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### Naval Notes

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## NAVAL NOTES.

### THE KING.

The following telegram was received by M. Fallières, President of the French Republic, on December 17th, from his Majesty King George, in connection with the service rendered by the French cruiser "Friant," and the drowning of three of her men, on the occasion of the wreck of the P. & O. ss. "Delhi."—

"I hasten to express to you and to the French Navy my warmest thanks for the gallant services rendered by the seamen of the cruiser "Friant" on the occasion of the wreck of the "Delhi," on board of which were my dear sister and her family. I am deeply grieved to learn that brave sailors have perished in their noble efforts to save life. I beg you to convey to their families the assurance of my sincere sympathy."

GEORGE R.I.

M. Fallières replied:—

"I greatly appreciate the feeling which your Majesty is pleased to express to me on the occasion of the wreck of the "Delhi." Three seamen have met their death while performing their duty, but the French Navy is proud to have helped to save lives, some of which were so dear to your Majesty. I shall not fail to inform the bereaved families of the sympathy which your Majesty manifests for them, and this will be a consolation that will be greatly esteemed by them in their affliction."

His Majesty also sent the following message to the Atlantic Fleet:—

"My sincere thanks for all the Fleet has done regarding the wreck of the "Delhi." I am much relieved that my sister and her family have been safely landed."

Her Majesty Queen Alexandra also sent the following telegram to President Fallières:—

"May I ask you to transmit to the officers and seamen of the warships "Friant" and "Du Chayla" my most grateful thanks for their noble and effective services on the occasion of the wreck of the "Delhi." My heart is filled with gratitude towards those who saved my dear daughter and her family from imminent peril. I most profoundly lament the death of the gallant sailors who sacrificed their lives in their effort to rescue the English passengers of the "Delhi," and I ask you to be so kind as to convey to their families my most sincere sympathy in their bereavement."

M. Fallières replied:—

"It was with keen emotion that I heard of the danger to which her Royal Highness Princess Louise and her family had been exposed in the wreck of the "Delhi," and I am particularly glad that French seamen were able to assist with success in the work of rescue. I am profoundly touched by the sentiments which your Majesty is pleased to express with regard to those who met

**Home—continued.**

their death in fulfilling a noble duty. I shall not fail to convey your Majesty's message to their sorrowing families, and I am asking the Minister of Marine to transmit your Majesty's thanks to the officers and sailors."

The following telegram was also sent by Queen Alexandra to the Vice-Admiral commanding the Atlantic Fleet:—

"Please accept and convey to the officers and men of the British battleships under your command my most heart-felt thanks for their noble and effective services upon the occasion of the wreck of the 'Delhi.' My heart is very full of gratitude to the gallant sailors who took so great a part in rescuing my dear daughter and her family in their great peril."

The P. and O. liner "Delhi," in which the Princess Royal, the Duke of Fife, and their two daughters were taking passage to Egypt, went on shore about 1 a.m. on the morning of the 14th December, some two miles from Cape Spartel. The night was thick and stormy, the wind blowing from the west with heavy rain squalls. The French cruiser "Friant" from Tangier was the first vessel to arrive at the scene of the wreck, being quickly followed by the battleship "London," flagship of Rear-Admiral Cradock, the armoured cruiser "Duke of Edinburgh," the "Weymouth," a torpedo-boat and a dockyard tug. The "Friant's" steam launch succeeded in towing one boat laden with passengers to the "Duke of Edinburgh," but owing to the nasty sea running, the work of transhipment was very difficult, and it was decided that it would be less dangerous to land the remainder. With some trouble Rear-Admiral Cradock succeeded in getting the Royal party into one of the "London's" cutters, and the boat was then headed for the shore; but in spite of all efforts to keep her clear of water she was swamped in the surf. Fortunately the water was, comparatively speaking, shallow, and the Princesses, although with some difficulty, and much exhausted, were brought safely to land. In the meantime, the "Friant's" steam launch had come to grief; she was proceeding to the help of another of the boats, when, getting into the trough of the sea, the coxswain was washed overboard and drowned, her fires extinguished, and the boat driven on shore. Two of the English boats tried to assist, but the surf rendered their efforts abortive. The crew succeeded in relighting the fires, and an attempt was made to steam out, but a heavy sea capsized her, and although the officers in charge and four men succeeded in reaching the shore, two others were drowned. The body of only one of the men was recovered, and after lying during the night in the French Hospital at Tangier was taken on board a French transport the next day for passage to France. Before the funeral procession left the hospital, the British Minister, speaking in French, made a touching speech, and laid a magnificent wreath of white flowers on the coffin on behalf of the Princess Royal. The procession was headed by the band of the "London," and was attended by the British Minister, the French Chargé de Affaires, and the entire staffs of the two Legations, the captains of the "London" and "Weymouth," with 20 officers and 200 bluejackets from the English ships, and a large contingent of French Naval officers and seamen. In the House of Commons the Prime Minister, in reply to a question by Lord Charles Beresford, said he was sure the House would be glad to acknowledge the extreme gallantry shown by the French seamen, and of expressing its sincere regret for the loss of life that had occurred.

