

p. 198) that this will not bring the two halves of the lambdoid suture (*cd* and *ab*) into symmetrical positions. In answer to this criticism it may be said that the lambdoid suture in this restoration is as nearly symmetrical as it is in many ancient and modern skulls. Moreover, in the case under consideration there is the most positive evidence of a lack of complete symmetry. Not only is there the most striking asymmetry in the whole occipital area (compare *O* and *O'* and *Ce.l.* and *Ce.r.*), but the remains of the lambdoid suture itself present a marked contrast on the two sides, being quite simple on the left (*cd*), but complex and dentate on the right (*b*). To base any far-reaching conclusions upon the position and direction of an isolated centimetre (*b*) of the lambdoid suture (see NATURE, October 16, p. 198) is simply courting disaster. For every anatomist knows that the lambdoid is the most variable and tortuous of all the cranial sutures.

Another indication of asymmetry of the lambdoid suture is the direction of the fragment marked *e*. My critics may say that as it points towards the piece *cd* and not towards *b* and *f*, it clearly belongs to the left and not to the right half of the suture, and that it would fall into its proper position if the left parietal were moved wholly to the left side of the line *mm*. But such a deviation as *e* is quite common. A precisely similar thing occurs in the Gibraltar skull, and in the La Quina skull there is a Wormian bone near the corresponding spot on the right side.

So far I have said nothing of the right parietal fragment (*P'*). It bears only a very small fragment (*a*) of the lambdoid suture, which, of course, must lie somewhere near the line joining *e* and *f*. Its lower margin does not quite reach the lateral sinus at *f*. With these and other guides (supplied by the impressions of the brain and meningeal vessels) this fragment may be orientated in a position approximately symmetrical to the left side. Incidentally, as the point *a* must be in the neighbourhood of the sutural line on *b*, the position of the right parietal fragment (*P'*) so determined checks the accuracy of the position of the left parietal (*P*).

No exact symmetry between *P* and *P'* is attainable because the brain itself is not symmetrical. In the human brain the type of occipital asymmetry seen in this case (*O* and *O'*) is usually associated with a greater prominence of the right parietal eminence (*P'*). This was the case in the Piltdown brain. In further confirmation of the reality of this it is found that the right parietal bone is very much thinner than the left, so that, as in the occipital region, the full extent of the cerebral lack of symmetry is not displayed in the outline of the skull.

In making the drawing illustrating this letter I have used a cranial cast which Dr. Smith Woodward kindly sent me a few weeks ago, but have made some slight alterations in the positions of the two parietal fragments.

In conclusion I should like to say how much I am indebted to Prof. Keith for all the help he has given me in my investigations, not only by allowing me to make use of all the valuable material in the museum of the Royal College of Surgeons, but also by discussing with me frankly and openly all the points in dispute concerning the Piltdown skull itself. In the earlier part of July, working with the cranial casts, he seemed to me to have established a good case for his mode of reconstruction; but from the moment I began to examine the actual fragments (August 13, 1913, the day after the discussion of the matter at the International Medical Congress) I became convinced that his solution of the problem was an impossible one. It was this personal experience of the import-

ance of working with the real things that I had in mind when I was writing my last letter (NATURE, October 30, p. 267). G. ELLIOT SMITH.

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The Piltdown Mandible.

IN *The British Journal of Dental Science* of October 1, there are published some excellent radiograms of the Piltdown mandible and of a chimpanzee's, the views having been taken from the side and from above.

In order to compare the outlines of the two specimens, I have superimposed tracings taken from each (Figs. 1 and 2).

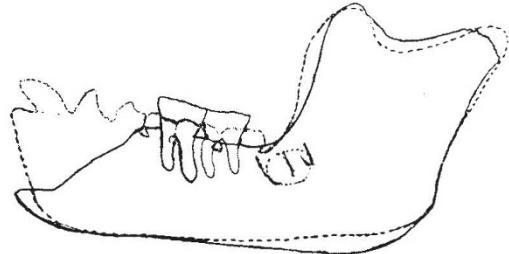


FIG. 1.—Outline tracing from radiograms of the Piltdown mandible (continuous line) and of the mandible of chimpanzee (broken line).

The similarity of the specimens brought out in this way is very striking, for the outlines are practically identical. I have also superimposed tracings of the last reconstruction of the Piltdown mandible and of the jaw of a young chimpanzee (Fig. 3), and again the similarity of the outline is very remarkable. No human mandible is known which shows anything

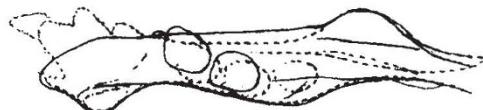


FIG. 2.—Outline tracing from radiograms of the Piltdown mandible (continuous line) and of a chimpanzee (broken line as viewed from above).

like the same resemblance to the chimpanzee jaw in outline and in all its details.

Of the molar teeth, I need only say here that not only do they approach the ape form, but in several respects are identical with them.

The cranial fragments of the Piltdown skull, on the other hand, are in practically all their details

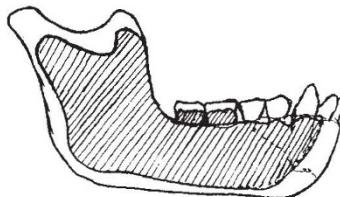


FIG. 3.—Outline tracing of the last reconstruction of the Piltdown mandible, and of the mandible of a young chimpanzee (shaded).

essentially human. If that be so it seems to me to be as inconsequent to refer the mandible and the cranium to the same individual as it would be to articulate a chimpanzee foot with the bones of an essentially human thigh and leg. DAVID WATERSTON.

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