

## THE TRUE SIGNIFICANCE OF THE PACIFIC CRUISE.

BY CAPT. A. T. MAHAN.

The projected movement of an American fleet of sixteen battleships, with attendant smaller vessels, from the Atlantic to the Pacific coast of the United States is an event not only important, both from the professional and national point of view, but striking to the imagination. It carries in itself certain elements of grandeur. It is therefore not surprising that it should have attracted particular notice from the press; but the effect upon the imagination of several journals has been such as to approach the border line of insanity. A measure designed upon its face to reach a practical solution of one of the most urgent naval problems that can confront a nation having two seaboard, extremely remote the one from the other, has been persistently represented as a menace to a friendly power—Japan; and so effectively has this campaign of misrepresentation been carried on, so successfully has an obvious and perfectly sufficient reason for this cruise been ignored in favor of one less probable, and, so far as knowledge went, non-existent, that certain of the press of Japan, we are told, have echoed the cry.

Not only so, but European journals, notably some in Great Britain, among them certain which are incessant in their warnings against Germany, and conscious that the whole distribution of the British fleet has of late been modified, with the object of increasing the battle-ship force quickly available for the North Sea, where their only enemy is Germany, nevertheless affect to deprecate the dispatch of a United States fleet from its Atlantic to its Pacific coast, where it will be four thousand miles from Japan, against the two or three hundred which separate England and Germany. A new British naval base has been established on the North Sea. The naval maneuvers of this autumn, in which have taken part twenty-six battleships and fifteen to twenty armored cruisers, that is, over forty armored vessels, with other cruisers and torpedo boats in numbers, have been in the North Sea; one coast of which only is British as our Pacific coast is ours. The Naval Annual for this year, a publication conservative in tone as well as high in authority, discusses the strategy of the North Sea with unhesitating reference to Germany. I take from it the statement that by May, 1908, 86 per cent of the British battleship strength will be concentrated in or near home waters. Yet in the face of all this, the rulers of Great Britain and Germany, at this very moment of my writing, find no difficulty in exchanging peaceful assurances, the sincerity of which we have no good reason to doubt. Have we also forgotten that upon the Emperor William's famous telegram to Kruger, a British special squadron was ordered into commission, ready for instant movement? Whether a retort or a menace, even so overt a measure, in home waters, gave rise to no further known diplomatic action. We Americans are attributing to other peoples a thinness of skin, suggestive of an over-sensitiveness in ourselves which it was hoped we had outgrown.

Let it be said at once, definitely and definitively, that there is in international law, or in international comity, absolutely no ground of offense to any state, should another state, neighbor or remote, see fit to move its navy about its own coasts in such manner as it pleases. Whatever Germany may think of the new distribution of the British navy, she says nothing, but will silently govern her own measures accordingly. The statesmen of Japan, who understand perfectly the proprieties of international relations, know this well, and doubtless retain their composure; but the result of the action of certain of the American press has been to stir up popular feeling in both countries, by the imputation to the United States government of motives and purposes which cannot be known, and which *prima facie* are less probable than the object officially avowed. Whether this endeavor to rouse ill blood has been intentional or not, is of course known only to the editors; but grave ground for suspecting even so unworthy a motive as to injure the national administration is fairly to be inferred from such a paragraph as I shall here quote, from a New York journal of October 6. My chief object in quoting, however, is not to impugn motives, however reasonable such construction, but to emphasize the essential characteristic of the coming movement of our fleet:

"Suppose that soon after the New Orleans riots, when relations between the United States and Italy were 'strained,' the American fleet had been sent on a practice cruise to the Mediterranean.

"Suppose that soon after the Venezuela message, Mr. Cleveland had ordered the whole American fighting naval strength to take a practice cruise off Nova Scotia or Jamaica."

Such action, in either supposed case, would have been wantonly insolent and aggressive, calculated to provoke hostilities, and such as no statesman would take, unless he had already determined to force war, or saw it looming large on the horizon; as the British fleet was sent to Besika Bay in 1878. The insolence, aggression, and provocation, however, would have been the demonstration off the coast of the nation with whom diplomatic difficulty existed. Occurring when these innuendoes did, in the midst of the virulent campaign of imputation of warlike purposes against the Admin-

istration, the inference is irresistible that there was deliberate intention to parallel the sending of our fleet from our one coast to our other to a measure as offensive as those named. The distinguishing characteristic of the movement now projected, from the international point of view, is that it is not in the nature of a demonstration, peaceful or hostile, off the coast of any other state, much less off that of one with whom our relations are asserted by the press to be delicate. Not every man in the street, however, could detect the fallacy. It is a maxim of law that intention can only be inferred from action. So wild an insinuation, in the columns of a journal distinguished for intelligence, can, so far as the action shows, be attributed only to a willingness to mislead, or to a loss of head.

