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The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are *sharp*, the articles *short*, and the facts *authentic*, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

THE NAVAL AEROPLANE.

In spite of the final wrecking of his machine, the results achieved by Wright in the army tests at Fort Myer have proved so convincing, that one of the Navy Department bureaus is seriously investigating the question of their usefulness for scouting on the high seas. At the first blush, the proposal to transfer the aeroplane from the land to the sea will seem to many people to be a mere multiplication of the many and serious risks attending the operations of the aeroplane on land. "How will the machine start?" it will be asked. "How make a landing?" "And how will its half ton of weight be supported when it is afloat?" On considering the problem a little more closely, however, it begins to be evident that so far as the difficulties of starting and landing, etc., are concerned, they can, with a little ingenuity and proper design, be so far overcome, that the aeroplane may be, at least in the present stage of the art, handled more easily, and with less peril to the navigator, than it is under present conditions.

The navy is so far of this belief, that Lieut. George C. Sweet, of the Bureau of Equipment, is, we understand, working on the plans of a naval aeroplane, designed to be carried by our warships and co-operate with them in naval maneuvers. The changes which would be necessary to transform a military into a naval aeroplane are not by any means radical, and involve merely the substitution, for the present skids or runners of the Wright machine, or the bicycle wheels used by the Farman type, of some form of boat-like structure, possessing sufficient displacement to carry the weight of the aeroplane. Although the Lieutenant naturally is not making public his plans at this time, it is fairly certain that a pair of long, narrow, and finely-modeled hulls, attached below the machine, will be substituted for the present wheels or runners. These must necessarily weigh more than the Wright brothers' skids; but they need not be so very much heavier than the cumbersome wheels and framing of the French machines. When we remember that although the racing skiff used in sculling races weighs only 25 to 27 pounds, it is capable of carrying an oarsman weighing 200 pounds, it would seem to be quite practicable to build two shells weighing but little more than the carrying equipment of a land aeroplane, each capable of carrying half the weight of the machine, or say 500 pounds. Compared with the difficulties of starting on land, the naval aeroplane would be at a distinct advantage. Our battleships are capable of making from 18 to 20 miles, and our cruisers from 23 to 30 miles an hour. This last is the speed of our fast scout cruisers of the "Salem" class; and it would be more than sufficient to enable the Wright machine to rise into the air and commence its flight. In practice, the aeroplane, furnished with its pair of shells, would be placed upon the fore deck, and the ship turned head to wind. When the speed of the ship through the air approached the proper velocity, the aeroplane engines would be started, and the machine would leave the vessel at a height of from 20 to 30 feet above the sea. The aerial scout, rising high into the air, would command a vast field of observation, and possessing a speed nearly double that of the warship, it could, upon discovering the enemy, quickly pass over him for purposes of observation. On returning to the parent ship, the machine would swing round into the wind and come down gradually until it rested on its shells, when it could be towed alongside and taken on board by a boat crane.

It is not denied that in carrying out these operations, serious difficulties might be encountered. For the present, at least, and until the aeroplane has been greatly improved in stability, power, and ease of handling, it would be impossible to make any such flight as above described in rough weather; but in calm weather, and even in moderate breezes with an easy sea, we can see no reason why it should not be accomplished. We are moving fast in these days, and the wonderful flights of the Wright brothers have so far established confidence in aeroplane flight, that the attempt to produce a naval aeroplane will be watched with the greatest interest, and no small degree of optimism.

YACHT RACING IN 1908.

Not for many years has there been so little interest in yachting as we have witnessed in this country during the season which has now drawn to a close. This has been due partly to the general financial depression of the earlier months of the year, and not a little to the growing popularity of the motor boat and the gas-driven cruiser. In Great Britain, on the other hand, the season has been marked by some very fine racing, particularly in what is known as the 23-meter class, made up of four fine boats of about 70-foot waterline measurement, designed under the new rule which aims to produce a yacht free from the exaggerations of form and sail plan which characterized the racing yachts built under the old waterline length and sail area rule. The first of this quartette was the "Nyria," which made her appearance in 1906, and by her good performance proved that it is possible to combine high speed with good seagoing qualities. In 1907 two yachts, the "White Heather" and "Brynhild," were built to meet the "Nyria;" and in a season's racing the "White Heather," a Fife boat, had no difficulty in beating the previous year's champion. The present season was marked by the entrance of Sir Thomas Lipton into the class with a new boat, "Shamrock," also built by Fife. She has proved to be a most consistent performer throughout the season, winning, out of thirty-five starts, nineteen first and two second prizes. In light weather the "Shamrock" proved to be unbeatable; and in moderate to strong breezes she was about able to hold her own with the other yachts.

Naturally, the success of the "Shamrock" has raised the question of another race for the "America" cup, and it is not unlikely that a challenge will be sent over this autumn, asking for a race under the new rule adopted a few years ago by the New York Yacht Club. This rule is approximately similar to that under which the British 70-footers have been racing this year. It was drawn up with a view to eliminating the broad and shallow body, deep keel, and enormous sail spread, which characterized the later boats built as challengers and defenders of the much-coveted trophy; and there is a strong feeling in the New York Yacht Club that future races should be held under this rule. The latest announcement by the Cup Committee, however, was in favor of holding future races under the old rule, on the ground that it produced a faster, if less serviceable, vessel; the committee holding that the intention of the donor of the cup was to have it raced for by the fastest vessel that could be built, irrespective of the question of seaworthiness. Interest in the 70-foot class in British waters next year has been stimulated by the reported placing of an order by an American yachtsman with Herreshoff for the construction of a 70-foot yacht, under the British rule, which will be sent over to try conclusions with the British quartette. If this boat is built, it will afford an excellent opportunity to prove whether Herreshoff can show the same superiority under the new as he has invariably done under the old rule.