**Home—continued.**

The King has given 3,000 francs (£120), and Queen Alexandra £100 towards the relief of the families of the French seamen who lost their lives.

**Naval War Staff.**

The Admiralty have determined upon the immediate formation of a Naval War Staff, and a Memorandum by the First Lord has been published, in which he points out the broad differences of character and circumstances which distinguish Naval from Military problems, and outlines the character of an effective Naval War Staff, and states the position it will hold in relation to the Board of Admiralty and the other Departments concerned with Imperial Defence. The Memorandum in question is a lengthy one and is issued too late for publication in the current number of the JOURNAL, but the principal points dealt with will be given in the February number.

In a second document the First Lord announces the appointment of an Additional Civil Lord, who will be a permanent and non-political official, to conduct the business and commercial transactions of the Board.

**HOME.**

The following are the principal appointments which have been made:—

Captains—C. M. de Bartolomé to be Naval Assistant to First Sea Lord; E. L. Booty, M.V.O., to "Dryad," and command of Navigation School; R. E. R. Benson to "Fisgard" as Inspecting Captain of Mechanical Training Establishments; J. C. Ley to be Assistant-Director of Naval Ordnance; C. D. Carpendale to "Good Hope" and as Flag-Captain to Rear-Admiral Sturdee; A. F. Everett to "Neptune" and as Flag-Captain to Admiral Sir G. Callaghan; R. A. Hopwood to "Hercules" and as Flag-Captain to Vice-Admiral Sir John Jellicoe; E. H. F. Heaton-Ellis, M.V.O., to "Prince of Wales" and as Flag-Captain to Vice-Admiral Cecil Burney; Hon. H. E. A'Court to "St. Vincent" and as Flag-Captain to Rear-Admiral Madden; H. F. Oliver, M.V.O., to "Thunderer"; R. S. Phipps Hornby, C.M.G., to "Swiftsure"; C. E. Hunter to "Hampshire"; R. Webb to "Sappho"; H. M. Doughty to "Melpomene"; M. H. Hodges to "Cornwall"; F. W. Caulfield to "Hyacinth"; C. L. Napier to "Monarch"; C. B. Miller to "Liverpool"; F. D. Gilpin-Brown to "Challenger." Commanders—H. Luxmoor to "Prometheus"; G. T. Pike to "Adventure"; G. Trewby to "Active"; G. J. Todd to "Sphinx."

The flag of Admiral Sir G. Callaghan, K.C.B., K.C.V.O., the new Commander-in-Chief of the Home Fleet, was transferred to the "Neptune" from the "Hercules" on the 14th ult., at Portsmouth. The flag of Vice-Admiral Sir John Jellicoe, K.C.B., K.C.V.O., appointed to command the Second Division of the Home Fleet, was transferred from the "Prince of Wales" to the "Hercules" at Portsmouth on the 10th ult., while on the same day the flag of Acting Vice-Admiral Cecil Burney, appointed to succeed Sir John Jellicoe in command of the Atlantic Fleet, was hoisted in "Good Hope," and later transferred to "Prince of Wales," and the flag of Rear-Admiral F. C. D. Sturdee, C.M.G., appointed to command of Fifth Cruiser Squadron, was hoisted in "Invincible," and transferred to "Good Hope," on the transfer of Vice-Admiral Burney's flag to "Prince of Wales."