In pursuing the next aspect of this cruise to which I purpose to devote attention, I am led again to quote the same journal. The slip lies before me, but I have failed to note the date:

"We are asked to believe that this expedition to the Pacific is a mere 'practice cruise.' He must be a miracle of innocent credulity who believes it. What observant men perceive in this dangerous situation is a cataclysm trained and bridled for Theodore Roosevelt to bestride and run amuck."

The last sentence is not necessary to my purpose; but I preserve it, partly for that gem of metaphor, "a cataclysm trained and bridled," and partly for the directness of the charge against the President of preparing conditions that must issue in war.

For the rest, if to believe in the obvious and adequate motive of practice for the fleet is to be a "miracle of innocent credulity," such I must admit myself to be; and I do so heartily. I am not in the councils of either the government or the Navy Department. I have neither talked with nor heard from any person who from official position could communicate to me any knowledge of the facts. My own information has been confined throughout to the newspapers. Shortly after the purpose to send the fleet became known, and counter agitation to be made, I had occasion to write to a British naval friend; and I said to him then that, while I had no clue to the motives of the Administration, it seemed to me that a perfectly sufficient reason was the experience to be gained by the fleet in making a long voyage, which otherwise might have to be made for the first time under the pressure of war, and the disadvantage of not having experienced at least once the huge administrative difficulties connected with so distant an expedition by a large body of vessels dependent upon their own resources. By "own resources" must be understood, not that which each vessel carries in herself, but self-dependence as distinguished from dependence on near navy yards—the great snare of peace times. The renewal of stores and coal on the voyage is a big problem, whether the supply vessels accompany the fleet or are directed to join from point to point. It is a problem of combination, and of subsistence; a distinctly military problem. To grapple with such a question is as really practical as is fleet tactics or target practice.

To this opinion I now adhere, after having viewed the matter in the light of such historical and professional thought and training as I can bring to it. Other reasons may have concurred; of this I know nothing. The one reason, practice, is sufficient. It is not only adequate, but imperative. The experiment—for such it is until it has become experience—should have been made sooner rather than be now postponed. That it was not sooner attempted has been, probably, because the growth of the navy has only now reached the numbers, sufficiently homogeneous, to make the movement exhaustively instructive.

The word *practice* covers legitimately many features of naval activity, which differ markedly and even radically from one another, though all conducive to the common end—proficiency. I may perhaps illustrate advantageously by a remark I have had occasion to make elsewhere, upon two theories concerning the summer practice cruises of the Naval Academy. There were—probably still are—those who advocated spending most of the allotted time in quiet, contracted, waters, following a prearranged routine of practical drills of various descriptions, which would thus be as little as possible disturbed by weather or similar impediment. Others favored the practice vessels putting out at once to sea for a voyage of length, amounting often to five or six thousand miles, in which must necessarily be experienced many kinds of weather and other incidents, reproducing the real life of the sea, and enforcing such practical action as the variable ocean continually exacts. It is evident that these conceptions, though opposite, are not contrary to each other, but complementary; and a moment's thought shows that under another phase they reappear in every fleet, if its active life is thoughtfully ordered with a view to full efficiency. It is imperative that a fleet, for a large proportion of the year, seek retired waters and relatively equable weather, for the purposes of drill with the guns; from the slow graduated instruction of the gunners, the deliberate firing at a stationary target, and from a ship either at rest or slowly moving, up through successive accretions of speed, of ship and of discharges, until the extreme test

is reached of fast steaming, and firing with the utmost quickness with which the guns can be handled. In like manner the maneuvering of a body of several ships in rapid movement, changing from one formation to another, for the ultimate purposes of battle, must progress gradually, in order that commanding officers and their under-studies may gain, not only ability, but confidence, based upon habit; upon knowledge of what their own ships can do, and what they may expect from the other vessels about them. Ships in battle order must keep at distances which, relatively to the speed maintained, are short; dangerously short, except where compensated by the sureness of handling based on long practice. It is clear also that alterations in the personnel of a fleet, which are of frequent occurrence, make constant tactical drills additionally necessary.

