

tying knots in a string held over the wart and burying the string. Another boy said it was better to spit on the piece of string and put it in your pocket; then when the string rots, the warts drop off. Another boy's remedy in the wart symposium was to take as many beans as you have warts and put them in a bag. Drop the beans along the road, and when some one finds them, he will have your warts.

These are fair samples of literally scores of rites for removing warts. A book on the folk lore of a single county in Illinois includes over a hundred wart remedies, mainly magic.

Smells are still regarded as powerful to ward off disease, by Americans who should know that "germs can't smell." The asafetida bag is not entirely obsolete. An occasional child wears one to keep off disease. The argument that the asafetida bag works by keeping other children—who may have diseases—at a distance is weakened when you reflect that children with colds and some other ailments have temporary loss of their sense of smell.

Camphor is a supposed germ-killer. So are onions. Actually, carrying either one around with you cannot kill germs, nor can eating onions keep germs away.

Dr. H. W. Haggard of Yale, chairman of the committee planning the superstition exhibit, once commented: "Most people secretly believe in the occasional accomplishment of the impossible, and secretly believe that scientists who scoff at their beliefs may be wrong."

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Science News Letter, March 4, 1939

ARCHAEOLOGY

Seven-Foot Statue Shows Pharaoh in Role of Osiris

See Front Cover

SEVEN feet tall, a majestic, high-hatted stone figure of Pharaoh Merenptah of the 13th century B. C. has come to rest in Boston's Museum of Fine Arts. It is pictured on the front cover of this week's SCIENCE NEWS LETTER.

Pronounced excellent of its type—showing an Egyptian king in the role of Osiris, god of the dead—the statue once adorned a temple at Armant on the west bank of the Nile. The statue and a number of others were found where they had been ceremonially "buried" by ancient Egyptians who, at one time, rebuilt the temple.

Science News Letter, March 4, 1939

ASTRONOMY

Hydrogen Is Fuel of Stars And Helium Is the Ash

Professor Russell Describes Process by Which Sun Liberates Its Energy; Empty Space Is Really Filled

HYDROGEN is the fuel and helium is the ash of the stellar engine which produces the vast amounts of energy liberated by the stars and the sun through the ages, Prof. Henry Norris Russell, Princeton astronomer, told a symposium on astrophysics in Philadelphia.

The meeting, sponsored by the American Philosophical Society and the Franklin Institute, summarized current knowledge of stars and the planets.

Speeding bits of hydrogen atoms are now believed to bring about spontaneous disintegration of chemical elements and release vast amounts of energy, Prof. Russell explained.

Crediting Prof. H. A. Bethe of Cornell University with having developed current concepts on the source of stellar energy, Prof. Russell said that as the various elements were broken up they gave off helium as the end product. Thus helium—the light stable gas—is the "ash" of stellar energy production.

From purely mathematical theories on the behavior of atomic nuclei when they are smashed by other atomic particles inside the sun and star, it is possible to explain why many of the lighter elements—lithium, beryllium and boron—appear not to be present in the sun to any great extent. Long since they have been transmuted into helium, giving off radiation.

It is only when carbon in the sun is considered that the destruction of the elements changes. For carbon, explained Prof. Russell, a whole series of transmutations occur which release large amounts of gamma radiation and which end up by recreating the carbon again along with more helium. Carbon, in effect, acts as the catalyst.

The sun will keep on shining for another 10,000,000,000 years, Prof. Russell estimated, and each 100,000,000 years it will grow enough hotter to raise the earth's temperature by one degree Fahrenheit.

Thus if nothing happens to the earth in the meantime it is going to be about 168 degrees on the earth in the year 100,001,938 A.D. instead of 68 degrees average as it is now. These supertropical temperatures would probably melt all the

ice caps at the earth's poles, raise the level of the ocean many feet and have other equally intriguing implications.

Science News Letter, March 4, 1939

"Empty" Space Misnomer

THE NEWEST studies of astronomy show that "empty" interstellar space contains about as much matter as do all the stars and planets, Dr. Theodore Dunham, Jr., Mount Wilson Observatory astronomer, told the symposium on astrophysics in Philadelphia.

Laboriously scientists are tracking down the identification of this cosmic dust for it may have profound implications on the nature of the universe.

The dust may be either the beginning or the end of stellar bodies. Dr. Dunham pointed out. It may have been cast off into space by the stars through the pressure created by their radiation, or it may—in the reverse sense—be the material from which the stars were formed and which they may still be gathering up as they push their way through space.

Using a single bright star known as X₂-Orionis for a beacon light, astronomers have been identifying the chemical elements in the cosmic dust with spectrographs attached to the great 100-inch Mount Wilson telescope. Sodium, two kinds of calcium, potassium and titanium have already been identified from spectrum lines and there are seven other lines which are known but not yet identified.

It turns out, Dr. Dunham said, that between the earth and the star there are probably 89,000,000,000 atoms.

Preponderantly these atoms are those of hydrogen for it is found that in each cubic meter in a path between the earth and X₂-Orionis there are:

Electrons	7,000,000
Hydrogen atoms	7,000,000
Sodium	150
Potassium	5
Calcium	3
Titanium	.03

These estimates are for only this single star, Dr. Dunham emphasized. Many more "soundings" of interstellar space will be needed before the figures can be applied to space as a whole.

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