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Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as 'Balls, small bore', 'Bear Creek Falls', 'Books and publications', 'Business and personal', 'Carriage, gas-propelled', etc.

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Table listing sections I through X: BIOLOGY, BOTANY, CHEMISTRY, CIVIL ENGINEERING, MATHEMATICS, METALLURGY, MISCELLANEOUS, NAVAL ENGINEERING, PHOTOGRAPHY, PHYSIOLOGY.

DEATH BY ELECTRICITY—THE NEW LAW OF NEW YORK.

The new law of the State of New York, ordering death by electricity as the punishment for capital offenses, went into effect January 1st. So radical a change in the administration of the ultimate penalty will probably give rise to delays in the administration of justice.

Assuming the constitutionality of the law to be perfect and proved, are the sheriffs and prison officials of the State prepared to inflict the punishment? The very crudeness of hanging brought it within the scope of the commonest type of executioner. But the new method deals with one of the most refined and least understood sciences. Experiments have already been made upon dogs and other animals.

Every prison where the law is carried out must be supplied with the most perfect electrical plant. Every connection must be of the best, and all must be kept in perfect order. The effects of disuse, the hardest of all deteriorating causes to combat in their influence upon machinery, must be guarded against.

To apply and run the apparatus and to inspect every detail, a skilled electrician will be required. The voltage must be accurately determined, the number of alternations of current per second must be known, if the alternating current is to be used, and the resistance of the person to be killed should be determined.

The successor of the present hangman can be depended on to make the fatal contact, but that is all. The electrodes must be attached to the person by or directly under the superintendence of the electrician. The struggles of the prisoner, by disturbing the position of the electrodes, may bring about the most deplorable results.

Death has been administered to dogs by suffocation in coal gas with perfect success. This death, as far as can be known, is absolutely painless. The writer has several times been rendered totally insensible by inhaling gas, and can testify to the efficacy of the anæsthesia produced.

But the law has been passed and no provision has been made to carry it out. Apparatus is not provided, no competent specialists have been appointed to superintend its administration, and in the present state of affairs, the present law appears to amount to little more than an indefinite suspension of the death penalty for murder.

Elastic Traces.

Every one has noticed that a dray horse is often obliged to use all his weight and strength to start a vehicle which moves along easily enough when once set in motion, and it is quite conceivable that springs in the harness might make the work easier by distributing the movement of starting over a longer period of time.

tion of the number of chains broken in the service, while the horses have done their work better and with less fatigue. The blow of the collar on the shoulder at starting is far less violent and less injurious to the animal than under the old system, and the horses, finding that a strong continued pressure will effect as much as the jerk which was formerly necessary, seem to gain courage, and pull steadily and directly, instead of wasting their strength in ineffectual plunges.

POSITION OF THE PLANETS IN JANUARY.

VENUS

is evening star and holds the first rank on the planetary annals of the month for her surpassing brilliancy. She is still moving eastward from the sun, and has so increased in size that her diameter, which was 10' when she became evening star, on July 11, is 20'.6 at the close of the month.

MARS

is evening star and ranks next to Venus on account of his close companionship with his peerless rival at the beginning of the month. Observers who have watched the approach of the two planets during December will be specially interested in their conjunction on the 2d, at 7 h. 47 m. A. M.

SATURN

is morning star, and holds a prominent place on the January annals. He must be looked for in the northeast, where he will be seen rising on the 1st about half past 7 o'clock in the evening, followed half an hour later by Regulus in the handle of the Sickle.

MERCURY

is evening star. He reaches his greatest eastern elongation on the 30th, and at that time, and for a week before and after, is visible to the naked eye in the west. He must be looked for three-quarters of an hour after sunset, about 7° north of the sunset point.

JUPITER

is morning star, and, before the month closes, will be a conspicuous object in the morning sky, rising in the southeast, more than two hours before the sun. Jupiter rises on the 1st at 6 h. 5 m. A. M.

URANUS

is morning star. He is in quadrature with the sun on his western side on the 11th at 4 h. P. M. Uranus rises on the 1st at 0 h. 58 m. A. M.

NEPTUNE

is evening star. He sets on the 1st at 4 h. 11 m. A. M. On the 31st he sets at 2 h. 11 m. A. M. Mercury, Venus, Mars, and Neptune are evening stars at the close of the month.

Illiterates.

A census of the illiterates in the various countries of the world, recently published in the Statistische Monatschrift, places the three Slavie states of Roumania, Servia, and Russia at the head of the list, with about 80 per cent of the population unable to read and write.