ARCHAEOLOGY

## Dice Rolled In Near East More Than 4500 Years Ago

ONE OF THE OLDEST dice in the world, whose discovery by an archaeological expedition in Mesopotamia indicates apparently that games of chance were not unknown to the ancient inhabitants of that country, has been acquired by the University of Pennsylvania Museum.

The die, which dates from about 2750 B. C., was found at Tepe Gawra by Dr. E. A. Speiser, who recently returned to this country after carrying on archaeological excavations in Mesopotamia. It is cubical in shape and is made of baked clay.

In only one respect does the Tepe Gawra die differ greatly in appearance from the modern variety. Whereas the modern die is so marked that the sum of the dots on any two opposite sides totals seven, the numbers on the ancient cube are arranged so that five opposes four and two opposes three.

The University Museum has among its collection a backgammon board which dates from about 3000 B.C.; it was found at Ur of the Chaldees. It is not improbable that the die found at Tepe Gawra was one of a pair used in playing that game.

*Science News Letter, July 18, 1931*

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Experts can tell how hot a flame is with surprising exactness by noting the deepness or paleness of the color.

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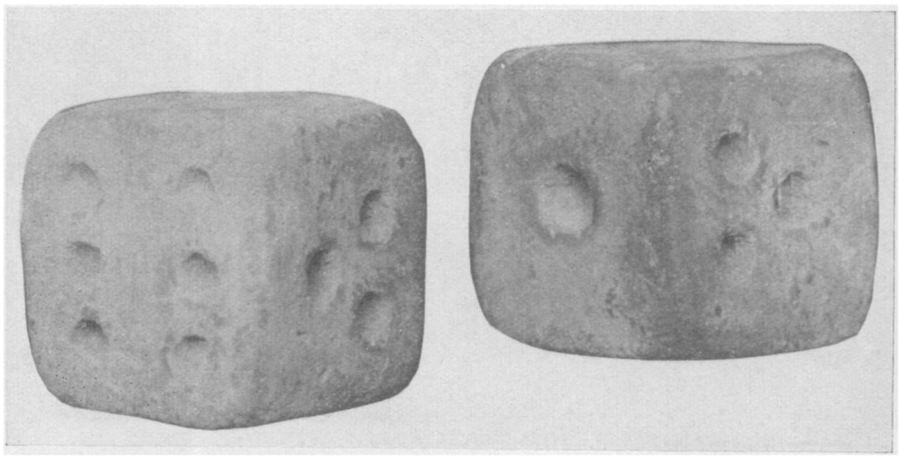
Synthetic oils from paraffin wax are less affected by varying temperatures than any known natural oil.



COME SEVEN!

*Two views of the ancient die found at Tepe Gawra, Mesopotamia, by Dr. E. A. Speiser. It dates from about 2750 B.C. and may have been used in playing backgammon.*

PHYSICS

# Invisible Alpha Particle Path Bent by Great Magnet

ALPHA PARTICLES are the hearts of helium atoms. They are so small that nobody has ever seen them.

Yet, in spite of their diminutive size, M. Rosenbloom, of the Faculty of Sciences of the University of Paris, has found it necessary to use an electromagnet built of coils of wire a yard in diameter and operated by a small power plant to make them change the direction in which they are traveling.

With this apparatus for bending the paths of the swift alpha particles, the French scientist has found that the particles from some radioactive atoms like radium consist of distinct groups of equal speeds, the speeds of the groups, however, being different. This gives a means of finding out the structure of the intensely small core of the atom, which is the present goal of atomic physical research.

The most typical mode of disintegration of radium and other radioactive bodies is by the expulsion of alpha particles with great velocity and energy. These are helium atom cores. It has long been known that from a given element the helium particles appear to be expelled with the same characteristic speed. This indicates that the alpha particle occupies a certain definite energy level in the atom which is defined by so-called quantum conditions.

In the radioactive thorium-C atom, which has now been found to consist of a number of distinct groups each characterized by a certain speed, Lord Rutherford has pointed out, these groups disclose the existence of several energy levels within the nucleus.

Ordinary electromagnets are not able to cause sufficient deflection but with the assistance of the magnet Prof. Aime A. Cotton, at the Sorbonne, can bend the alpha particles round in a semi-circle and separate them out.

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