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TESTS OF THE TORPEDO CRUISER VESUVIUS.

On May 19 and 20 some carefully planned tests of the torpedo cruiser Vesuvius were made, at Hampton Roads, Va., in the presence of army and navy officers and a number of interested foreign officials. Dummy shells, made of cast iron and steel, were used, of the same weight as the dynamite shells for which the guns were made. The first three shots were fired at fixed buoys, at one mile, three-quarters of a mile, and half mile distances, the vessel being in motion. The first projectile went directly over the buoy which served as a target, dropping a few yards off, within a space deemed to be destructive. The second and third shots both went wide of the mark. Three shots were next tried at a moving target, the Vesuvius herself moving at a speed of 17 knots. In this test a cutter with a mast was used as a target, the target being towed by the Cushing. The first shot, mile range, went 200 yards beyond the target; the second shot, three quarters of a mile range, went a quarter of a mile beyond the target; and the third shot, half mile range, struck the water a quarter of a mile short of the target.

These trials fall short of what it had been thought might be attained in the way of accuracy of firing, and while it is possible that better results may be reached with further experience, the opinion seems to be growing that pneumatic torpedo guns are perhaps better suited for forts and other fixed defenses than for ships of war. It does not follow, however, but that the Vesuvius still has a most important field of possible usefulness, although her sphere of action may not be as wide as had been hoped. Her great speed, and the rapidity with which she can discharge dynamite projectiles carrying heavier charges than are used in the fish torpedoes, and at a much greater range, present very strong features in her favor, and in smooth water, as in our principal harbors and adjacent thereto, there does not yet seem to be reason why she may not be of very high efficiency. She made one successful shot out of six, and this, it is reported, was the number of automobile torpedoes fired at the Blanco Encalada, recently sunk in a Chilean harbor, before the torpedo was discharged which proved effective. It is to be remembered, too, that the Chilean vessel was riding at anchor, and thus presented a much better target than the buoys at which the torpedo tubes of the Vesuvius were pointed. There is no other vessel like the Vesuvius, and there can be no doubt that the action of the navy department in providing for her construction was both enterprising and judicious, although it is yet too early to determine as to the advisability of building another vessel of the same class, which Congress authorized to be built, if in accordance with the judgment of the officials of the navy department.

The Great Dynamos of the Deptford Central Station, London.

The station is a large building of 210 feet in length and 195 feet in breadth, the height of the main building is 100 feet, and chimney shafts 150. The overhead travelers, the huge planing machines and lathes, give one more the impression of a big workshop than a generating station. This is occasioned by the fact that the whole of the plant is made on the premises.

The boiler house contains twenty-four 500 horse power tubular boilers divided into four batteries of six boilers each. It is intended to place on top an additional twenty-four, divided in a similar manner. This space at present is occupied by a tank which holds 800,000 gallons of water. Underneath the boilers is placed a forced draught engine to facilitate making steam rapidly in the case of a foggy day.

The great dynamos now in process of construction will be by far the largest and most wonderful electrical machines in the world.

The armature ring for each of the 10,000 horse power dynamos measures 35 feet in diameter, it is made of cast iron in eleven pieces, and is to be fastened to the dynamo shaft by cast iron arms or spokes, each of which will be in turn secured to the shaft by a double milled steel ring shrunk on, while as an additional security 22 solid steel bolts, 6 inches in diameter, each weighing when finished 12 cwt., passing through the outside of the armature ring, screw direct into a steel ring mounted round the center of the dynamo shaft.

The armature and shaft when completed will weigh 225 tons, and the field magnets 350 tons more. This is exclusive of the massive bed plate on which both the engines and field magnets will stand. One 5,000 H. P. engine is to be fixed at each end of the dynamo shaft, the armature thus being in the center, and taking the place of the ordinary flywheel, which is dispensed with; the bobbin holders are fixed in the same way as on the 1,250 horse power machines, 132 coils being used. It may be mentioned here that five dynamos of this type, each supplying 200,000 lights, are to be built.

