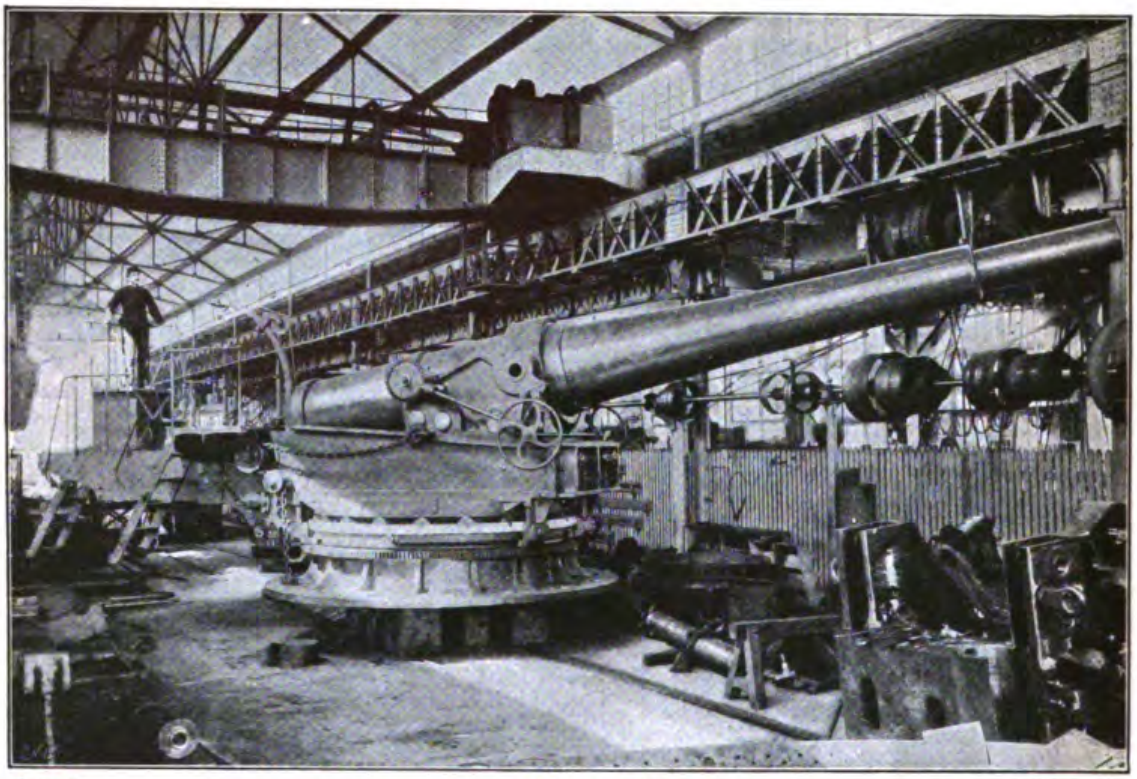
Where "Long Tom" Was Made.

By M. Dinorben Griffith and D. Bril.



From a] READY FOR THE FRONT. *[Photograph.*

ONE gloomy, murky, and despondingly wet morning, when the present year was still in its babyhood, we found ourselves within the vigilantly guarded portals of Messrs. Schneider and Company's famous Metallurgical Works at Creusôt—the second largest and most important in the world. Nay, Creusôt has well earned the right to be termed "The World's Iron Metropolis."

Strangers are permitted to visit the works, with the exception of the Artillery Department, in parties of ten to twenty, but only under the escort of a guide provided by the company and at the hours of 9 a.m. and 2 p.m. The visit is strictly limited to two hours, and a second visit by the same party is prohibited. We were happily exempt from these restrictions, as we had a special permit. After signing our names in the register we were conducted from the porter's lodge, along passages, down steps, through the counting-house, and into the manager's room, and duly provided with a guide.

"The works cover three miles of ground," said our cicerone, "so you will not be able to see it all in one day."