**British Empire.**—continued

Captain F. F. Haworth-Booth has been selected for service under the Australian Government to act as Naval Adviser to the High Commission of the Commonwealth in London.

The 2nd class cruiser "Doris" paid off on the 6th ult. at Devonport on being relieved in the Atlantic Fleet by the new cruiser "Weymouth," and recommissioned the following day for service with the Devonport Sub-Division of the Home Fleet. The 2nd class cruiser "Brilliant" paid off at Chatham on the 15th ult. on completion of two years' service in the West Indies and on Newfoundland Fishery duties.

**Creation of a 7th Destroyer Flotilla.**

The 2nd class cruiser "Venus" was commissioned at Portsmouth on the 20th ult. for service as Depot Ship for the 7th Destroyer Flotilla, which is being organized.

The vessels which are to form the new flotilla are the twenty destroyers of the "Acheron" type, which will join as they are completed. They are the "Acheron," "Ariel," "Archer," "Attack," "Badger," "Beaver," "Defender," "Druid," "Ferret," "Forester," "Goshawk," "Hind," "Hornet," "Hydra," "Jackal," "Lapwing," "Lizard," "Phoenix," "Sandfly," "Tigress." These destroyers were provided for in the 1910-11 programme. Their dimensions are as follows: Length, 240 feet; beam, 25 feet 9 inches, with a displacement of 780 tons. The turbine engines are to develop 13,500 I.S.P., giving a speed of 27 knots. while the armament consists of two 4-inch Q.F., and two 12-pounder Q.F. guns, with two torpedo tubes. The new flotilla is specially intended for service in the North Sea.

**The New Floating Dock.**

The new floating dock, which has been built for the Admiralty by Messrs. Swan, Hunter and Company at Wallsend-on-Tyne, was successfully launched on the 4th inst.; she was to have been launched on the 7th ult., but when the time came, she refused to move, and a further attempt to launch her on the following day also failed. It was thought that the attempt on the previous day was unsuccessful owing to the tallow on the slips having become frozen, and throughout the next night large fires were kept lighted underneath the huge construction; but in spite of the use of powerful hydraulic rams, the attempt had again to be abandoned. Since then the ways have been considerably altered, and the launching was accomplished without any mishap or difficulty. The dock has a lifting capacity of 32,000 tons, and is one of the three, for which provision has been made in the Estimates. It is believed the new dock will be moored in the Medway.

**FRANCE.**

The following are the principal promotions and appointments which have been made:—

Rear-Admirals—I. Gaschard to Vice-Admiral; A. J. Bouxin to command of the Naval Training Establishments in the Northern Ports; B. S. Sourrieu to command of Naval Training Establishments in the Mediterranean. Capitaines de Vaisseau—J. F. Clément, A. L. Huguet, A. Rouyer, A. A. Tracou, P. J. Darrieus, to be Rear-Admirals; J. E. Paillet to "Jauréguiberry"; E. A. Conrad-Bruart to "Desaix." Capitaines de Frégate—P. A. Jéhene to "Branlebas" and command of Destroyer

**France—continued.**

Flotilla of 3rd Squadron; J. M. De Marquessac to "Pistolet" and command of Torpedo-boats, Submarines and fixed defences at Saigon; H. R. Sagliesi-Conti to "Descartes."

—*Journal Officiel de la République Française.*

**Admissions to Naval School in 1912.**

The Minister of Marine has fixed at sixty the number of cadets to be admitted to the Naval School as the result of the examination for 1912.

