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SCIENTIFIC AMERICAN SUPPLEMENT

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THE FIRST ELECTRICAL EXECUTION.

In January, 1889, the new law of the State of New York went into effect, whereby electricity was substituted for the rope in the execution of criminals; but it was not until the 6th inst. that the prison authorities at Auburn, N. Y., had occasion to make actual trial of the new method upon the body of a convict.

A wretch named Kemmler, whose crime had been the atrocious murder of a woman, was appointed to be the first to suffer electrical death. No sooner was this announced than a number of persons interested in electricity and electrical apparatus set themselves to work to prevent the execution of the law, first by appealing to public sentiment through the newspapers, and next by interposing legal obstacles through the courts. It was set forth by these electrical partisans, first, that it would be a degradation of the noble science of electricity if it were brought down to so base a use as the killing of criminals; and second, no electrical apparatus known was capable of generating a current that would kill a human being with as much certainty and regard for humanity as the gallows.

Strange to relate, at the very time when these electrical discussions were filling the daily papers, when numbers of professors and electrical experts were striving, by might and main, to convince the public, through their learned disquisitions, that the alternating currents, the wires of which ramified in all directions through the city, were innocent and harmless, at this very time there occurred a series of deplorable incidents, whereby persons who accidentally touched the electric wires in the streets were instantly killed. The solemn essays of the learned-in-their-own-conceit experts would appear in the morning papers, proving beyond all question that the wires were perfectly safe, they could not extinguish life, and therefore the attempt to use electricity as provided by the new law was absurd. But perhaps the next morning, in the same newspapers, there would be given to the public the shocking details of loss of life occasioned by the deadly alternating currents in the overhead wires. These dreadful tragedies came in such frequent succession that all argument and talk against the law promptly ceased, and the city authorities hastened and cut down the dangerous wires.

The opponents of the law thereafter took a different tack. They obtained a postponement of the sentence of the condemned man on account of alleged legal errors in his conviction and the unconstitutionality of the new law. An appeal was taken to the highest court of the State, but the conviction and the law was sustained. An appeal was then taken to the Supreme Court of the United States, which held that the new law was not in conflict with the constitutional law. Further applications were made to the State court, but were dismissed, and on the 6th instant the doomed man suffered the statute penalty. He was strapped to a stout chair, electrodes were placed so as to make contact with top of head and base of spine, an alternating electrical current from a powerful Westinghouse machine was joined, a switch was moved, and the criminal was struck dead—instantly killed by lightning. The apparatus employed was sure and effective.

The law requires the presence of witnesses; among those brought in were several doctors, electricians, foes and friends of the new law, lawyers, and newspaper reporters.

The most intelligent of the witnesses, disinterested persons, also the warden of the prison, declare that as a mode of execution the electrical plan is far preferable to the scaffold.

It is rumored the Westinghouse Company or some of its adherents spent many thousands of dollars in fruitless efforts to nullify and obstruct the operation of the new law. The ablest lawyers and experts, who ordinarily receive large fees, were employed.

The execution of a criminal, whether by the guillotine, the garrote, the gallows, the gun, or the dynamo, is a ghastly business; and it is not surprising that the sensational newspapers, aided by the electrical opponents of the law, should have made the most of such an occasion to fill their columns with revolting details.

The foes of the law dwell upon the fact that the muscular contractions of the victim after the switch was turned prove the correctness of their original position—that Kemmler lingered a few seconds in life, that he was not instantaneously killed, therefore that electricity is a failure for this purpose, and the law should be repealed.

We have only to say, if they are not satisfied with the electrical apparatus used at Auburn, if, as they claim, it is not effective, then let us employ the deadly devices which the complainants themselves use, own, and control, with which they fill our streets and slay our innocent citizens. Let them bring the culprit to our city prison, place him on a conducting floor, introduce one of their street light wires, and with it, at the moment of execution, touch the hands of the prisoner. It will extinguish life instantly. It has rarely been known to fail.

To make labels adhere to tin use a freshly made solution of gum tragacanth in water.

WIRE AND ELECTRICITY.

