

HISTORY OF ASTRONOMY

Egyptians Studied Astronomy With a Piece of String

THE LATEST giant telescopes trained on the stars are marvels of intricate mechanism. Even the amateur astronomer buys his small telescope or builds one as carefully as he can according to expert directions.

Looking at such things reminds Sir Flinders Petrie, England's grand old man of Egyptology, that science is so mechanized that we hardly realize how results could be obtained before artificial means were introduced.

Yet, working with sticks and strings thousands of years ago, man began his determined effort to orient himself. He wanted to know where he stood on the earth; where he was in time; what was the relationship of this world to the moving bodies in the heavens.

"The recording of time," writes Sir Flinders in the scientific journal, *Ancient Egypt and the East*, "is perhaps the most elementary matter. This was done in Egypt by cutting notches as a tally on a stick, and in Italy the years were marked by a priest driving a fresh nail into the doorpost of the temple. The divisions of the day are marked by the Egyptian peasant of today by putting a stick upright in the ground, and marking where its shadow falls. It seems probable that the scientific Egyptians of the early pyramid age had used the pendulum for time division, by the cubit of land measure, 29.157 inches, swinging 100,000 times a day."

The early observers recognized the number of days in a year by counting the days elapsing until the sun rose again in the same direction. Semitic science went wrong in reckoning lunar time by looking for the new moon at sunset. The accurate way was to measure the lunations and days between eclipses, which, Sir Flinders says, was probably the Babylonian method.

The Egyptians found the truth north, Sir Flinders believes, by hanging up a high plumb line and observing it and the pole star, always visible above the horizon, through a narrow slit. They found the true north midway between the two extreme positions of any star near the pole.

Long narrow trenches lying north and south to the east of Khufu's pyramid

were probably used by the Egyptians to determine just when a star passed the meridian, or the point directly overhead. A cord was stretched true north and south about 20 feet above the water-filled trenches, and the observation consisted in noting the instant when the reflection of the stars cut the cord.

In such ways, says Sir Flinders, astronomers made important observations without any apparatus but a piece of string. The main difficulty was in measuring time, and if the early dynasties knew the pendulum the use of it was certainly lost in after ages. The different forms of time-telling by water dropping or flowing, as a clepsydra, are too vague for any exact result, and this held man back from any exact knowledge or record except that of eclipses.

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PUBLIC HEALTH

Carbon Monoxide May Cause "Mystery" Accidents

INSIDIOUS carbon monoxide gas seeping from engines into automobiles may be the cause of many unexplained accidents. In 1933, there were 58,900 unexplained automobile accidents in which cars driven off the roadway for no apparent reason killed 3,260 persons and injured 53,240.

During tests at Hartford, Conn., conducted in cooperation with the Connecticut Motor Vehicle Department and Department of Health, air within typical "run of the road" automobiles, such as police cars, private passenger cars, busses and trucks, was examined for its carbon monoxide content.

The conclusion was that fully 7 per cent. of motor vehicles when in operation contain enough carbon monoxide to cause the collapse of occupants. There was probability of serious accidents if drivers were exposed to these dangerous atmospheres four or more hours. At least 60 per cent. of automobiles tested contained measurable quantities of the gas when in operation.

The first symptoms of carbon monoxide poisoning include headache, dizziness, smarting eyes, drowsiness and nausea, which result in slowing down of mental processes. The report of the test thus holds that the gas which comes largely from poor combustion and escapes through leaking exhaust pipes may also be partly responsible for some of several thousand accidents attributed annually to poor driving judgment.

The research, conducted by the Travelers Insurance Co. and the Cities Service Oil Co., found that it is possible for a dangerous concentration of carbon monoxide to accumulate within a car which is following another at the usual trailing distance. The gas may enter the trailing car whether its windows are open or shut.

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Excavation of the Circus Maximus, scene of spectacular chariot races in ancient Rome, may be attempted.

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