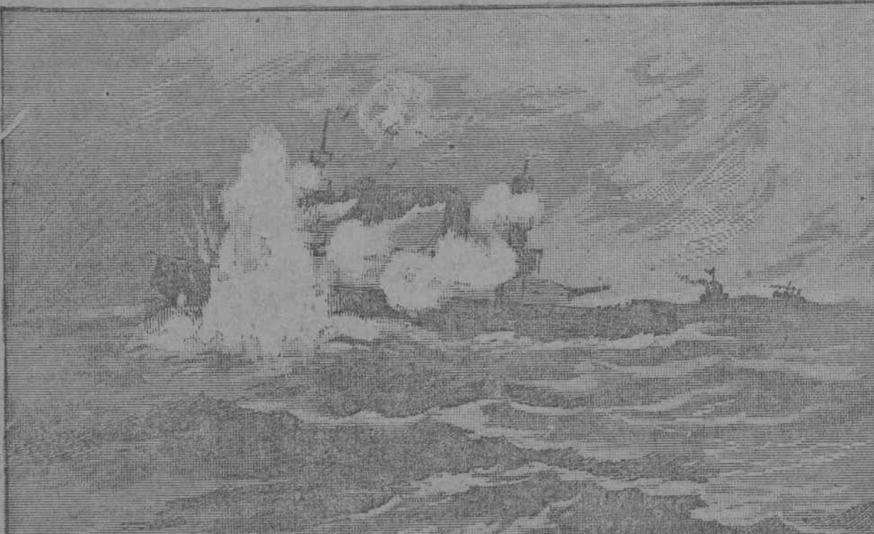


GOLIATHS of the

A Pictorial and Descriptive Forecast of the Next Great Naval Encounter Between Modern War Ships.

The men in our navy are discussing just now what will happen to them in the next war, for with every new battle ship there are additional reasons for expecting strange results. Just at present the croakers in our navy are pointing out new kinds of casualties likely to happen on the Kearsarge and Kentucky, two new battle ships now under way. These vessels have superimposed turrets, being the only vessels of the kind ever built. Whether one turret will disable the other, what will happen to the men in one turret when the guns in the other turret go off, and how the turrets can

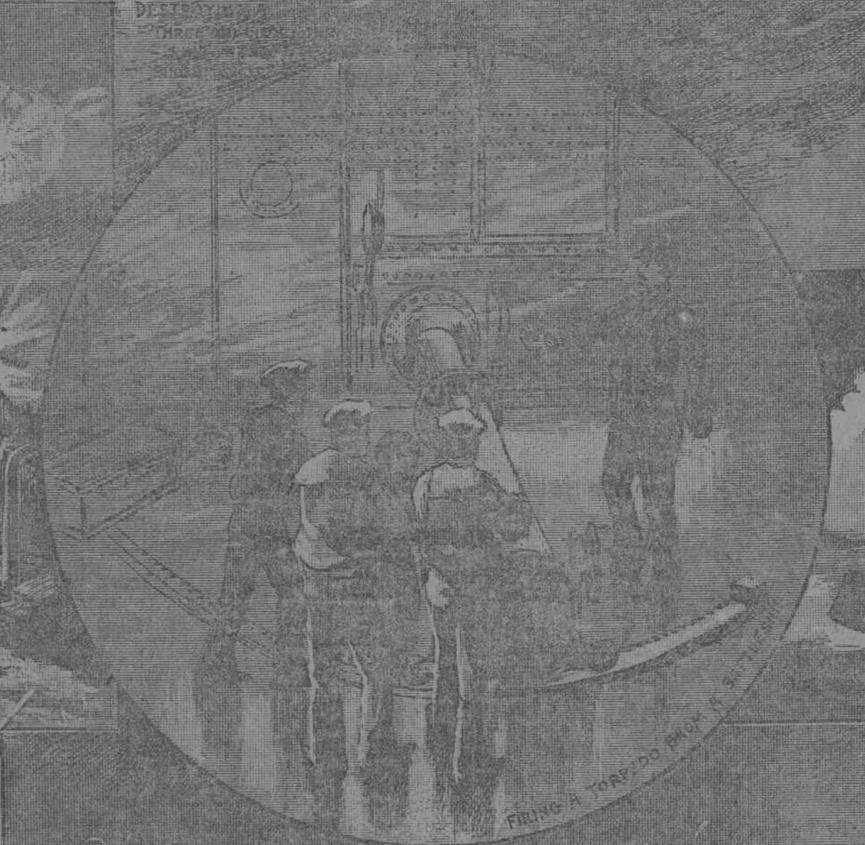
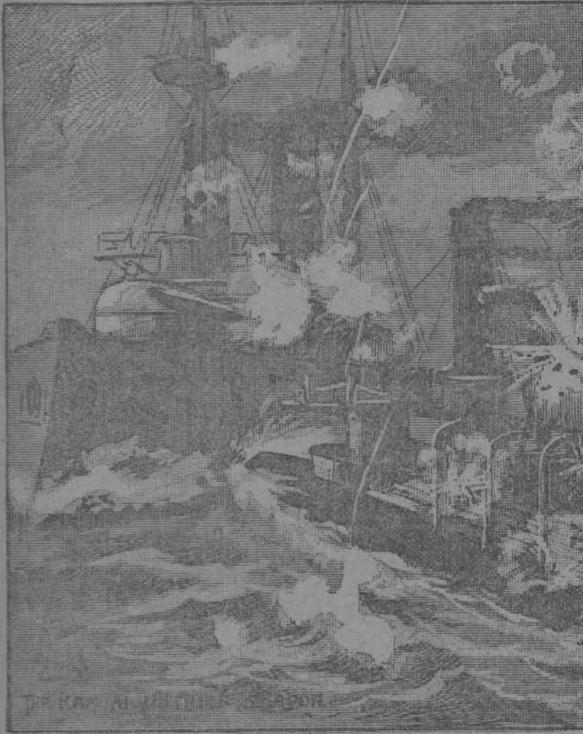