WATER STORAGE DESTROYS THE TYPHOID BACILLUS.

It has been known for some years that the storage of water, undisturbed, has a beneficial effect in reducing the number of bacteria with which it may be infected. The question has recently been made the subject of extensive laboratory tests by Dr. A. C. Houston, Director of Water Examination, Metropolitan Water Board, London. Eighteen separate portions of water were infected with from forty to eight million typhoid bacilli, and bacterial counts were made, every week, until the typhoid germs had entirely disappeared. In one of the series of tests, ten of the portions of water failed to show any bacteria at the end of three weeks, sixteen at the end of four weeks, and in five weeks' time the whole of the eighteen portions failed to show any signs of the deadly germ.

The bearing of these laboratory tests upon the question of city water supply is evident; for where it is possible to store the water in suitable reservoirs, and maintain it in an undisturbed condition for a few weeks before drawing off, the city using that water is provided with an additional safeguard against the greatly-dreaded disease. On the other hand, Dr. Houston does not consider that undisturbed storage should be allowed to take the place of filtration.

The latter has proved to be a most effective safeguard against typhoid, and storage should be looked upon rather as an additional protection, not as excluding the necessity for sand-bed filters. It is suggested that the time and expense of purifying a city's water supply might be reduced by using special storage reservoirs in combination with mechanical filtration at a specially rapid rate; and Dr. Houston expresses himself as being satisfied with a well-stored rapidly-filtered water, rather than an unstored slowly-filtered water. The difficulty of maintaining a sufficiently large quantity of water in an undisturbed condition for the necessary four or five weeks might be overcome by building such reservoirs in duplicate, the water being drawn off in one while the other was undergoing its period of rest. Though the cost of such a plant, especially in the case of the larger cities, would be heavy, it would be offset by the shorter time required to purify the water in the filtration beds, and the greater purity obtained by the twofold treatment.

PROGRESS ON PANAMA AND ERIE CANALS COMPARED.

Public attention has been so strongly centered upon the progress of the Panama Canal, that the people of this State, and particularly of New York city, have failed to realize either the magnitude of the work involved in the reconstruction of the Erie Canal, or the extensive scale upon which the work is now being prosecuted. A comparison of the total quantities taken out on the two canals, during the years they have been in course of construction, shows that the State enterprise is quite comparable, in the magnitude of its operations, with that now being carried on by the Federal authorities. Active construction commenced on the Panama Canal in 1904 and on the Erie barge canal in 1905. During the first year of work at Panama, 243,472 cubic yards were taken out; while 716,676 cubic yards were excavated during the first year of work on the barge canal. During the second year's work, 1,799,227 cubic yards were taken out at Panama, and 1,460,705 cubic yards from the barge canal. During the third year of work, the totals were respectively 4,948,497 cubic yards and 4,500,459 cubic yards. In the fourth year, 15,764,098 cubic yards were removed at Panama. As 1908 was the fourth year of work on the Erie barge canal, the totals, of course, cannot as yet be given; but in July the total excavation was 1,067,111 cubic yards, or 99 per cent of the amount taken out at Panama for July, 1907, which was 1,076,767 cubic yards. In August of this year the total excavation was 1,091,891 cubic yards, as compared with 1,271,966 cubic yards taken out at Panama during August of last year. In this comparison the important point should not be overlooked that the New York State enterprise contains in its 442 miles of length a much larger number of structures compared to the amount of excavation than does the Panama Canal, the excavation of the Erie barge canal representing only forty per cent of the total cost of the work. In both of these enterprises the seeming delay in starting the work of active construction was due to the enormous amount of preparatory work in the prosecution of surveys, preparation of plans and estimates, and the purchase and placing on the ground of the enormous plant and supplies.

Attempts recently made to map out weather charts of the high sea between Europe and the United States are said to have proved entirely successful. Some preliminary experiments commenced last year, not specially prepared, had led to some practical results in so far as the weather bulletins received from passing steamers allowed weather charts and weather prognoses to be established on the ocean. The more systematic experiments undertaken this year by Dr. Polis, director of the Aix-la-Chapelle metereological observatory, in conjunction with the Hamburg-American Line on their steamship "Kaiserin Auguste Victoria," have been prepared carefully, telegrams relating to the weather condition on the coast of Europe being transmitted daily by wireless telegraphy from the observatory above mentioned to the steamship on its way to New York throughout its voyage. If the American and European governments and other authorities lend sufficient aid, the missing link between the weather records of the two continents, viz., those of the Atlantic Ocean, will be completed in the near future, allowing the weather conditions from the western boundary of the United States to the eastern boundary of Europe to be surveyed daily. This would doubtless mean an extraordinary advance in connection with weather prediction (which in the interests of agriculture has lately been promoted most actively by the German government), while yielding a most welcome aid to navigation. The progress of those experiments is accordingly watched with the keenest interest in German naval circles.