

Scientific and Useful

THE ELECTRIC SLEEP.

Electric sleep, or anaesthesia, is produced by the action on the brain of intermittent electric currents of low voltage. It has been a subject of special study for several years by Professor Stephane Leduc, of Nantes, and others, and the application has been perfected until it is practicable to put dogs and rabbits quickly into a calm and regular sleep, with general and complete anaesthesia. In rabbits, at least, the sleep can be safely prolonged to eight hours or more, although ether and chloroform bring much risk after two hours. Electric sleep makes possible the painless electrocution of animals, an increase of voltage causing the loss of will and sensation, to be followed by cessation of respiration and stoppage of the heart. Animals killed by this gradual action have been free from the severe wounds shown in the criminals executed in New York. Electric sleep has been induced several times in human subjects, the first trial having been on Professor Leduc himself. The experience is not wholly agreeable, the loss of speech being followed by loss of movement, and then by a sensation of dreamy consciousness and impending peril with no power to cry out or raise a hand. There are no bad after effects.

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A SOLID MASS OF METAL.

After the great fire in San Francisco, hundreds of tons of lead and zinc and other metals were found fused into a solid mass, four or five feet thick, covering the entire foundation of the ruins of an old shot tower. This represents a large money value; but owing to its enormous size and weight—some hundreds of tons—it is quite impossible to make use of the metal by any ordinary means. It has been decided, therefore, to cut the metal up into blocks weighing about one ton each, and this work is now being accomplished by means of an electric arc. All the men who are engaged in cutting or melting the channels through the mass of metal have their faces covered with canvas to protect them from the blinding glare of light.

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THE TRADITIONAL MAN IN THE MOON.

In our infancy there was pointed out to us the mysterious man in the moon, who looks solemnly down from his perch in the sky. No doubt we have made many a childish speculation concerning this grave personage, who has been watching the successive generations on the earth come and go for centuries, and wondered how he came to be away up there in the moon so many miles from us.

Well, he was sent there because he was a naughty fellow, a wicked man, who picked up some sticks that did not belong to him on Sunday. The first mention of this is in the Bible, where it is told that a certain individual was put to death for such a proceeding.

From this Bible story originated one of the greatest and most ancient superstitions—that of the man in the moon. The man in the moon is known to every

nation, and is pictured as leaning on a fork on which he carries a bundle of thorns or brushwood which he was caught stealing on the Sabbath day; and as a punishment he was confined in the moon. The dark lines and spots which compose the features of this traditional man are in reality the shadows of lunar mountains on the moon.

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SOMETHING ABOUT THE BRAIN.

That portion of the substance of the brain which is known as gray matter is supposed according to the highest authorities, to be most intimately related to intellectual action. Sometimes curious aggregations of gray matter are found in particular parts of the brain, and Dr. Oswald Morton has recently suggested that these may be the cause of the extraordinary mental powers occasionally exhibited by persons whose general intellectual capacity hardly rises above that of idiots. Such powers, or aptitudes, always relate to some special faculty, like memory, without including other faculties.

The aggregations referred to might explain the marvellous memory for music exhibited by "Blind Tom," and the more still extraordinary powers of Heinecker, the child of Lubeck, who lived in the early part of the eighteenth century; and who knew the chief incidents of the Pentateuch at the age of one year, had mastered all of sacred history at two years, and was intimately acquainted with modern and profane history and geography, and spoke French and Latin, besides his native tongue, at the age of three. When four years old he died.

With reference to what has been called the relation of "brain light and dreams," Professor Scripture of Yale once stated that he had reason to think that the faint light which is seen in darkness, or with closed eyes, and which appears in the form of rings, waves, and irregular figures is due, not as is generally supposed, to chemical changes going on in the retina, but to something occurring in the brain. He proposed that it should be called "cerebral light."

This cerebral light appears to be located in those higher centres of the brain that are connected with visual memories and imaginations. A close relation has been observed between these cerebral light figures and the contents of dreams, and Professor Scripture suggested that the hallucinations produced by drugs, like hashish, may be simply modifications of such figures.

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NAMING THE STARS.

From time immemorial the heavens have been an object for investigation and amazement of the inhabitants of the globe; and to the student of astronomy nothing is more interesting than the great similarity of the stories that have grown up about the stars among the most widely separated peoples.

The constellation which to-day is called the Milky Way was known to the primitive Indians and to the African bushmen as the A-shen Path, the cinders of which were conceived to be hot and

glowing. The ancient inhabitants of Britain called it Watling-street, or the path of the mythical giants, the Watlings.

To the casual eye the gulf between the highly civilised, ancient Greeks and the American Indians is well nigh impassable. Yet the constellation known colloquially to modern Americans as the Dipper was called the Bear by both these people.

The imaginative Indian thought of the four front stars as a bear, those in the tail as pursuing huntsmen, and the small star on the end as a pot in which they were to cook their victim.

The aboriginal inhabitants of Australia showed an ingenuity almost equal to that of the Greeks in naming the planets. The constellation of the Pleiades, which is composed of seven stars, was considered by the Greeks to be a band of maiden. In explanation of the dimness of the seventh star, they said that one of the maidens fell in love with a mortal, and thereafter hid her light through envy of her sisters, who were beloved of the gods.

To the Australians on the other hand, they were known as a queen with her six attendants. Like the Greeks, the Australians also sought to account for the dim star, and so the myth grew that the queen had been stolen by a neighbouring constellation, the Crow.

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DRINKING WATER FROM SEWAGE.

At present the greatest difficulty of a modern city is to obtain a pure water supply. Science is now planning to remedy this difficulty by rendering all water pure, no matter how vilely polluted it may have been.

In brief, all drinking water in future will be purified sewage water.

Throughout the civilised world, and especially in large continental areas, the difficulty of obtaining pure water, without which a healthy population cannot exist, is being felt with ever increasing severity. All rivers and streams in inhabited countries are in a greater or lesser degree sewage, and with the growth of population they will all become polluted to a deadly degree. The only remedy, therefore, as the population cannot be kept down, is to make the sewage harmless.

The complicated process by which this is to be done will consist in first destroying the harmful bacteria by the action of other bacteria, then freeing the water from all bacteria and organic life and finally aerating the water so as to make it palatable and acceptable to the stomach.

According to the new scientific theory of sewage transformation, the mass of polluted liquid and solid is passed through a series of nine bacteria beds. During the passage of the sewage through these beds it loses all its offensive and harmful character and becomes entirely transformed in nature, so that only an expert could know what it had been. Part of it escapes in the form of gases, while the nitrified solid matter deposited at the bottom of the bacteria beds is extremely valuable for fertilising purposes.

At the conclusion of the process we have a volume of clear water, at least harmless to man, but containing, perhaps, a considerable quantity of anaerobic bacteria, although they will rapidly decrease in number now that the material upon which they labour has been removed.

The finishing touch will be given by pumping pure air into the water which is necessary to make palatable. The air will also cause the death of the few remaining anaerobic bacteria, to whom oxygen is a sure poison.

Do not envy the beautiful hair of others, but possess it yourself. Some are born with beautiful hair, others acquire it, but none have it thrust upon them. Those who acquire it do so, for the most part, by the discovery that there is a remedy for locks thinned by disease, or which may have become prematurely gray; and that remedy is



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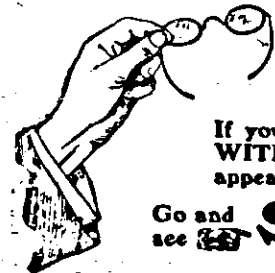
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