Korea in 1904," and "Commercial China in 1904" are the titles of monographs just prepared by the Department of Commerce and Labor through its Bureau of Statistics. These monographs, which discuss commercial and other conditions in the countries in question, are now in the hands of the printers and will be published as a part of the Monthly Summary of Commerce and Finance, a portion in the issue to be made within a few days, and the remainder in the issue at the close of the present month. They discuss commerce and commercial conditions in each of the countries in question, not only at the present time, but the history of their commerce, their trade relations with the various parts of the world and with each other, the total value of their present commerce compared with that of earlier years, their trade with the United States, with other leading countries of the world, and with each other. Many other important facts regarding conditions in those countries are also discussed, such as railways, telegraphs, routes of communication, manufacturing industries, the class of merchandise imported, and the class of merchandise exported.

The total commerce of the territory fronting upon and immediately adjacent to the scene of present hostilities aggregates, in round terms, about $600,000,000, of which considerably more than one-half is imports. Japan's commerce is about equally divided between imports and exports, but in the case of China and Asiatic Russia imports greatly exceed exports, and this is also true of Hongkong, which passes most of its imports on into China and draws from China most of the articles which become its exports. Probably three-fifths of the total commerce of the countries in question, taken as a whole, is in the form of imports, and the United States is year by year supplying a larger share of those imports of the countries in question and gaining upon other countries in the relative share which it supplies thereof. Of the exports from the countries named, the United States is the largest single purchaser. The tea, the raw silk, the manufactured silk, the rice, the mattings, and other products of this character which form the bulk of the exports of China and Japan go more largely to the United States than to any other single country of the world, while as to Asiatic Russia and Korea, their exports are at present so small as to be of little importance in a discussion of the commerce of the countries in question.

The more important of the exports of the United States to the section in question are cotton and cotton goods, kerosene, flour, lumber, manufactures of iron and steel, manufactures of leather and tobacco. Raw cotton exported to this particular section of the world goes chiefly to Japan, and the market in Japan for American cotton is influenced largely by the surplus of cotton in India, which is of shorter staple and therefore of lower price. In years of short supply in India Japan turns to the United States for its raw cotton, but in years of plentiful supply in India a large proportion of the raw-cotton purchases of Japan are the product of India. In cotton manufactures China is the most important customer. The exports of cotton manufactures to China in the past year have materially fallen off, though the reduction in imports of American cottons into China is no greater proportionately than the reduction in such imports from other countries. This reduction in importations of cotton goods into China is due in part to the unsettled conditions which have prevailed during the year, and in part to the increased importations of cotton yarn and increased domestic production of cotton goods.

Kerosene is an even more important item in our exports to the Orient, and in this article the trade is barely holding its own, kerosene from Russia and Sumatra proving a very active competitor. To China the exports of mineral oils from the United States fluctuate greatly, ranging all the way from 20 to 55 million gallons per annum. In 1901, for example, the total was 27 million gallons; in 1902, 57 millions, and in 1903, about 20 millions. To Hong-Kong the shipments are more steady, ranging from 15 to 18 million gallons per annum. To Japan the shipments also fluctuate in some degree, though not so greatly as in the case of China. In 1899 the total to Japan was 32 million gallons; in 1902, 59 millions, and in 1903, 35 millions.

Flour as a factor in our export trade to the Orient has of late attracted coniderable attention, but the total is not large, nor the growth rapid. The total value of flour exports to the Orient from the United States in the last fiscal year was: To Hong-Kong, $4,628,224; to Japan, $2,247,199; to China, $289,637, making the total to the countries under consideration $7,165,060, or less than 10 per cent of the total exports of American flour in 1903.

The Mystery of Worlds.