Many and wonderful were the sights we witnessed, and every hour of that day I regretted I had not insured my life before leaving London. We had to pick our way carefully to avoid accidents, and such little obstacles as sheets of red-hot iron, or a few hundred rails in the same condition; to hop nimbly aside to avoid trains, that came from all directions at once, and seemed as much at home inside the workshops as out. Loaded with cubes of steel at a white heat, and weighing several tons, they nonchalantly steamed along, spreading waves of heat as they passed, the metal fuming and hissing as the rain fell upon it in the open.

With a "*Pardon*" the guide suddenly dragged us aside, to make room for a strange procession. Half-a-dozen men in scanty raiment dashed past us drawing long-handled trucks, containing huge, shapeless masses of red-hot metal just raked from the mouth of a furnace. They had no time for pause, or even for a "By your leave." We followed in their—distant—wake, and saw the trucks empty their contents near what seemed to be a series of caverns, guarded by men in leather breeches, and wearing metal veils. With long forks they pushed the metal into the caverns, where huge hammers flattened it and thrust it out; again and again it was pushed

back, each time emerging more shapely, until finally it was of the required dimensions.

From building to building we wandered. In some the heat was — well, considerably more than tropical, and instead of rain we were treated to showers of sparks. Then outside, into rain, mud, and fog, and into another building, with a temperature borrowed from the North Pole, where we saw stacks of metal, polished and cold; noiseless machinery punching holes, or cutting off great hunks of metal as gently as if they were cutting cake. It was all weird, uncanny, and desolate, for the few workmen were in miniature locomotives overhead, directing and ordering those demon machines with many mysterious valves and wheels.

The next workshop was a distinct contrast, being the *aciéries* for the fabrication of steel by the Bessemer process. Here man's inventive genius had converted the most dangerous element into a useful servitor, feeding its fury only to make it work more efficiently, measuring its passion only to restrain and utilize it at will. A single tongue of flame let loose could have licked half-a-dozen of its puny masters out of existence, leaving but little trace behind.

We witnessed a superb display of fireworks. Huge cauldrons were uncovered and their contents inspected, which in return for such attention belched out flames with a roar and a fury that were grand at a safe distance. Fire climbed the tall chimneys and played outside, illuminating the town from end to end; while waggons rumbled in

[*Photograph.*

PANORAMA OF THE CREUSOT WORKS.

[*From a*]

from the adjacent mines with coal to satisfy its voracious appetite. The daily consumption of coal is 300 waggons, making a total of 121,000 tons per annum, two-thirds of which is imported — chiefly from England. In addition to this 200,000 tons of coke are also consumed, 2,800,000 cubic mètres of gas, and 3,600,000 cubic mètres of water.

The iron mines of the company employ 2,000 men, the coal mines 5,000, the furnaces 700, the steel works 800, the forges 2,700, the machinery works 2,800, and the locomotives, etc., 1,500. Altogether, 15,500 workmen, and not including the clerical staff, porters, watchmen, messengers, etc.

The extensive artillery works were constructed in 1888; before that period this department of work was carried on in the general machine shops. These workshops are very large, light, and fully equipped with all the latest machinery. The guns are brought here from the forge, and pass through different departments to be turned, bored, polished, grooved, and mounted with the greatest care and accuracy, according to plans. The steel to be employed in gun-making is of the finest quality, and before it is sent to the workshops it is submitted to the severest tests.

Here we found cannons to right of us, cannons to left of us, cannons behind, and cannons before; fortunately, they did *not* volley and thunder, or this article would not have been written for THE STRAND MAGAZINE.

It is fashionable now, I believe, to jot down one's impression of any notable

From a] TURNING A BIG GUN. *[Photograph.*

scene or event. Mark Twain has saved me that trouble; he has so accurately and ably expressed my feeling while visiting this particular department in the Creusôt Works, that I cannot do better than quote his words:—

"If the bubble reputation can be obtained only at the cannon's mouth I am willing to go there for it — provided the cannon is empty. If it is loaded, my immortal and inflexible purpose is to get over the fence and go home."

