



Scale of Centimeters

**SECOND SKULL OF SINANTHROPUS**

To provide "most valuable clue yet unearthed for solving the mystery of early man"

## ANTHROPOLOGY

## Second "Peiping Man" Skull Found to be That of Young Man

Noted British Anthropologist Predicts Discoveries Will Throw Flood of Light on Nature of Primitive Brain

**A** SECOND skull of Sinanthropus has been recovered from material taken out of the limestone caves at Choukoutien, about 40 miles from Peiping, where the original "Peking Man" skull was discovered by a young Chinese geologist, W. C. Pei, last December.

The material containing the new specimen was removed from the site last October to the Geological Survey's cenozoic research laboratory, located in the Rockefeller Foundation Hospital at Peiping, and was carefully worked over under supervision of the laboratory's honorary director, Dr. Davidson Black, who reported the discovery to the Chinese Geological Survey.

### First Was Skull of Girl

In July several uncrushed fragments of bone were revealed. When chiselled out of the hard matrix and pieced together these were found to represent the greater part of the vault and a portion of the base of a Sinanthropus skull which evidently belonged to a young adult male.

Dr. Black is now inclined to believe that the skull found last December was that of an adolescent girl, though he admits this is pure surmise based largely on the general shape of the forehead. The new specimen lacks the general pentagonal shape usually associated with female skulls.

According to Dr. Black, the second skull, though somewhat fragmentary, yields valuable information concerning certain parts, including the sphenoid and nasal bones, which were represented in the previous find. Compared with the latter it also presents slight but significant differences in shape and size which Dr. Black thinks may possibly be due to a difference in sex.

While the proportions of the two skulls are in general the same, there are some marked variations. In the new specimen, for instance, the frontal bulges are not so prominent nor is the average thickness of the skull so great as in the first.

A complete comparison of the two skulls will be made when the prepara-

tion of the first specimen has been completed. This will probably take a couple of months, Dr. Black indicated.

Just where the Peking man fits into the scale of human evolution is not yet entirely certain, so perhaps the second specimen will help answer this question. It is generally agreed that he lived considerably after the Java ape-man, *Pithecanthropus erectus*, who probably walked the earth some half million years ago. Dr. Black, who first described the Chinese specimen, has expressed the opinion that it is older than the Neanderthal man, whose age is estimated at about 40,000 years. Dr. Hrdlicka, of the Smithsonian Institution, however, last spring announced his opinion that the Peking skull was very similar to the Neanderthal specimens, so that it would be about the same age.

### Discoveries Unique

These fossils of Sinanthropus will provide the most valuable clue yet unearthed for solving the riddle of early man, Prof. G. Elliot Smith, noted British anthropologist, predicted last week in a lecture before the Chinese Geological Society. Prof. Smith is in Peiping at the invitation of the Chinese Government for the purpose of studying the Sinanthropus specimens.

Although the report on the cast of the braincase obtained from the second skull is not complete, Prof. Smith described the discoveries as unique in the whole history of anthropology and predicted that the evidence would throw a flood of light on the nature of the primitive brain.

What Prof. Smith's exact conclusions will be are eagerly awaited by the scientific world due to the controversy that is raging over the birthplace of mankind.

*Science News Letter, October 4, 1930*

## MEDICINE

### Ultra-Short Radio Waves Kill Poison of Diphtheria

**U**LTRA-RADIO waves, shorter than those commonly used to send messages, are able to weaken materially the potent poison elaborated by the diphtheria bacillus, Drs. Ralph R. Mellon, Waclaw T. Szymanowski and Robert Alan Hicks of the Western Pennsylvania Hospital Institute of Pathology here have reported to *Science*.

The wave length used was 1.9 meters. The effect of temperature was carefully ruled out by using special cooling devices and by careful control tests. The strength of the poison, or toxin as it is

called, was so weakened that after six hours' radiation, the amount of toxin that would kill an animal was only equal to half of one dose of the strength and amount used in skin testing for diphtheria.

