

The Fossil Man of Lansing, Kansas.

A GOOD deal of discussion has recently been aroused in America by the discovery of the so-called "fossil man of Lansing." It seems worth while considering the probable stature of the individual to whom the bones belonged. Prof. S. W. Williston, of Chicago, gives in the *Popular Science Monthly* for March (p. 470) the following values for the bone lengths, without, however, stating how the measurements were taken:—Femur, 43.0 cm.; Tibia, 35.0 cm.; Humerus, 30.2 cm.; Radius, 25.0 cm. From my memoir on the "Reconstruction of the Stature of Prehistoric Races" (*Phil. Trans.*, vol. cxii. A, pp. 169–244), by using the formulæ on p. 196 Dr. Alice Lee has obtained the following results in cms. :—

Bones used in Reconstruction	Supposed ♂	Supposed ♀
(a) Femur	162.1	156.5
(b) Humerus	158.0	154.6
(c) Tibia	161.8	157.1
(d) Radius	167.7	164.8
(e) Femur + Tibia	161.7	157.0
(f) Femur, Tibia	161.7	157.0
(g) Humerus + Radius	162.4	159.8
(h) Humerus, Radius	159.7	155.5
(i) Femur, Humerus	159.6	156.0
(k) Femur, Tibia, Radius, Humerus	158.3	154.5

Now my experience of reconstruction shows me that with primitive races we do not get from formulæ based on modern data very consistent results when the radius is used.¹ I believe (a), (f) and (i) are the best formulæ to take in such cases. Effecting a perhaps not wholly defensible smoothing by taking means we have :—

Stature of Lansing individual	If ♂	If ♀
From all formulæ	161.3	157.3
From (a), (f) and (i)	161.2	156.5

The mean deviation of all the formulæ from the mean of the set is on the assumption that the bones belonged to a man 1.91, and on the assumption that they belonged to a woman 2.02. Thus the formulæ run from both aspects slightly more smoothly if we assume the bones to be those of a man. The skull may possibly offer, on closer study, some balance of characters on which to form an appreciation as to sex. Prof. Williston's photographs, having regard to the lower mandible and brows, do not seem wholly inconsistent with the male sex.

As to the date of the Lansing bones, this can only be settled by the geologists on the spot. But if the period be at all comparable with that of Palæolithic man in Europe, of whom, I think, we may put the best available estimate of stature to be 162.7 cm., the American and European statures, so far as such slender evidence goes, are not widely apart. If, on the other hand, we take the bones to be those of a woman, the stature of 157.3 cm. would correspond to a male stature of 169.0 cm.—a value considerably above that of Palæolithic man in Europe, or, indeed, of Neolithic man.

Hence I would suggest the following points for consideration :—

A. *The bones are those of a man.*

If they belong to those of an "early" American man,

(a) He was, if a normal example, of much the stature of Palæolithic man in Europe.

(b) He must have been a short man for his race, if early American man was much taller than the European Palæolithic man.

B. *The bones are those of a woman.*

If they belong to those of an "early" American woman,

(a) The early Americans, if she were a normal example of a woman, had a male stature of 169 cm., and were a taller race than early European man.

(b) She must have been a tall woman for her race, if early European and American men were at all similar in stature.

The stature of the American Indian is very considerable; if, therefore, a great antiquity can be predicted, i.e. if the silt would seem to show that the bones have been many thousand years embedded, the importance of determining the sex becomes obvious. No dogmatic statement, re-

¹ Everything tends to show a shortening of the radius relative to the length of the other long bones, since early times.

membering the variability of human stature, can be made, but the find gives a *slight* probability in favour of American early man and European Palæolithic man not diverging widely in stature, if the bones are male, but, on the other hand, if the bones are female, they give a *slight* probability in favour of American early man being much taller than European Palæolithic man.

It is easy to make irresponsible suggestions at a distance, but is it not possible for a systematic investigation to be made by excavating the whole, or a large part, of the deposit upon the limestone bed at Concannon's house, with the hope of discovering further human remains, or signs of human handicraft?

KARL PEARSON.

Reform in School Geometry.

THE reviews in your issue of April 23 tend to confirm an apprehension I have long felt. Euclid is to be abolished, and another sequence of propositions substituted. But it is probable that in many cases the same old methods of teaching will be retained, the same old drudgery of learning propositions and not learning to think, will be gone through by the future generation as it has been gone through by the past. The only difference will be that the one redeeming feature of the old system, the semblance of a logical sequence, will be abolished, and students will be commended instead of condemned for assuming constructions before they have learnt how to perform them. They will also be encouraged to base their proofs on such difficult-to-be-understood concepts as *direction*.

Now it appears to me that instead of the new geometry being a recent innovation, its essential features are pretty well laid down in the "Treatise on Geometry" published in 1871 by the late Dr. Watson (Longmans' Text-books of Science). The disadvantages of Euclid's order of treatment, the use of hypothetical constructions, the importance of loci, the classification of propositions, all these and many other points on which stress is now laid are discussed in Dr. Watson's preface. Whether or not would-be reformers of mathematical teaching have studied Watson, it is interesting to find the supposed "modern up-to-date improvements" in the teaching of geometry so closely forestalled in a book of thirty years ago, just as the so-called "modern free wheel" was commonly fitted to tricycles from 1879 onwards, until cyclists were glad when a substitute was invented.

G. H. BRYAN.

I WILL not deny that some reformers desire to abolish Euclid and establish another sequence of propositions in abstract geometry for schoolboys; but if Prof. Bryan reads the reviews which he cites more carefully, he will see that the reform current is very strong in quite another direction, and that his long-held apprehension is altogether baseless. I think that I apprehend the idea underlying the efforts of the majority of the reformers. It is the very old idea that the average English boy may be educated through the doing of things rather than through abstract reasoning. If abstract geometry is to be retained as a school subject, it can only in the future, as in the past, do harm to 98 per cent. of the boys; we say, drop it altogether in schools, and think of it only in connection with the universities. Two per cent. of schoolboys take to abstract reasoning as ducks take to water, and they ought not to be discouraged from the study of Euclid, but they and all the other boys ought to study geometry experimentally, logic entering into the study just as it enters into other parts of experimental physics. If the best modern books have a fault, it lies in the absurd assumption that an experimental sequence ought to have some connection with the Euclidean sequence.

JOHN PERRY.

Can Dogs Reason?

MY account of an experiment which you allowed me to record in *NATURE* of April 16 has been copied into a number of newspapers, and has brought me no few letters. Some of my correspondents explain the negative results of the box-meat experiment by supposing that the dog was too well trained to "steal" the meat. They have not noticed that I was careful to point out that the box was placed in the yard in which the dog is accustomed to be fed, that