"Few people need to be told that a rotating fluid mass is shaped very much like an orange," says Miss Agnes M. Clerke, writing in Knowledge on "The Fission of Rotating Globes." "It assumes the form of a compressed sphere. And the reason for its compression is obvious. It is that the power of gravity, being partially neutralized by the centrifugal tendency due to axial speed, gains progressively from the poles, where that speed has a zero value, to the equator, where it attains a maximum. Here, then, the materials of the rotating body are virtually lighter than elsewhere, and consequently retreat furthest from the center. The 'figure of equilibrium' thus constituted is a spheroid, a body with two unequal axes. In other words, its meridional contour—that passing through the poles—is an ellipse; while its equator is circular. Now we know familiarly, not only that a spinning sphere becomes a spheroid, but that the spheroid grows more oblate the faster it spins. The flattened disk of Jupiter, for instance, compared with the round face of Mars, at once suggests a disparity in the rate of gyration. But there must be a limit to the advance of bulging, or the spheroid, accelerated *ad infinitum*, would at last cease to exist in three dimensions! Clearly this unthinkable outcome must be anticipated; at some given point the process of deformation must be interrupted. A breach of continuity intervenes: the train is shunted on to a branch line. Nor is it difficult to divine, in a general way, how this comes to pass. Equilibrium, beyond doubt, breaks down when rotation attains a certain critical velocity, varying according to circumstances, and the spheroid either alters fundamentally in shape, or goes to pieces. So much plain common sense teaches; yet the precise determination of the course of events is one of the most arduous tasks ever grappled with by mathematicians. M. Poincaré essayed it in 1885; it was independently undertaken a little later by Prof. Darwin; and the subject has now been prosecuted for eighteen years, chiefly by these two eminent men, with a highly interesting alternation of achievement, one picking up the thread dropped by the other, and each in turn penetrating somewhat further into the labyrinth."

The Current Supplement.

Mr. Waldon Fawcett opens the current SUPPLEMENT, No. 1471, with a well-illustrated, instructive article on the manufacture of emery wheels. Mr. Charles Stevenson's excellent paper on whale oil is concluded. The Baltimore fire was made the subject of a careful study by Mr. F. W. Fitzpatrick. His conclusions are published in the current number of the SUPPLEMENT. "A Capture of Elephants at the Kraal of Ayouthia, Siam," is the title of a descriptive article that will surely be of interest to many readers. The building of Harbin is described in a paper on the conditions in Manchuria by United States Consul Miller, of Niuchwang, China. The behavior of selenium with regard to light and temperature, a subject which has been of considerable importance to physicists ever since the invention of Prof. Bell's radiophone, is recounted in a brief but valuable discussion.

A yield of 5 cubic feet of acetylene gas from every pound of calcium carbide is guaranteed by manufacturers in the United States. In Germany acetylene gas is mixed with a gas of lower candle power, containing about 25 per cent acetylene, and used in railway cars.

Correspondence.

The Origin of the Sheepeater's Monument.

To the Editor of the SCIENTIFIC AMERICAN:

I have noted with interest your illustration, in your issue of February 13, of "Sheepeater's Monument" in Idaho, with its accompanying article; but the writer of the article does not seem to have made it very clear precisely how the column was formed, which he ascribes to the action of "wind and weather." In fact, he explains its origin in the following language: "At first a cloudburst, possibly, formed a channel; this became a cañon, and as the sides of the mountain washed away, a column-shaped mass, which was more resistant and harder than the rest, was left. *Accident* made the top of the column larger, as *chance* shaped the lower portion."

The author of the paper thus apparently regards the stone capping of the column as a mere incident having nothing to do with the formation of the column. May I be permitted to say, this is an explanation which does not explain. Besides, it is not easy to see how " a column-shaped mass harder than the rest," and positioned exactly vertical to the horizon, could have existed in the original mass from which the column was formed.

From the published photograph and description it seems to me clear that the column is the work of rain, and of rain only; and that wind, and, in a general sense, "weather," had nothing to do with it: and that so far from the capping-stone being an accident, the column owes its existence to it. Such stone-capped pillars are found in greater or less degrees of perfection in various parts of the globe, especially in mountainous districts; they are, I believe, always found in unstratified material containing bowlders or flat stones, always on the flanks of ravines, and always taper toward the top. In several ravines near Botzen in the Tyrol (southern watershed of the Alps) are found hundreds of such columns consisting of indurated mud containing bowlders, varying in height from 20 to 100 feet and usually capped by a single stone. Their mode of formation is described by Lyell in "Principles of Geology," I., 331, and a diagram shows the outline of an original valley excavated in red porphyry, and partly refilled by a glacial moraine, comprising hard, red mud containing bowlders. This mud, after a rain, being heated by the sun, cracks; succeeding rains enlarge these cracks to furrows, and the furrows to gullies, till the material is cut up into a series of columns or pillars. The tops of these pillars are gradually worn off by succeeding rains, until a stone is exposed, which protects the material immediately beneath it, and thus the column is carved out, beginning with the top, so to speak, and becoming longer and longer as the unprotected mud is washed away on all sides. Some are found where large flat stones appear resting on a mere point, giving an umbrella-like appearance; in others the stones have fallen off and the column then wears away rapidly, until, perhaps, another stone is reached which for a while prevents further disintegration. The upper part of the column is always thinner than the lower part, because it has been longer exposed to the action of the rain. Further, the sectional contour of the pillars conforms to that of the capping-stones, and they are therefore like the "Sheepeater's Monument," more often pyramidal than conical.

