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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 PRESIDENT AT PANAMA.

The recent visit of the President to the Isthmus of Panama was both timely and stimulating. It occurred at a distinctly critical period in the affairs of the canal. Sweeping changes were being made, both in the methods of construction and the system of administration of the canal, the construction being about to pass into the hands of the contractors, and the administration being simplified, placed under one-man control and located definitely and permanently at the Isthmus. To this new departure the visit of President Roosevelt lends special significance. Although Mr. Roosevelt spent but a few days on the Isthmus, the time was busily employed; and, apart from the encouragement which was afforded to the employees by the presence of the Chief Executive in person, the President himself has undoubtedly acquired a firmer grasp upon the situation, and will find his personal observations of great value in arriving at future decisions on the many difficult points which must arise during the actual work of construction.

The present occasion marks the close of the second and the opening of the third chapter in the history of the Panama enterprise. The first chapter included the long and exhaustive examination of the physical conditions of the Isthmus, with a view to determining the best location for a canal, and resolved itself mainly into the determination of the relative merits of Nicaragua and Panama. That work in itself was of great magnitude, and involved the creation of various commissions and boards, and the putting through of costly surveys by large engineering forces. The subsequent decision in favor of Panama was followed by negotiations for the purchase of the rights and properties of the French company, and the securing of the necessary concessions from the Colombian government. Out of the negotiations and seemingly inevitable intrigues that followed, sprang the young republic of Panama, friendly to the United States and anxious to do everything that lay in its power to further, in the way of concessions and agreements, the prosecution of the work.

The second chapter contains the story of the vast work of preparation which was necessary before the actual work of excavation could be put into full swing. The strip of the canal zone, ten miles in width, stretching from ocean to ocean, was found to be a veritable breeding place of disease; unsanitary, ill provided with pure drinking water, and, because of the prevalence of yellow fever and malaria, fatal to the health of the many thousands of laborers who would have to be crowded upon the work, if it were to be finished on time. During this second period an efficient sanitary corps was formed, and under its systematic methods the canal zone has been cleaned up, yellow fever practically eradicated, and malaria so far brought under control that the zone is now pronounced by engineers of high standing, who have been engaged for a year or more upon the work, to be no more threatening to health than many of our Southern States. Concurrently with the sanitation of the Isthmus, the great problem of housing and feeding the canal employees has been successfully solved, and comfortable quarters and good board are now obtainable at reasonable rates.

Another question, equally vital to the success of the enterprise, is that of administration. There is no denying that, here, many mistakes have been made, and that the earlier operations were hampered by a system that was altogether too cumbersome and slow to suit the very special conditions that are to be found at the Isthmus. The resignation of the then chief engineer, Mr. Wallace, served to emphasize the fact that, if the best results were to be secured, and the whole of the complicated organization were to work together har-

moniously, the control of it must be placed in the hands of one man, who should be permanently located at the Isthmus, and have absolute authority in all matters pertaining to the construction of the canal. One of the most happy results of the President's visit has been the signing of an executive order concentrating the authority in the canal construction in one man, and giving him supreme jurisdiction over the heads of the seven departments of the administration. Both the chairman and the department heads will have their residence at the Isthmus, and will be in a position to push the work through without, as before, having to make continual references to higher authority located at Washington, many thousand miles away. The Isthmian Canal Commission, which we understand is also to be reorganized, will make quarterly trips to the Isthmus for the purpose of receiving reports and advising with the chairman and the heads of departments.

The third and longest chapter in the history of the canal opens with the wise decision of the government to undertake the huge task of active construction by contract, and not by day labor supervised by the government engineers. The SCIENTIFIC AMERICAN has always urged that this was the only practical way in which this work could be done. Some time may be consumed before the government and the contractors can decide upon that final form of contract and those questions of price and time which are mutually agreeable. But once this has been determined, we believe that the canal will be put through steadily to a final completion. Enough has been learned, however, from the preliminary work, to make it certain that Congress must be prepared for the exercise of great liberality and patience; for the work will undoubtedly cost much more, and take longer by several years to complete, than was originally estimated.

## JAPAN LAUNCHES A LARGER "DREADNOUGHT."

Concurrently with the completion of the trials of the "Dreadnought" comes the news of the launching by the Japanese of a battleship, the "Satsuma," which not only exceeds the British ship in size and power, but seems to have made like that vessel an enviable record in speed of construction. Most remarkable of all is the fact that this, the world's greatest battleship, has been built entirely by the Japanese themselves. Moreover, a sister ship is under construction; and we may look at any time for the announcement that she is afloat. The "Satsuma" is given in the telegraphic dispatches announcing the launching, as being of 19,200 tons displacement, in which case she exceeds the "Dreadnought" by fully 1,200 tons. Her horse-power is announced as being 18,000, and her estimated speed is over 20 knots. One or other of these last figures must be in error; either the horse-power is too small, or the speed too great. The most striking fact about this truly enormous vessel is her armament, which is to consist of four 12-inch guns carried in two turrets forward and aft on the center line, and no less than twelve 45-caliber 10-inch guns, mounted in pairs in turrets on the broadside. By this arrangement the "Satsuma" can concentrate two 12's and four 10's ahead and astern, and four 12's and six 10's on each broadside. The Italian Marina Militare, a usually well-informed journal, gives in its last issue drawings of this vessel, which also credit her with a battery of four 12's and twelve 10's, the latter mounted in six two-gun turrets. The Japanese, as the result of their experience in the war, have concluded that nothing less than the 4.7-inch rapid-fire gun is sufficient to stop the large torpedo boats and destroyers, and consequently the "Satsuma" will carry a battery of a dozen of these pieces. In this connection it is noteworthy that this enterprising nation has four 16,000-ton 22-knot armored cruisers afloat or on the stocks, which will carry four 12-inch and eight 8-inch guns as their main battery. This gives them the same offensive power as our own battleships of the "Georgia" class, and practically places them in the battleship class. Evidently this youngest of the naval powers is determined to remain master of the Pacific.