Even when unloaded there is a vindictive look about a cannon that prevents your getting on familiar terms with it. You lean in a seemingly careless attitude, resting your hand on the base of its long, lean neck, when suddenly it swings round, and with its one eye stares you in the face in a most objectionable manner, as if it wondered whether you were worth powder and shot or not.

After a shock of that kind it was difficult to absorb the voluble explanations of our guide, who dilated on the beauty of this gun, the deadly properties of another, and of what it *could* do when given a chance; then his description was interlarded with such terms as "bolsters, jackets, slides, pivots, centimètres, and millimètres," sufficient to make any brain reel, especially when the cannon, still with head in air, seemed to leer in the most impudent fashion.

As we traversed these great workshops we learnt from our guide that any of the guns shown us—from the great monsters intended for coast or fortress defence only, corresponding, I presume, to our 80 and 100 ton guns, to the vicious-looking 15-centimètre 50-calibre quick-firing gun, or the beautifully finished little 37-millimètre (1 7-16in.) quick firer, the wonderful handiness of which excited our admiration — could be manufactured, complete in every detail and fit for immediate service, in less time than a corresponding weapon could be produced by any other gun factory in existence.

The company have supplied guns to every country in the world with the exception of England and Germany. They undertake contracts for foreign Governments to supply guns, projectiles, and ammunition, but the former only are manufactured at Creusôt.

It was not until 1870 that gun-making was attempted by Messrs. Schneider, their first experiment being the mitrailleuse used in the Franco-German War with fair success. Before this period the old-fashioned cast-iron cannon had been replaced, first by bronze and then by steel guns; smooth bores had been thrown aside in favour of rifled weapons; and muzzle-loaders in favour of breech-loaders, both in small arms and artillery. And keeping abreast or in advance of all these changes, the firm became famous

as makers of the finest and most up-to-date modern steel ordnance.

One of the most powerful and deadly guns constructed at Creusôt is the "Long Tom" of Boer fame, which carries up to 15 kilomètres (about nine miles).

"How and where did the Boers get their guns?" we asked a member of the firm, a few days later.

"The Republics of the Transvaal and Orange Free State had secured their guns and their rifles in 1895, buying their war material nearly everywhere," was the reply. "Thus they acquired guns from the Creusôt group, Nordenfelt, and Maxim; but we supplied nearly three-quarters, especially the 75, 120, and 155 guns of field and fortress artillery. Altogether, the number of modern guns in their possession must be estimated at not less than ninety."

"And projectiles?"

"Well, you see, they foresaw the possibility of the English fleet cutting them off from the outer world, so they provided themselves with a large quantity of projectiles — 500 per *pièce*. We also sent out with the guns and material an instructor to teach *manœuvre* and to keep the guns in order.

"His name? M. Fleche. No, he has not yet returned."

"What about your present orders for the Transvaal?" we asked.

"Ah, you want to know too much. I will answer that question next year."

But to return to the works and our patient guide. We saw the space allotted to the French guns, and were informed that they were always finished and mounted in the Government arsenals. We noticed two Japanese gentlemen, paper and pencil in hand, in earnest converse with one of the foremen. "Are they here out of curiosity to see the works?"

