

FAREWELL TO PILTDOWN

FOR us who are deeply interested in British history and also actors in the British scene the name of Piltdown will evoke many nostalgic memories of field and study, particularly to those of us who can dimly remember the days before the world went mad in 1914. For this most English of place names epitomized a whole era of work and enthusiasm in a phase of intellectual adventure which has become part of our history. Our younger contemporaries will hardly understand in what sense Piltdown became the centre around which revolved so much else; indeed, this *First Englishman* seemed to look down the unnumbered centuries to all the pre-historic phenomena of wood and downland: flint mine and hilltop fort, barrow and ditch, trackway and linchet, from Kits Coty House and Coldrum in the east to where the westering sun casts the long shadows of the Stonehenge trilithons. No less was the name entwined with those of friends who moved in that circle of geologists, pre-historians and anatomists who were then bending their energies to the elucidation of the problems of human evolution. And we were proud to think that it was due to the eagle eye of an inspired *amateur* that the lineaments of this most ancient of men were made known to the world.

That amateur was Charles Dawson, who lived and practised as a solicitor in Uckfield, Sussex. He was a man of wide interests and experience, for he had acquired a sound training in geology and palæontology, and had made notable contributions to the national collections of Wealden fossils, while at the same time he was an archæologist who had undertaken excavation and written Papers on a variety of historical and similar subjects. As a Fellow of both the Society of Antiquaries and of the Geological Society he was typical of his class and time.

According to his own account¹ the Piltdown adventure began when he discovered a small deposit of gravel on Piltdown Common, near Fletching, which was being dug to provide material with which to repair the local roads. Dawson asked the workmen to put aside any bones or fossils which they might unearth, and some time after, it is believed in 1908, he was handed a piece of thick mahogany coloured bone which had clearly been part of a human skull. When, three years

¹ C. Dawson and A. S. Woodward (1913), "On the Discovery of a Paleolithic Human Skull and Mandible in a Flint-bearing Gravel overlying the Wealden (Hastings Beds) at Piltdown (Fletching), Sussex," *Quart. Journ. Geol. Soc.*, lxi, pp. 117-44.

FAREWELL TO PILTDOWN

later, he himself picked up a second fragment of the same colour and thickness, he reported the matter to Dr. Arthur Smith Woodward,¹ then Keeper of the Department of Geology at the British Museum, who was so impressed with the fossils that he and Dawson started digging at Piltdown on their own account. During 1912 they recovered several more pieces of the same thick cranium, together with the right half of a strange lower jaw as well as some fossil teeth of extinct animals. A few rough flints of the kind called *coliths* with three others of different type thought to be of palæolithic work and date completed the collection this year from the Piltdown gravel. In the autumn Smith Woodward settled to the task of reconstructing the skull from the nine fragments of it which had been found, and at a meeting of the Geological Society, held on December 18th, he and Dawson described the circumstances of the discovery and exhibited the reconstructed skull. This latter revealed an astonishing creature; for the cranium, although as reconstructed apparently possessing a brain capacity near the lower limit of human variation, was entirely human in appearance, being round, smooth and with a high forehead, while the lower part of the face was in startling contrast, consisting of the blown-out muzzle and chinless jaw of an anthropoid ape. For this unique creature Smith Woodward created the genus *Eoanthropus* and assigned it to the species *dawsoni* in honour of its discoverer.

Immediately after the meeting controversy broke out regarding this Dawn Man of Dawson. Certain British, American and Continental anthropologists, struck by the bizarre mixture of human and ape-like characters, declined to believe that the jaw and cranium belonged to the same creature, and asserted that the small patch of gravel at Piltdown had produced bone relics of two forms new to science, an early type of man and an extinct ape. At the same time Dr. Arthur Keith² questioned the accuracy of the Smith Woodward reconstruction of the skull, and through several brilliant chapters in his book³ he took his readers, step by step, along the path which led to his own reconstruction of *Eoanthropus* which gave him a larger head and brain. In June, 1913, Keith called in Professor Grafton Elliot Smith,⁴ then occupying the

¹ Sir Arthur Smith Woodward, F.R.S., Fellow and sometime President of the Geological Society. A distinguished authority on fossil fishes, reptiles and mammals.

