

touches "keep well for my sake," and "I went to Babylon but did not see thee; I was greatly disappointed," appear near the dawn of letter writing.

As for the industrial revolution, brought in by metals, Prof. Speiser says:

"When copper first finds its way into the principal centers of the ancient world, late in the prehistoric period, no one can suspect that the first great industrial revolution will be made of just this sort of reddish stuff.

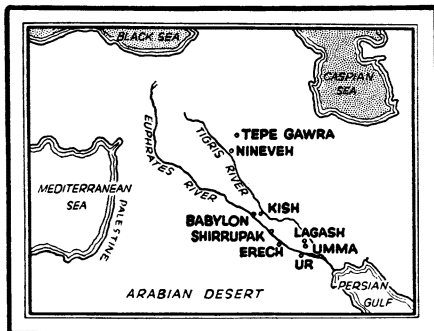
"To the craftsmen who hammer it into shape, the metal is merely a costly substitute for stone; a rarity and nothing more, incapable of disturbing the even tenor of contemporary life.

"But at length the discovery is made that when the metal has been reduced and then remelted, it can be cast so as to yield any desired shape. No longer like rigid stone, the copper becomes pliable and strangely responsive. In other words, some one has stumbled upon the basic principles of metallurgy.

"Event follows upon event with alarming rapidity. Home industries receive a powerful impetus. Foreign contacts acquire a new meaning. Stone users are no match in battle with the wielders of the new copper weapons. Possession of the metal becomes a stark necessity, and, since the known mines are limited in number and restricted to a few locations, there is a mad scramble to control the sources of supply. Distances are disregarded in the search for new deposits. In the heat and dust of this upheaval whole nations are shifted and transplanted almost overnight.

"When the smoke has at last cleared it is an entirely different world that faces the unknown future; a restless world constantly on the move. Life is no longer, as it has so long been, peaceful and leisurely and on the whole uneventful."

Describing the scenes as they are eventually, in 1935, Prof. Speiser says:



SCENE OF ESCAPE

The Land of the Two Rivers, Mesopotamia, where man escaped from the chrysalis stage of being prehistoric, and stepped out into the enlightened era of history.

"You cannot mistake the main outlines of the historic revolution, once you have been fortunate enough to excavate such a place. First you are impressed by the beauty and restraint of the prehistoric civilizations. Then you come to a place where these come to an end. A few feet of earth, and you have ascended to a different world. Across that enormously significant border are the foundations of modern life. Great wealth and industry and skill, and with it all a feeling that everything is somehow in a state of flux. And the ground is green with copper."

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Science News Letter, April 13, 1935

PHYSICS

Stratosphere's Height Above Earth Found To Be Variable

STRONG evidence that the base of the stratosphere varies greatly in height is contained in preliminary results of the Massachusetts Institute of Technology's recent sounding balloon investigation of weather conditions as high as 15 miles above the earth.

Investigations so far completed of the sensitive instruments carried aloft at St. Louis, Mo., a few months ago indicate that the base of the stratosphere suddenly shifts in height in ranges varying from 25,000 feet (4.7 miles) to 40,000 feet (7.5 miles), according to Prof. Carl G. A. Rossby, meteorology director at the Institute.

Extraordinary fluctuations in temperature, ranging from 36 degrees below zero Fahrenheit to 78 degrees below, were also recorded at the base of the stratosphere, that layer of the atmosphere

where temperature no longer decreases with greater height.

Temperature, humidity and air pressure readings were automatically made during active storm conditions by means of highly sensitive, featherweight instruments carried by the balloons. Swelling as they rose until they burst in the rarefied air of the stratosphere, the balloons then parachuted the instruments to earth where they landed safely in shock-absorbing split-bamboo frames.

Find 29

Of the 35 balloons released last November, 29 were found within 100 miles of St. Louis and returned to the Institute, where their precious instruments have been partially calibrated by Prof. Rossby.

From these studies, scientists hope to learn, among other things, whether violent changes in the stratosphere accompany temperature fluctuations and at what approximate level the greatest cold is found.

While the data previously obtained are still being studied, another investigation, the third, is planned for next week, provided that weather conditions are favorable. Since these investigations are being carried on under active storm conditions, "favorable" in this case, means the worst possible.

Chris Harmantas, who is in charge of field operations, has already left for St. Louis with 36 new sounding balloons.

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