



PICTURE WRITING

And the method of its removal from the bottom of a future lake for study. The watch indicates the comparative size of the symbols.

on for a year and a half during which time 65 groups of ancient rock writings have been taken from the river. Many of the rocks weighed hundreds of pounds and had to be chiseled away above dangerous rapids.

More than 300 complete pottery vessels and many other objects were also taken from the area of the rock writing. Valuable archaeological data were collected and many charts, and molds of the picture writing were made.

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ECONOMIC ZOOLOGY

Eugenie Hats Demand Feathers; Ostrich Breeding is Revived

EMPRESS EUGENIE hats, and other feather-decorated feminine headgear now sweeping into fashion, have resulted in a sudden revival of the ostrich-breeding industry that had all but died out in South Africa.

So low had the industry fallen that there are now only about 13,000 birds in this district, and with breeding going on at a capacity rate it is estimated that it will take at least two and one-half years to bring the number up to 50,000, and at least fifteen years to reach the

METALLURGY

Ultra-Violet Light and High Frequency Current Harden Steel

Use, Other Than in Dentistry, of Some 8,000,000 Precious Alloys, Also Urged Before Steel Treating Society

HARDENING the small metal parts of typewriters, sewing machines, and the like may be speeded up by the use of high-frequency radio currents, ultraviolet light, and the electric spark, according to a report presented by John J. Egan, research metallurgist of Long Island City, N. Y., before the American Society for Steel Treating, in Boston.

The steel is given this desired "case hardening" by nitriding, Mr. Egan explained. This previously has been a slow process, involving the heating of the steel while it is placed in a nitrogen atmosphere. After many hours of heating in contact with the nitrogen gas, it is cooled and its surface or "case" has become hardened.

But by subjecting the metal to ultraviolet light or to electrostatic fields caused by the electric spark or high-frequency radio currents, nitriding is speeded up and hard satisfactory cases are made in a short time, he reported. While Mr. Egan does not believe these methods to be commercially applicable at the present time, he thinks that further experimentation should make them so.

Alloys of precious metals should

prove useful in other fields than dentistry, the society was told by Prof. R. C. Brumfield, of Cooper Union, New York City.

Gold, silver, platinum, palladium, and other rare elements, when alloyed with the baser metals, have service qualities that can be known only by actual experimentation, according to Prof. Brumfield. It is estimated that eight million combinations are possible, each with its unique characteristics. Only a few of them have ever been developed, and these have been used in dentistry. The resistance of these alloys to discoloration and their possibilities for heat treatment recommend their use elsewhere, Prof. Brumfield said. The ultimate strength of some of these metals is as much as 90 tons per square inch. The strength of steel ranges from 50 to 100 tons per square inch.

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ARCHAEOLOGY

American Archaeologists Make Finds in Italy

THE FIRST non-Italian expedition to be granted permission to do archaeological excavating in Italy reports great success after less than one month's work. Dr. Jotham Johnson, field director of the University of Pennsylvania Museum's expedition to Minturno, Italy, reports to Horace H. F. Jayne, director of the Museum, the discovery of a remarkable series of architectural terra cottas dating from the third to first centuries B. C., as well as a fine sculptured head of the Emperor Tiberius and a statue of the Emperor Augustus.

No less than eighty inscriptions have also been found, but for the most part these were built into walls of a later temple, and have not yet been read. A late mosaic landscape of the Nile has also been unearthed by Dr. Johnson.

This "dig" at Minturno marks the first time in history that a foreign institution has been permitted to work in the Italian field, and permission was due

pre-war total, which was 300,000 birds.

Before the present boom six-month-old ostrich chicks sold for about \$5, but today there are few for sale at any price; some ordinary flock birds are selling for \$20 each, while breeding birds bring as high as \$75 a pair. Incubators that have been idle for years are being repaired to receive batches of eggs.

So badly had the ostrich feather industry fallen off that only seventy sorters of feathers could be mustered.

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to the efforts and kindness of Count Constantini, and the hearty cooperation of Dr. Amedeo Maiuri of the Naples Museum, officials of the University of Pennsylvania Museum announce.

Minturno itself is a highly interesting site, and dates from pre-Roman times when it was known as Minturnae. It lies about forty miles northwest of Naples on the Mediterranean Sea. Formerly it was the ancient city of Aurunci and in 314 B. C. it was one of three towns to make war against Rome.