Electrically heated flat irons are now made which are very serviceable. The flat iron is of the usual form, but made hollow. The interior contains a lot of coiled wires, through which the electrical current passes and heats the wires red hot. The latter are arranged between protecting sheets of mica and asbestos. You turn a switch, and the flat iron at once heats up ready for use. The street wires supply the electrical current.

In the same way all kinds of domestic utensils may be heated, such as cake bakers, meat broilers, coffee pots, etc. Electrical platters for keeping food warm when on the table may be had. Electrical heaters for warming apartments are also made. There is, indeed, no end to the useful applications of wire and electricity.

The Star Mizar.

Every observer of the heavens, who knows by name some of the brightest stars, is familiar with the constellation called the Great Dipper, visible in the northern sky through the whole night and throughout the year. It consists of seven stars, four in the bowl and three in the handle. An interesting discovery has recently been made by Professor Pickering, of the Harvard University observatory, concerning one of the stars of this beautiful group. Mizar is the name of the star. It is the middle star in the handle, is of the second magnitude, and has attracted much attention ever since men began to study the stars, because even to the naked eye it is double. It has a companion, Alcor, plainly visible to observers endowed with good visual power. Alcor is of the fifth magnitude, and is about 11′ distant from Mizar. The tiny star seems to be growing brighter, for the Arabians considered it a severe naked eye test, and it is now comparatively easy to detect. The telescope shows plainly that Mizar is a double star, its components being of the third and fifth magnitudes, the one a brilliant white, the other a pale emerald. The marvelous discovery is now made that the larger star of the pair is also double, the two stars that compose it being so close together that the telescope cannot separate them. The spectrum of a star, like the solar spectrum, consists of the seven primary colors, crossed by dark lines. These lines form a kind of astronomical alphabet. If the star is coming toward us, they shift toward the violet end of the spectrum. If the star is receding, they shift toward the red end. Two stars very near together, having the same spectrum, cannot be distinguished from a single star as long as they are at rest. If they revolve round each other in a plane inclined to the line of sight, the lines of their spectra will be single when the stars are in conjunction, and double when they are at elongation. This is the case with Mizar, and the doubling occurs at intervals of fifty-two days. Professor Pickering, therefore, infers that these two stars are immense suns revolving round each other. He estimates that the period of revolution of each sun about the common center of gravity is one hundred and four days, and that the maximum velocity is one hundred miles a second. These conclusions are the result of measurements of almost inconceivable delicacy.—*Youth's Companion.*

Bisulphide of Carbon.

A correspondent writes: An interest of a very practical kind attaches to this compound. Carbon bisulphide (Fr. sulphure de carbone) is a colorless, heavy, very mobile and volatile liquid. It is made by the action of sulphur vapor on red hot charcoal, and is used in the manufacture of waterproof materials, the extraction of oils from seeds, etc. It has a specific gravity of 1·29, and boils at 114·8 deg. F., but volatilizes very quickly at ordinary temperatures. The specific gravity of the vapor is rather more than 2½ times that of atmospheric air, and the vapor not only readily collects near the bottom of any space in which it is produced, but flows along almost like a fluid, and the vapor may thus reach a fire and be inflamed at some distance from its source of production. One of the most striking characteristics of this vapor is the extremely low temperature at which, when mixed with air, it takes fire. According to experiments, this temperature is about 415 deg. F. (some authorities give it considerably lower). If it is borne in mine that the lowest visible red heat corresponds to a temperature of about 1,200 deg. F., while a bright red heat, such as is necessary to inflame a mixture of benzoline vapor and air, corresponds to about 2,100 deg. F., it will be seen how very low, relatively speaking, the temperature of ignition is in the case of bisulphide vapor. The smallest spark from iron, a fire, a cinder after it has lost all appearance of fire, an even moderately heated stove, etc., are hot enought to set it on fire. The mere striking together of two pieces of iron within the inflammable atmosphere is sufficient to ignite it. It is not essential that an actual spark should be produced in order to bring about this result, but if the particle struck off is about 415 deg. F., a temperature far below a red heat, ignition will result. The above is an abridgment of the evidence of Dr. A. Dupré, taken for the purposes of a recent Board of Trade inquiry into the burning of