bability of a nucleus now being formed among them, and discussed the possibility of the earth's formation in a similar way. As condensation proceeded, and the earth became first fluid and then gradually solid, he showed that we should have at the centre the dense metals and their compounds, and in the crust the lighter metals, and explained how it was that the sea was salt from the first beginning. With a view to elucidate this part of the subject, he entered at some length into the composition of the sun, whose condition now is strictly comparable with that of the earth in its earlier stages, and proceeded to show how exactly the metals and gases forming the sun's atmosphere are ranged according to their densities. Coming more to chemical geology proper, he showed how the first sedimentary rocks were formed from the débris of pre-existing rocks, and the later ones in turn from their débris. Alluding to the Bath hot-springs, he strongly advocated the theory of their heat being due to chemical rather than to volcanic action, and explained his reasons for believing that this action was owing to the oxidation of iron. Treating amongst other heads of metamorphic action and mineral veins,—of the first he demonstrated the probability of many of our metamorphic rocks being due to the heat produced by great mechanical disturbances, such as the crumpling up of strata, and not to contact with the interior heat of the earth; and of mineral veins he adduced arguments in proof of their not being due to volcanic action. In conclusion, he gave the results of a new experiment by Mr. Stoddart of Bristol, which demonstrated very clearly the formation of flints, and concerning which nothing was satisfactorily known.—H. H. W.

CORRESPONDENCE.

THE BOULDER-CLAY AND THE THAMES VALLEY.

Sir,—At the meeting of the Geological Society, on February 24th, some surprise was expressed at the fact of the Boulder-clay not crossing the Thames Valley. It comes down in places to the water level on the north bank (there the Thames Valley is older than the Drift), and occurs nowhere along a distance of (I believe) ten miles on the south bank. If, as seems highly probable, at the time when the Boulder-clay was being deposited north of the Thames, parts of Kent and Sussex were above water, the Thamas Valley could not have been many fathoms deep, and existed as a channel running east and west between an island to the south and a shoal to the north. Along this channel an east and west current would flow parallel to the northern shore of the island, and sufficiently strong to cut off all drift slowly travelling down from the north and prevent its ever arriving at the coast. Therefore we find no remains of it now.

J. Lucas.

Geological Survey of England, Upper Tooting, S.W.
February 26, 1869.

DISCOVERY OF DAKOSAURUS IN ENGLAND.

Sir,—In the last number of the Quarterly Journal of the Geological Society appeared an abstract of a paper by Mr. Wood-Mason,

claiming to make known the existence of *Dakosaurus* in England. I trust I shall not appear wanting in courtesy in noticing the paper now, instead of waiting till it is published in full. But as I should then have no more or less to say, I have thought it better to make known the fact that *Dakosaurus* has already been chronicled as an English fossil, so that when Mr. Wood-Mason publishes his paper, he may withdraw his claim to be its first discoverer.

In the Woodwardian Museum occur vertebræ, limb-bones, and teeth of a reptile, for which I had used and still use the name *Dinotosaurus*; and, in a controversial writing on the Potton sands, I had referred teeth (in no way to be distinguished from those in the Kimmeridge Clay) to the same genus. My friend, Mr. Walker, soon after found that these teeth, which he had originally referred to as of crocodilian character, were similar to those in the British Museum, for which Quenstedt had used the name *Dakosaurus*, and in his next paper in the Annals of Natural History, 1866, and in the British Association Reports, he chronicles the *Dakosausus* as an English fossil, and acknowledges the assistance of Mr. Henry Woodward in its determination. It also was found in the beds at Wicken (Upware), and duly enumerated in a paper on that locality by Mr. Walker in 1867, in the GEOLOGICAL MAGAZINE, p. 310.

It has been known to me for several years in several species, as characteristic of beds from the base of the Oxford Clay to the sands over the Kimmeridge Clay. HARRY G. SEELEY.

WOODWARDIAN MUSEUM, CAMBRIDGE.

"MIDDLE DRIFT" GRAVEL AT LOPHAM FORD.

SIR,—My friend Mr. Gunn originally pointed out to me the interest attaching to Lopham Ford, as a crucial test on the question of denudation. He now asks, "how, supposing the valley of Lopham to be attributable to either pluvial or fluvial denudation, supposing the watershed to have been ever (? always) on that spot, could the magnificent bed of valley gravel have been deposited on the bank, near the ford and the watershed?"

What will he say, when I reply that there is no such bed of valley gravel there at all? The gravel seen is the "Middle Drift," in which the valley is excavated. I examined it carefully, and came to that decided conclusion. As corroborative evidence I found in it a bed of whitish sand, containing abundance of the same minute organisms from the Chalk, which are so plentiful in the Glacial sand at Firgrove pit near Norwich, and in the railway cutting near Wells. These could hardly be abundant in a river-gravel in a valley not cut through the Chalk.

I need not reiterate that I do not attribute the excavation of this valley to pluvial or fluvial, but to Glacial action. The contorted condition of the superficial beds, or "trail," is extremely marked in the gravel pit on the Suffolk side at Redgrave.—O. FISHER.

HARLTON, CAMBRIDGE.