I have inclosed you a sketch (from the same source) of the "Dwarf's Tower" near Viesch in the canton of Valais (Switzerland), composed likewise of hardened mud and gravel, and capped by angular blocks of gneiss.

I judge that the "Sheepeater's Monument" consists of a similar mixture of indurated clay and gravel and that it is the remnant of a glacial moraine which formerly filled the valley to a point above the level of the capping-stone and in which moraine the existing ravine has been scooped.

As to the senseless name "Sheepeater's Monument" —it would be interesting to know if it were not originally named by its discoverer after Jupiter, whose appellation was subsequently corrupted by the natives into something they could understand.

GEORGE W. COLLES.

Milwaukee, February 23, 1904.

It not infrequently happens that, in any new development, some minor detail gives more trouble than all the rest of the apparatus. In this respect, automobiles are notably weak in two points. Tire troubles are probably responsible for the greatest number of breakdowns, and the tire itself requires constant watching and care. The other weak point is the apparent lack of an entirely reliable igniter. At the recent motor car trials, held in London, England, in September, under the auspices of the Automobile Club of Great Britain and Ireland, no fewer than forty-one per cent of the cars that stopped did so on account of trouble with ignition.—Electrical Review.

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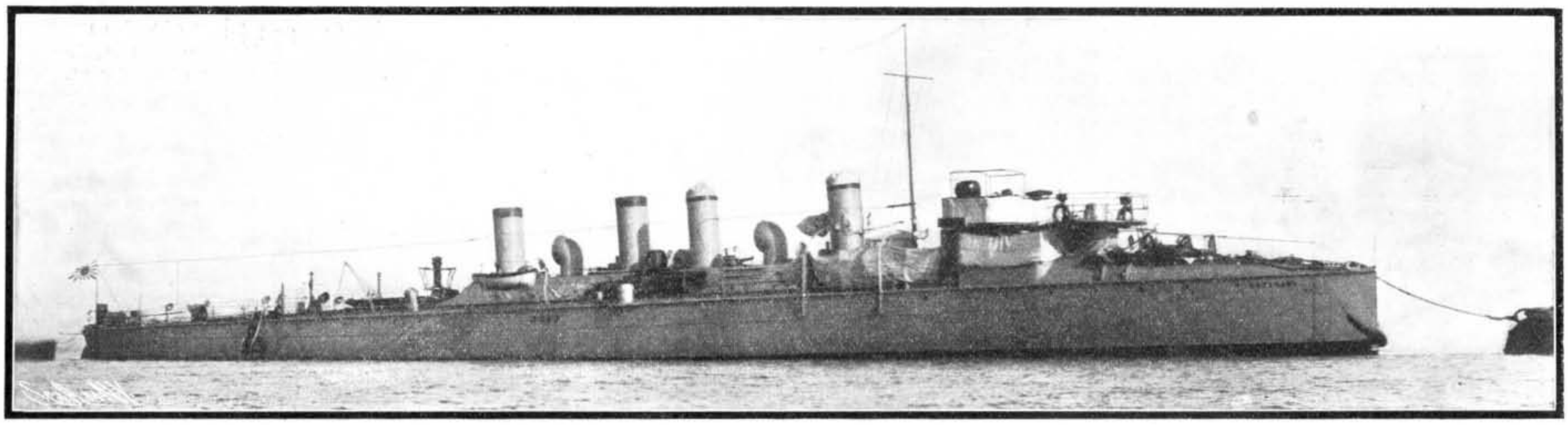
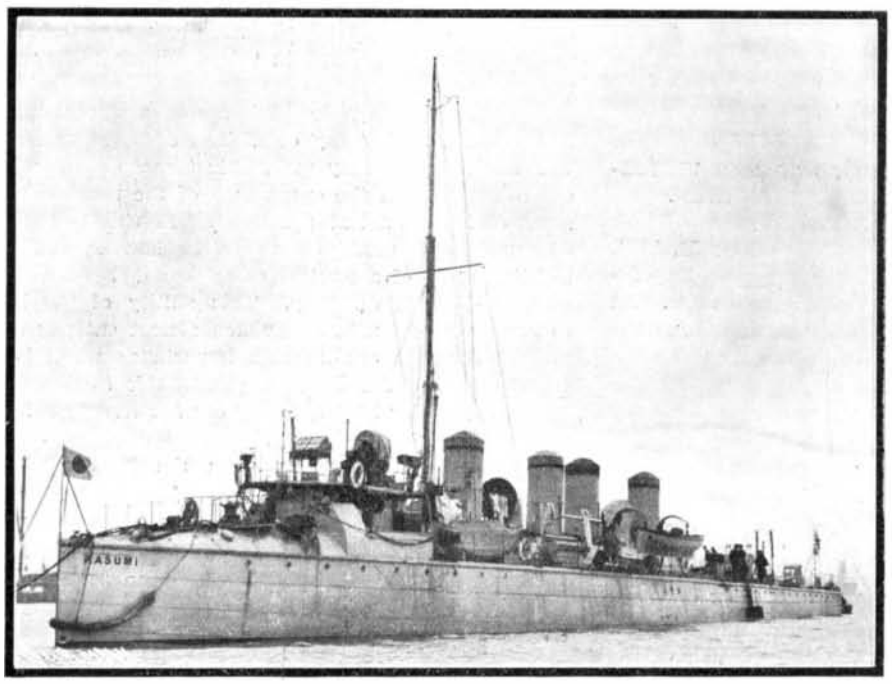