**The New Battleship.**

The Minister of Marine has intimated to the Port Authorities at Brest that one of the new battleships provided for in this year's estimates is to be built at that yard, and they are authorised to commence the preparation of material for the new ship, which, like the "Jean Bart" and "Courbet," is to be completed within three years. The second of the new ships is to be laid down at Lorient, while a third, to take the place of the ill-fated "Liberté," is to be built at the Chantiers de la Gironde, Bordeaux, the firm which constructed the "Vergniaud." These ships are to be identical with the "Jean Bart" and "Courbet," so as to form an homogeneous squadron. The work on the "Jean Bart" is being pushed forward so rapidly that the ship will probably be completed ready for sea well ahead of the date originally fixed. On the 30th November, at the La Seyne Yard, Toulon, the first keel plate of the new 23,000-ton battleship "Paris" was placed in position, and it is hoped that she will be launched next October. The slip on which she is being built has been specially constructed for the purpose, the work of construction presenting considerable difficulty, as the La Seyne Yard is built entirely on land recovered from the sea. The new slip will accommodate ships of over 600 feet in length, and weighing 10,000 tons at the time of launching.

The new first-class battleship "Vergniaud" was commissioned on the 18th ult.; she is the last of the six ships of the "Danton" class to be completed, and when she joins Vice-Admiral Boué de Lapeyrères's flag, the First Squadron of the "Battle Fleet" will have been brought up to its full strength.

The "La France," the sister ship to the "Paris," has also been commenced; she is being constructed at the Chantiers de la Loire at St. Nazaire.

**The Organization of the French Naval Defence.**

M. de Lanessan, the former Minister of Marine, has given notice of his intention to move a resolution in the Chamber on the organization of the naval defences of France as follows:—

The Chamber calls the attention of the Ministers of Marine and War to the necessity:—

1. To consider the distribution of the fleet, with a view to its being ready for all strategical requirements at once on the declaration of war.
2. To organize each of the military ports and arsenals, with a view to their being in a position to carry out the duties for which each is most particularly suited, both in peace and war, and to supply our arsenals with the organization and machinery most suitable for producing the maximum amount of work at a minimum cost, assuring at the same time to the workmen such advantageous terms as will make it to their interest to retain their positions.

France—continued.

3. To complete the defences of every point on the littoral, both by sea and on land, which in time of war might be exposed to bombardment or landing.
4. To increase the powers of the heavy guns of our battleships, and if possible, to make them superior to the guns mounted in foreign navies.
5. To concentrate the financial efforts of the Navy on new construction and the accumulation of a sufficient supply of warlike stores.

The *Temps* comments on the above as follows:—

“The resolution which M. de Lanessan has submitted to the Chambers on the organization of the naval defences of France, and their distribution, so that they may act immediately on the outbreak of war, is a matter which he has very much at heart, and which drew from him a year ago a series of letters of great interest.

“M. de Lanessan’s opinion is that without withdrawing altogether from the Mediterranean, it is nevertheless desirable to concentrate a part of our battleships and armoured cruisers in the North, with the port of Brest as a base. The *Temps* has already contested this view; we have shown that concentration in the Mediterranean conforms more to the interest of the general defence of the country and to the requirements of our entente with England; quite recently an English journal *apropos* of the concentration in the Mediterranean of the squadrons of battleships of the “Patrie” and “Danton” classes, stated that M. Delcassé, the present Minister of Marine, is probably in more close relations with the British authorities than any other European Minister has been for generations, which appears a reason for treating the question as we have done.