To give a slight idea of the extraordinary size of the engines to be employed for driving, the measurement from the ground to the top of the high pressure cylinder is to be 48 feet. The over-all dimension of the dynamo is 45 feet, and of this 16 feet is below the floor level. Yet, in spite of the colossal proportions, it is said the dynamos will be so easy of manipulation that they can

be drawn apart for cleaning in less than five minutes. The Deptford central station differs from almost all other generating stations from the fact that, with the exception of the bare castings and engines, every part of the work is done on the premises. The turning of the shafts and crank pins, the fitting together of the dynamos, the making of the conductors, all are carried out under one active supervision.

In order to cope with the gigantic nature of the work, some of the largest planing machines and lathes in England are used. One planing machine gives a vertical cut of 20 feet and a 22 foot horizontal cut. A lathe taking four cuts has a capacity of 11 feet in diameter and 25 feet in length. Everything is carried out on the same large scale.

The Diphtheria Bacillus.

The ardor with which the study of the causation of diphtheria has been pursued among those who are engaged in that branch of medical science has been at last rewarded by the discovery of the true diphtheria bacillus.

The most eminent bacteriologists in the world with great unanimity announce the fact.

Dr. Klein, the eminent English bacteriologist, has published an elaborate report in the Nineteenth Annual Report of the Local Government, in which he enters into the details of his methods of investigation and his tests.

His paper contains several facts of prime importance, a knowledge of which should be generally known. Among them are the following: Some of the lower animals, particularly cows and house cats, are susceptible to this disease, and instances are cited in which the domestic cat has communicated the infection to the family to which it belonged, with fatal results.

He has also demonstrated the presence of the infection in the milk of cows previously inoculated with diphtheria bacilli.

He takes occasion to emphasize another fact which is of great practical importance and should always be borne in mind by health officers, to wit: The contagion of diphtheria is to be classed with those which can exist and thrive outside the human body. "It is a matter of common belief," he says, "that a room may retain active the diphtheritic contagion for a very long period; that milk may be not only the vehicle, but even the multiplying ground of the diphtheritic contagion; and that sewer air and sewage may contain and be the means of distributing this contagium."

These points are of much import in investigating new outbreaks of this disease.

A California Big Tree to be Shown at the Chicago World's Fair.

It has been determined to send to the World's Fair, as a feature of the government exhibit, the largest specimen that can be obtained of the famous big trees of California. A tree thirty feet in diameter, which is about the largest size that grows, will be selected, and the limbs cut off thirty feet from the ground. The trunk will then be sawed into sections and the outside piece only sent to Chicago. On arrival at the exhibition the pieces will be put together so that the outside portion of the tree, several feet thick and thirty feet high, will stand just as it did in the forest. In order to cut the tree into sections it will be necessary to have a special saw made, about fifty feet in length, which will be operated by machinery that must be taken into the forest especially for the purpose. It is estimated that eight cars will be required to carry the tree to Chicago. It is proposed at present to place it in the center of the rotunda of the government building, which will be 120 feet in circumference. The interior of the tree will be decorated with cones, leaves, and other attachments of the tree, divided into rooms, and the whole illuminated with electric lights.

Fast Railroading.

A train on the Chicago and N. W. road, of 3 cars, lately ran from Council Bluffs to Chicago in 9 hours, exclusive of stops, or at the rate of 53.92 miles per hour.

On the Canadian Pacific a train recently ran from Vancouver to Montreal in 92½ hours, including 3 hours' detention from a mud slide. From Smith's Falls to Montreal, 128.3 miles, the running time was 2 h. 5 m., or at the rate of 61.6 miles per hour.

THE "gliding" railway, or chemin de fer glissant, exhibited at Paris in 1889, has been established as a short length at the Crystal Palace, London. In this construction the coaches are without wheels, but "glide" on a film of water between the "skates" of the carriage and the broad flat rail which supports the weight. The motion is effected by a pressure of water from hydrants which are brought into play as the train proceeds.

A CORRESPONDENT in Babitz, Bohemia, writes to the Viennese Deutsche Zeitung: "In the neighborhood of Eule lives a woman who is 113 years old. She has been a pensioner for more than 40 years, but still threads her needle without glasses, and takes an hour's walk to church."