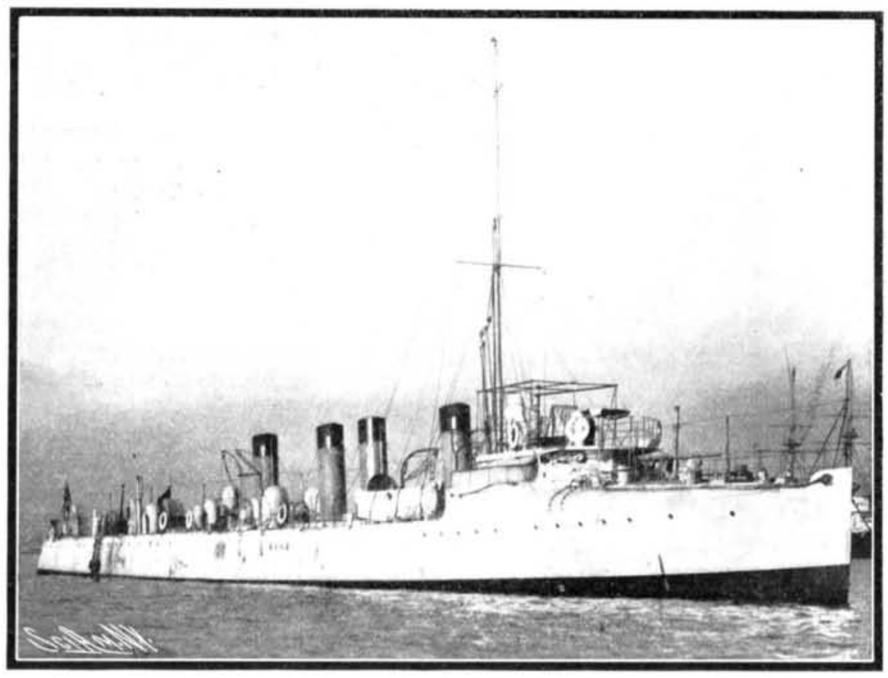
Length, 220 feet. **Beam,** 20.6 feet. **Draft,** 9.6 feet. **Displacement,** 360 tons. **Speed,** 31 to 31.4 knots. **Armament:** One 3-inch; five 6-pounders; two 18-inch torpedo tubes. **Builder,** Yarrow. **Date,** 1899.

"Sazanami." Class of Four Destroyers.