Sea in a Big Battle.

Terrific Slaughter and Destruction Which Will Result When the New Guns and Weapons Are Tried.

Katabdin, now lying there. He wonders what would happen to him if she poked her nose into a man-of-war upon which he was at work. This nose of the Katabdin is the most formidable piece of steel ever cast for use in war. It was made at a single casting and weighs fourteen tons. It is estimated that this ponderous prow, below the water line, will pierce the heaviest armor used in modern ships while the ram is only going at two-thirds speed. So powerful is the Katabdin that, running at full speed, it is claimed she could lift the Indiana five feet.

This curious craft looks like a whale. She is heavily armored, and has a turret



be secured in a seaway, are only a few of the new problems which these vessels involve.

The only sea fight since the introduction of the modern iron clads to which our sailors can refer, was the battle of the Yalu, between the Japanese and Chinese. Although it only lasted a short time and did not involve any ships of the first class, such as our Indiana or Massachusetts, yet it threw a good deal of light upon naval warfare.

Since then there have been many improvements. An entirely new list of horrors has been created by the latest inventions. Dangers previously unknown now confront the sailor. New kinds of wounds, new diseases and a new kind of death have been discovered. Only the other day Captain Philo McGiffin, who commanded one of the Chinese battle ships in the Yalu fight, committed suicide in this city as a result of injuries received in that engagement. His sufferings were caused quite as much by the shock to his nervous system as by the physical wounds he received. He discovered that all the noises of the world rolled into one did not compare with the din on board a modern battle ship in an engagement.

These ships are huge steel tanks. They are built altogether of steel and iron, and the light and air are almost completely shut out on all sides. In actual battle the crews are likely to have to work the guns and engines not only without fresh air, in an atmosphere of thick smoke, but in darkness. The roar when a huge gun is fired fills all parts of the ship. In a hot fight continuous firing by many guns at once has to be kept up. The detonations in the turrets are something frightful. Ear drums blown in, blood vessels burst, eyesight ruined by chemical action of the gun powders, and the mouth and throat parched by the intense heat are only a few of the things which the gunners and their officers expect to suffer. Added to all these horrors are dangers from hostile shot, shell and torpedo.

After an engagement of less than an hour the Indiana would present a wholly different aspect from her appearance when she went into action. In the first five minutes her great smokestacks would be shot away, her boats would vanish in a mass of splinters before the shot from hostile rapid-fire guns, and her flagstays, yards, halliards and anchor cables would be shattered and swept overboard. In a ship of this kind going into action no man is allowed to appear on deck, and every movable object is stowed away or thrown overboard.

The superstructure of the Indiana and of all battle ships of her class consists of light steel bulkheads, railings, ladders and passages. A projectile from an ordinary eight-inch rifle would pass clear through it, coming in at one side and going out at the other. After a few minutes of a naval fight this superstructure would be shot full of holes. Doors, ventilators, railings and ladders would be swept overboard like so much junk. The wooden deck would be ripped up and scattered in splinters.