But when all this—and more not here specified—has been accomplished, whether at the Naval Academy or for the fleet, what has been done but lay the necessary foundation upon which to rear the superstructure of the real life of the profession? There remains still to fulfill the object—very different from mere practice, though dependent upon it—which alone justifies the existence of a navy. The pupil of the Naval Academy passes naturally and imperceptibly into the routine life of the service by the simple incident of being ordered to a sea-going ship; the single ship, the cruiser, gains her sufficient experience by the mere fact of staying at sea; but a fleet tied to its home ports, or to the drill ground, does not undergo, and therefore does not possess, the fullness of fleet life. Not only are the interruptions numerous and injurious; not only does the easily reached navy yard sap the habit of self-reliance; but out in the deep, dependent upon itself alone and for a long period, there await a fleet on a distant voyage problems so different in degree from those of a vessel alone as practically to be different in kind. Multiply any kind of difficulty by sixteen, and you have passed from one order of administration to another.

The movement of the United States battle fleet from the Atlantic to the Pacific coast is in the highest sense practical, because it is precisely the kind of movement which the fleet of any nation may, and usually will, be required to make in war. It is further practical, because the United States has a Pacific as well as an Atlantic coast, and has not a navy large enough to be divided safely between them. The question is at least debatable, whether for the near future the Pacific is not the greater center of world interest; as it certainly is, with regard to our own military necessities, one of greater exposure than the Atlantic. Like France, with her Mediterranean and Atlantic shores, the United States is in the painful military dilemma of being liable to attack upon one side while the fleet is on the other; but our distance to be covered is so much greater than that of France, that the position is vastly more embarrassing. A fleet of battleships leaving Toulon, full coaled and victualled, may reach Brest or Cherbourg without renewing the fuel and stores in its holds; but a fleet leaving New York or Norfolk for San Francisco has upon its hands a most serious administrative problem, and one which no accuracy of gun-fire, no skill in tactics, can meet. It is in fact the problem of Rodjestvensky, to use an illustration particularly apt, because recent. Can our navy in such case expect from the weak states of South America the facility for recoaling, etc., which was liberally extended to the Russian admiral, to the somewhat amazement of the naval profession, and to the just indignation of Japan?

It is an old saying that an army, like a snake, moves on its belly. This is little less true of a navy. In the foremost naval man of modern times, in Nelson, we, according to our several prepossessions, see the great strategist, or the great tactician, or the great fighting man; but the careful student of his letters realizes that, underlying all, is the great administrator, who never lost sight or forethought for the belly on which his fleet moved. The unremitting solicitude for the food essential to the health of his crews; the perpetual alertness to seize opportunity, indicated by such casual note, at sea: "Finished discharging store-ship No. —;" the slipping into Tetuan to fill with water, because little progress toward Gibraltar could be made against the current and temporary head wind; the strong self-control, holding down his constitutional impetuosity to move, till sure that all has been done to make movement far reaching, as well as accurate in direction; the whole culminating at the end of his life in a wide sweeping movement across the Atlantic, back to Gibraltar, and thence to Brest, a period of three months—about equivalent to that required for our projected transfer—during which he was never embarrassed about stores because always forehanded; that is the way—speed, not haste—in which wars are won. It was, and was recognized at the time to be, a magnificent instance of the mobility which is the great characteristic of navies as fighting bodies; not the mobility which consists in getting an extra half-knot

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are mounted, two on the main deck, one forward and one aft protected by shields, and eight on the gun deck in broadside. The complement is 293 officers and men.

#### THE SCOUT CRUISER "SALEM" AND CLASS.

There are now under construction for our navy three vessels of an entirely new class, which are expected to prove a very serviceable type. These are the scout cruisers "Birmingham" and "Salem," building at Fore River, and the "Chester," building at the Bath Iron Works. As they are not designed to do any fighting, except in an emergency, the effort of the designers has been to make them fast and thoroughly seaworthy. To this end they are provided with a lofty forecastle deck; and although they are but of 3,750 tons displacement, they are being fitted with engines of 16,000 horse-power, with which they must develop a speed of 24 knots. With a view to obtaining data as to the relative efficiency of the three types of engine, the "Birmingham" is being fitted with twin-screw reciprocating engines, the "Chester" with four-screw Parsons turbines, and the "Salem" with twin-screw turbines of the Curtis type. The armament consists of twelve 3-inch rapid-fire guns and two 21-inch submerged torpedo tubes. One excellent feature of these boats is the large coal supply, of 1,250 tons, which is expected to give them a radius of action larger than that of contemporary scouts of other navies.

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on a speed trial with picked coal and firemen, but that which loses no time because it never misses opportunity. At the end, when he came off Brest, out of the dozen ships with him, all but two were turned over to the admiral there commanding, ready for any call; to blockade or to fight. Of the two, one, worn out structurally, he had retained from the first chiefly because of her value as a fighting unit, due to an exceptional captain; the other, his own flagship, had been over two years from a home port, yet within a month of arrival sailed again for his last battle. Compared to these its antecedents, Trafalgar is relatively a small matter.

