East side of England. I need scarcely remind your readers that geologists. not omitting the Survey authorities, have long since abandoned the belief in the Permian age of Sedgwick and Murchison's "Lower Red Sandstone" of Yorkshire and Durham. "All along that range" (Nottingham to Tynemouth), says Prof. Ramsay, "the red rocks on which the (Magnesian) Limestone rests are now proved to be Carboniferous sandstones and shales. . . . . The *supposed* Rothliegende has indeed almost (? altogether) disappeared from the entire area."[1] The few feet of true dolomitic Magnesian Limestone at Skillaw Clough and a few other points in the West of England cannot for one moment be compared with the vastly thicker and more extensive deposits of Magnesian Limestone on the other side of the Pennine Chain. I must also beg to differ from Prof. Hull, when he refers to the Marl Slates of the North-east of England as a local and thin formation. We find Marl Slates accompanying the Magnesian Limestone through Notts and through Durham. I have lately recognized them in Yorkshire. In Notts they attain in places a thickness of over 100 feet, and under Lincolnshire of about 200.[2] They maintain throughout this wide area a remarkably characteristic facies. Thus Prof. Hull's objections to my argument for the pre-Permian age of the Pennine Chain—based on the dissimilarity of the Permian deposits on the two sides of that range—are singularly unfortunate.

This argument is not, however, as Prof. Hull seems to imagine, a crucial point in my hypothesis. Even if the Permian deposits of the West were closely allied to instead of being so very unlike those on the East of the Pennine Chain, this would not demonstrate the post-Permian age of that range. Similarity in texture, of fossils, and even of "set" or succession, between the rocks of a period in two adjacent areas, though no doubt indicating a general similarity in physical conditions and in sequence of events, would not suffice to prove original continuity of submergence between those areas. (Deposits now accumulating on the opposite sides of an island or peninsula or in two adjacent lakes may be undistinguishable, and their faunas may agree, and yet such areas are either wholly dissevered or only connected *in a roundabout way.*) All idea of direct continuity of submergence must even in that case fall to the ground when there is, as in the present instance, sufficient independent evidence of the existence of an intervening land barrier. E. Wilson.

BLOWING WELLS.

Sir,—A curious phenomenon has recently been brought under my notice observable at some of the wells in the uppermost part of the Bunter sandstone of this district. These wells "blow" through fissures in the sandstone, just above water-level. This is when barometric pressure is low, suction setting in as the mercury rises.

The most remarkable of these wells is one at Solberge near here. The blast at this well is conveyed above the ground by means of an

[1] Q.J.G.S. vol. xxvii. p. 245; Geol. Mag. 1872, Vol. IX. p. 339; The Yorkshire Coalfield, p. 482; Geol. Mag. 1866, p. 49; Q.J.G.S. vol. xxv. p. 291.

[2] Q.J.G.S. vol. xxxiv. p. 812.

iron tube inserted in the covers of the well and running up alongside of the pump. With an outward blast, this "buzzer," it is said, can be heard a mile off.

Mr. Fairley, the county analyst, pronounces the water "a hard water of good quality for drinking, but not for any purposes where softness is mainly due." On raising the covers of the well, the water is seen in a state of ebullition, which soon ceases.

The existence of a cavern in the strata has been suggested as the cause of the blowing wells in this district. The very considerable thickness of sandstone that probably intervenes between the bottom of the well, and the underlying Magnesian Limestone—the unlikelihood of any cavern existing in the sandstone itself—and the almost certain tendency the glacial sands would have to fall through any opening of the kind, causing a depression on the surface of the soil, of which there is no evidence, for the wells are situated on dome-shaped ridges of drift-covered sandstone, incline me to look for another reason for the phenomenon. I am more disposed to think that, taking into account the fissures in the sandstone, its origin may be traced to causes similar to those which produce explosions in coal-mines. These, I understand, generally take place at or about the time the barometer has reached its lowest point.

Mr. Hutton, of Solberge, takes much interest in the peculiar action on the part of his well, and registers the changes in velocity and temperature of the blast by means of the anemometer and thermometer. The barometrical observations, as already noticed, show that the direction of the current is dependent upon the weight of the atmosphere.

Mr. Fox-Strangways, F.G.S., tells me that he believes the great currents of air which issue from large caverns are more generally influenced by temperature than by barometrical changes, and that he has been struck with the enormous current of air which issues from the Mammoth Cave in Kentucky, but which is an incurrent during the night.

The existence of such wells, as are above described, is unknown to me elsewhere than in this neighbourhood.[1] Any information as to their occurrence in other parts of the country, might help to throw light upon a subject which is at present a puzzle to many in this district, and is, I cannot but think, well worthy of further investigation. There are borings or wells called "blow wells" on the Lincolnshire wolds, and on the coast of Essex, but I am unacquainted with their history.

A. G. Cameron,
H.M. Geol Survey.

Northallerton, *Dec.*, 1879.

[1] See Blowing Well near Preston described by J. Rofe, F.G.S., Geol. Mag. 1867, Vol. IV. p. 106.

Errata in Mr. W. Davies's paper, January, 1880.

Page 19, line 25 from top, for "rapprochait," read "rapproche."
,, 25, ,, 13 from bottom, for "la," read "le."
,, 26, ,, 23 from top, for "*Pelicanus*," read "*Pelecanus*," and in all subsequent instances to p. 27.

Erratum—January, 1880. In Mr. Kinahan's article, p. 29, line 23, for *Killarney* read *Killary*.