

**Torpedo Net Tests.**

The question of the protection of our vessels from torpedoes is as important as that of furnishing them with torpedoes, or even more so. An interesting series of experiments on torpedo nets is now being conducted at Newport; in all probability the tests will extend well into the winter, as only one or at most two shots can be fired a day while the present routine of duty and instruction is maintained at the station. The weapon used was the submarine gun of the Destroyer and the projectile weighed 1,600 pounds. The Midgley net was tried first. The net was fifteen feet wide and twenty feet deep and was placed 200 feet in front of the Destroyer, attached to a heavy spar. The net was easily pierced, the projectile remaining uninjured. Another piano wire net twice as strong was used at the same range and was pierced as easily, one of the heavy vertical strands being cut through. The heaviest of the American nets will be moved away until the projectile fails to pass through, then the English (Bullivant) net will be tried. The comparative strength will then be easily determined.

The American net can be more easily handled than the English, as it only weighs 400 pounds, while the English weighs 660 and is so designed that it cannot be rolled up. The effect of the ordinary wash of the sea upon the hang of the net when the vessel is under headway will also be determined. The success or failure of a net depends upon its ability to stop the torpedo or so interfere with or delay it as to cause the explosion to take place before the side of the war vessel is reached. The tests are being well conducted and the results will be looked for with interest.

**SHEFFIELD STEEL AT THE EXPOSITION.**

In the British section of the Mining building an exhibit of singular interest was that of William Jessop & Sons, Ltd., of Sheffield, England, manufacturers of the celebrated *Jessop steel*, known all over the world for its special adaptability for cutting tools, dies, punches, drills, cutlery, needles, etc., also sheet steel for saws, pens and springs, and crucible steel castings of all kinds and weights. The factory at Sheffield is known as the Brightside Steel Works, covering an area of thirty acres, and including extensive converting and melting furnaces, forges, rolling mills, wire mills, steel foundry, machine shops, etc. Many of the large ocean steamships are now fitted with heavy castings for stern frames, rudder posts, and bed plates from their foundry. The business was established just one hundred years ago, and for sixty years the house has been permanently represented in the United States, its chief American office being at No. 91 John Street, New York City; Mr. W. F. Wagner being the general manager, with Mr. Jas. Jessop as associate.

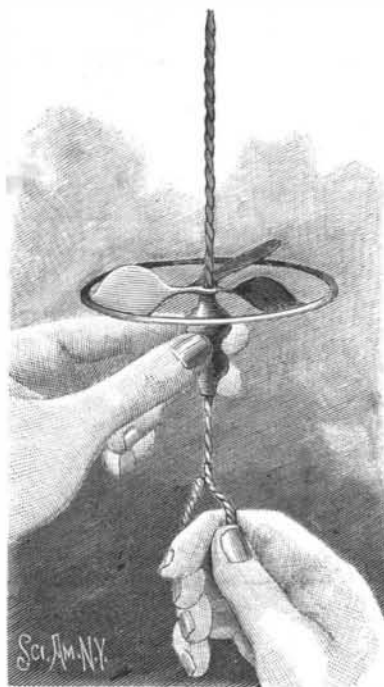
The large glass case containing the main portion of the exhibit, as shown in the illustration, is filled with samples of the many finished and unfinished forms into which the Jessop steel has been made. The brilliant and artistic setting of these castings has been greatly admired. There are small and large gear wheels, cams, cross heads, cylinder and cylinder cover, spanners and coal mine car wheels. Some of the castings have been broken or bent cold, and drawn out into instruments with a cutting edge, such as razor, carving knife and chisel, in order to show the malleability and quality of the steel. There is an extensive collection of fractures of various qualities of tool steel, hardened and unhardened, arranged in the show case in pleasing geometrical designs, to the number of nearly twelve hundred, and a display of large and small circular saw plates, so neatly adjusted that they seemingly rest lightly in position, whereas the largest of these massive steel disks weighs over five hundred pounds. There are also finished bars of steel; a 12-inch wide band saw fifty-four feet long; and, to crown all, there is an American flag, made up of alternate stripes of polished and black steel, with steel stars, nickel-plated, which makes a very pleasing effect.

