RECENT USES OF ELECTRICITY.

It is difficult to realise that the telephone is barely eight years old. The first conversation over a wire occurred Oct. 9th, 1876. Little was then thought of it, scarcely more than of that wonderful but now forgotten toy, the phonograph. The notice of an astonished man of science from England first gave the "far-speaker" wide publicity, and then within a half-dozen years it has made great progress, which we have not seen exactly reported. Its use is growing, in every civilized nation, and the distance over which it is effective is lengthening, until sanguine inventors believe that a voice can soon be heard beneath an ocean, as indeed it has been one-third across America. The use of the telephone may grow as surprisingly as did the telegraph, but at most its field is, if not exactly limited, at least well defined.

With storage batteries, however, the case is different. The uses of "power" are illimitable and innumerable, and when, about 1881, it was declared that a fireless motor could be carried in a chest, great things were hoped and promised. Great things, too, have been done. An omnibus has been driven through the streets of Paris conveying its own power. A Yarrow launch has been driven six hours at a high speed. A tricycle, weighing only four hundred pounds all told, has been propelled at the speed of a cab. The balloon which, it was declared the other day, had solved the mystery of steerage in an "air-way," so to speak, was moved by "accumulated" electricity. Torpedoes have been driven and guided by these boxes of force. These things are wonderful in themselves, and more wonderful in their promise. Yet the "storage" or "accumulation" of electric energy is not a success, because it is too costly. Engines are cheap and last indefinitely. Storage batteries are costly and will wear out quickly. So long as this continues no storage battery can compare, under ordinary circumstances, with an extra engine full of steam and a banked fire ready for instant use. The trouble is not one of principle; it is merely a question of cost and detail, and may be solved at any time. When that time comes the wonders of electricity will be indefinitely increased.

The transmission of power by electricity has been reported as measurably solved by M. Duprez, in France. The French Institute examined his invention in 1883—too recently, it will be observed, to expect as yet any practical results—and reported that he delivered one-half the original power at a distance of 38 miles. The waste is great. Yet, when it is considered how great is the economy and convenience of substituting one central source of power for many less ones, the percentage of loss is endurable. The problem is double—to transmit power in sufficiently large quantities for a factory and over considerable distances. There is little difficulty in transmitting small amounts of power for considerable distances, or considerable power for short distances. It is a question of conductors, and M. Duprez, according to the Institute, "vastly exceeded everything previously accomplished by the greatness of the transmitted power compared with the resistance of the conductor." If this be strictly true, the steam and iron horse may get a rest.

The first electric railway for the carriage of passengers was seen at the Berlin Exhibition in 1879. Shortly after, 82,000 passengers were carried at the exposition at Paris. They were not exactly toys, and yet they were not full-fledged. The distances were short, and the gauge was ridiculously narrow. In May, 1881, an advance was made by the opening of an electrical railway in the suburbs of Berlin. It was 3 miles long, and the speed had risen to 30 miles an hour. The next electrical railway ran to the Giant's Causeway, in Ireland. There are also little roads in Austria and Holland and under the Thames. The last was successfully opened in Cleveland, Ohio. America is not usually so slow in using new things, nor have her inventors been backward in attacking this problem. Daft and Edison and Field have each declared their systems perfect. But we believe no electric locomotive has yet earned a dividend. Dynamos seem to be like racehorses—neither handsome nor very useful at low speeds. When they are harnessed and brought down to practical velocities they are at a disadvantage. Obviously a locomotive which its best results only when rivalling the speed of a gale leaves something to be desired. Where such speed can be used safely (as upon a miniature track designed for the carriage of parcels, such as, for instance, mails), extreme rapidity can be obtained. Mr. Danchell has devised a single-track railway of this description, upon which he proposes to make 200 miles an hour. Perhaps no department of electricity promises better than this one of transportation, although as yet it lags a little behind its fellows.

Nothing has yet been said of the electric light, partly because it is so familiar to every one. We were the pioneers. It was not until the last days of 1880 that some of the streets of New York were lighted by Mr. Brush, and on September 5th, Mr. Edison's in-door system was tested in the *Times* offices. Soon afterward the system was extended upon a scale not yet equalled anywhere. The light is perfect. The theory is perfect. And yet we hear of no more "installations" upon a scale equal to the operations of even a small gas company. The use of the electric light for photography is growing. Excellent effects are got from it in any weather, but it is always costly and cannot always be had. A year or two ago Professor Bell was said to have deposited at the Patent Office a sealed description of the method of "seeing"—that is, we suppose, of transmitting images by electricity. Two of our professors promptly declared that effects of light could be sent over a wire by using mosaics of selenium, each section at one end being connected by a separate wire with the corresponding section at the other end. The currents of electricity transmitted would then depend upon the amount of light falling upon any given bit of selenium, and the corresponding distant fragment would register the result. Since then Mr. Bell has given no sign, and we are forced to believe "seeing by wire" is yet a philosopher's dream. That it must be always so is a hasty conclusion in view of the seemingly impossible deeds already done by the aid of the "virtue," as it was early called, which men have subdued without understanding.—*Ex.*

CARE OF BOILERS IN THE NAVY.

At a recent meeting of the Naval Institute, Assistant Engineer W. M. Parks, U. S. N., read an interesting paper on "The Care of Boilers in the Navy." Mr. Parks asserted that it must be evident to any one familiar with the subject that the lifetime of boilers fitted to the vessels of our Navy is too short, and that the cost of repairs during their brief period of service is far greater than the nature of their duty would seem to warrant. The boilers are well built, of the best material, therefore maximum efficiency and length of service ought to be expected from them. It is generally conceded that these expectations are not realized.

The rapid deterioration of naval boilers is attributed to rapid and disastrous formation of scale on the heating surfaces. In some cases, before the boilers have made one cruise, they are choked up with scale. The familiar results follow:—leaky tubes and burned sheets, with consequent expense and delay.

There is no reason why naval boilers should not last quite as long or even longer than ordinary marine boilers, unless it be that they are subjected to harder usage. Ordinary marine boilers, well cared for, enjoy a tolerably long life of efficient service. The question is, Why are not our naval boilers equally efficient and durable? The explanation given in Mr. Parks' paper is that a standing order to naval engineers prohibits them from using boiler of a density exceeding $\frac{1\frac{3}{4}}{32}$

To work within the limit of concentration, an engineer has to use the blow-off cock very frequently, the waste of water being supplied from the sea. The sulphate of lime present in the sea water is then deposited on the heating surfaces. Atlantic steamers frequently make a voyage of ten days without opening a blow-off cock, but the concentration of salts in the water will often reach a density of $\frac{4}{32}$ or $\frac{5}{32}$; yet they do not deposit much scale, because the quantity of scale-making materials is dependent upon the quantity of fresh sea water fed, which is carefully restricted. Were the methods followed by well-managed merchant vessels permitted in our Navy, it is believed they would result in material saving to the nation and over supply of red tape alone, prevents the change from being made at once.—*Ex.*

TILE pavements for streets are being tried by the authorities of Berlin. The tiles are molded into blocks 7·8 inches square and 3 9 inches thick, and impregnated with bituminous products up to 20 p. c. of their volume. They are laid on concrete 6 inches thick, and the spaces between them are filled with hot tar.