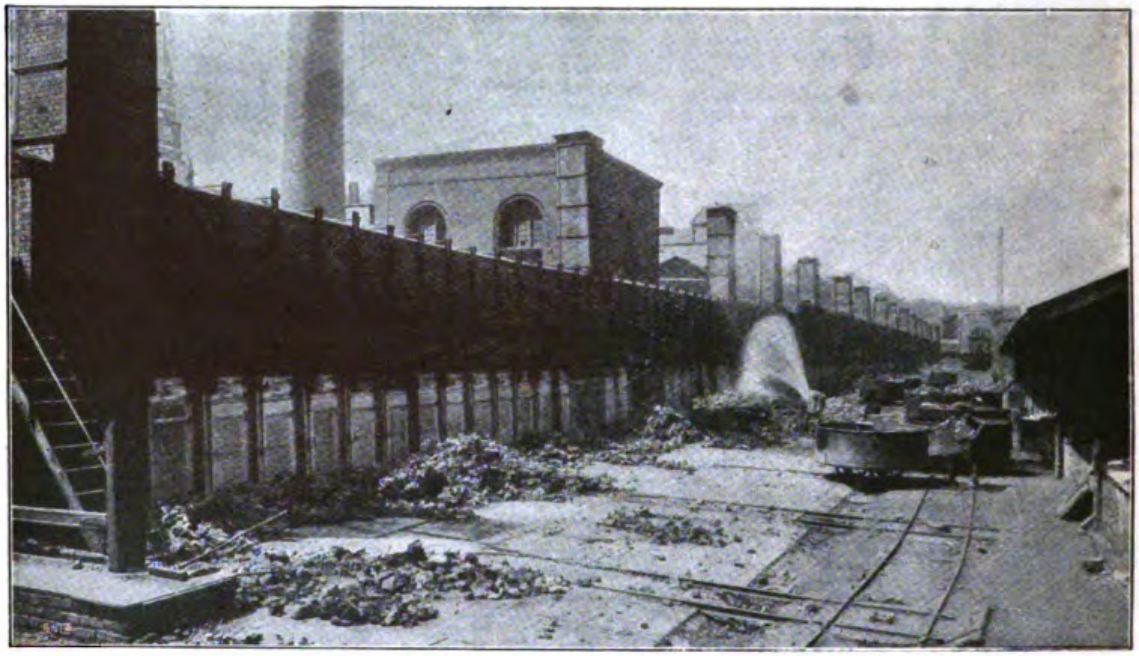
"No, they are here with orders for warships and guns for their Government. We have several foreign missions at Creusôt just now, Russian, Servian, Roumanian, and Japanese."

When a foreign Government wishes to order guns, ships, or locomotives, they send their plans in charge of one or two experts, whose duty it is to superintend their own orders. On no pretence whatever is a foreign engineer allowed in the works. The men employed are all French, and, taken altogether, are far superior in appearance and manner to the ordinary *ouvrier*. They work twelve hours a day, and are not permitted to leave the premises between the hour of their arrival and the closing of the works in the evening.

From a] A BORING-SHED. *[Photograph.*

We were particularly struck with their refined faces, colourless, but as if carved out of fine ivory. Considering the number of hands employed, accidents are comparatively rare, and the diseases they suffer from are mostly heart and nervous complaints. They are paid by piecework; and according to their ability at a minimum daily wage, to which is added the profits of the piecework.