“M. de Lanessan desires that our offensive forces should be distributed with a view to strategical needs on the outbreak of war. Perhaps it might be as well first to determine what and with whom this war will be. M. de Lanessan supposes it will be with one Power alone, but there is nothing permitting us to assume that this will be so, and even if this should be the case, it would be necessary in the first instance to unite our squadrons. The partition of our squadrons along our coasts is the application of the theory of ‘*petit paquets*,’ the result of which we well know. The more dangerous the enemy, so much the more is it necessary to concentrate our efforts, and any distribution of the fleet in time of peace which would render its concentration in time of war more difficult is a mistake. The objection urged is that by doing so, we leave our coasts undefended, and subject to bombardment and invasion, but to act on the defensive is not the way to employ a naval force; the duty of our squadrons should be to seek out the enemy and bring him to action, not to leave him master of the sea, with the idea of protecting our coasts. This is a well-established principle. ‘The first duty of the British fleet,’ says an Admiralty Memorandum, ‘is not to defend anything, but to attack the enemy and destroy him, thus assuring protection to our possessions, to the Mercantile Marine, and to British commerce.’ To destroy the enemy we must be more powerful than he is, and this superiority cannot be attained by dividing our forces. Another Memorandum of the British Admiralty is worded as follows: ‘The real danger against which this country has to be prepared in time of war is not invasion, but interruption of our commerce, and the destruction of our Mercantile Marine. With this end in view, our fleet must be prepared to prevent any of the enemy’s

France—continued.

ships keeping the sea long enough to cause us loss by bringing them to action.'

"Eight years separate those two pronouncements of the British Admiralty, but the principle asserted in each is the same. Attack should be the sole object of a naval offensive force and this will be made all the easier by concentration, an equal distribution of our ships between the two seas which wash our coasts would therefore be a fault."

*Le Temps* and *La Vie Maritime*.

## RUSSIA.

The following appointments have been made:—Vice-Admirals—von Essen to Command of the Baltic Fleet; Ebergardt to Command of the Black Sea Fleet; Sarmavski to be Commander-in-Chief at Sebastopol. Rear-Admirals—Prince Liven to be Chief of the General Staff of the Navy; Stezenko to Command of the Siberian Flotilla.

Vice-Admiral Essen highly distinguished himself during the war with Japan at Port Arthur, where he at first commanded the "Novik," being transferred later to the command of the battleship "Sebastopol," which, when the end came, he took outside the harbour and sank, rather than that she should fall into the hands of the Japanese.

### The Naval Programme.

The new Naval programme has been laid by the Minister of Marine, Admiral Grigorovitch, before the Duma.

In a preliminary note the Minister lays stress on the absolute necessity for providing a powerful fleet, as an essential condition of preserving the independence of the country and as an important factor towards maintaining peace in Europe. "Russia," he lays down, "became a great Power the day her fleet was mistress of the Baltic." This mastery of the Baltic has to be regained. The absence of a Naval programme during the last six years has seriously compromised the carrying out of this urgent duty.

It is proposed that the Baltic Fleet shall be composed as follows:—

Two squadrons, each to consist of 8 battleships, 4 armoured cruisers, 8 protected cruisers, 36 destroyers, and 12 submarines; a total of 16 battleships, 8 armoured cruisers, 16 protected cruisers, 72 destroyers, and 24 submarines.

The Black Sea Fleet, which is of secondary importance, is to be stronger than a combination of the next two most powerful navies after Russia in that sea, and the following programme of new construction has been approved:—

1. Three battleships of 22,000 tons displacement, to be armed with ten 13.5-inch guns; two of the ships to be constructed at Sebastopol, at the Koloma and Krupp yard, and one at Nicolaieff at the Vickers-Maxim yard. The estimated cost of each ship is over £2,000,000. The armour of two of the ships is to be made at the Ijora works, and of the third at the Nicopol-Marionpol works, in which the Krupp firm are largely interested. The first of the new ships was laid down on the 1st October at Sebastopol, the 2nd at Nicolaieff on the 1st November. At the Nicolaieff yard it was found necessary to deepen the approaches and enlarge the slips; this has been done also at the Admiralty yard at Nicolaieff, the total expenditure having amounted to 11,000,000 francs.

2. Nine destroyers of the improved "Novik" type, with a displacement of 1,050 tons, and a speed of 35 knots. at a cost of £212,000 each;

**Russia—continued.**

4 to be built at the Nicolaieff yard, 2 by the Metallurgic works at St. Petersburg, 2 at the Neva yard, and 1 by the Putiloff works.

3. Six submarines: 3 to be built at the Baltic works of the Boubnov type, and 3 at the Neva yard of the improved Holland type.

