EXPERIMENTS ON DEATH BY ELECTRICITY.

Some experiments on the effect of electricity upon animals, with a view to determining the best method of inflicting the death penalty on capital offenders, were performed on the 5th of December at Mr. Edison's laboratory in Orange. Mr. Harold P. Brown was in charge of the work.

A calf weighing 124½ pounds was first subjected to the current. An alternating current of about 50 volts E.M.F. was first applied, which caused the animal to fall, but nine minutes afterward it rose to its feet apparently uninjured. The current was then brought up to 770 volts E.M.F., and was applied for eight seconds. The animal died, and as far as could be ascertained, the death was absolutely instantaneous. On dissection the brain vessels were found filled with blood, but no hemorrhage was discernible; the heart and lungs were normal. The hair on the forehead was slightly scorched where the metal parts of the electrode came in contact with it.

A second calf, weighing 145 pounds, whose resistance between the electrodes was 1,300 ohms, was subjected to a current of 750 ohms E.M.F. for five seconds. Again death was instantaneous, the heart at once stopping.

Next a horse weighing 1,230 pounds, halter included, was subjected to the experiment. With the connections made as shown in the cut, the resistance was found to be 11,000 ohms. The current was used at about the same potential as before, but as the voltmeter had broken down, the electromotive force could only be judged by the degree of illumination which it imparted to a series of lamps. A single tap of the hammer was used to close the circuit, but the animal was little if at all affected. The current was then applied for five seconds, and again for fifteen seconds, and in neither case was the animal injured apparently. Finally the current at a full potential of 700 volts, estimated, was applied for twenty-five seconds. During this time steam was evolved from the electrodes, showing insufficient metal contact. Death was produced instantly.

The methods of connecting the wires to the animals were two: In the cases of the calves, ordinary medical electrodes were used. One was applied to the forehead, the other just back of the shoulders, in order to bring the brain into the direct line of conduction. The forehead electrode was circular, two inches in diameter, and was covered with sponge; the other electrode was four inches long and two inches wide. Both were covered with sponge, which was saturated with a solution of zinc sulphate of specific gravity 1·054 at standard temperature. A portion of the skin, where the electrodes were to be applied, was freed from hair by clipping with scissors. The burning of the hair in the first experiment was undoubtedly due to incandescent and not to arc action.

In the case of the horse, the legs were wrapped with wet waste, and around this the wires were wound directly. One conclusion that these and other experiments lead to is that the resistance of the animal is due in great measure to the perfection of the contact with the skin. Perspiration favors the contact and lowers resistance. Another conclusion is that the current should be applied so as to have the brain in its direct course. A distinct difference is noted between the action of the alternating and the direct current. The alternating current seems to produce a kind of paralysis or tetanic condition, in which the animal struggles very little, while the direct current brings about contortions which may become very serious and powerful.

The experiments were executed under the auspices of the Medico-Legal Society of this city. The importance of determining the best method of inflicting death by electricity arises from the new law of the State of New York, which goes into force after the first of January. This law substitutes death by electricity for death by hanging as the statutory punishment for capital offenses.

The recommendation of the committee, which, in September, had been charged with especial consideration of the question, advised the use of the alternating current of 1,000 to 1,500 volts E.M.F. and with alternations of not less than 300 per second. The current, the report stated, should enter the person by metal electrodes from one to four inches in diameter covered with thick layers of sponge and chamois skin moistened with a weak aqueous solution of common salt, and the sitting position was recommended.