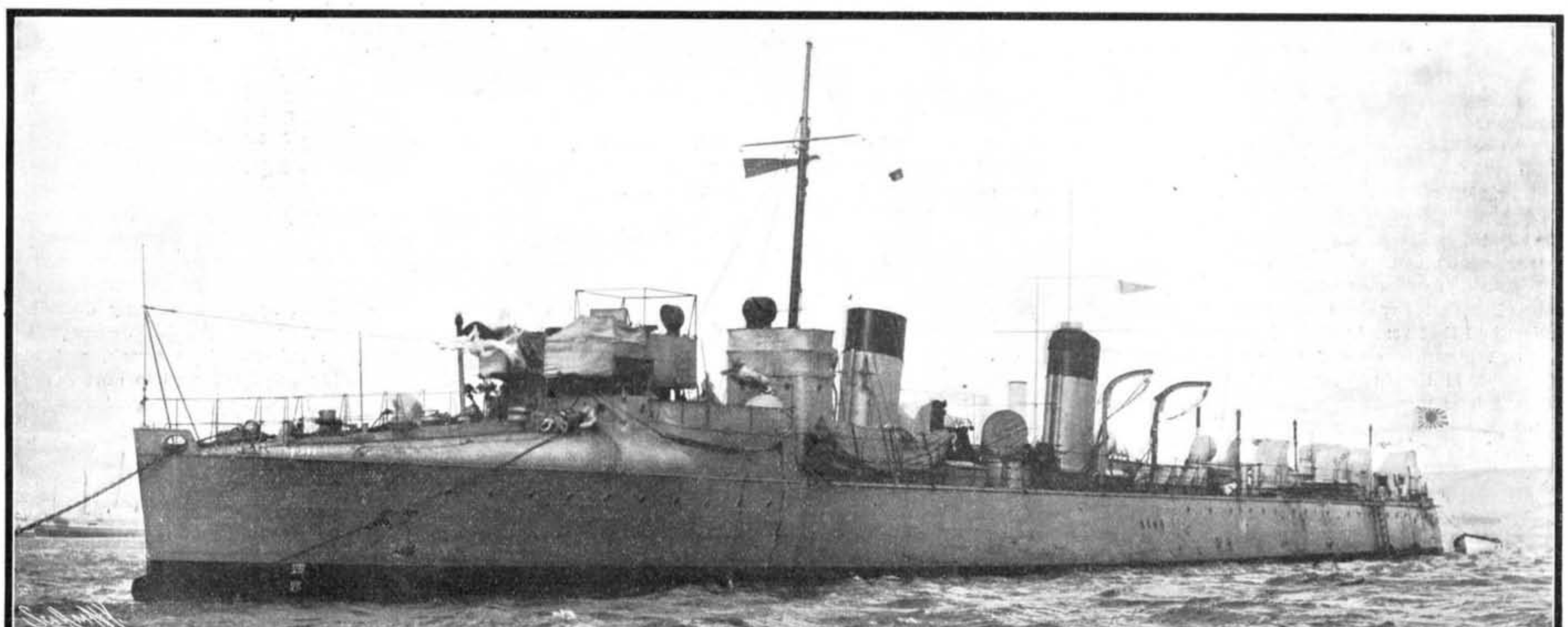
Length, 220 feet. **Beam,** 20.6 feet. **Draft,** 9.6 feet. **Displacement,** 360 tons. **Speed,** 31 knots. **Armament:** One 3-inch; five 6-pounders; two 18-inch torpedo tubes. **Builder,** Yarrow **Date,** 1902.

"Kasumi." Also "Katsuki."



Length, 216.7 feet. **Beam,** 20.7 feet. **Draft,** 8.3 feet. **Displacement,** 300 tons. **Speed,** 31 knots. **Armament:** One 3-inch; five 6-pounders; two 18-inch torpedo tubes. **Builder,** Thornycroft. **Date,** 1901-1902.

"Shirakumo." Also "Asashio."



Length, 210 feet. **Beam,** 19.5 feet. **Draft,** 7.2 feet. **Displacement,** 275 tons. **Speed,** 30 to 30.5 knots. **Armament:** One 3-inch; five 6-pounders; two 18-inch torpedo tubes. **Builder,** Thornycroft. **Date,** 1898-1900.

"Usugumo." Class of Six Destroyers.

THE JAPANESE TORPEDO-BOAT DESTROYER FLEET.—[See page 214.]