**New Ships.**

During the past year no less than four battleships of the "Dreadnought" type have been launched for the Russian navy, which is a record in the annals of Russian shipbuilding, especially as all four ships have been less than two years on the stocks.

The "Sebastopol," built at the Baltic works, was the first to take the water, on the 29th June; the "Poltava," built at the new Admiralty yard, followed on the 10th July; the "Petropavlovsk," also built at the Baltic works, was launched on the 9th September, and the "Gangoot," built at the new Admiralty yard, on the 7th October.

These ships are sister-vessels, so will form a perfectly homogeneous division. Their dimensions are as follows: Length, 590 feet, 6 inches; Beam, 87 feet, with a draught of about 27 feet 3 inches on a displacement of 23,000 tons. The armour protection is reported to consist of a complete belt of high tensile steel from 6 feet below to 10 feet above the waterline, 8.8-inches thick, tapering to 4.9-inches forward and aft; above is a partial upper belt from the stem to within 60 feet of the stern, 4.9-inches thick, tapering at bow to 2.9-inches. The athwartships bulkheads are 4.9-inches thick; the turrets, 12 to 8 inches; barbettes, 8 inches, conning tower, 10 inches, and the ammunition tubes, 5 inches.

The armament consists of twelve 12-inch (50-calibre) guns mounted in four triple turrets, all on the centre line of the ship; sixteen 4.7-inch Q.F. (50-calibre) guns on the main deck, as anti-torpedo armament, with some smaller machine guns.

They are fitted with Parsons turbine engines, with four screws, which are to develop 42,000 I.S.P., to give a speed of 23 knots, steam being supplied by 25 water-tube boilers of the modified Yarrow small tube type. The coal capacity is 3,000 tons, with a further storage for 1,170 tons of liquid fuel. The electric light is furnished by Diesel dynamos, aggregating 2,670 kilowatts. The designs, material and workmanship of these ships have all been carried out in Russia, but we believe that the work of construction has been superintended by Messrs. John Brown and Co., of Govan-on-Clyde.

**The Naval Dockyards.**

The Minister of Marine has decided that for the future the Government yard at Sebastopol is to be used for repair work only, while the Nicolaieff yard, will be the building yard. All the workshops, plant, etc., used for the building of ships, will be moved from Sebastopol to Nicolaieff as soon as possible. The reason for this decision is that Nicolaieff, lying as it does up the Bug, occupies an incomparably superior position from the point of view of security in the event of war.

A new dry dock is to be constructed at Cronstadt, the first stone of which was laid on the 12th August, and which will be called the Alexis Nicolas dock, after the Tsarevitch. It is to be 800 feet long, 112 feet wide at the bottom, and 117 feet on top, with a depth of 35 feet below the surface. The electric pumps are to be capable of discharging in four hours the 120,000 cubic metres of water the dock will hold.

*Marine Rundschau and Revue Maritime.*

## UNITED STATES.

THE UNWATERING OF THE WRECK OF THE "MAINE" IN HAVANA HARBOUR, AND  
REPORT OF THE BOARD OF INVESTIGATION.

The Engineer Corps of the United States Army is to be congratulated upon having brought to a successful conclusion a difficult and unique work of marine cofferdam construction and excavation which, in this particular class of work, is without parallel in the history of engineering. We refer to the successful unwatering of the sunken battleship "Maine." Sunken vessels have been recovered in various ways, but never, so far as we know, has a ship, lying on the bottom, been salvaged from the water by the method adopted in the case in question. The recovery of a ship of six or seven thousand tons displacement, lying in 37 feet of water, upon a bed of mud and soft clay of approximately equal depth, is a problem of considerable magnitude, even when the hull of the ship is in an approximately sound condition; but when, as in the case of the "Maine," the forward part of the vessel has been blown entirely to pieces, the difficulty is many times multiplied. When the army engineers received instructions to recover the "Maine" so that every part of the ship could be subjected to thorough examination, they were confronted with a problem which they might well have pronounced impossible of solution.