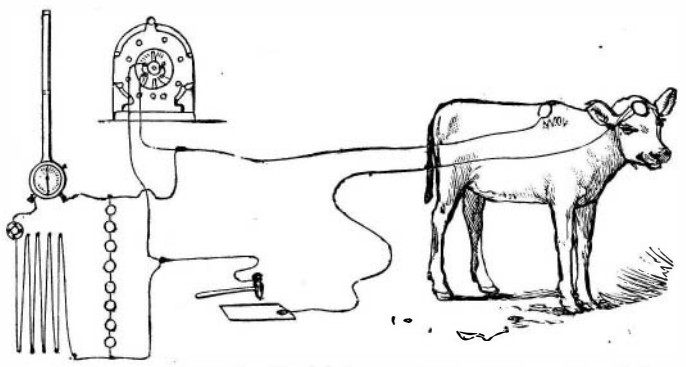
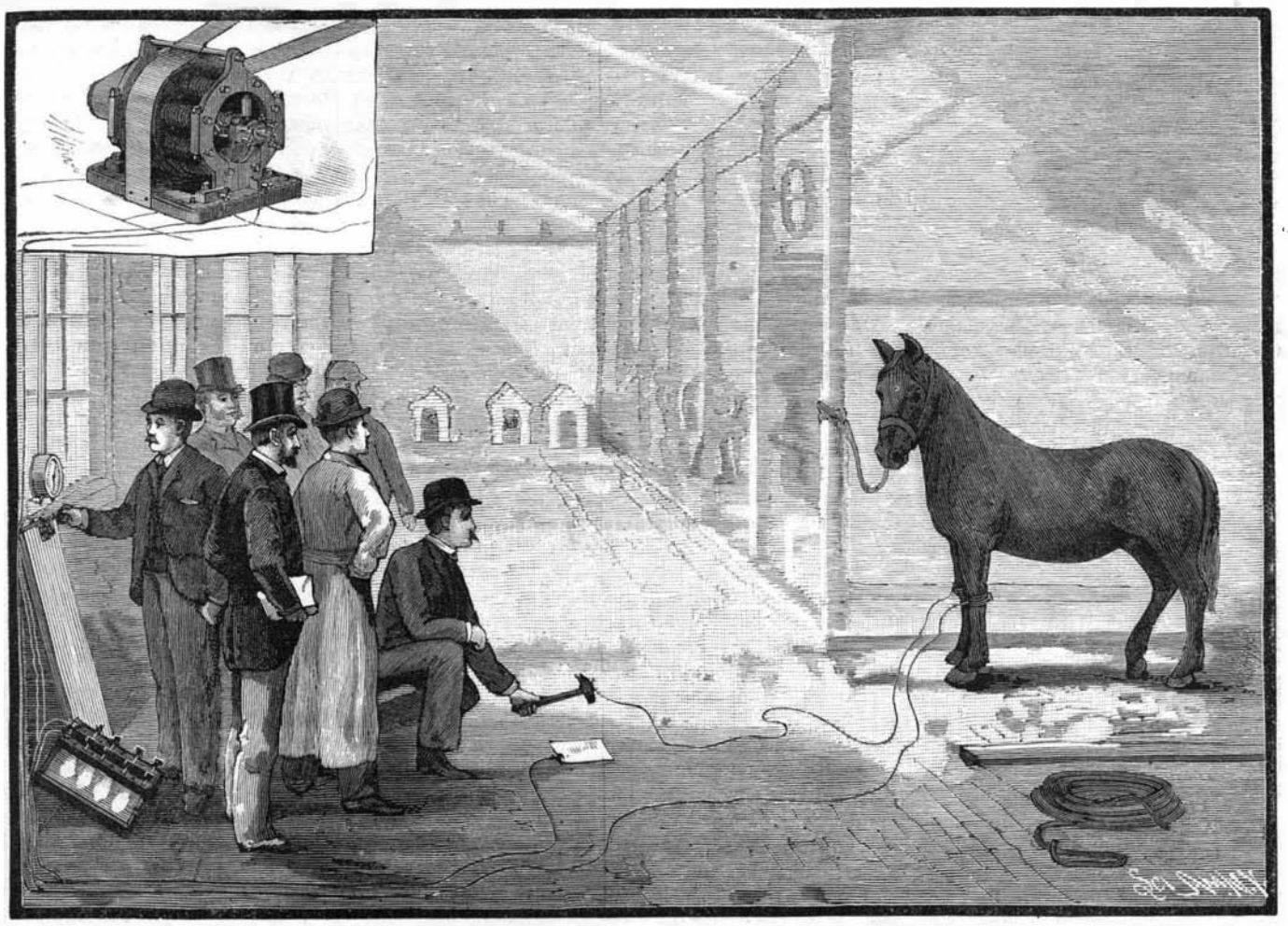


DIAGRAM SHOWING METHOD OF CONNECTING BATTERY AND SUBJECT.