The firm was awarded the medal for highest excellence on their goods shown at the Exposition, but such award was, in their case, notable only as being a continuation of the highly favorable recognition the firm

had previously received in two exhibitions at Paris, and at London, Melbourne, Antwerp, Liverpool, and other places. It is the intention of the firm, we understand, to donate the exhibit to the Columbian Museum to be founded in Chicago, and for which many prominent exhibits have already been secured.

**THE FLYING PROPELLER.**

This is the name given by the manufacturer to a new form of an old toy which has always been inter-



AERIAL TOP.

esting and popular in whatever form presented. This one is the simplest, cheapest and it seems to be the best. The wheel is punched out of a single piece of tin. It has three arms or vanes, which near the rim are in the form of disks inclined at an angle of about thirty-five degrees to the plane of the wheel rim. At the center of the wheel there is a square hole in which is loosely fitted a twisted square rod, and upon this rod, below the wheel, is placed a wooden sleeve, the bore of which is large enough to allow the rod to be readily drawn through it.

The wheel having been placed upon the rod—as

**What is Electricity?**

Prof. Galileo Ferraris, the genial Italian scientist, whose name is known to all electricians, was recently asked by a young lady what electricity was, but, unlike most others when asked that question, he ventured to answer it, and according to *Cosmos*, wrote in French in her autograph book the following, of which we venture to give a translation, even though the English language hardly does justice to the original in French: "Maxwell has demonstrated that luminous vibrations can be nothing else than periodic variations of electromagnetic forces. Hertz, in proving by experiments that electro-magnetic oscillations are propagated like light, has given an experimental basis to the theory of Maxwell. This gave birth to the idea that the luminiferous ether and the seat of electric and magnetic forces are one and the same thing.

"This being established, I can now, my dear young lady, reply to the question that you put to me: What is electricity?

"It is not only the formidable agent which now and then shatters and tears the atmosphere, terrifying you with the crash of its thunder, but it is also the life-giving agent which sends from heaven to earth, with the light and the heat, the magic of colors and the breath of life. It is that which makes your heart beat to the palpitations of the outside world, it is that which has the power to transmit to your soul the enchantment of a look and the grace of a smile."

**The Third and Fourth Generations.**

M. G. Lagneau communicated to the Academie de Medecine, recently, the concluding part of an interesting statistical paper on the population of Paris, in which he proved that the extinction of families of Parisians proceeds with extraordinary rapidity. A little over 60,000 children are born annually in Paris, and the expectation of life at birth is 28.05 years. The population of Paris at the last census was 2,424,703, and M. Lagneau calculates that, if not recruited from the country, the population, at the end of one generation, would be reduced to 1,698,679, a diminution of more than a third; at the end of a second it would have fallen to 1,100,100, at the end of the third to 833,720, and so on, until at the end of the eighth generation *la ville leumire* would contain only 140,700. Probably the real figures would be even less favorable, for, as a matter of fact, it is almost impossible to find a Parisian whose ancestors for three generations have been Parisians. The same, or very much the same, holds good in London. Some ten years ago Mr. James Cantlie, in

