

CHEMISTRY-ELECTRICITY

Diamond-Hard Materials Seen as Future Development

MATERIALS harder than diamonds yet cheaper than gems, and metal lighter than aluminum but stronger than steel were suggested as possible electrochemical discoveries of the future no more startling than those of the past by Dr. Colin G. Fink, head of the division of electrochemistry of Columbia University, in a nationwide radio talk arranged by Science Service over the Columbia System.

The cooperation of chemistry and electricity produced stainless steel and the chromium-nickel alloy that covers the Chrysler building, according to Dr. Fink. They defy rust and deterioration for all time to come, he declared.

"We need new products and processes to convert our super-heavy railway equipment into such that will excel that of the modern airplane," Dr. Fink continued. "We want to produce by electrical and chemical means. . . electric lamps ten times as efficient as the best tungsten lamp today, dyes that never fade and silver that does not tarnish."

Interesting experiments in the growth of the electrochemical industry were described.

"Wilson, an American, mixed ordinary marble with coal and passed a strong electric current through the mixture," Dr. Fink stated. "He obtained a new 'stone' or compound, calcium carbide. Returning from lunch on the day of his discovery, it started to rain, and the rain drops coming in contact with this new product caused a hissing sound,

and a powerful gas—acetylene—was evolved. This day marked the birth of one of the foremost of chemical industries: Calcium carbide, acetylene, hydrocyanic gas, acetone, acetic acid, solvents, etc.

"E. G. Acheson passed electricity through coal and converted it into graphite—a most valuable lubricant—better and purer than any natural graphite theretofore produced.

"F. G. Cottrell suspended a chain through the center of smoke stacks, applied a high voltage current, and lo and behold, no fume, no dust any longer came out of the stacks," he said, "just as though the factories had shut down completely. But, of course, they had not. Electricity was causing those myriads of smoke and fume particles to go down instead of up. And more than this: the dust was collected and in many cases was found to contain valuable constituents such as silver."

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ARCHAEOLOGY

Cavemen's Idea of Magic Shown by Paintings

MAAGIC played a large part in the daily lives of men of the Old Stone Age, states Prof. Herbert Kühn, of the University of Cologne, in the German scientific journal *Forschungen und Fortschritte*. He points to five lines of evidence in the cave drawings of

France and Spain in support of his claim.

First, says Prof. Kühn, is the frequent appearance of arrows in the animal drawings, sometimes shown above the animals' heads, sometimes pointed at their bodies. This device is taken to be a method of conjuring the desired game within the range of the hunter's weapons.

Then there is the uneven distribution of the caves in which Stone Age drawings are found. Certain caves, low and difficult of access, appear to have been shrines of magic for centuries, for their walls are thick with paintings, often laid over each other again and again. Neighboring caves, much easier to get into, were totally ignored. Prof. Kühn's inference is that the pictured caves were regarded as specially favorable for the practice of successful magic.

Prof Kühn's third evidence is the appearance of men wearing animal masks and tails in the drawings. These masked figures are usually shown in dancing attitudes, and dances have been a part of primitive religious and magic rites in all historic ages and lands.

In some of the caves there have been found traces of dancing circles, as well as objects, among them sex symbols, which are similar to ceremonial objects used among primitive peoples today in the "initiation" ceremonies by which boys and girls are inducted into full membership in the tribe.

Finally, Prof. Kühn points out the marking, and even the destruction, of the animal figures. Some of them have holes made in them by weapons and even by fingers, some have been thrown into the waters in the caves as if to drown them, and in some of the drawings animals are shown being guided by a sort of fence to a cliff edge over which they will plunge to death. In one North African drawing of the later stone age, a hunter with bow and arrow is shown pursuing his quarry, while a woman—possibly a witch—is shown waving her hands as though in incantation, while a line is drawn connecting her body with his. All these phenomena are considered as various kinds of "sympathetic magic."

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In earlier days on the earth, there were dragon flies that had a wing spread of two feet.

Napoleon Bonaparte took an interest in natural history, and his library contained more than 500 water colors of animals, birds, and plants.

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