Up to this time, however, the vessel, so far as her fighting qualities are concerned, would remain unimpaired. An unsightly mass of jagged iron, belching smoke from her funnels and gaping superstructure, dragging cables through the water, without either smokestacks, masts or ventilators, the Indiana would be just as formidable to an enemy as, when glittering with white and gold, she went into the fight with her colors flying at the masthead. An apparent wreck, she would be uninjured. The reason for this is that the armor in a modern battle ship is built around the two parts of the vessel that are absolutely essential—the guns and engines.

All the rest of the vessel may be shot away, but so long as she can maintain her engines unimpaired and keep her guns going she can remain in the field. The engines are below the water line, protected by the heaviest armor on the sides of the ship and by a protective deck, which rises at an angle from the sides. The angle at which any shot could hit this protective deck would be such as to make it impossible to "bite." It would be practically impossible for an enemy to get home a shot on the engines, either by penetrating the hull below the water line or through the protective deck. So long as the hull remains intact the vessel must float. The hull performs the double purpose of floating the turrets and protecting the engines.

The turrets and the conning tower are the only other parts of the vessel secured from hostile shot by the heaviest armor. The great guns that form the offensive weapons of the ship are contained in the turrets, whose armor is carried far below the wooden deck, clear down the protective deck, below which is the magazine, where powder and shot are kept. The conning tower, where the commanding officer and his staff watch the movements of the enemy and from which they work their own ship, communicating by tubes and telegraph with all the turrets and engine rooms, is absolutely essential. This tower is almost as heavily protected as the turrets, and it is built up from the protective deck, so that everything else around it may be shot away, but still it will remain intact.

The Indiana, then, after receiving the hostile fire of a united fleet, would be a shapeless mass, presenting to the eye only her turrets, her conning tower and her hull uninjured, but otherwise ragged, uneven and torn and splintered from stem to stern. While the sailors in our navy are comforted by the reflection that such a seeming wreck might be able to steam into port, they ask what their own condition would be.

After spending a couple of hours in the turrets or stoke holes of a battle ship in action they are wondering if they would be able to crawl about alive, whether they could see and what effect the inhalation of smoke and gas would have upon the lungs. That all the men will be deafened and unable to hear the bells and orders is one conjecture. That the electric lights will go out, leaving the men in darkness is another. That the gases from the new smokeless powder will ruin their eyes is also alleged, and that the heat will be frightful is expected.

But the fearful din and the strain upon the nervous system are expected to work the most serious results among officers and men. The recommendation of the Surgeon General of the Navy to have a hospital ship accompany our fleet into action has been ominously suggestive to the men before the mast. But if Jack escapes alive from the next naval action he will consider himself lucky, after the familiarity he acquires with new weapons of destruction that are constantly being added to our armory. He does not doubt that other navies are keeping pace with our own in their devices to kill and destroy.

Every sailor that comes to the Navy Yard takes a careful look at the ram



deck upon which hostile shot would strike a glancing blow. She is painted a dark green, the color of the sea, so as not to attract attention. The gun, the torpedo and the ram are the three great marine weapons, and the Katabdin displays the utmost development of the ram. She is the only vessel of the kind ever built. No other navy has a boat like her. She was built upon the recommendation of Admiral Daniel Ammen, who had made a life study of defence, and who became an ardent advocate of rams. He said they were the cheapest and most efficient vessels, as five rams could be built for the cost of three battle ships. Before the Katabdin was placed in commission Admiral Ammen's argument received striking proof in the sinking of the great Victoria five minutes after she was hit by the ram of the Camperdown.

The Katabdin is intended only for harbor defence. Her mission will be to run into the vessels of a hostile fleet. She comes to a point below the waterline, and has a sharp edge on both sides of her prow running aft with which she is expected to cut the sides of a man-of-war after punching a hole in her. It increases the destructive effect of a glancing blow, and enormously adds to the strength of the Katabdin. The shock to the crew of the ram at the moment she strikes an armored ship is something the men in our navy are talking about. She carries 91 men all told.