The example is for all time. Incidental conditions have changed since then, but the essential problem remains. Steamers may not find in a calm, or in an unprofitable head wind, the propitious moment for clearing a storehouse, or running into a near port to

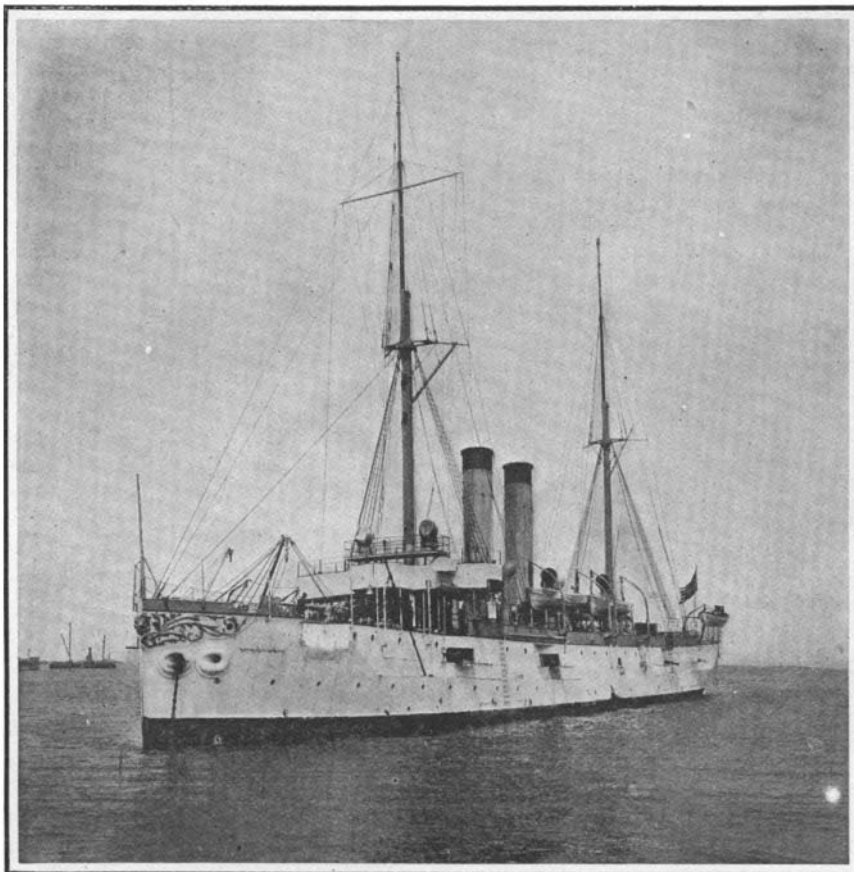
fill with water; but the commander-in-chief may find imposed upon him the consideration: Where should we fill with coal, and to what extent beyond the bunker capacity, in order to make the successive coalings, and the necessary stretches from point to point, most easy and most rapid? What distribution of these operations will make the total voyage shortest and surest? What anchorages may be available outside neutral limits, should neutral states consider coal renewal and other

Then the mere operation of transferring the coal, or other stores, under any of these circumstances is done more rapidly the second time than the first; and the third than the second. At what points of the voyage should additional colliers join, having reference, not only to the considerations above mentioned, but also to the ports whence they sail, that the utmost of their cargo may go into the fleet and the least be expended for their own steaming? It is always well to consider the worst difficulties that may be met. From the north tropic on the one side to the same latitude on the other, the whole voyage of an American fleet will be in foreign waters, except when on the ocean common. Upon what hospitality can it count in war?

I hold it to be impossible that a fleet under a competent commander-in-chief and competent captains—not to mention the admirable junior official staff of our navy, of highly trained officers in the prime of life—can make the proposed voyage once, even with the advantages of peace, without being better fitted to repeat the operation in war. No amount of careful pre-arrangement in an office takes the place of doing the thing itself. It is surely a safe generalization, that no complicated scheme of action, no invention was ever yet started without giving rise to difficulties which anxious care had failed to foresee. If challenged to point out the most useful lesson the fleet may gain, it may be not unsafe to say: its surprises, the unexpected. If we can trust press reports, surprise has already begun in the home ports. The fleet apparently has not been able to get ready as soon as contemplated. If so, it will be no small gain to the government to know the several hitches; each small, but cumulative.