This work is the modern proof of a discovery made thirty-five years ago by two French scientists, D'Arsonval and Charrin. They found that high frequency currents of 200,000 cycles per second diminished the strength of diph-

theria toxin. The frequency in the modern work was 158,000,000 cycles per second. Both the Pittsburgh investigators and D'Arsonval found that the greatest action of the rays was obtained when a film of the toxin was exposed to the radiation. Possibility of using this irradiated toxin as an immunizing agent was suggested by D'Arsonval and is considered by the Pittsburgh men worth investigating further.

*Science News Letter, October 4, 1930*

## ASTROPHYSICS

## Ten Million Volts Light Sun Like Huge Electric Lamp

### Annihilation of Matter as Source of Tremendous Power Forms Basis for New Theory of Naval Research Physicist

**E**LECTRICITY, under a pressure of ten million volts, about the same as that of a good lightning flash, is constantly flowing from inside the sun into outside space, and so "heats the solar atmosphere to incandescence in a manner precisely like the filament of an electric light is heated by the electricity flowing through it." This is the new and startling theory that has been developed by Dr. Ross Gunn, research physicist of the U. S. Naval Research Laboratory. Dr. Gunn has discussed these implications of his theory with a representative of Science Service. A full technical report of his conclusions will shortly appear in *The Physical Review*.

Dr. Gunn pointed out that the rotation of the sun is peculiar. Not only does its equator turn faster than regions near its poles, but the rotation of the same part varies by a few per cent over a period of about six years. A similar regular change occurs in the amount of light that the sun gives off.

#### Good Lightning Voltage

"My study of the electric and magnetic phenomena in the sun's atmosphere has led me to an explanation of these observed variations and given a great deal of valuable numerical information," Dr. Gunn stated. "I don't need to go into technical details, but the way that we have observed the sun to rotate requires us to believe that it is constantly throwing off large amounts of electricity. This current is so large

that it wouldn't mean much to the layman for me to express it in numbers, but the sun is caused to glow by a voltage equivalent to a good lightning discharge, about ten million. It is this continually flowing current that heats up the sun like the filament of an electric light, so we might say that the sun acts like a gigantic electric light radiating its energy into space. It is the ultimate power house and stimulant of the solar system.

"We can also calculate the total power required to light the solar electric lamp. The entire wealth of our nation would buy enough electricity, at present rates, to light the sun for a millionth of a second. Yet the sun has been burning this way for at least a million years, and perhaps longer, so you might ask where the energy comes from.

"The latest researches seem to answer this question and it seems almost certain that the energy comes ultimately from the annihilation of matter. In the past few years physicists have come to believe that mass and energy are the same thing in different forms. Therefore, if processes take place in the sun which cause mass to vanish and light or electrical energy to appear, we need not be greatly surprised. This view is consistent with many other known astronomical facts. It is fairly certain that by means of some subatomic process the sun converts a million tons of its material into energy every second.



DR. ROSS GUNN

*He thinks the solar atmosphere is heated to incandescence by electricity*

"This loss of mass is very great, but it is small compared with the sun's total mass. It is estimated that not until a million years have elapsed will its size be appreciably affected. Therefore, it seems likely that the sun will continue to shine as it does now for a great many generations, unless some new phenomenon appears and upsets the domestic economy of the old Egyptian god!"

*Science News Letter, October 4, 1930*

## CHEMISTRY

## New Sulfur Soap Found to Destroy Machinists' Boils

**D**R. EMORY R. HAYHURST, professor of hygiene at Ohio State University, has reported to the American Chemical Society the discovery of a new kind of soap, containing colloidal sulfur, that may come into wide use.

From a new method of gas purification there is obtained a very fine grade of pure sulfur as a by-product, yielded as a product resembling a moderately moist clay. It was found that men working with the process who made use of the sulfur as a hand cleanser obtained beneficial results, so Dr. Hayhurst tried it as a soap made with an ordinary castile base.

He found that it produced no harmful effects but was definitely beneficial. Its use was tried in a machine shop where "machinists' boils" had been common for five years, and within a few months every workman was entirely free of the trouble.

*Science News Letter, October 4, 1930*