SHORTER ARTICLES.

MAN IN KANSAS DURING THE IOWAN STAGE OF THE GLACIAL PERIOD.

Two miles southeast of Lansing, Kansas, and about twenty miles northwest of Kansas City, a human skeleton was found last spring by farmers in digging a long tunnel excavation for use as a dairy cellar. Soon after the discovery, the place was visited by M. C. Long and Edwin Butts, of Kansas City, the former being curator of the public museum there, for which they obtained the skeleton. Mr. Butts, a civil engineer, made measurements of the excavation, which extends 72 feet into the bluff. Its floor is a nearly level stratum of Carboniferous limestone; and its lower part consists of débris of limestone and earth, while its upper part is the fine calcareous silt called loess. The skeleton was found mostly in a disjointed and partly broken and decayed condition, at the distance of 68 to 70 feet from the entrance of the tunnel, about two feet above its floor, and 20 feet below the surface of the ground exactly above it. Half of the lower jaw was found ten feet nearer the entrance, and a foot lower, than the principal parts of the skeleton, including the other half of the lower jaw.

About a month ago this locality was carefully examined again by Mr. Long and Professor S. W. Williston, of the Kansas State University, and the latter wrote a short article, 'A Fossil Man in Kansas,' which was published in SCIENCE, August 1. Before this article appeared, newspaper accounts had been seen by Professor N. H. Winchell, of Minneapolis, and by myself in St. Paul, which had led us to plan a journey to Kansas, partly for the purpose of examining the Lansing skeleton and the drift section in which it was discovered. We accordingly visited this tunnel excavation, at the house of Martin Concannon, on Saturday, August 9. Professors S. W. Williston and Erasmus Haworth, of the State University, Lawrence, Kansas, and M. C. Long, Sidney J. Hare, and P. A. Sutermeister, of Kansas City, accompanied us. Mr. Concannon, owner of the farm, and his sons, who dug the tunnel and found the skeleton, were also present and explained again all the circumstances of their discovery.

The entire section of the tunnel, which is about 10 feet wide, 7 feet high with arched top, and 72 feet long, was examined; additional bones, as of the hands and feet, were found in the dump outside; and the skeleton, in Kansas City, was inspected. According to Professor Williston's measurements of the bones, the fossil man was about five feet eight inches in stature, and was probably more than fifty years of age, as estimated from the worn condition of the teeth. The skull is dolichocephalic, with receding forehead, strongly developed supraciliary ridges, and a markedly prognathous face and chin. Most of the vertebræ and ribs are wanting, probably because of their decay previous to the deep inhumation by the overlying loess.

The skeleton lay in the upper part of the earthy débris, including many limestone fragments of small size and some as large as two or three feet in length. Just above it, at an irregular line a few inches to a foot higher, a horizontally stratified water deposit of fine loess begins, forms the upper two thirds of the tunnel, and extends up to the surface 20 feet above the place of the skeleton. The loess continues up to Mr. Concannon's house, which is about 100 feet distant, on a slight terrace, about 35 feet above the horizon of the skeleton, and 47 feet above the level reached by the adjoining Missouri river at its highest flood since Mr. Concannon's settlement here 35 years ago. This flood, in 1881, was 25 feet above the lowest stage of the river, which is 735 feet above the sea. The Carboniferous limestone outcrops about 50 feet southeast of the house, and rises gradually in a spur ridge southeastward to a height of 150 feet or more above the river.

Within a quarter of a mile southward, and also within a half mile to the west and northwest, the loess forms uplands about 200 feet above the Missouri; and at the end of the loess deposition it doubtless stretched as a broad floodplain, 200 or 250 feet above the present river level, across the Missouri valley, which has been subsequently re-excavated. The skeleton appeared to all our party to have

been entombed at the beginning of the loess deposition, which would refer it to the Iowan stage of the Glacial period, long after the ice-sheet had receded from Missouri and Kansas, but while it still enveloped northern Iowa and nearly all of Wisconsin and Minnesota. In other words, it belonged to a time before the prominent moraines of these last-named states were formed on the borders of the waning ice-sheet. The very old Kansas glacial drift, including many boulders of the red Sioux quartzite, is very thinly spread on this northeastern part of Kansas, under the loess, and reaches about 30 miles south of Lansing, terminating along an east to west boundary 12 to 15 miles south of the Kansas or Kaw River.

The loess and the Lansing skeleton are of Late Glacial age, but are probably twice or perhaps three times as ancient as the traces of man in his stone implements and quartz chips occurring in glacial gravel and sand beds at Trenton, N. J., and Little Falls, Minn. In the Somme Valley and other parts of France, as also in southern England, stone implements in river drift prove that man existed there before the Ice age, that is probably 100,000 years ago, or doubtless four or five times longer ago than the date of the skeleton at Lansing, Kansas.

WARREN UPHAM.

NOTES ON INORGANIC CHEMISTRY.

IT appears from a recent paper in the *Berichte* that Dr. Marckwald has at last succeeded in preparing a specimen of polonium, the radio-active element associated with bismuth, in such a way that the question of its being a peculiar form of bismuth itself may be set aside. The method used was to take a specimen of strongly radio-active oxychlorid of bismuth, dissolve it in acid, and then precipitate the metal by a rod of pure metallic bismuth. Under these circumstances the bismuth becomes coated with a black deposit, which seems to be nearly pure polonium, inasmuch as the radio-activity of the solution is wholly concentrated in the black deposit, which is itself extremely active. The amount obtained from several kilos of pitchblende residues was only a few milligrams, from which it was estimated that the amount of polonium in pitchblende is not over one gram per ton. Dr. Marckwald hopes, however, to obtain enough of the pure metal by this method to determine its atomic weight.

K. A. Hofmann has also continued his work on radio-active substances from the uranium minerals, especially upon radio-active lead. The radium so obtained is very much more active upon the photographic plate than is polonium. A specimen of radio-active lead sulfid, which acted powerfully upon a photographic plate, was much weaker in discharging the electroscope than a specimen of polonium oxychlorid, which had no effect whatever through a thin gutta percha film upon a photographic plate, even after twenty hours' exposure. He found that radio-active lead preparations gain in activity by preservation in a dry condition in closed tubes. A number of metals seem capable of robbing uranium of its activity. In one experiment a solution of pure uranium was mixed with barium and the latter precipitated by sulfuric acid. The uranium thereby lost completely its activity both toward the electroscope and toward the photographic plate; after standing two days in a closed tube the uranium regained its activity. The same phenomenon was observed in another experiment when bismuth was substituted for barium. A number of the rare earths, such as thorium, erbium, didymium, cerium and lanthanum, are capable of receiving an induced activity from uranium, and the same is true, not only of barium, but also of strontium and calcium. Activity is very slightly induced in yttrium and not at all in glucinum and zirconium. Lead receives a weak activity when precipitated from the uranium solution with sulfuric acid, but none at all when the precipitant is caustic potash.

The same number of the *Berichte* contains a paper by Stock and Doht continuing their investigations of stibin, SbH_3. This hydrid of antimony was obtained in the solid state some years ago by Olszewski, but great difficulty had been experienced by him and by them in obtaining more than a very small trace of the gas from the materials used. The