AN HOUR WITH EDISON.

Professor Edison's laboratory, in size and external appearance, resembles a country church. The interior, however, is not so church-like. The first apartment is a reception room, on the right of which is the private office, containing a large library of scientific works. Beyond these there is a large room containing materials and a number of glass cases filled with expensive physical and chemical apparatus. The machine shop at the rear is furnished with the best of machinery and tools, and is kept constantly in operation in carrying out the plans of Mr. Edison. On the second floor there is a single spacious room, which is the laboratory proper. Here, upon the walls, are shelves which are thickly studded with bottles, jars, and boxes, containing all known substances, both common and rare. It is a chronic habit of Mr. Edison to purchase every newly discovered substance, so that it will be at hand should it be required. The Professor states that no substance can be named that is not included in his collection.

In the middle of the floor there is a stand containing a great number of batteries, from which wires run in all directions. Beyond is a table upon which, among other pieces of apparatus, there is a large induction coil, capable of yielding a spark 12 or 14 inches in length. Here also is the carbon relay, the progenitor of all existing carbon telephones, "

on the changeable conductivity of carbon under a varying pressure.

No one can pass by the phonograph, and the Professor himself does not tire in experimenting with this wonderful machine.

One phonographically cultivated can no longer be satisfied with "Mary had a little lamb" and selections from Mother Goose, for now the phonograph can sing, and not only a simple melody, but a duet, and even furnish you with an accompaniment and applause at the same time.

The phonograph which Mr. Edison uses in his laboratory has a double mouth-piece, and the machine will faithfully reproduce a duet sung in it; but the most interesting performance is to hear the Professor sing a duet alone. Singing first the air of "John Brown's body," etc., and afterward the bass over the same matrix while listening to the air as reproduced by the instrument, he produces a matrix which will sing both treble and bass. Not satisfied with this, he whistles Yankee Doodle, and finally, over the same matrix, talks in a loud voice, so that when the whole is reproduced we have a first-class street corner bawl, which is like this: Two fellows singing John Brown, another whistling Yankee Doodle, and a perturbed citizen crying from an upper window, "O shut up! Go away! If you can't sing better than that the police will arrest you! Police! police!"

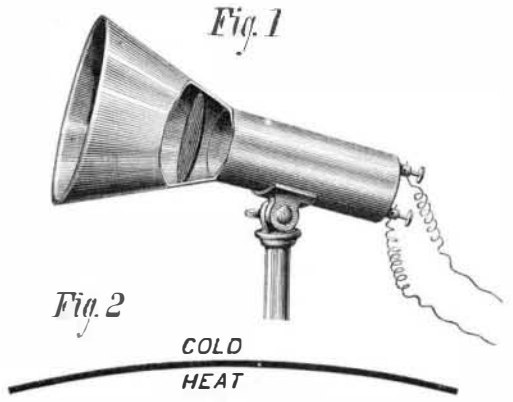
In the extreme rear end of the laboratory, among a host of funnels, jars, acoustic and pneumatic apparatus, there are telephone wires, with which are connected a carbon transmitting telephone and a receiving instrument. Standing some 8 or 10 feet from the transmitter, Mr. Edison said, in an ordinary tone of voice, "

the other end of the line. "I do." Q. "What do you pay for it?" A. "Three dollars and twenty cents a year." Q. "What is your opinion of it?" A. "It is the best of its kind." Q. (while crumpling a paper) "What am I doing now?" A. "Crumpling a paper." Then followed music from a music box of the smallest size, and other tests, showing the wonderful perfection and power of the instrument.

The thermo-telephone, explained by the Professor, although at present without special practical value, is certainly a novelty. It consists of a thermopile having placed in its collecting funnel a hard rubber disk, as shown in the first engraving. A sound made in front of this disk is heard in a receiving telephone connected with the thermopile.

The *rationale* of this is at once apparent when a strip of hard rubber is placed against the lips and bent, as shown in the second engraving, so that the strip will be alternately concave and convex. The difference in temperature is very perceptible, the convex surface being cold and the concave surface warm, and, however rapid the vibrations which render the surfaces alternately convex and concave, the result is the same.

