

growth or accretion is such as occurs in Annulose and not in Molluscan shells. One of the specimens contains a *Ditrupe* and a *Spirorbis* both of which exhibit precisely the same kind of microscopic structure."<sup>1</sup>

While some of the supposed patelliform shells cannot be placed among the Mollusca, one form, of which there are two specimens, is very well preserved and distinct. It is referred by Gwyn Jeffreys to the genus *Hipponyx*, of which no upper valves were known previously from any strata below the Maestricht Limestone, although the lower valves or shelly bases had been met with in both the Chalk and Greensand in England.

They are from the Glauconitic Marls of the Black Mountain, Belfast, from the zone of *Pecten asper* of Barrois.

I have also received within the past week a new *Emarginula* from the Grey Chalk near Folkestone, which differs markedly from the only form hitherto known, *E. Gresslyi*, from that locality. I hope to illustrate both these in a future number of the GEOLOGICAL MAGAZINE.

J. STARKIE GARDNER.

#### COMPARATIVE PHYTOLOGY.

SIR,—Some very indistinct impressions, or rather remains of leaves, were forwarded to me from the well-known hazel-nut bed of Brook in the Isle of Wight, under the supposition that they might prove to be leaves of the beech. It is interesting to record that Baron von Ettingshausen found himself able to at once pronounce them to be leaves of *Corylus*, although he was quite unaware that they had been found associated with the nuts, and therefore recognized them entirely from what could be traced of their venation, for the outline and margin were almost wholly obliterated.

J. STARKIE GARDNER.

#### THE TERM "SCHIST."

SIR,—I feel rather perplexed by some observations on the term "schist" made by Mr. Allport in the GEOL. MAG. for this month. A great deal of confusion at present prevails as to the exact meaning of the word, and the progress of our knowledge, as I know by experience, is impeded by the want of a fixed meaning. Following Jukes, I have usually confined the terms "schist" and "schistose" to a rock possessing true foliation, as defined by Darwin, and approved by Mr. Allport. But when I have come to study certain "schists" in the field, I have found them to be simply laminated or cleaved, and therefore not schists, but shales or slates. It has appeared to me that we could not do better than adhere to Jukes's summary of the different kinds of fissile structure: "the *foliation* of *schist*, the *cleavage* of *slate*, and the *lamination* of *shale*." I was accordingly cast in doubt on finding that so high an authority as Mr. Allport used "schistose" as equivalent to "fissile," and affirmed that "the term schist certainly ought not to imply or include foliation." I confess I do not see why the word "fissile" could not be used for rocks which do not come into Jukes's triad, leaving as "schistose" undecomposed and unmetamor-

<sup>1</sup> See Dr. Gwyn Jeffreys's report of the *Valorous* Expedition, Proc. R.S. 1876.

phosed. I write, however, less as a critic than an inquirer; and for any petrological autocrat or parliament who will fix our nomenclature, I will, as in duty bound, for ever pray.

C. CALLAWAY.

WELLINGTON, SALOP, *March 4, 1880.*

#### THE GLACIAL DEPOSITS OF CROMER.

SIR,—If Mr. Reid had extended his observations he would possibly have suppressed the paper which appeared in your pages of last month. Geologists will find the refutation of it in the structure of the Wensum Valley by Foulsham, Guist, and Fakenham, where the beds of the Cromer Cliff have been cut through by this valley, into which the chalky clay in its unmistakable form has come, resting on the Middle Glacial (a later part of it than that which caps the Cliff section), near the valley bottom, but wrapping over this and lying upon the Till and Contorted Drift direct on the higher slope of the valley. The instances, however, of the excavation of valleys through the older Glacial beds and Crag, and their infilling by the gravel and chalky clay, are universal wherever the Contorted Drift extends, and occur as far south as the southern border of Suffolk.

The gentlemen of the Survey, confined by their duties to very limited areas, form some of them very decided opinions upon the whole subject of the newer Pliocene formation from what they find there. Thus from a gentleman employed in Cambridgeshire and West Essex we have been presented with one theory of the Glacial formation; from another who was employed in the neighbourhood of the Fen country we have a most elaborate theory of it, which in most respects is the exact contrary of the former; and now we have Mr. Reid's. From gentlemen unconnected with the Survey we have had that of Mr. Gunn, who finds everything—upper, lower, middle, “the great laminated series,” and I do not know what besides,—in the Cromer Cliff; that of Mr. Geo. Maw, who made out that the beds of the Cromer Cliff were posterior to the chalky clay, and analogous in position to that part of this clay which Mr. Harmer showed, in 1866, lay in valleys cut through its general outspread; and that of the late Mr. Belt, which was so vast and extraordinary as to be beyond definition here; and besides these, there are my own more moderate views. The principal result of this excogitation must be that geologists in general infer that we are all quite in the dark, and I suspect are, many of them, laughing at us.

Dr. Croll has in your pages insisted that the Glacial Clay of Holderness, which is without contortions, and contains numerous horizontal beds of sand or gravel, is the bed of the North Sea between England and Scandinavia shoved bodily over Yorkshire by the Scandinavian ice; and this, moreover, without disturbing the Chalk floor. Mr. Reid now has it that this ice has shoved Norfolk out of its place (still without disturbing the Chalk floor) and crumpled up the county. Beside, and in contrast with these hypotheses, we have Mr. Geikie and Mr. Skertchley insisting that the morainic clay, which is seen for miles overlying sand and gravel in the North Suffolk cliff, has been dragged thus over by the ice, without even the layer of sand actually in contact with it being disturbed. These things are so far beyond