² Sir Arthur Keith, M.D., D.Sc., Ll.D., F.R.C.S., F.R.S., Conservator of the Museum and Hunterian Professor, Royal College of Surgeons of England. Sometime President of the Royal Anthropological Institute and of the Anatomical Society. Anatomist and philosopher, author of a number of works on anatomy and evolution.

³ *The Antiquity of Man*, 2nd Ed., 1925.

⁴ Sir Grafton Elliot Smith, M.A., M.D., Litt.D., D.Sc., F.R.C.P., F.R.S. Sometime Professor of Anatomy in the University of Manchester, later Professor of Anatomy in the University of London. Author of several works on the evolution of man and the diffusion of Culture.

FAREWELL TO PILTDOWN

Chair of Anatomy at Manchester University, to support his views on the reconstruction but to his chagrin Elliot Smith hesitated and ranged himself on the side of Smith Woodward in the argument which went on for several years.

As only one half of a lower jaw had been found and even of this the condyle, which forms the hinge with the cranium, was missing, a certain amount of reconstruction was necessary in order to make the jaw fit the cranium. Also Smith Woodward had equipped the jaws with the great interlocking canine teeth of the anthropoid apes, whereas Keith gave his reconstruction teeth of a human pattern and size, which was in accordance with the human manner in which the surviving molar teeth had been worn down, which was quite unlike anything seen in the jaws of apes. However, a few months later a large canine tooth of ape-like form was found at Piltdown, and as this fitted the jaw Smith Woodward seemed to have been vindicated in this part of his reconstruction.

Meanwhile, in 1914, a most remarkable object had been unearthed at Piltdown, this being a slab of fossil bone from the leg of an ancient elephant but cut and shaped to form a heavy weapon or tool of a "cricket-bat" shape; this was regarded as the actual work of *Eoanthropus* himself. Next year Dawson announced more startling discoveries, this time from a site at Sheffield Park, some two miles from Piltdown. They were apparently found on a ploughed field and consisted of two fragments of a second skull, a molar tooth and the tooth of a very early rhinoceros. The humanoid tooth was regarded as similar to those already in the jaw from Piltdown and thus this second discovery was held to confirm the views of those, the monists, who believed that the bones from Piltdown belonged to one individual, as against those, the dualists, who were of opinion that Piltdown had produced an early form of man (*Homo piltdownensis*) and an extinct ape (*Pan vetus*) allied to the chimpanzee. This, the last discovery associated with Piltdown, converted many anthropologists to the monistic view, although Marcellin Boule pointed out¹ that as the tooth found was a first lower molar, "which of all the true molars in Man is most difficult to distinguish from those of anthropoid apes," this second discovery was really no confirmation of the one-creature hypothesis.

Charles Dawson died in 1916 and from that date, in spite of the most intensive search carried on over a number of years, nothing more was ever found in the Piltdown gravel.

The antiquity of *Eoanthropus* depended upon that of the gravel deposit in which his remains were found. It was of limited extent and slight depth, there being no more than 4 ft. in the section at the site. This was composed of two layers; an upper band of light gravel and a

¹ Marcellin Boule. *Fossil Men*, 1923, 472, n.1.

lower thinner band of deep brown sand and gravel firmly cemented together by iron oxide. As the land at Piltdown stood some 120 ft. above sea level and 80 ft. above the present river Ouse which flows about a mile to the westward, it was assumed that the gravels were of the same age as those of the 100 ft. Thames terrace gravels of early Pleistocene date, that is, from 500,000 to a million years ago.

