AFRICAN COUSIN OF JAVA APE-MAN?

One of the African skulls, after the fragments had been pieced together. The Pithecanthropus-like profile, with its low arch, massive eyebrow ridge, and heavy back portion, is easily recognizable.

ANTHROPOLOGY

Fossil Bones May Belong To Kin of Java Ape Man

ASSEMBLY of fossil bones found by a German explorer in East Africa, may reveal their possessors to have been close relatives of *Pithecanthropus erectus,* the famous Java Ape Man.

Fragments of two skulls have been assembled by Dr. Hans Weinert of Kiel, Germany. The remains were discovered in 1935 by Dr. F. Kohl-Larsen in the gravel at the northeast end of Lake Eyassi, Tanganyika Territory, thousands of miles away from the Ape Man it is said to resemble so closely, and in another continent altogether.

They were found associated with bones of a number of animals, antelopes, pigs and hyenas resembling those now living in the same country, but completely fossilized. It is maintained, therefore, that they date back about 100,000 years.

The animals found with the human bones also give an idea of the appearance of the East-African highlands at the time when Eyassi Man lived. The country then was an open savannah interrupted by scattered trees and by groves, and not so dry as it is at present.

The task of assembling the fragments was a very difficult one. There were about 200 of them, and, as Dr. Weinert says, a piece larger than a silver dollar was something extraordinary. Still the result has revealed a good deal of the skull cap of one, and part of the face of a second individual. The critical examination is still in progress.

Science News Letter, January 28, 1939

ETHNOLOGY

America Was News to Sixteenth Century China

THERE is an old story that dies hard, to the effect that a Chinese Buddhist monk discovered Mexico a thousand years before 1492.

Competent scientists and historians find nothing to uphold such a yarn. Yet it persists. A United States Congressman recently inquired about it at the National Library in Peiping.

In the circumstances, there is public interest in a new check-up on the facts by Dr. L. Carrington Goodrich, of Columbia University, reported to the *Geographical Review*. America, it appears, was news to China in the sixteenth century.

Syphilis was first noted in China in 1505; corn was accurately described there in 1573. The corn must have come from America, and the disease possibly did, though medical historians disagree keenly on the origin of syphilis. In any event, Chinese did not think of these things as betokening a strange New World.

America burst upon cultured Chinese in 1584, when Jesuit missionary Matteo Ricci, assisted by a Chinese interpreter, prepared a world map including the New World.

Dr. Goodrich says, "The map caused a sensation, not only in South China, but in the great centers of culture in the Yangtze Valley as well."

Several editions of the map were needed. In 1608 the emperor demanded a dozen copies.

Chinese must have got a strange first impression of the New World from notes on the map. Regarding Mexico, they were simply told:

"Mexico produces birds' feathers of divers colors. The people use them to make wonderful pictures: landscapes and portraits."

Patagonians were "not more than ten feet tall."

All this, as Dr. Goodrich emphasizes, does not mean that Chinese influences did not reach America, carried by Asiatic wanderers across Bering Strait. But there was no Chinese Columbus, and no knowledge of America's people in China until after 1492.

Science News Letter, January 28, 1939

PHYSICS

Magnetic Forces Aid Swedish Traffic Control

THE INVISIBLE but very real forces of magnetic fields are the best means which soon may be used in Sweden to solve that perennial traffic problem of getting vehicles from side streets across a main arterial highway with a maximum of safety and a minimum of delay to the main traffic flow.

From the American consulate at Stockholm comes word that a "sensitive road" signal is expected soon to be installed that solves the problem.

Buried in side streets near arterial highways would be covered electromagnets which radiate a small magnetic field. As automobiles, horse drawn vehicles,

motorcycles, and even bicycles and handcarts approach the intersection, the steel in them changes the magnetic field.

This magnetic change trips off the relay mechanism which turns the traffic light at the corner from red to green. This green signal lasts from 10 to 15 seconds and then gives the right of way back again to the main highway.

Should a vehicle from the side street be immediately followed by another, the latter is not given the green light before a minimum time for the green light in the main street has expired. In this way the traffic on the main highway can be prevented from being blocked by a stream of vehicles from the side street.

The only kind of vehicle which will not actuate the magnetic signal system is one which contains no iron, steel or other magnetic material.

