of the difficulty. I should feel much grieved if these remarks appeared to convey any slight whatever on the careful work of modern palæontologists; but my impression is that the object of their labours will be to a serious extent frustrated if their results are published in too complex a form for the "general geologist." Having said so much about changes of names, perhaps I may be pardoned if I sign myself,

ROB. W. HADDOW.

BANBURY, 8*th Sept.* 1887.

CHERT IN IRISH CARBONIFEROUS ROCKS.

SIR,—Chert is not, as supposed by Dr. Hinde, a definite characteristic of the Irish Upper Carboniferous Limestone (see chapter v. Manual of the Geology of Ireland, C. Kegan Paul & Co., 1878). Where this limestone is fully represented as in Co. Limerick, etc., the "lower cherty zone" is there best developed; and it occurs *in the lower limestone*, between the "lower shaly limestone" and the "Fenestella Limestone." A second conspicuous zone for chert lies between the Fenestella Limestone and the upper limestone, when of the "Calp type." In the upper limestone of Cork and Kerry there are layers and nodules of chert, but in Limerick, Tipperary, and part of Galway it is rare, while in the rest of Galway and in Clare it is more common. In part of Leinster, between the upper limestone and the Coal-measures lower shales, there is a cherty zone, but in the rest of Leinster and in Munster in all the known sections of the junction of the Limestone and Coal-measure shales, this cherty zone is absent. In Ulster, however, especially Fermanagh, where sections can be seen, this cherty zone is well developed and of a character similar to that described by Dr. Hinde as characteristic of the Yoredale Series, Yorkshire.

According to my experience chert is as frequent, if not more so, in the Lower, as in the Upper Irish Carboniferous Limestone. When it occurs in zones, it is usually accompanied by shaly beds, and is more or less friable; but when in compact limestones like those of the "Burren type," it stands out conspicuously like the nodules, lentils, and layers of flint in the chalk, as can be seen in innumerable places in Cork, Kerry, Clare, Sligo, Fermanagh, etc.; near Athenry, Co. Galway, in a railway-cutting, there is a thick bed.

As Dr. Hinde has been making researches as to the origin of chert, I would specially direct his attention to the chert lentils perpendicular to the stratification in Benmore, Co. Fermanagh, to which attention was first drawn by Thos. Plunkett, M.R.I.A., of Enniskillen, in a paper read before the Royal Dublin Society. Those mentioned in his paper occur in Benmore, but I have since observed them in Belmore and other places in that county. They are lenticular masses in height and depth, and have all the appearance of ordinary chert. I take it that they are the filling in of shrinkage fissures along a line of partial rupture. I would also draw his attention to the lower and middle cherty zones in the Co. Limerick, both of which are remarkable Palæozoic breaks, as in the intervening rock, "Fenestella Limestone," the fossils are quite distinct and much more

abundant than in the strata above (Calp) and below (lower limestone with shale partings). I would also draw his attention to the papers published by the Boston Society on the island of Cuba, which I suspect might throw some light on the subject. As suggested in previous writings I suspect that the cherty zones in the Irish Carboniferous Limestone, especially that between the Fenestella Limestone and the Calp, must have some connection with vulcanicity.

Years ago Jukes got chert from Queen's Co., Limerick, Clare, etc., examined by Sorby, and I think I remember that he published about them.

Geological Survey of Ireland. G. H. Kinahan.

RE "EXPLOSIVE SLICKENSIDES."[1]

Sir,—I should like, if I may, to add a few facts which seem to closely bear upon the subject of Mr. A. Strahan's interesting article in the August Number of your Magazine. They are these:—In driving, exploring, or "opening-out" headings in certain seams of coal, loud reports are very frequently heard, which are often accompanied by the bursting-off from the sides of the excavations of large blocks or masses of coal. The noise made by such "explosions" or reports may be likened to artillery, and often causes men to run out of the place with alarm. Now, these "bumps," as the miners term them, generally occur in situations where the strata are much faulted by dislocations, and increase in importance with depth or thickness of cover. They probably happen most frequently and loudest in single drifts or headings, or those formed in advance of the general workings of the mine; and it is where these excavations are formed in the lower part of the coal-seam that the "bumps" are heaviest and produce greatest effects. Such an instance occurred a few years ago in one of the pits of the Moira Collieries close here, when a sudden and very severe bump completely displaced and shattered a single-brick "brattice"-wall (or partition, dividing the excavation longitudinally for ventilating purposes) for a length of about 24 feet. This wall was, as it were, completely *blown* out, and the men in the place were "jumped-up" off the floor, but not hurt. The wall was about three feet high and built with mortar. Again, in excavatimg the main roadways in the solid coal in the thicker seams of South Staffordshire, very severe bumps take place, and have been known to suddenly displace hundreds of tons of coal, by throwing them off the sides into the road. But in the ordinary course of coal-getting, especially by the method called the "Longwall" (*i.e.*, where all the seam is extracted by one operation), loud reports with bumps are of every-day occurrence, and now and again they have the effect of knocking out the props and sprags (wooden supports to roof and sides) and bring down a quantity of stuff. Also, during the operation of "holing" (under-cutting the coal-seam preparatory to breaking it down), the coal will keep on bursting itself off in little fragments from the face of the excavation with loud explosive reports, often putting the men's candles out. When the coal does this, it is said to have plenty of "life" in it, or "it keeps talking to you."

[1] See Prof. T. McKenny Hughes' article, *ante*, pp. 511–512.