But certain of the fossil animal remains belonged to the even earlier age of the Pliocene, and as most of them were of the same deep brown colour as both the humanoid fossils and the lower band of gravel it was reasonable to assume that they came from this base bed. Opinions were divided as to the age of this lower bed, for while some thought that it had been laid down in Pliocene times, others were of the opinion that it had been disturbed from its original place of deposition and relaid at Piltdown during the early part of the succeeding Pleistocene period. A similar division was noticed in the types of worked flints recovered, for while some of them were of the iron stained *Eolith* type, whose origin was the subject of much debate, there were a few others of lighter colour which were considered to be Palæoliths, although they did not conform to any well known types of implements of the Old Stone Age. Thus Piltdown provided relics of both late Pliocene and early Pleistocene, and the age of *Eoanthropus* lay somewhere between these two extremes.

In this manner did this strange creature enter upon the stage of life, the subject of endless debate, and of hundreds of notes, papers and references. He was an astonishing mixture of ape and man; he walked in the upright manner, bearing his head upon his shoulders by means of a slender neck, balanced and poised as with us. His skull was large, rounded and carried a brain capacity which matched those of his discoverers, while his forehead was high and smooth, yet his face was disfigured with the huge projecting muzzle of an ape, and great canine teeth were locked in his jaws. Even so he did not appear to be so strange or unexpected to the men who reconstructed him, for at that time it was thought possible that in the course of human evolution the growth of the brain might have preceded the refinement of the ape face. Nevertheless, if the cranium bones and the lower jawbones had been found at places apart they would have been accepted as the fossils of two distinct creatures, and there would not have arisen any question of marrying them; it was the close association of both in a small patch of ancient gravel, together with the remains of other ancient animals, and all stained the same distinctive colour, which forced anthropologists to accept them as the remains of one creature. This was the only reason why Keith accepted *Eoanthropus*, although he said that he was no "dawn man," and should not have been so named. His reconstruction of the cranium was undoubtedly the right one, and he declared of

FAREWELL TO PILTDOWN

it that save for the unusual thickness of the bone and one or two other minor details it was in all essentials a human cranium, while, on the other hand, the jaw was entirely simian save for the human features of the teeth, which included the manner in which they had become worn away. Keith squarely faced the problem of Piltdown, but he never solved it, for to the end of his days he spoke of it as an enigma and asserted that "Piltdown man saw, felt, heard, thought and dreamt much as we still do," and he protested against the "possibility of fashioning a chimpanzee-like skull out of bones which are shaped exactly as in modern human skulls."¹ On the contrary Elliot Smith stated that the brain of *Eoanthropus* was the most primitive and the most ape-like human brain yet discovered² and objected to Keith's method of reconstructing it along human lines.

Thus stood the matter until the year 1926, when Mr. F. H. Edmunds's researches into the geology of the country around Piltdown was published by the Geological Survey.³ For therein he proved that the age of the gravel had been much exaggerated for it was neither Pliocene nor early Pleistocene, but late Pleistocene of a mere 50,000 years of age. *Eoanthropus* at once fell from his antique state; once thought to have been at least half a million years old and standing near the direct line of man's ancestry, he was now shown to have been contemporary with late Stone Age men who, in France, were decorating their caves with paintings which still excite our admiration. The mystery deepened because, be it remembered, the *Eoanthropus* remains had been found in association with fossils of Pliocene animals, yet the deposit was of no great antiquity. The problem of Piltdown was therefore shelved and thought insoluble.

But the mystery was solved at long last and in a manner which shook and shocked the scientific world. For between the years 1949 and 1954 a group of scientists subjected the whole of the Piltdown material to a rigorous re-examination, using certain methods and techniques of testing which had only recently been developed.⁴ The results were devastating and demonstrated that the Piltdown remains were fakes, the work of a clever and audacious forger.

We have no intention of describing here the long and careful tests which produced this verdict because it has been admirably done in a book written by Dr. J. S. Weiner, one of the principal investigators of

¹ Keith, op. cit., ii, 556 and 636.