An additional use of the Ericsson system, as it is known, is for an automatic traffic counter. The registering apparatus drives a reel of paper upon which it draws columns proportionate to the size of the traffic flow for a given time interval.

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GEOLOGY

Siberia's Frozen Ground Is Survival of Ice Age

THE ICE AGE is not a thing of the past. It survives underground, in the permanently frozen soil of Siberia and other high-latitude lands, where summer thaws out the soil to a depth of a few inches or a few feet, permitting plants to grow, while beneath, to an unknown depth, are earth and rock that have been ice-bound for a million years.

How this survival of the Pleistocene makes trouble for present-day engineers and other practical people was told at the meeting in New York of the Geological Society of America by Prof. George B. Cressey of Syracuse University.

All heavy construction in this area, undertaken by the Soviets, has to be built on piling. To soften the earth enough to permit the piles to be driven, steam jets have to be used. At one place, Igarha, a lumber mill engine stands on wooden "roots" that go down nearly 70 feet to bedrock.

Water mains give particular trouble. If the engineers cannot find unfrozen ground of sufficient depth, they have to lay the pipes in board-lined trenches, and along with the water mains they must install steam pipes to keep the water from freezing, with the whole filled in with sawdust or moss.

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ASTRONOMY

Limits of Universe Still Beyond Astronomers' Reach

Calculated Curvature of Space Much Too Confined For Known Density of Matter, Scientist Declares

ASTRONOMY has reached a temporary impasse in its attempts to figure out the curvature of space and the limits of the universe, said Prof. Howard P. Robertson, mathematical physicist of Princeton University, in the opening address of the 1939 Sigma Xi lecture series at Louisiana State University.

On the basis of present observation, relativity theory of the universe has led to a model of space which has so large a curvature that its limits—if you think of it as a huge ball—are much too confined, Prof. Robertson said.

Not Enough Matter

By Einstein's relativity theory curvature of space is linked with the density of matter within that space. To bring about the curvature indicated by present knowledge matter would have to have more than 60 times the density now observed by telescopes.

Moreover, continued Prof. Robertson, if the universe is thought of as expanding, the most distant nebulae would have had to be close together at some time about 1,000 million years ago. This vast time is much too short, however, for rocks are known on earth which are probably twice as old as this.

And the final dilemma of astronomy is that if the limits of the universe correspond to a sphere with radius of 500 million light years, then astronomers are now looking through present telescopes and seeing nearly to the ends of space.

With the 100-inch Mt. Wilson telescope, Prof. Robertson pointed out, Dr. Edwin Hubble has detected distant nebulae which are about 500 million light years away.

Few people seriously believe that astronomers are now looking to the end of space and believe that the new Mt. Palomar 200-inch telescope, when it goes into operation, will open new vistas for astronomy. Yet if space has limits now predicated this would not be so.

"We seem to have come to an impasse with this line of attack; I find myself unable to accept the model to which such so large a curvature almost inevitably leads, and unwilling to postulate *ad hoc* some new principle to lift myself over the difficulty," said Prof. Robertson. "Looking back over the assumptions involved in the determination of the present value of the curvature, we find that at many points the conclusion is sensitive to even relatively slight uncertainties; above all, the method is highly sensitive to lack of uniformity in the distribution of the nebulae, whether this be due to fluctuations in the statistical material or to large-scale structural features of the nebular system.

"That density gradients, of such a magnitude as to raise considerable doubt concerning the validity of the method, do in fact exist in regions closer to us than those emphasized in Hubble's surveys, is clearly shown by the recent survey of Shapley of some 75,000 nebulae brighter than the 18th magnitude in southern galactic latitudes.

Uneven Distribution

"On arbitrarily dividing all his material into the eastern and western hemispheres, Shapley finds that the number of nebulae per square degree in the former exceeds that in the latter by between 40 and 50 per cent; similarly he finds that the number of nebulae per square degree in the central portion of the plates taken from the southeast quadrant is more than twice the corresponding number for the northwest quadrant even although he is here dealing with a total of almost 20,000 nebulae.

"The existence of similar density gradients along the line of sight at the distances involved in Hubble's surveys might easily mask or distort the curvature effect which we are seeking; until more positive evidence on this point is available, it would therefore seem expedient to seek our additional datum elsewhere—perhaps most hopefully in an accurate determination of the deviations from the linear velocity-distance law at greater distances, for this effect should be much less sensitive to departures from the distribution implied by our homogeneous models."

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