

a warm, moist climate, and the flints were of a type elsewhere associated with the earliest finds of Neandertal men.

The two together are believed to indicate that Palestine man probably lived during a warm period when the glaciers of northern Europe had retreated for the time being, which puts him back among the earliest of human beings whose bones and cultural remains are at all well known.

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## ARCHAEOLOGY

## Chinese of New Stone Age Lived Like Indians of West

CHINESE of Shansi province, in northern China, were farmers in the New Stone Age as they are farmers now. They lived primitively, and some elements of their culture are suggestive of those of the American Southwest, though there is no direct connection between the two.

Explorations by archaeologists of the Freer Art Gallery, a department of the Smithsonian Institution, have shown how Chinese lived and worked among the fine-soiled loess bluffs in the Shansi region, some 2,000 years ago. Their findings are incorporated in a report, just published, by C. W. Bishop, associate curator of the Gallery.

They lived in round pit dwellings, as some of the ancient Southwestern Indians did. These Chinese pit dwellings averaged ten feet deep, were shaped like bee-hives, and had plastered walls. Entrances were at the top. Modern natives of the district dig their dwellings, like artificial caves, into the sides of the loess bluffs.

They cultivated the soil with stone and shell hoes, and used stone and shell in making their arrowheads. Other materials used in their tools were horn, bone, and presumably wood.

Their principal crop seems to have been millet, still widely used for food in northern China. Their only domestic animals were pigs and dogs.

They knew the arts of spinning, weaving, basketmaking and pottery. In the latter craft, they first made pots by the "coil" method, but in the later days of the New Stone Age developed some kind of potter's wheel. Hemp seems to have been their principal, perhaps their only, source of fiber for cord and cloth.

Bones of the dead, found piled helter-skelter, suggest that they may possibly have practised ceremonial cannibalism.

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## GEOLOGY

# Continents Rise and Sink Through Long Cycle of Ages

## Evolution of Grass Called Greater Event Than Raising of Highest Mountains

GRASS was glorified above earth's highest mountains, in the address that opened the annual meeting of the British Association for the Advancement of Science. The speaker was the Association's president, Dr. W. W. Watts, professor of geology at the Imperial University of Science and Technology, South Kensington.

"It is perhaps not too much to say that the magnificent outburst of energy put out by the earth in the erection of the Alps, Andes, and Himalayas in Tertiary times was trivial in its influence for man's advent and his successful occupation of the earth in comparison with the gentle but insidious growth of 'mere unconquerable grass' and its carpet of 'wise turf' which in some form clothes by far the greater part of the land of the globe," Prof. Watts declared.

The speaker based his estimate on the importance of the grasses on the evolution of mammals, particularly those used by man for food, clothing, burden-bearing and many other purposes. Before grass evolved, comparatively late in earth's long history, herbaceous animals were browsers, and mostly solitary. When grass came, some of them modified their habits to feed on it, and in time they became gregarious, thus forming the foundation of flocks and herds even before man appeared on the scene to claim leadership of those flocks.

In the course of his address, Prof. Watts undertook to find a geological mechanism to account for the tremendous changes in the extent of the sea during the course of geologic time. In some ages, the sea covers most of the land areas; in others, it recedes until it occupies only the true ocean basins themselves. The present is a time of such recession.

The explanation offered is that the continental land masses float, like great rafts of rock, on an underlying layer of rock of a different kind. This underlying massive stratum passes through phases of solidification and liquefaction, as a lake in northern lands is ice in winter and water in summer. During the liquid

phase, the continental rock rafts sink lower, and the sea partially covers them. During the solid phase, the masses rise higher, and the sea drains off again.

These phases are very slow, the time from change to change being measurable in scores or even hundreds of millions of years. Their comings and goings are due to the development of internal heat in the underlying stratum, caused by the radioactivity of the rock material itself. When enough heat has accumulated, they liquefy after a period of slow "boiling up" lasting many ages, they cool and solidify again.

At present the earth is in the "solid" phase, with the continents floating high.

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## PSYCHOLOGY

## Spiritist Mediums May Be Split Personalities

ARE SPIRITIST mediums persons with dual personalities? Are their "controls," the shadowy personalities that purport to give them messages from the other world, merely their other, "opposite" selves?

A suggestion that this may be the case was offered before the meeting of the British Association for the Advancement of Science, by Whately Carington, well-known English psychologist.

Mr. Carington subjected a considerable number of mediums, both in their normal condition and in the trance state, to what psychologists call the word-association test. This consists in the examiner saying one word, and the subject answering with the first word that comes into his mind. The answer gives a picture of the mental state of the subject.

Thus, to the word "ball," a small boy might answer "bat," while a debutante might answer "dance," and a soldier "cartridge."

A person with dual personality, who is his "own opposite" in the second mental state, might give opposite reactions to the same test word. Take the most fa-