² G. Elliot Smith, *Appendix to the Dawson-Woodward Paper above*, 147, and *The Evolution of Man*, 1927, 74.

³ F. H. Edmunds, *Geology of the Country around Lewes*, *Mem. Geol. Survey*, 1926.

⁴ *The Solution of the Piltdown Problem*. J. S. Weiner, K. P. Oakley, W. E. Le Gros Clark. *Bull. Brit. Mus. (Nat. Hist.)*, Vol. 2, No. 3, 1953.

Further Contributions to the Solution of the Piltdown Problem. Weiner and others. *Bull. Brit. Mus. (Nat. Hist.)*, Vol. 2, No. 6, 1955.

FAREWELL TO PILTDOWN

the hoax.¹ It will be sufficient to state that the tests were many and various but they confirmed each other in a decisive manner. Dr. Weiner and his associates, Dr. K. P. Oakley, Sir Wilfrid Le Gros Clark, and others² have condemned Piltdown beyond any hope of reprieve, and the name, once one of fame, is now one of shame.

Those of our Members who are addicts of that modern fairy story, the detective novel, will not easily read a better example than this book. In it they will find the full story of Piltdown retold, the evidence carefully collected and discussed, the tests described, the principal characters introduced and a true bill returned. If at the last Dr. Weiner draws back from naming the villain in the case the reader need not be left in much doubt if he will consider which of the principals possessed the necessary knowledge and skill, had abundant opportunity and the compelling ambition to plan carefully the most elaborate hoax which has ever imposed itself upon the savants of two hemispheres. A bald statement of his nefarious activities will point an unerring finger at the man. It is believed now that he had had long in his possession a fossil human skull having bones of unusual thickness, a feature now thought to be due to pathologic causes. This skull was either incomplete and in pieces or he himself broke it up and then stained the fragments to match the lower band of gravel at Piltdown. Reserving at least three fragments, two to take to Smith Woodward as representing the first discovery and the third one to be produced later as being picked up in Sheffield Park, he "sowed" the remainder into the gravel, ready for their discovery by Smith Woodward. He then obtained the lower jaw of an orang-utan, cut it in half, broke off the significant condyle, ground down the molar teeth to simulate normal human wear, and put it into the gravel also. Next he sowed the site with a few small genuine fossils of Pliocene and Pleistocene date, obtained from various sources, after having stained certain of them also. The "cricket bat" implement was next manufactured, stained and planted. The canine tooth whose "discovery" so confounded Keith was that of a modern ape, artificially abraded and actually painted with Vandycke brown. As regards the flints there was no necessity to do anything to the dubious "eoliths," but the three "palaeoliths" were stained brown before sowing; they were originally probably Neolithic rejects of a white colour. Of the four objects alleged to have been found at the second and unknown Piltdown site one of the skull fragments was a piece reserved from the original skull but the second piece was of another and thinner boned cranium and was not even fossilized; the molar tooth had been artificially ground

¹ J. S. Weiner, *The Piltdown Forgery*. 1955. O.U.P. Pp. xii+ 214, with 9 photographs. Oxford University Press, 1955.

² The full list is given on p. 37 of *The Piltdown Forgery*.

FAREWELL TO PILTDOWN

down and these, with the genuine fossil tooth of a rhinoceros, all stained. So much for means and methods. As for opportunity Dawson had the gravel pit at Piltdown to himself for several years, and even when he was joined by Smith Woodward the digging was carried out with great secrecy, and only on one occasion were they joined by a third party, the young French priest Teilhard de Chardin, while they employed but one old labourer.

Dr. Weiner has devoted several chapters to the record and character of Dawson which have gone far to explain the motives of this deep deception, and in the course of doing so we are also told some surprising things about the adverse opinions of Dawson held by some of his Sussex neighbours. No hint of these damaging views seemed to have reached the London principals, for quite one of the saddest aspects of this affair is the high regard and esteem in which Dawson was held by Smith Woodward, Keith and Elliot Smith.