The engineers and seamen expect to be knocked off their feet the moment she strikes, and many believe it will be safest to lie down on the stomach with their feet toward the bow, well braced against a bulkhead. The officer in command stands in a conning tower armored with 18-inch steel, and watches the enemy through a slit. A large part of her 251 feet of length will be under water as she plunges forward at a 14-knot gait. Shells will glance off her turtlesback like rubber balls. Her smokestack, davits and ventilators may be shot away, and she will be extremely difficult to hit in a vulnerable part.

The greatest danger to those on board of her will be torpedoes. The only guns she carries are 6-inch revolving cannon with which to pick off torpedo boats. Otherwise she must trust to her armor and her destructive ram for safety. If the Katabdin can get in one good punch on a battle ship, the latter would be, in the vernacular of the to-castle, "a goner." The officers in command will pay no attention to the firing of hostile ships, but will be ever on the watch for torpedoes.

The most mysterious thing in naval warfare is the torpedo. All naval officers are afraid of torpedoes. Any floating keg or barrel or box which may drift helplessly down with the tide toward a fleet during the next war will create consternation among its officers. The dread of torpedoes among naval officers has become almost a superstition. They regard with suspicion every floating plank, every piece of wood on the surface of the tide. A dead dog gives them a fit and is closely scrutinized from the deck, and any object that seems to move upon the surface is almost certain to receive a hull or a few shots from a rapid-fire gun.

The reason for this is that torpedoes are awful and certain in their effects. They create hardly more than a ripple as they come spinning toward a ship. If, indeed, they are not altogether unseen. They strike the ship in her most vulnerable part, under the water line, beneath the armored belt. One such torpedo sent home sends the largest battle ship to the bottom in short order. The Victoria went down five minutes after having a smaller hole punched in her bottom than would be made by an average torpedo. Turrets, thirteen-inch rifles, conning tower and armored deck and sides are helpless against the attacks of these mysterious enemies, whose touch means death.

The torpedo room of a battle ship will, in the opinion of many naval experts, be the place where the decisive work will be done in the next great naval engagement. Here the deadly missiles that fly toward the enemy through the water instead of through the air are ranged side by side. They are close to the torpedo tube. They are all primed, charged and ready to set off. Their delicate machinery is adjusted to a nicety, and they are fitted with every appliance to enable them to pursue their course independently once they are fired from the tube of the ship. The torpedoes are 12 to 14 feet long. The entire forward part is filled with gunpowder, which is set off by contact. Aft of that in the torpedo come the machinery and the compressed air to run it.

A \$2,500 torpedo will sink a \$3,000,000 battle ship. One torpedo costs no more than one shot from a 13-inch gun. They are among the cheapest and most destructive of weapons. A modern battle ship can carry a large supply of these deadly missiles. Special officers and men skilled in their use are detailed to the torpedo room. The ship may be in action an hour before the favorable moment comes to fire a torpedo. Of that the commanding officer in the conning tower is the judge. He approaches an enemy, judges the distance the torpedo must travel, and telegraphs the officer on duty in the torpedo room. The latter sets tube and torpedo accordingly.

One torpedo fired in the battle of the Yalu dived under the ship at which it was aimed and almost hit a friendly vessel on the other side. It then sped on toward the horizon. This is poor firing. The officers in charge of torpedo work in our navy have reduced the subject to a science and now know to a nicety how far torpedoes will sink and float and swim in all kinds of sea. The light, inexpensive torpedo tube in the bow of the ship is the instrument which, in their opinion, will give the best account of itself. The torpedo is not to be fired from this tube while the ship is going at full speed. She will come close to the enemy before letting go her torpedo. The latter upon leaving the tube immediately plunges into the sea. It goes ahead with its own motive power and comes in upon the enemy, perhaps unseen.

The minute it touches the side of the ship the torpedo goes off. There is no battle ship afloat that could withstand such a blow. The most enthusiastic advocate of heavy armor never claimed that ships could be protected by steel against torpedoes. The torpedo officer seeks to get in his weapon near the boilers of the enemy. He aims to hit her amidships. An opening made abreast of boilers or engine room will create a kind of havoc in a battle ship of which we have no parallel. Once hit in such a place by a torpedo, the mightiest battle ship is doomed. She will hardly have time to fire another shot before she goes down. The moment the torpedo goes off under the ship, discipline, in all likelihood, will be at an end among the crew, and every man will seek only his own safety, well knowing that there is not a moment to lose before the enormous mass of steel sinks beneath the waves. There are a few of the things that Jack is now considering as he sees every provision being made for death and destruction and the mighty forces of modern science enlisted in the work.