In my estimation, therefore, the matter stands thus: In the opinion of Sir Charles Dilke—than whom I know no sounder authority, because while non-professional he has been for a generation a most accurate observer and appreciative student of military and naval matters

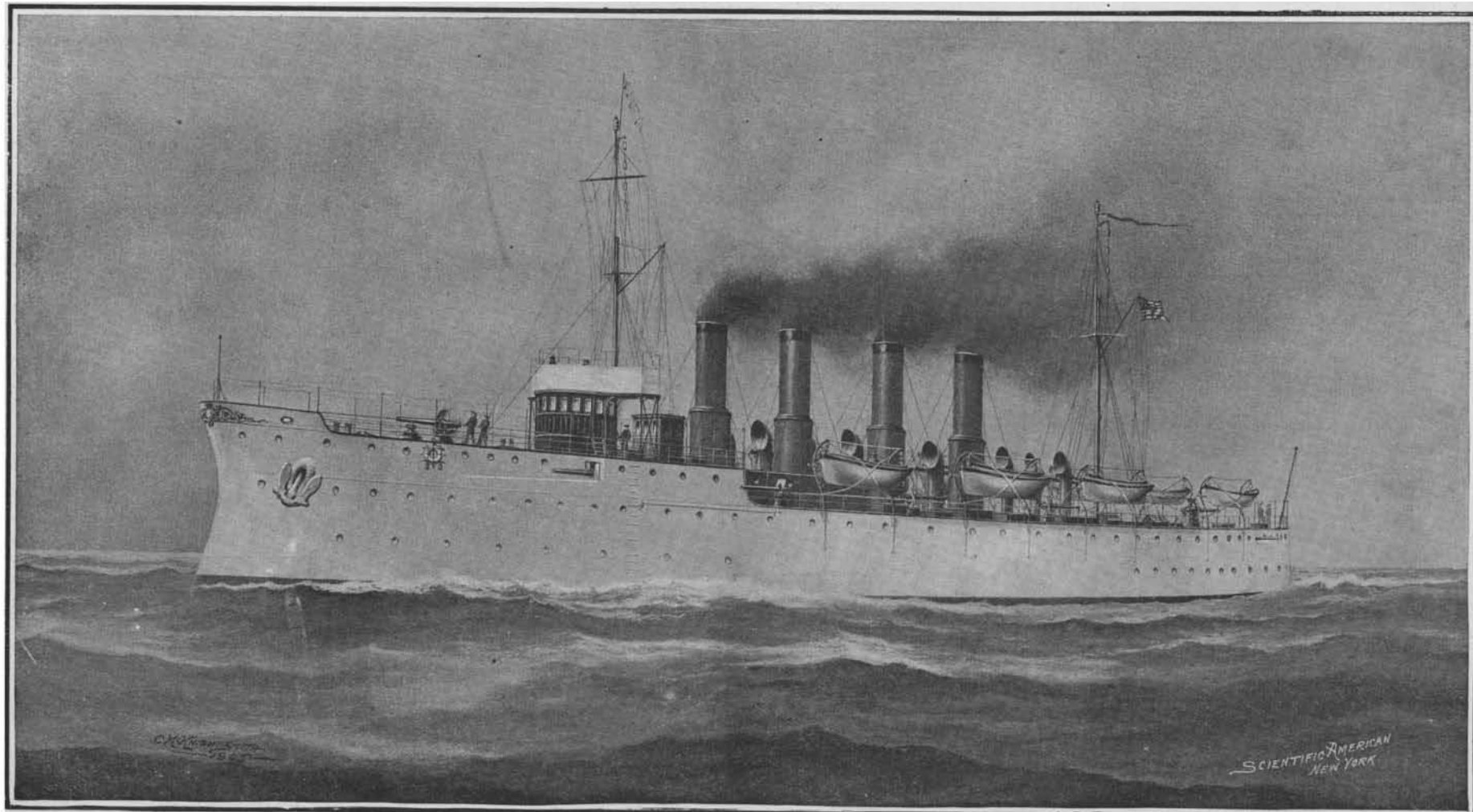
—the United States navy now stands second in power only to that of Great Britain; but it is not strong enough to be divided between the Atlantic and Pacific coasts. Both are part of a common country; both therefore equally entitled to defense. It follows inevitably that the fleet should be always ready, not only in formulated plan, but by acquired experience, to proceed with the utmost rapidity—according to the definition of mobility before suggested—from one coast to the other, as needed. That facility obtained, both



Displacement, 3,200 tons. Speed, 16½ knots. Bunker Capacity, 700 tons. Armor: Deck, ½ inch on flat, 1 inch to 2 inches on slopes. Armament: Ten 5-inch R. F.; eight 6-pounders; two 1-pounders; four Colts; one 3-inch field gun. Complement, 293.

