

sition, the scheme of developing a varying amount of energy within the torpedo by admitting more or less air through the cable, is unquestionably sound; but how far the available differential motive power called forth by the opposing forces described, is sufficient to operate the rudder by a direct application to the tiller, practice alone can determine. The torpedo applied to the *Intrepid* having been run out, and hauled in, upwards of one hundred times without leading to an exact determination of the proper position of the valve which regulates the admission of compressed air to the tubular cable, it has become evident that the plan of steering, as intended, involves too much nicety in practice. The constructor therefore, on receiving a copy of Captain Cooke's report to the Bureau of Ordnance, at once modified the steering apparatus within the torpedo in such a manner as to render its action wholly independent of the amount of differential force of the compressed air and the counteracting tension of the spring before adverted to. The mechanism thus modified, was however not perfected and applied until the trial in the East River on the 26th of October—the *Intrepid* going out of Commission the following day. The strong current in the East River rendered any decisive test impossible; but the amended mechanism certainly enabled the operator to control the position of the rudder of the torpedo in a more satisfactory manner than during the previous experiments.

The *Intrepid* being no longer available for experiments, the Chief of the Bureau of Ordnance has ordered the torpedo to be applied to the *Nina*, which is now undergoing repairs at the Navy yard. The question whether by means of the amended steering apparatus, (tested for the first time on the East River as before stated,) the course of the torpedo can be properly directed, will therefore soon be practically determined. It is scarcely necessary to observe, that the utility of the new torpedo system would be but slightly affected should it be found necessary to attach a wire to the tubular cable for the purpose of actuating the rudder by means of electricity. An adequate supply of compressed air being always present within the torpedo, electro-magnetic agency would, of course, only be needed to operate diminutive valve connected with the steering apparatus. Regarding the application of electricity, Captain Ericsson has called our attention to the fact that, the method proposed in certain quarters of merely passing a wire through the cable, would prove abortive on account of the great elasticity of the cable. An elongation of 40 feet in a length of 700 feet, it appears, takes place under the tension produced by running the torpedo engine with full power. Hence, in order to prevent the wire from being torn by the stated extensive elongation of the tubular cable, it must either be coiled within the cable and then protected by a coating of gum or inserted, during the process of manufacture, between the layers of canvas composing the cable. By this expedient, the wire would form a helix capable of being extended during the elongation of the tubular cable consequent on the tractive force exerted by the propeller of the torpedo, and by the rotation of the reel while being hauled in. It is reasonable, however, to assume that the simple method of admitting more or less compressed air into the tubular cable for the purpose of operating a small valve connected with the steering apparatus, will prove successful in practice. The result of the trial with the amended steering apparatus in the East

River on the 26th of October, reported by Captain Cooke, favors our assumption. In the meantime it is satisfactory to know, that the protracted experiments conducted by Captain Cooke on board of the *Intrepid* prove, that we now possess a reliable submerged movable torpedo the endurance and trustworthy character of which is beyond dispute, since it has been run out and hauled in more than two hundred times without the slightest accident to the motive engine; nor has the mechanism for regulating the submersion been out of order at any time during the trial. The remarkable expedient of allowing the sea to enter freely into the engine compartment of the torpedo, dispenses with stuffing boxes round the propeller shaft and the axle by means of which the submersion is regulated, besides doing away with the necessity of oiling the bearings of the machinery. The ever present difficulty unavoidable in mechanism which is not accessible—rust and abrasion—has been completely overcome by constructing the internal mechanism wholly of bronze, and by running the journals in bearings composed of box wood effectually lubricated by the surrounding sea water. Personal attention is therefore entirely dispensed with. Regarding the size of the torpedo it will be well to state, that the main body consists of a square tank slightly taper at the ends, composed of thin steel plates 3 feet 6 inches long, 30 inches deep and 20 inches wide. A taper block of wood, 18 inches long, attached to the after end of the tank, forms the stern; while the vessel containing the explosive charge 400 pounds of nitro glycerine, represented by a solid block semi-circular at the forward end, 27 inches long, fins the bow. It only remains to be mentioned that owing to the small size of the torpedo and the perfect drill of the crew of the *Intrepid*, it has been landed with extraordinary facility during the experiments, not a single accident having occurred during the frequent taking on board and launching of the machine.