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METALLURGY

Flash Welding Joins Metal Amid Shower of Sparks

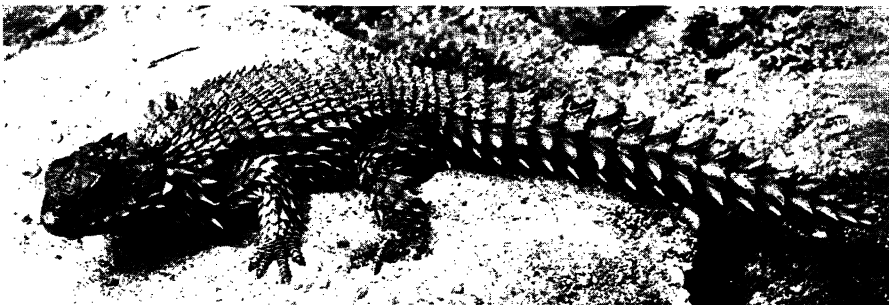
See Front Cover

A BRILLIANT shower of sparks for a few seconds, and two pieces of steel have become one, with a union as strong as the original metal itself.

The picture on the front cover from the Pittsfield, Mass., works of the General Electric Company illustrates a recent adaptation of electric welding to industry. It is joining together the sides of the open seam of a cylindrical casing for a small transformer. As the edges to be welded slowly near each other and as the minute projections come into contact first in one place and then in another, there is a spectacular flashing and a huge shower of sparks is thrown high into the air. The edges of metal redden and become plastic with heat.

The two edges of metal join; good contact is made; and a huge current, from 100,000 to 200,000 amperes, rushes through the new joint. It is quickly shut off. In but six seconds the adjoining edges of a rolled sheet have become as the sheet itself. No metal other than that of the steel plate has been used.

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IN AN ARMOR OF SPINES

This African Spike-Tailed Lizard parades on his desert rock. In a barren and hungry land, where everybody is hunting for something to eat, it behooves potential mouthfuls to make themselves just as difficult as possible.

MEDICINE

Six Generations of Poliomyelitis Virus Grown Outside Body

Successful Laboratory Cultivation Expected to be Valuable in Learning to Control Disease

THE ORGANISM causing infantile paralysis has been successfully grown outside of the human body at the Mt. Zion Hospital, San Francisco, Dr. Frederick Eberson, director of clinical laboratories and research at the hospital and assistant clinical professor of medicine at the University of California, has just announced. The significance of this announcement lies in the fact that the virus or germ of infantile paralysis has never before been successfully cultivated outside the body and investigations leading to control of the disease have been consequently hampered.

The studies at the Mt. Zion laboratories have been made during the past year with a special culture medium prepared from brain tissue. It is on this medium that the virus has been grown.

Numerous attempts to grow this virus have been made previously, and several apparent successes have been reported. Scientists generally, however, have not been satisfied that cultivation of the virus has actually been accomplished in any of these cases.

How the germ was successfully grown is described in detail in a special communication to Science Service by Dr. Eberson. Because the germ prefers to attack nervous system tissue, brain, which is part of the nervous system, was used. Tissue from sheep and human brains was used, and in such material

six generations of the virus have been grown up to the present time.

Success with brain tissue in cultivating the germ of another disease which attacks the nervous system led to experiments with the same culture media for infantile paralysis virus.

"The original virus was diluted a million or more times, which excluded the mechanical carrying over of the virus itself and proved the actual growth of the living culture," Dr. Eberson said.

Virus from the spinal cord of a monkey afflicted with infantile paralysis provided the original material for the research. After from eight to ten days of growth on the special medium of brain tissue, tiny minute organisms could be seen when a bit of the culture was put on a slide, stained and viewed through a microscope.

Controls Negative

This material was transplanted to new culture media and a new generation of the virus grew up. This has been continued for six generations so far.

"Controls with the culture media alone were always negative," Dr. Eberson said. "The original virus filtrate was negative for all organisms. The visible virus cultures failed to grow in all ordinary culture media."

Actual multiplication of the virus can be demonstrated, he reported.

"The organism has three stages of growth. One stage is invisible under the microscope although the culture medium is cloudy. Other stages are seen as larger globular bodies with pale centers and later as clusters of minute ovoid bodies about one-fifth the size of ordinary small cocci. The virus bodies appear to have a surrounding envelope that favors adhesion of the organisms to form peculiar nests of colonies."

Studies of the behavior of this artificially-grown virus in the bodies of monkeys is now being made. Studies on immunization and serum production are also under way, Dr. Eberson reported.

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