#### SEMI-PROTECTED CRUISER "DES MOINES." ALSO "CLEVELAND," "CHATTANOOGA," "DENVER," "GALVESTON," AND "TACOMA."

refreshment an operation of war not to be permitted within their jurisdiction? What choice is there among these anchorages, for facility due to weather? If driven to coal at sea, where will conditions be most propitious? For concrete instances: How much of the wide and shoal estuary of the La Plata is within neutral jurisdiction? Is the well-known quietness of the Pacific between Valparaiso and the equator such that colliers can lie alongside while the ships hold their course? If so, at what speed can they move?



Length, 420 feet. Beam, 46 feet 8 inches. Trial Draft, 16 feet 10 inches. Depth Amidship, 36 feet 6 inches. Displacement on Trial, 3,750 tons. Battery, twelve 3-inch guns. Torpedo Tubes, two submerged. Armor: Deck, 1½ inch, side, 2 inches. Horse Power, 16,000. Speed, 24 knots. Coal Supply, 1,250 tons.

#### SCOUT CRUISER "SALEM." CLASS OF THREE SHIPS.

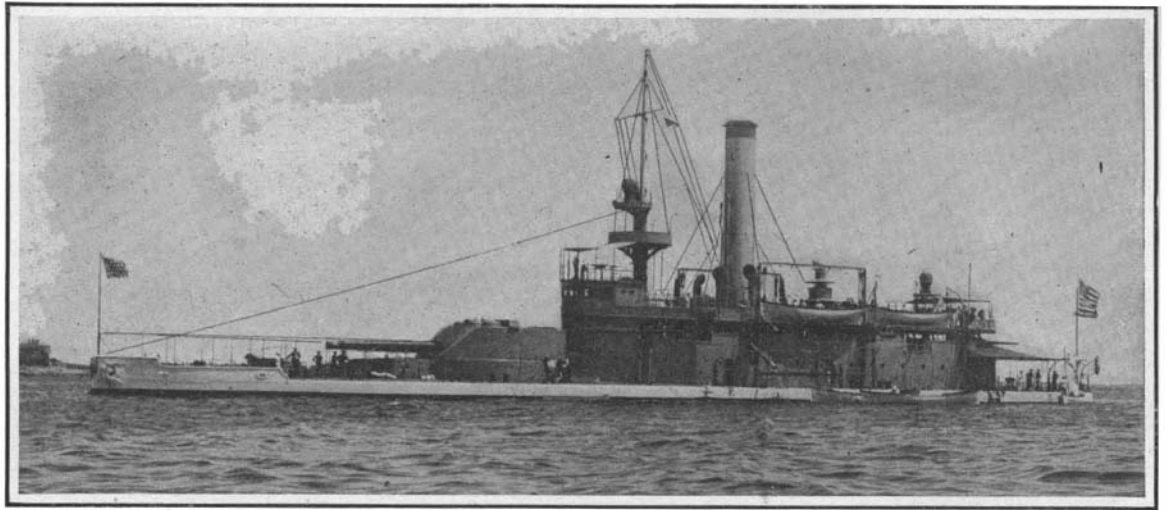
coasts are defended in a military sense. By this I do not mean that an enemy may not do some flying injury—serious injury—but that no large operation against the coasts of the United States can prosper, unless the enemy command the sea; and that he cannot do, to any effect, if within three months a superior United States force can appear. Rodjestvensky took longer; but could he have smashed Togo, as Togo did him, what would have been the situation of Japan, for all the successes of the preceding fourteen months? Evidently, however, the shorter the transit from the Pacific to the Atlantic, the greater will be the power of the fleet for good; just as it would have been better if Rodjestvensky—assuming his success—had come before Port Arthur fell, or better still before its fleet was destroyed. Such mobility can be acquired only by a familiarity with the ground, and with the methods to be followed, such as Nelson by personal experience had of the Mediterranean and of the West Indies; of the facilities they offered, and the obstacles they presented. Such knowledge is experimental, gained only by practice. It is demonstrable, therefore, that the proposed voyage is in the highest degree practical; not only advisable, but imperative. Nor should it be a single spasm of action, but a recurrent procedure; for admirals and captains go and come, and their individual experience with them. Why not annual? The Pacific is as good a drill ground as the Atlantic.