The measurements were made by Mr. A. E. Kenelly, of the Edison laboratory. It will be noticed in the diagram of the electric connections that a series of lamps were arranged in parallel with the voltmeter and its resistance. The lamps in this position acted as an adjunct to the voltmeter, giving ocular evidence of variations in electromotive force, and affording in themselves an approximate measurement of the same factor. They were utilized after the breaking down of the voltmeter as already described.

It is now proposed to kill an elephant by electricity, not, however, by the Medico-Legal Society's representatives. The elephant Chief, the largest in the country, has become so dangerous that his death has been decided on. It is proposed to apply electricity. Whether the idea will be carried out remains to be seen.



EXPERIMENTS IN KILLING ANIMALS BY ELECTRICITY, AS CONDUCTED AT ORANGE, N. J.

A Good Trade to Learn.

There are very few young men who start out in life but what do so with the intention of doing something that shall furnish them a means of livelihood and something more, which they may look to in case there comes a time when they cannot do so. It is of course desirable to do that which shall be the most sure of bringing about this object, and it is a most important thing that the young man choose that in which there is the best chance for the accomplishment of this end.

There are few trades to-day that offer better advantages in this direction than the machinist trade. As a rule, they are a better-paid class of men than almost any other, and the chances for advancement are more numerous than elsewhere. The young man who starts in to learn the machinist's trade has a broad field for development. Upon this trade more than upon any other depends the prosperity and wealth of our country. There is a constant and increasing demand for new and improved mechanisms, and it requires the genius and ability of good machinists to furnish this demand. Then there is also the great field of invention, that opens up an unexcelled and exhaustless chance for the ambitious and ingenious mechanic. That there are "millions in it" is emphatically evident from the examples before us. Nor is it absolutely necessary that a man shall be an expert. Some of the most valuable and most profitable inventions have been those worked up by men who were not experts, and who were scarcely well versed in mechanics to be valuable workmen.

That many inventions are valueless, we do not question, but that is not always a direct indication that they are worthless or unimportant as an invention. The one great aim in this line should always be to produce an article which is at once simple and possessing some features of novelty or value over any similar existing device. Another reason why we would consider the machinist trade a good one to be taken up is because it is principally upon this that the country depends for its wealth-producing forces, and while this state of things lasts there will always be a demand for good workmen. A thoroughly good machinist is seldom out of a job, and so far as statistics show, there are less labor troubles arising in this than in any other line.—*Practical Mechanic.*

Rotary Veneering Machines.

According to the *Northwestern Lumberman*, the largest machine for cutting veneers in the United States is in operation in California, and shaves up logs ten feet eight inches in length with the greatest ease. The shavings which come from these machines are great, long sheets, in each of which is almost the entire wood of a big log, and from a single shaving is frequently made from 2,000 to 5,000 berry boxes. The logs are first cut into the desired length, then placed in a large steam box and left for twelve hours, subjected to the effects of exhaust steam, which so softens the wood that it can be cut into the thin sheets desired, without checking or splitting into fragments. When sufficiently softened, the log is pushed into an immense lathe and revolves in front of the great blade exactly as a strip of wood in a turner's lathe revolves toward the chisel. After the water-soaked outer portions of the log have been trimmed off, a number of small, chisel-like instruments are adjusted, with the sharp cutting edges pressing against the log, which make parallel lines, partially cut through, the whole length of the great white, steaming shaving. These lines are the points of bending when the boxes are formed, and make that operation nothing more than a simple mechanical movement, as the wood bends readily at the partial cuts, and forms the angles of the box. All but the core of the log is turned off into this long shaving, one-twentieth of an inch in thickness and nearly one thousand feet long, which is folded and broken into convenient lengths for handling as fast as it comes from the knife. These are then cut into narrow strips, lengthwise, and of the proper width for the sides and bottoms of a berry box. The last step in the manufacture is the fastening of the bottom and side strips together, which is done by a peculiar-looking machine called a stapler, but which might properly be called a wire-sewing machine.