The success of the fraud was due to several reasons. It is a sad truism that honourable men are sometimes very easily duped by knaves, for the characters of Smith Woodward and Keith precluded them from doubting Dawson's word, and never was a famous case more dependent upon the testimony of one man than this of Piltdown. Also, be it remembered, Smith Woodward had had dealings with Dawson in the matter of fossil collecting for many years previously. Even so there remain some very disturbing questions which can now never be answered since, perhaps mercifully, the principals are no longer with us. We now learn, for instance, that until 1953 the jaw was not even tested for its degree of fossilization, a most astonishing revelation when we recall the near forty years controversy as to whether it belonged to the cranium or not. Possibly it was considered too precious to be drilled for test, although clearly its value depended upon such testing.¹ Then we are told that Mr. C. W. Lyne, a dentist, pointed out in 1916 the very damaging fact that the very heavy wear of the molar teeth was incompatible with their immaturity; in other words, how could the jaw of a young ape-man carry the teeth of an old one? The objection, we

¹ If readers doubt that such an argument could be put forth let them consider the case of the Nebraska tooth. A molar tooth was found in what was believed to be Pliocene strata in Nebraska, U.S.A., in 1922. American anthropologists assigned it to an extinct form of manlike ape and too hastily created the genus *Hesperopithecus* ("Ape of the West") to receive him. In view of the identification being based upon a single tooth Elliot Smith urged Dr. Fairfield Osborn to allow a thin slice of enamel to be cut from the tooth in order that its exact affinities might be determined. Dr. Osborn replied that it would be quite unpardonable to inflict any damage on a type-specimen. However, a clumsy photographer later dropped the tooth and shattered it, when Elliot Smith again suggested that advantage might be taken of this accident to carry out his first proposal (*The Times*, February 20th, 1923). In this appeal he was joined by Mr. C. W. Lyne (*The Times*, February 23rd, 1923). The tooth was later assigned to a fossil bear and the short-lived genus *Hesperopithecus* cancelled.

FAREWELL TO PILTDOWN

are told, was "brushed aside."¹ Moreover, until Dr. Oakley carried out the experiment in 1949, no attempt had been made to ascertain if the "cricket bat" bone implement could have been fashioned with the aid of flint tools only.

It must be admitted that there was a powerful "will to believe" in Piltdown, for the means to expose him were certainly available in 1912 but were not then applied.² Perhaps if Keith had been sent the Piltdown material in the first place and not have had to work with plaster casts, the story might have been different. But the chief reason for the resounding success of the fraud was undoubtedly due to the timing of his appearance; anthropologists were hoping for something like him to appear, and, lo, he came. It was as the years went by, as other and more significant fossil forms of apes and men came to light and modified ideas as to the course of human evolution that Piltdown became an anomaly. The new investigation described in Dr. Weiner's book exposes his fraudulent composition and has eclipsed his light for ever.

JOHN H. EVANS.

¹ In the letter to *The Times* quoted above, Mr. Lyne went on to write: "Personally I have always regretted that the Piltdown canine could not have been subjected at its apical end to some microscopic examination. I myself suggested it at the time." His was certainly a voice crying in the wilderness.

Mr. Alvan T. Marston also pointed out, in 1952, that the canine tooth was that of a young ape and could not have belonged to the skull of a man of over forty years of age.

Brit. Med. J., XCIII (1952), pp. 1-13: "Reasons why the Piltdown Canine Tooth and Mandible could not belong to Piltdown Man." What is doubly astonishing is that Elliot Smith urged a course of action in regard to the Nebraska tooth which, so far as we know, he did not propose as regards Piltdown.

² As long ago as 1863 an alleged fossil jaw supposed to have been unearthed in the famous Moulin Quignon pit at Abbeville, France, was decisively rejected after examination owing to its high nitrogen content, indicating that it retained considerable animal matter. See Keith, *op. cit.*, 1, 270, and Boule, *op. cit.*, 22.