#### Paper from Peat.

In the report of United States Consul R. S. S. Bergh, of Gothenburg, Sweden, it is announced that paper making from peat has been begun in Sweden on a commercial scale. A company capitalized at over a million has acquired possession of extensive peat bogs, and has prepared plans for mills to turn out wrapping paper and pasteboard. Although the money for the enterprise was largely put up in London, the process by which the vegetable fiber of the peat is to be turned into paper is covered by an American patent. It is claimed that the cost of a ton of paper worth \$30 is but \$15, leaving a more than satisfactory margin of profit. Further claim is made that but two hours are required to convert peat into paper. This process,

#### HARBOR-DEFENSE MONITORS.

The great scare which took place along our seaboard cities when it was known that the Spanish fleet had started for America was no doubt largely responsible for the authorization by Congress in 1898 of four harbor defense monitors, one of which, the "Arkansas," built at Newport News, is herewith illustrated. The others, the "Florida," "Nevada," and "Wyoming,"



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**Displacement,** 3,235 tons. **Speed,** 12 knots. **Bunker Capacity,** 400 tons. **Armor:** Belt, 11 inches; turrets, 11 inches; barbettes, 11 inches; deck, 1½ inch. **Armament:** Two 12-inch 40-caliber B. L.; four 4-inch R. F.; three 6-pounders; six 1-pounders; two Colts. **Complement,** 137.

#### HARBOR-DEFENSE MONITOR "ARKANSAS." ALSO "FLORIDA," "WYOMING," AND "NEVADA."

were built at Elizabethport, Bath, Me., and San Francisco. The "Arkansas" is 252 feet long, 50 feet beam, and draws only 12 feet 6 inches of water. She is a typical monitor, with a freeboard of only a few feet and her main battery of two 12-inch guns is carried at a height of not more than 8 or 10 feet above the water. The belt, 11 inches in maximum thickness, is 5 feet wide, half of this being below the water line. The deck is 1½ inches thick and the barbette and turret are protected by 11 inches of armor, all treated

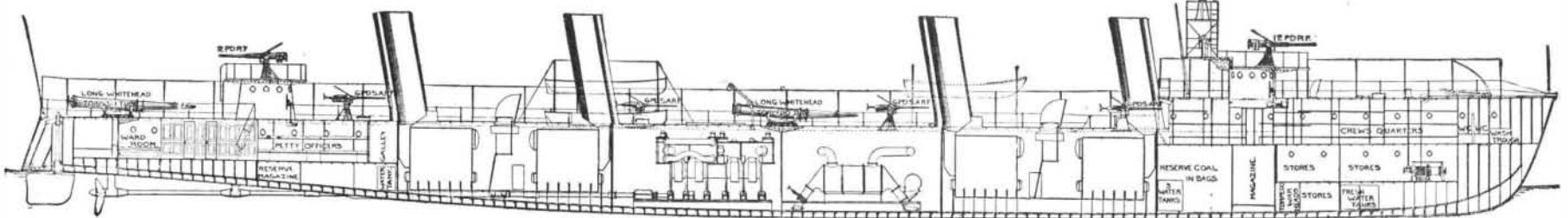
remaining three reserves are in the waters of the State of Washington and include islands, some being at the entrance to Puget Sound, while the others are on the southwestern coast of the State near the Oregon line.

In forest preserves 480,451 acres have been added to the Stanislaus and Lassen Peak national forests in California, the addition to the Stanislaus forest lying

in Calaveras, Tuolumne, and Mariposa counties. The strip of land is 55 miles long and covers 348,570 acres. The northern part of this addition takes in the famous Calaveras grove of big trees, which is owned privately. The other smaller adjacent groves have given to the government the intention of buying the patented land.

#### TORPEDO-BOAT DESTROYERS.

At the time of the Spanish war the United States possessed no torpedo-boat destroyers; but the Congress



LONGITUDINAL SECTION, SHOWING INTERNAL ARRANGEMENTS OF TORPEDO-BOAT DESTROYERS.

however, will not do away with the use of wood pulp entirely, since only the rougher kinds of wrapping paper and cardboard can be economically made. Coarse papers and cardboards made from peat possess greater strength than similar articles in which straw is the basis. The supply of peat in the world is practically inexhaustible. It is found in all the countries of northern Europe, where it has been used for centuries as a fuel. It is not unusual to discover deposits many miles in extent and from ten to fifty feet deep. Siberia alone possesses thousands of square miles of this material, and much is known to exist in the United States and Canada. If it helps to produce the coarser grades of paper and thus relieves the pressure upon the tim-

ber supply, it will do a great deal toward aiding in the preservation of the forests of the United States.