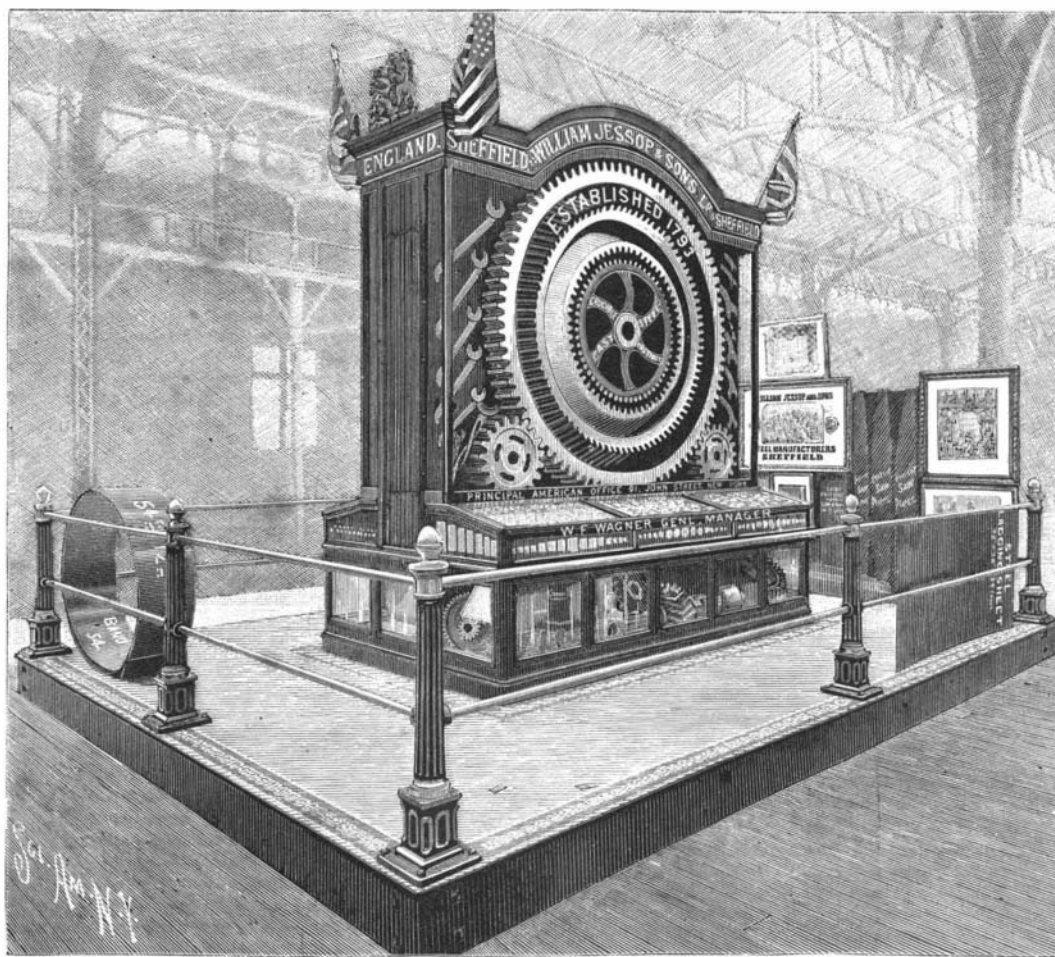
a lecture which he gave for the National Health Society, challenged any one to produce a Londoner of the fourth generation, a challenge which was not, we believe, taken up. The causes of this dying out of town populations are, no doubt, complex; but M. Lagneau points out two which, in Paris at least, are the most important—the enormous mortality during the first year of life and the very high death rate from tuberculous diseases. This death rate appears to be twice as great in Paris as in London, and M. Lagneau appears to attribute a part of this difference at least to the less density of population on the surface in London. The Londoner has 84 square meters, whereas the Parisian has only 39.—*British Medical Journal*.

**The Scientific American.**

This paper has stood for the last forty years at the head of its class of publications. It has no superior. As a scientific and mechanical journal it cannot be excelled. The patent agency of Munn & Co., connected with it, is one of the few strictly reliable agencies in the United States. Those of our readers who desire to obtain a patent, and wish to have their interests well attended to, cannot do better than to address Munn & Co., Solicitors of Patents, No. 361 Broadway, New York, for their pamphlet containing full information about patents, caveats, etc.

[To the *Sewing Machine Times* we are indebted for the above kindly notice, a favor unsolicited and hence the more appreciated.—EDS.]

THE cost of the Union Pacific was reported as \$112,259,360, an average of \$108,778 a mile.



THE WORLD'S COLUMBIAN EXPOSITION—EXHIBIT OF WILLIAM JESSOP & SONS, LIMITED THE SHEFFIELD (ENGLAND) STEEL MANUFACTURERS.

shown in the engraving—the wooden sleeve is grasped between the thumb and finger of one hand, the eye at the lower end of the rod is grasped by the other hand and the rod is drawn quickly downward, thus imparting to the wheel a very rapid rotary motion which causes it to rise to a great height in the air. Sold by the Magic Introduction Co., 321 Broadway, N. Y.

In Dakota, with a four-horse gang plow, from six to seven acres a day is commonly plowed.