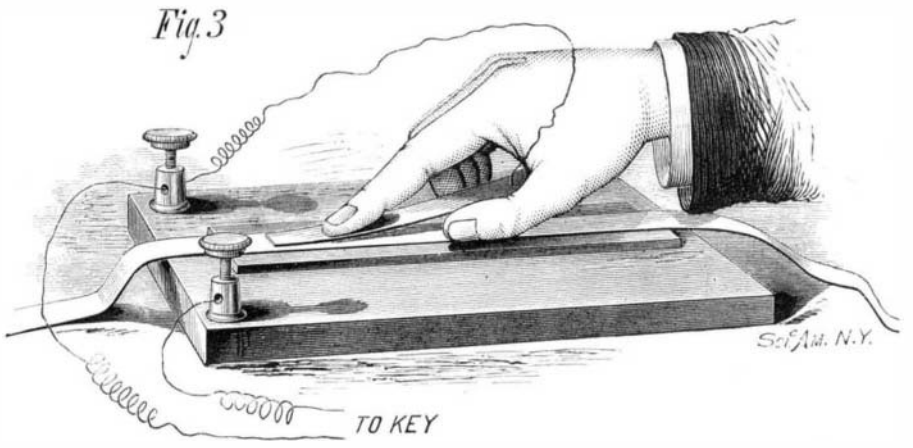
We witnessed an experiment illustrative of the principle of Mr. Edison's electro-motograph, a telegraphic instrument in which the sounder is operated without magnets. In this experiment, which is illustrated in Fig. 3, a strip of chemically prepared paper is laid upon a metallic surface, which is connected with one of the battery wires, and a platinum faced spring which is attached to the other battery wire is taken in the hand and pressed firmly on the paper strip; at the same time force is applied in the direction of the length of the strip. A telegraph key is placed in the electric circuit, and when the current passes through the paper the salt contained by it is instantly decomposed, so that it acts as a lubricant, permitting the spring to slide easily on the paper while the current passes, but immediately the current is broken the friction is sufficient to stop the spring.



THERMO-TELEPHONE.

The best solution for saturating the paper is made by dissolving 1 lb. of sulph. soda in 1 gallon of water. Any of the sodium salts will answer.

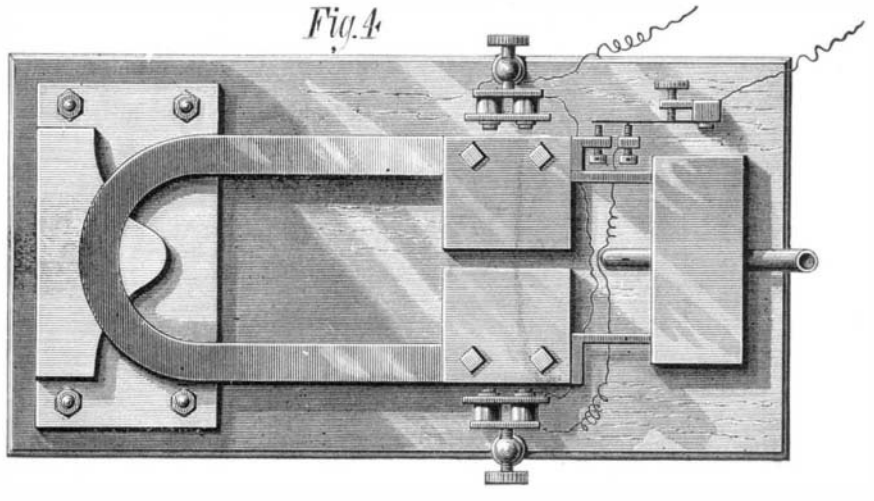
Electricity as a motive power, until now, has been a comparative failure, as 90 per cent of the battery has been wasted. Professor Edison has devised a novel electrical machine which he calls the Harmonic Engine, in which 90 per cent of the power is realized. With two small electro-magnets and three or four small battery cells, sufficient power is generated to drive a sewing machine or pump water for household purposes.



ELECTRO-MOTOGRAPH.

This engine, which is represented in Fig. 4, consists of a fork 2½ feet long, made of 2 inch square steel. The curved part of the fork is firmly keyed in a solid casting which is bolted to a suitable foundation, and to each arm of the fork is secured a 35 lb. weight. Outside of and near the end of each arm is placed a very small electro-magnet. These magnets are connected with each other, and with a commutator that is operated by one of the arms.