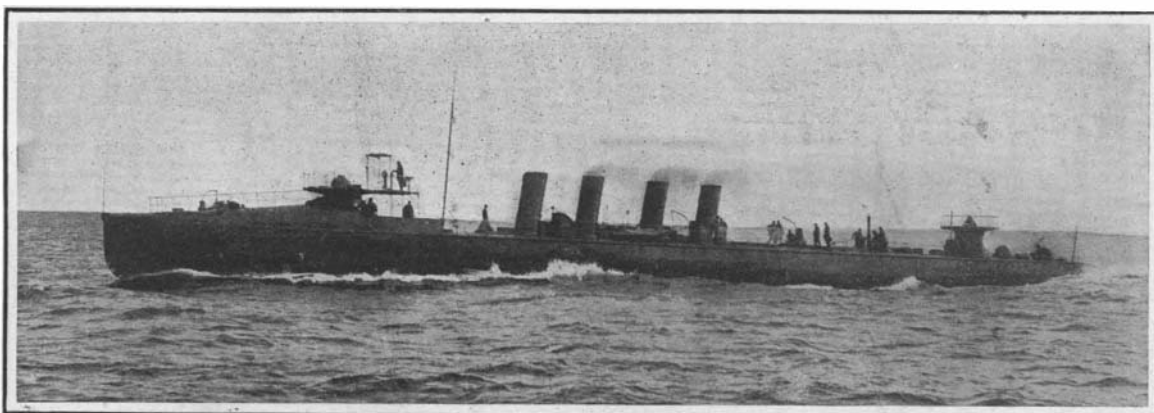
by the Krupp process. In each corner of the superstructure is mounted a 4-inch, 50-caliber gun. The vessels have a speed of 12 knots in smooth water. They are purely harbor defense vessels, and in any but a comparatively smooth sea it would be difficult to make accurate shooting with the big guns. Steaming head to sea the decks are constantly submerged, and it would be a problem under such conditions to keep the water out of the turrets. It is certain that no more ships of the monitor type will be constructed for the United States navy.

#### New Forest Reserves Created.

President Roosevelt has recently created four new

of 1898 authorized on May 4 the construction of sixteen of these vessels. The contracts were signed in the following autumn, and it was not until some four years later that these boats went into commission. The accompanying photograph of the "Macdonough" shows the characteristic features of these craft. They vary in displacement from 408 to 482 tons, on a mean draft of from 6 feet to 7 feet 2 inches; but the full load displacement is considerably greater, varying from 512 to 692 tons. The "Macdonough" is 240 feet 7 inches long, 22 feet 3 inches extreme beam; her mean draft is 6 feet 8 inches; her normal displacement 430 tons, and her full load displacement 512 tons. She is driven by twin-screw triple-expansion engines. Steam is supplied by Thornycroft boilers. Her highest speed on trial was 28 knots on a mean displacement of 400 tons, and this was obtained with an indicated horse-power of 6,425. Her bunker capacity is 110 tons. The lowest speed obtained on trial by any of these boats was 28.1 knots and the highest 29.69 knots, which was the speed of the "Stewart." It cannot be said that our destroyers have been very successful. During last summer a race was arranged from Sandy Hook to Hampton Roads, in which several of the boats broke down and the winners fell far below their trial speeds. It is believed by our naval constructors that it is wiser to build larger and stronger boats with greater cruising radius, and be satisfied with a moderate speed of from 24 to 25 knots. It is claimed that such boats could repeat their trial speed in actual service under any but the most extreme conditions, and that they would be free from the ever-recurring breakdowns which render our present destroyers so unreliable. Hence the present intention of the government is to build five 800-ton destroyers in which the weights allotted to hull and engines will be sufficient to render them serviceable in any kind of weather. These boats are to be driven by Parsons turbines. We think it would be wise to add to the displacement, and raise the speed to at least 30 knots.

We have also added to the navy 22 torpedo boats of from 150 to 340 tons displacement, and of from 23 to 30 knots speed, the particulars of which are given in the tabular summary of the navy on another page.



**Length,** 240 feet 7 inches. **Beam,** 22 feet 3 inches. **Draft,** 6 feet 8 inches. **Displacement,** 430 tons. **Horse Power,** 6,425. **Speed,** 28 knots.

#### TORPEDO-BOAT DESTROYER "MACDONOUGH." CLASS OF SIXTEEN VESSELS.

ber supply, it will do a great deal toward aiding in the preservation of the forests of the United States.

The output of coal in Peru in 1906 was 79,900 tons, as against 75,300 tons in the previous year. The output of oil increased from 50,000 tons to 71,000 tons. The greater bulk of the coal was raised in the Cerro de Pasco district. The copper output showed an increase over the previous year, and amounted to 13,500 tons, this figure including ingots, mattes, and mineral.

bird and animal reserves on the Pacific coast, as well as increasing certain forest reserves. The action was the outcome of the campaign undertaken by the National Association of Audubon Societies, to prevent the extermination of the sealion and of certain birds inhabiting the small islands along the northwestern Pacific coast. One of the reserves on the coast of Oregon embraces a number of rocky islets which are worthless for any other purpose. In spite of this fact, they are inhabited by a vast number of sea birds. The