

ON THE EXISTENCE OF THE FALLOW DEER IN ENGLAND DURING PLEISTOCENE TIMES

MR. SCLATER'S translation of Dr. Jeitteles' essay on the geographical distribution of the Fallow Deer in present and in past time (NATURE, vol. xi. p. 71), and the careful criticism which it has called forth on the part of Mr. Boyd Dawkins (*loc. cit.* p. 112), have renewed in my mind a conviction which I formed some years ago, namely, that *Cervus brownii* and *Cervus dama* are identical, and that under the former title the fact of the existence of the Fallow Deer in England during the Pleistocene period lies in some degree obscured.

The interest which, doubtless, Dr. Jeitteles' essay has excited induces me to believe the present to be a fitting

occasion to endeavour to demonstrate the probability of this conviction. In his original description of *Cervus brownii* (Quart. Journ. Geol. Journ. 1868, p. 514), Mr. Boyd Dawkins thus writes:—

"The antlers of *Cervus brownii* are totally unlike those of any existing species excepting *Cervus dama*, to which they approach so closely that the type-specimen was considered by Dr. Falconer to belong to the latter. The basal half, indeed, so strongly resembles the corresponding portion of that of *Cervus dama* that it would be almost impossible to differentiate fragments from which the coronal portion had been broken away. But the resemblance ends at the second tyne (*c*). If the series of antlers of *Cervus brownii* be compared with those of the Fallow Deer which have been reproduced from Prof. Blasius's valuable work, there is this important difference

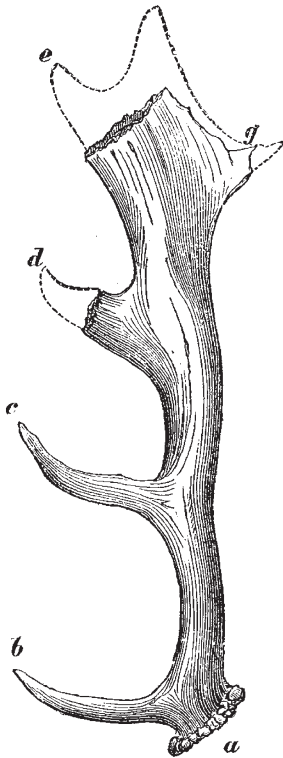


FIG. 1.—Type of *Cervus brownii*.

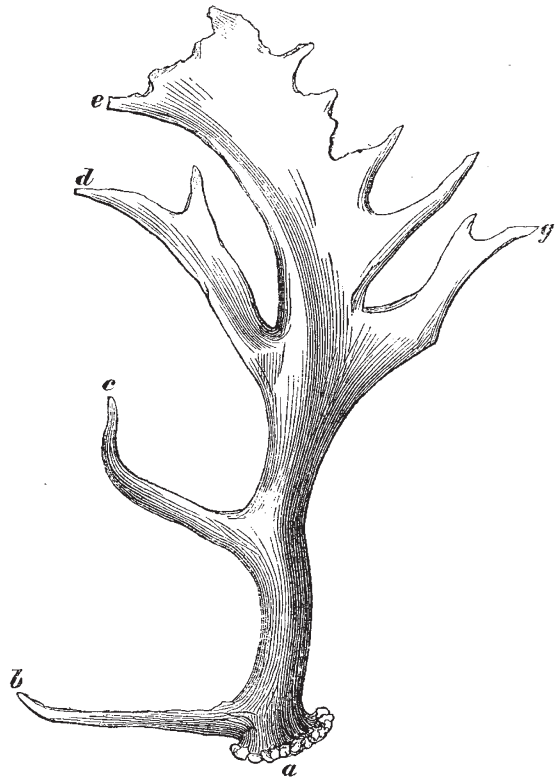


FIG. 2.—Right Horn of Wild Greek Fallow Deer.

visible: in the former the third tyne (*d*) is present on the anterior aspect, while in the latter it is altogether absent. With this exception the antlers of the two species are most closely allied; and Pl. xvii. Fig. 4 corresponds almost exactly with Pl. xviii. Fig. 5, the third of the series of antlers selected by Prof. Blasius as typical of *Cervus dama*. To the objection that the development of the third anterior tyne may have been an accident, it may be answered that it is to be found in none of the endless variations of form assumed by the antlers of the Fallow Deer, and that it is presented also by a far more ancient cervine species from the crag of Norwich."

It is therefore clear that in its possession of the third tyne (*d*) is centred, according to Mr. Boyd Dawkins, the Clacton Deer's sole right to be considered specifically distinct from the common Fallow Deer. The accompanying drawings (Figs. 1—4) will, I think, be found to show the insufficiency of this character. Fig. 2 represents a horn of the wild Fallow Deer from Greece; Fig. 3 that of a

wild Fallow Deer from Sardinia. In both of these specimens the third tyne (*d*) will be seen to be largely developed. These horns are selected from a considerable series brought to me by my brother, Mr. Basil Brooke, direct from Greece and Sardinia, and in none of the other specimens is this tyne developed, but in all the anterior aspect of the horn resembles ordinary specimens of the horns of *Cervus dama*, such as those reproduced by Mr. Boyd Dawkins from Prof. Blasius's work. Fig. 4 illustrates still further the instability of the foundation upon which is based the specific separation of *Cervus brownii*. The horn here figured belonged to a deer which lived and died in one of my own parks. The third tyne (*d*), so distinctly shown in the figure, was produced but once in the course of the animal's lifetime, neither its companion horn nor those which preceded or succeeded it showing the smallest trace of it.