The arms make 35 vibrations per second, the amplitude of which is ⅛ inch. Small arms extend from the fork arms into a box containing a miniature pump having two pistons, one piston being attached to each arm. Each stroke of the pump raises a very small quantity of water, but this is compensated for by the rapidity of the strokes. Mr. Edison proposes to compress air with the harmonic engine, and use it as a motive agent for propelling sewing machines and other light machinery. The power must be taken from the fork arms so as not to affect the synchronism of their vibrations, otherwise the engine will not operate.



EDISON'S HARMONIC ENGINE.

Suspension Bridge Accident.

A serious accident, resulting in the death of two men, recently occurred on the New York anchorage of the East River Bridge, through the breaking of one of the parts of the wire rope which formed the tackle by which a strand of the cable was being lowered into place between the eye bars. The rope measured 1¼ inch in diameter, and to all appearances was perfectly sound. The strain upon it, some 75 tons, was below that which the tackle should withstand, and it is supposed that jamming against the edge of the sheave, or some other indefinitely known accidental cause, determined its rupture. The strand fortunately swung over the previously finished part of the cable, and thus was prevented from damaging the buildings below as it flew through the air between anchorage and pier. The part crossing the river at once sagged down to the bottom. The strand has since been cut and taken down, and a new one is being made. The two men killed were struck by the flying ropes, one being killed instantly and the other mortally injured by being thrown from the anchorage to the ground. The accident will delay progress on the bridge for a few weeks.

microphones," and other instruments dependent

Mill Explosion Science.

Mr. J. D. Hayes, of Detroit, Mich., took occasion at the recent Convention of the National Millers' Association to remark in opposition to the view that mill dust is explosive as follows: "We know that machinery running with a belt or wire is likely to produce a certain amount of electricity, and the dust may become charged with electricity. You may take gunpowder into the street packed in a box and it would be explosive, and so would also nitro-glycerine. But nobody ever heard of a case of blasting a rock with mill dust." (Applause.)

While we would not for a moment seek to impair Mr. Hayes' own good opinions of his bad ones, we would state, for the benefit of those who may accept what is said at the Convention and hence widely published as authoritative, that mill dust owes its explosiveness to its finely comminuted state and free admixture with air, in which condition its oxidation occurs with great rapidity. Mr. Hayes' supposition seems to be that some one has asserted that mill dust is inherently explosive under all circumstances, because of an unstable chemical nature, as in the case of gunpowder or nitro-glycerine. The simple experiment of trying to explode a barrel of flour with a percussion cap will demonstrate to him how untrue this must be; but, on the other hand, when Mr. Hayes lights a stove next winter, he may remark that the little sticks of wood burn quicker than the big ones, and the smaller they are the faster they burn. And if he will carry the process of comminution of the sticks downward by the aid of a penknife he will discover still more rapid combustion, until probably he may mentally discern the fact that when the particles which constitute mill dust) become infinitesimally minute they may burn so quickly in the air as to produce an explosion.

Learn Something.

A young man stepped into the office of the Indianapolis Rolling Mill not long since and asked for work. "What can you do?" asked the president. "I don't know," said the young man. "Have you a trade?" "No, sir." "Where did you come from?" "From Pennsylvania." "Are you a German?" "No, sir; I am an American." "If you were a German, or an Irishman, or a Frenchman, I could set you to work, because you would know how to do something, but Americans don't know anything about practical business."

This reply may not apply to all Americans, but it is lamentably true to a great extent. In Germany the boy is brought up where he sees something done, and has some idea of doing it. Very few Irishmen or Germans but know how to turn over a few rods of ground and raise something upon it. Most of them have some idea of mechanical operations, the production and uses of material and of tools.

It is those born in America who are ignorant and idle. It is the false notion that a man does not need to labor, or that he can get his living by his wits, that causes a large part of our idleness and distress. Begin at once to learn something; no matter your age, learn some practical pursuit at once.

EXPERIMENTS recently made with an electric light in this city showed that by its aid ordinary print could be read at night half a mile away.