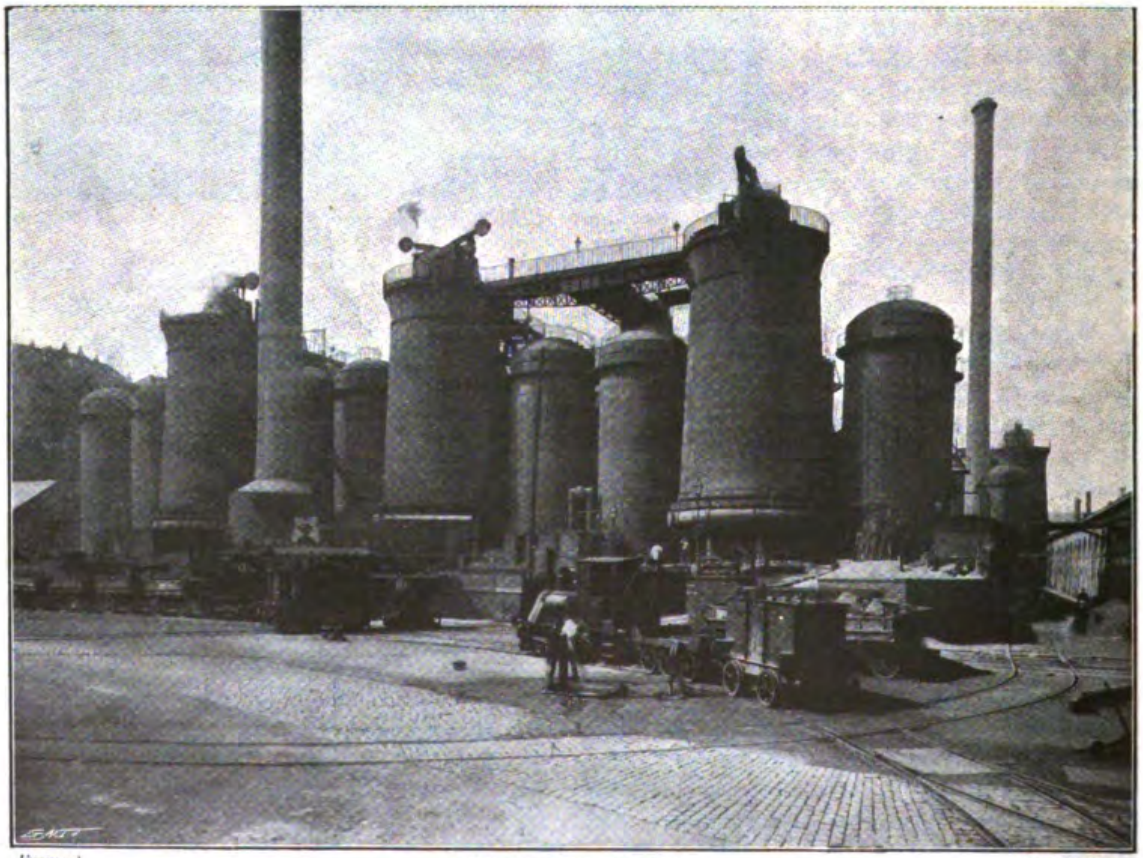
At the beginning of 1897 Messrs. Schneider acquired the ordnance department of the Société des Forges et Chantiers de la Méditerranée. This department is worked with Creusôt and the polygon of Hoc with that of Villedieu, under the able management of M. Canet, the great French gun designer and constructor, under the title of Services de l'Artillerie. This enormous Schneider-Canet combination, which will soon be



From a] FIRE-HOLES OF THE COKE FURNACES. *[Photograph.*

further enlarged, has made the artillery department of Creusôt one of the most important in the world, and a serious rival to Krupp and Armstrong in the production of war material.

The guns that have been already constructed show the steady progress of the firm since the date mentioned. The more recent type of quick-firing guns, made of steel throughout, are the 47-millimètre 60-calibre high power, which is specially suited for naval service on board ships of limited tonnage, as



From a] SOME OF THE FURNACES. *[Photograph.*

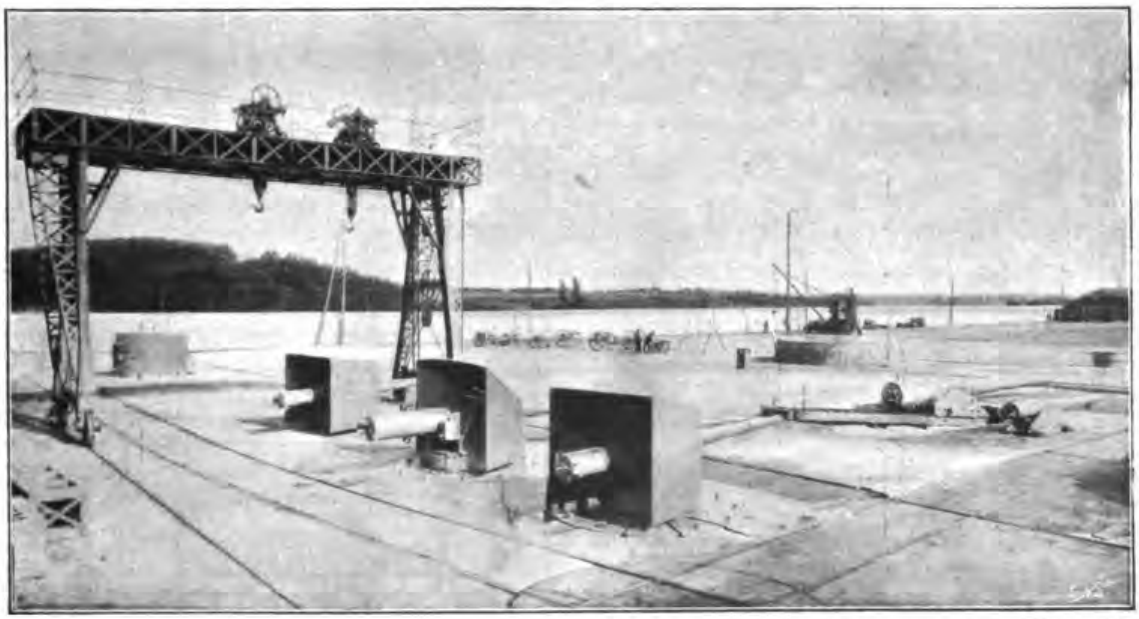
From a] AN ARTILLERY WORKSHOP. *[Photograph.*