The plan adopted of building entirely around the wreck a massive cofferdam extending from solid bottom to several feet above high water mark, was the subject of much criticism from the day the plans were first made public. Complete failure of the cofferdam was freely predicted by the engineering profession. Yet in spite of the difficulties due to the tendency of the mud-filled wall to leak and to yield by distortion, the fact remains that it has done its work, and that the army engineers have so far laid bare the wreck that not only will the after two-thirds of the ship be floated and towed away to be sunk at sea, but practically every part of the wrecked portion of the structure has been made to yield its quota of evidence in determining the first cause of the disaster.

The joint Army and Navy Board appointed by the Secretary of the Navy has presented its report, and an advanced official statement has been given out at Washington, which says, "The Board finds that the injuries to the bottom of the "Maine" were caused by the explosion of a charge of a low form of explosive exterior to the ship between frames Nos. 28 and 31, strake B, port side. This resulted in igniting and exploding the contents of the 6-inch reserve magazine, A-14-M, said contents including a large quantity of black powder. The more or less complete explosion of the contents of the remaining forward magazine followed. The magazine explosions resulted in the destruction of the vessel."

The investigation disclosed the fact that there is a fracture some 20 feet wide extending across the bottom of the vessel at a point about 100 feet from the bow. From the fact that the frames were still in position, though, of course, much distorted, the Board concluded that a low form of explosive was used in destroying the vessel. A high explosive would have caused a much more complete destruction of the material in its immediate vicinity. Incidentally, the report sustains the findings of the Sampson Board, which investigated the disaster in 1898, immediately after the "Maine" was blown up. That Board located the point of the exterior explosion at about frame 18 on the port side, but its report was based upon an examination by divers working in 37 feet of water. The unwatering of the "Maine" has made possible a closer approximation

United States—continued.

to the truth, and it is now disclosed that the point at which the vessel was ruptured lies between frames 28 and 31.

The after portion of the hull remains practically intact. Forward of frame 30 is a gap of about 30 feet, where the ship was cut in two, and forward of the confused wreckage lies the bow, which was blown entirely out of position, swung round to starboard, and broken off from the ship's structure at frame 14. The stern of the vessel, instead of being in the vertical position, now lies horizontally and at right angles to the keel of the vessel, a considerable section of the plating on the port side being still attached to the stern. A long strip of the double bottom lies on the top of the after edge of the severed bow, and beneath this severed portion rests a section of the keel some ten feet in length. One end of it lies in the mud, and the other end, twisted backward and upward, is now resting against the shell of the detached section of double bottom. In places the keel has been turned entirely upside down, so that some sections of the bottom platform are uppermost.

The sequence of events on the night of the disaster is now clear. A charge of low explosive, probably a large quantity, was set off below the bottom of the "Maine," forward of frame No. 30 on the port side, and a few feet from the keel. How this destructive agent was contained, at what depth it was located, and how it was set off, will probably never be known. Whether the mine was touching the ship or on the harbour bottom, the force of the explosion would seek the line of least resistance, which would lie vertically through the body of the ship. The rush of gases tore through the double bottom and the shock and heat of the explosion set off the black powder, of which there was a considerable amount in the magazine just above the point of the explosion, and this, in turn, ignited the forward magazines. The enormous energy thus liberated, having the water below and on the sides of the hull as an abutment, expended its energy in tearing asunder and folding back the overlying protective and other decks of the ship.

The illustrations which were published showing the recent wreck of the French battleship "Liberté" were strongly suggestive of similar illustrations of the wreck of the "Maine," published shortly after the event. The whole structure of the "Liberté" in the region of the explosion was opened out and folded back by the explosion of the magazines, presenting an appearance remarkably like that of the disaster in Havana Harbour. In the case of the "Maine" the magazines were set off by an exterior explosion, whereas on the "Liberté" the explosion was due to the deterioration and spontaneous ignition of the smokeless powder. It should be noted that outside of a comparatively small amount of ammunition for small arms, there was no smokeless powder on board the "Maine" at the time of the disaster.

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