## RECENT AERONAUTIC EXPERIMENTS IN FRANCE.

Experiments with aeroplanes and airships are being carried on in the neighborhood of Paris with great activity. M. Bleriot made a trial of his modified apparatus mounted upon a raft upon Lake Enghien. The apparatus glided upon the lake and moved forward by means of the propellers alone. Although the speed seemed to reach at least 20 miles an hour, the apparatus did not rise in the air. The aeroplane weighs some 900 pounds, added to the aeronaut's weight. Bleriot tried to draw the aeroplane and add to the effort of the propellers by means of a rope and motor-driven winch. But it was difficult to make the combination work well, so that after running over the lake, making a number of evolutions, experiments were stopped for that day. M. Bleriot believes his aeroplane will rise if there is a strong head wind, and hopes to fly shortly.

The new Vuia aeroplane which has been also described in these columns is being tried on a meadow near Paris. It will be remembered that the canvas body of the aeroplane is mounted on a carriage of metal work and runs upon wheels over the ground by the propellers. Should the power be great enough, the whole apparatus is lifted off the ground and is urged forward by the propellers. During a trial held in the presence of the Aero Club's officials, there was a strong head wind of 20 feet per second. Heading the aeroplane against the wind, the aeronaut set the propellers running and made a good speed over the ground. Accelerating the speed, the aeroplane left the ground and made a flight of a short distance, then alighted and again made a second rise in the air. The distances were short, however, in each case. Vuia uses an angle of 5 degrees with the air. Owing to a slight breakage, the apparatus was not in shape to continue, but a new flight will be made shortly.

Count de la Vaulx is preparing for a new series of flights with his airship of the cigar-shaped pattern. He is operating over a well-located piece of flat ground to the west of Paris, and here he erected a balloon shed of great size in order to carry on the work. He expects to make a flight within a short period over the plains which surround this locality.

It will be remembered that the engineer Leger is constructing a flying machine of the helicopter form for the Prince of Monaco. This has been carried on at Monaco with great secrecy, so that no details of the new flyer have as yet been made public. It is to use an "Antoinette" four-cylinder motor, built by Levavasseur, of Paris, of the same pattern as that used by Santos Dumont. But here no less than four such motors are to be mounted for driving the propellers. The experiments will no doubt take place about the first of December at the Chateau of Marchais, belonging to the Prince of Monaco.

After making his celebrated flight of October 23, Santos Dumont now considers that he is well enough advanced to be able to steer the aeroplane in any direction. Accordingly he made an entry for the Deutsch-Archdeacon Grand Prix of \$10,000 at the Aero Club, as he expects to make an attempt at winning this prize. It is awarded to the first flyer without balloon which makes a closed circuit of 1 kilometer (0.62 mile) during the day without touching ground, turning around a point selected in advance by the competitor and distant at least 0.3 mile from the starting point. Any number of attempts can be made during that day. These must be made in the presence of the Aero Club's commission. Santos Dumont has selected a spot of ground in the Bois de Boulogne, where he made his first flights with the aeroplane. The machine has been overhauled in the meantime.

## ENGLISH AEROPLANE PRIZES.

The London Daily Mail has offered a prize of £10,000 (\$50,000) to anyone who travels by aeroplane from London to Manchester in one day, two stoppages being allowed for the taking in of gasoline. The competitors must be members of a recognized aero club. But if any difficulty is made by an aero club in admitting mechanics or other worthy persons to membership, it will be seen to that a suitable club is formed in England, which club will be accepted as an aero club.

Spurred on by the Daily Mail apparently, the proprietor of the London Daily Graphic and the Graphic offers £1,000 (\$5,000) to the inventor who first produces a machine which, being heavier than air, shall fly, with one or more human passengers, between two given points not less than one mile apart. The points of arrival and departure will be selected by the proprietors of the Daily Graphic and the Graphic.

The Adams Manufacturing Company announce that they will give £2,000 (\$10,000) to the winner of the Daily Mail's £10,000, (\$50,000) prize, provided his aeroplane be made entirely in Great Britain or her dependencies over seas.

The proprietors of the Autocar offer £500 (\$2,500) to the maker of the gasoline engine driving the flying machine which wins the Daily Mail prize, provided the engine be made by a British automobile manufacturer.

The true student of the professional or technical school becomes heir to a comprehensive and clear understanding of his duties and responsibilities in his relations to his fellow men and to the community. Those duties and responsibilities present themselves to his trained mind in their real proportion. He is neither non-developed nor mal-developed in his judgment of affairs. His university training, especially in the technical school, has taught him accuracy and penetration in the analysis of any proposition confronting him, and that truth and knowledge must be sought with the directness of a plumb line. Science yields nothing but confusion to the shifty, devious, and dishonest inquirer. The fundamentals of morality are the very stepping stones to technical success or professional attainment.