it can be fired point-blank up to a distance of 1,000 mètres; and the action of the breech-lock is almost instantaneous. Another gun in great demand is the 10-centimètre 45-calibre quick-firing, with special mechanism for training the gun. The 12-centimètre 45-calibre quick-firing is another favourite, a large number of this type having been ordered for Portugal for the armament of new cruisers.

The Spanish Government selected a 14-centimètre 45-calibre gun for their navy. These are so mounted as to limit the recoil, and to insure quick and automatic return.

For very rapid firing, which can be effected by one single gunner, the 15-centimètre 45-calibre is almost perfect; it possesses all the improvements carried out for the Schneider-Canet quick-firing guns, and the fuse can be fired by percussion or by electricity.

A few yards from the artillery shops is situated the Villedieu proving-ground, electrically lit. This polygon is fully equipped for all kinds of tests. Twenty guns of varying calibres are kept permanently mounted there; gun tubes are tested by firing from them a



From a] THE TESTING-GROUND. *[Photograph.*

gunpowder charge placed between two projectiles. Mountain and field guns pass through firing tests before they leave the works; also siege and garrison carriages and gun mountings and turrets—a careful record being kept of all these tests.

The firing staff, by means of mirrors, are enabled to witness, without danger, the result of various tests. Some of the firing platforms for field and mountain artillery are paved with stone, while others are grass-grown. A hill bounding the polygon on one side is known as the "Mountain of Bullets," because at one time the cannons tried there discharged their projectiles into its side.

In addition to the Villedieu proving-ground at Creusôt Messrs. Schneider have a polygon at Havre, at the mouth of the Seine, principally used for testing naval guns, and another at Tancarville for long-range firing tests.

There have been three generations of Schneiders at Creusôt. M. Eugene Schneider, the present director of the works, is the grandson of the founder. Still quite a young man, he is a born organizer, and a very clever business man. The town is practically Schneiderville built, kept up and ruled by the company, and the dwellings of the workmen and the other buildings erected for their comfort and pleasure are models of what can be done to elevate workmen and to make them independent and contented. The population is 32,000.

Guns of the Schneider-Canet system include all the types and calibres used for ships, coast and garrison defences, and for field service and siege operations. The guns of the Schneider-Canet system are now in use in all the following countries: France, Denmark, Turkey, Argentina, Russia, Greece, Holland, Spain, Uruguay, Switzerland, Japan, Mexico, Portugal, China, Transvaal, Sweden, Roumania, Chili, Hayti, Norway, Servia, Morocco, Brazil, and the Dominican Republic.

We shall always remember with pleasure the time we spent among the Creusôt guns, although before our departure we imagined we could hear "in tones of thunder the diapason of the cannonade" and "the blast of war's great organ shake the sky."

From a] A COLOSSAL STEAM-HAMMER. [*Photograph.*