

## ASTRONOMY

# Sun Not Much Older Than 7.55 Million Million Years

**T**HE AGE of the sun cannot be much more than 7.55 million million years. So declares Dr. Ludwik Silberstein, research physicist of the Eastman Laboratories at Rochester, N. Y., in *Scientia*.

Dr. Silberstein bases his conclusions on a mathematical study of astronomical researches made in part by other scientists. The luminosity of a star is proportionate to the cube of its mass. That is to say, a star twice as big as our sun gives off not merely twice as much radiation, but eight times as much. The older a star grows, the smaller it gets, because it is all the time converting its matter into energy and radiating the energy away. But the smaller it gets, the more slowly it shines itself away, by that same rule of the cube. When the sun shall at last have dwindled to one-half its present mass, it will be radiating only one-eighth as much energy.

## 4,200,000 Tons a Second Lost

The mass radiated away by the sun at present is 4,200,000 tons per second; the sun's mass in tons is expressed by a 2 followed by 27 naughts, Dr. Silberstein says. The application of a suitable mathematical formula to these two figures gives 7.55 million million years as the sun's age.

"If we know the present mass of a star," Dr. Silberstein continues, "the equation enables us to predict what its mass will be at any future time and, reaching back into the past, to tell how much time has elapsed since the star had a mass so or so many times greater than now. Thus, for example, if we ask what time has elapsed since our sun had twice its present mass (if such ever was the case), the answer is 5.66 million million years. Similarly, for the time since the sun had 4 times and 10 times its present mass (again if this was ever the case) we find 7.08 and 7.47 million million years respectively.

We see, incidentally, that these figures differ less and less from each other and approach very rapidly indeed the original time-coefficient, viz. 7.55 million million years, and the remarkable thing is that even if we asked about a hundredfold, a thousandfold mass, and so on, we would never exceed that length

of time (T) which thus is the upper limit of the sun's age, if we are yet to keep to our concrete example. In plain English, the sun as such cannot be older than 7.55 million million years. If we asked what mass the sun had before that time, say 8 billion years ago, the equation would give us an absurd answer, an imaginary mass, as a mathematician would put it"

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## ARCHAEOLOGY

## Stone Ceremonial Lamp Found in Alaska

**A** STONE LAMP, with a human figure in an attitude of prayer carved in full relief in the bowl, is the prize of prehistoric Eskimo art brought back from Alaska by a woman archaeologist. The archaeologist, Miss Frederica de Laguna, has just returned from an Alaskan expedition to Kachemak Bay, Cook Inlet, where she excavated a prehistoric village site for the University of Pennsylvania Museum.

The stone lamp is the outstanding find of the summer's digging, in Miss de Laguna's estimation. Five other lamps with carved human figures inside them have been found in Alaska. This is the first to be unearthed from its old

## PSYCHOLOGY

## Rats More Clever Than Humans At Escaping From Labyrinth

**R**ATS when lost in a labyrinth find their way out faster and more intelligently than many human beings would under similar conditions, Prof. John F. Shepard, University of Michigan psychologist, told the National Academy of Sciences. But he observed that there are rat geniuses and morons, just as among men and women there are many different grades of intelligence.

Ears aid rats in their repeated travel-



AT PRAYER IN A LAMP

resting place by a scientific expedition. The origin of the lamps has been a matter of mystery, for stone carving has not been considered an Eskimo technique.

"The carved lamp, together with a small, plain one, were found in a house pit," said Miss de Laguna, describing the discovery to Science Service. "The house was evidently in ruins at the time the lamps were cached.

"The decorated lamp must have been made for ceremonial use. The figure of the man, sitting with hands spread out in front of him, with face upturned and closed eyes, is evidently in an attitude of prayer. The carving of the features is very fine, and the lamp itself is beautifully finished."

The lamp was unearthed in a thick shell heap so close to the sea that high tide washes over the place. The land there has sunk, but in earlier times it was the site of a series of five different settlements.

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ings through a maze of blind alleys and unusual turnings. They seem to remember the sounds of the floors over which they scurry. Prof. Shepard was forced to insulate the rat-runs with sand and rubber to make them sound alike. Although cheese is the proverbial rat bait and rats do like it, Prof. Shepard found that rats do not have a keen sense of smell and their noses do not guide them to cheese-baited traps.

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