GATLING GUNS IN CHINA.

The two great Oriental empires across the Pacific seem to be rapidly coming under the influence of Gatling guns and modern artillery, and promise to rival their western prototypes in the development of destructive tendencies. Under the date of September 30 the Yokohama, Japan, correspondent of the San Francisco *Alta* says:

"Peace or war? is the question on every one's lips. There are said to be 50,000 troops in Tokio under daily drill. These soldiers are actuated by the most loyal and patriotic spirit, and declare themselves ready for any required service. The uncle of the Mikado, Prince Higashi Fushimi no Miyu, will take the field as commander-in-chief. He recently returned from England, via San Francisco. There is considerable discussion as to how far the good offices of foreign representatives have been exercised in smoothing over existing difficulties between the cabinets of Peking and Tokio. They are generally credited with a desire that neither countries should win, or that both might be worsted, fearing that the victorious nation might become arrogant toward all foreign powers when elated with the flush of victory. The foreign representatives at Peking write that there is every outward indication of war displayed by the Chinese, who are raising money, purchasing arms and vessels, engaging drill masters,

and enlisting men; but that there is, amid all this existing agitation, a vast quantity of despatch writing and interviewing going on between the ministry of Okubo, the Japanese ambassador, neither party seeming desirous of engaging in actual hostilities until after every resource of diplomacy has finally failed. The Japanese Embassy left Tientsin September 6, and reached Peking September 9, since which time they devoted themselves to the negotiation of honorable terms, in acknowledgment of the Japanese work of pacification in aboriginal Formosa. The Chinese Government has recently effected a loan of 3,000,000 taels (equal to \$5,000,000) from the Oriental Banking Corporation, for which ample security has been pledged. Doubtless many British subjects look upon wars as excellent opportunities, providentially offered, of virtually buying out the country. The finances of Japan are in a good and prosperous condition, and should the war cloud pass over she will need no present assistance. The ultimate resources of the Chinese are, however, far greater than those of Japan, and the practically illimitable number of men—such as they are—which she could bring into the field during a protracted contest, may well be considered by the Japanese cabinet, which, during an extended war, will surely occur and cripple her, and often defeat her most effective movements. The Chinese have recently received ninety American Gatling guns, with cartridges, from the United States, and it is understood Japan has also ordered several such batteries. The Chinese Empire is said to comprise 425,000,000 of people, while Japan, which is a sparsely settled country, has but 33,110,000 by her last census, taken on blank forms, similar to those used in the United States. The general opinion on the war question among these best informed seems to be that unless the degradation of Prince Kung should affect negotiations unfavorably, the main points of agreement are about settled between the two countries, and the outstanding disagreement is only one of how much money damage shall be paid by China to Japan. It is reported that already China has made three distinct propositions for settlement in each one of which she has increased the amount of her offers of indemnity, for she well dreads the proverbial courage of the Japanese, and their superior drill and discipline."

A correspondent of the *World*, writing from Yokohama, September 30th, says: There is a growing clamor on the part of the Japanese people for war, and no doubts are entertained by them of the results of a conflict with China. The informed will understand the disparity of population and resources, but they rely upon the unanimity and valor of Japan as opposed to the disaffection and cowardice of the Chinese soldiery. They are even confident of immediate successes that will enable them to throw the expenses of the war on China. Warlike preparations at Jeldo are still continued with great energy. Such is the ardor to enlist in the army that numerous rejected applicants are reported to have committed suicide. Troops are rapidly shipped to the south, en route to Formosa or China, as the case may be. The Government is receiving the encouragement of the powerful clans in all parts of the empire. The memorial received from the Shizoku, which expresses the common sentiment of all, after discussing the points at issue, declares that in the opinion of the leaders, "under present circumstances, it is better to have war; or we shall create contempt abroad and trouble at