It may be remarked that the tyne *d* in the type of *Cervus brownii* (Fig. 1) stands at a lower level in relation

to the greatest palmation of the horns, than is the case in the other three specimens. The explanation of this discrepancy is very simple. The former represents (as its own characters and a comparison of it with the remainder of the fragments with the species found at Clacton readily prove) a young animal, probably a buck of four years of age, whilst the other figures represent the horns of adult animals. In the immature Clacton Deer

the force expended in producing the abnormal tyme *d* well-nigh exhausted the supply at the command of a system fully occupied with the production of things more needful, namely, materials for the vigorous increase and consolidation of flesh and bone. Hence the long, attenuated palm, which probably ended very much in the manner in which Mr. Boyd Dawkins has restored it. Analogous instances of excess of growth in one direction,

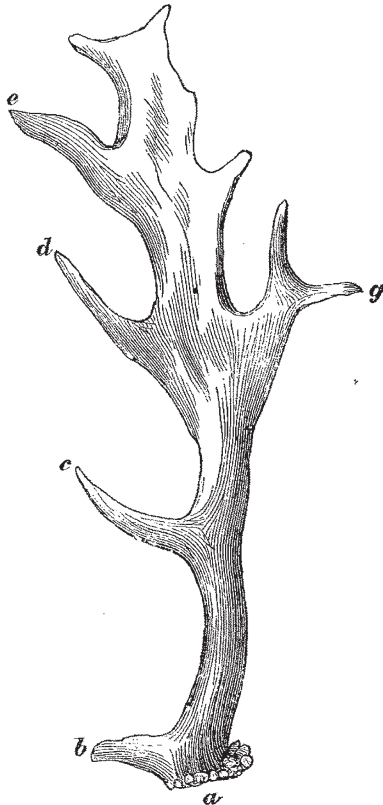


FIG. 3.—Right Horn of Wild Sardinian Fallow Deer.

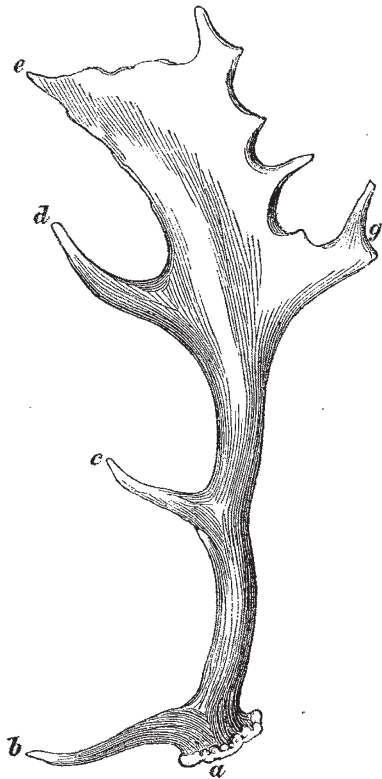


FIG. 4.—Right Horn of Park Fallow Deer.

causing a corresponding defect in another, may be seen in all large collections of deers' horns; indeed, in my own collection I find the horn of a young fallow buck, in which the characters specially alluded to in the type of *Cervus brownii* are shown in a still more marked degree.

These facts appear to me fully to justify the rejection of *Cervus brownii* as a species distinct from *Cervus dama*, and therefore to warrant the belief in the existence of this species in England during Pleistocene times. Whether the Fallow Deer became extinct in

Northern Europe before the advent of Prehistoric man, or whether it continued to exist in these islands even at the commencement of the Roman occupation, are questions which strike me as altogether beside that of the truth of the "ancient belief" to which Mr. Boyd Dawkins shows such firm allegiance. In either case, the species may have been reintroduced by the Romans, a people whose magnificently lavish expenditure upon luxury and pleasure despised bounds.

VICTOR BROOKE

HELMHOLTZ ON THE USE AND ABUSE OF THE DEDUCTIVE METHOD IN PHYSICAL SCIENCE\*

WE have still to speak of his attack on the authors of this book with regard to the emission theory of light. They say that such a theory is not to be justified unless a light-corpuscle has been actually seen and investigated. In this demand Mr. Zöllner detects "an impossibility which is not simply physical, but even logical, and which it is easy to expose. In fact, if the sensation of light is produced only when the corpuscles come in contact with our nerves, it is obviously impossible to have any ocular perception of such a corpuscle before it has touched or affected our nerves of sight." And then this remark is followed by declamation about gross blunders

\* Concluded from p. 151.

in logic, absolute nonsense, and so on. And, in fact, there is absolute nonsense here; only the nonsense does not lie in what the English writers have said, but in the interpretation which their opponent has put upon their words. Does a man who believes himself so superior to his antagonists in the firmness of his grasp of the principles of the theory of knowledge, still need to have it explained to him that to see an object means, according to the emission theory, to receive in the eye, and so to feel, the corpuscles of light that rebound from the object in question? But, this being so, there is no logical impossibility, and nothing inconsistent with the premises of the theory, in the supposition that a light-corpuscle at rest—and the corpuscles are at rest as soon as they are absorbed by dark bodies—may throw off other corpuscles that impinge on it, and so may become for these a centre of radiation, which will be visible as the radiant point. Whether such