FEBRUARY 16, 1865.

XXIII. Mr. J. WALLACE YOUNG described—

A large collection of the Products of the destructive distillation of Coal-tar, forwarded for exhibition by Thomas P. Miller, Esq. of Springfield, amongst which were tar oils, paraffine, photogen, ammonia, &c., and specimens illustrating the formation of the aniline colours; benzol, nitro-benzol, aniline, mauve, magenta, blue, violet, yellow, green, &c., also numerous specimens illustrating the application of these colours in dyeing and printing.

XXIV. *On the discovery of CARBONIFEROUS LIMESTONE fossils in the UPPER COAL MEASURES to the east of Glasgow.* By Mr. R. WHYTE SKIPSEY.

THE author exhibited specimens of *Productus scabriculus*, *Discina nitida*, *Conularia quadrisulcata*, *Bellerophon Urii*, and a shell like *Axinus deltoideus*, but not sufficiently perfect for identification, and fragments of pentagonal stems of a crinoid, recently discovered in the Upper Coal measures, very greatly higher in the Carboniferous series than previously known.

The fossils of this character are true marine types, and have not hitherto been found higher in the Carboniferous series in the West of Scotland than about 290 fathoms under the Ell coal, generally in the Mountain Limestone, and its concomitant shales. But the specimens now produced were discovered in a coal-pit shaft on the Drumpeller estate, about six miles east of Glasgow, enclosed partially or altogether in clay ironstone nodules—these again enveloped in clay shale, a few of the dorsal valves of the *Productus* being in the shale itself. Their position is about thirty fathoms from the surface, over and underlaid by the usual alternations of sandstones, shales, and fireclays. In this pit the Main coal is calculated to be 100 to 110 fathoms from the surface, and the Ell coal, if in its usual relative position to the main seam, would be ten to fifteen fathoms higher. The

position of this fossil bed, therefore, is about sixty fathoms above the Ell coal, thus giving these varieties of ocean life a horizon of upwards of 300 fathoms higher than hitherto known in our Scottish coal fields, the remarkable distinction being that they lie above the regular coal seams of the Upper Carboniferous strata, while any previously known beds of the kind lie in the middle series, thus establishing a connecting link with the Permian beds, in reference, at least, to the *Discina nitida*. The nodules enclosing these fossils are of a brown colour like hæmatite, and this is really their character, there being only twenty-eight per cent. of iron in its normal state of a carbonate, and twenty-three as a peroxide—the shale is also purplish red. The cause is evidently a considerable dyke or fault, which, though not in contact at this point, traverses the ground in close proximity, and by transmitted heat has effected this change in colour and character.

The *Productus* is most abundant of all the genera, only a few specimens of the others having yet been found; but great numbers could not be expected, the extent of the fossiliferous bed turned out being only the horizontal space of the working and air shafts together, not exceeding an extent of twelve feet square, and a foot to a foot and a half in thickness. It is, however, a persistent bed, and in its natural position, there being no irregularity or dislocation visible in it or the strata around, except a comparatively limited downthrow, on the side opposite the pit, on the whole series of beds, by the action of the dyke or fault, the pit being considered as lying on the upthrow side.

As a proof that this is not a mere casual or isolated deposit of marine organisms, it may be stated that at another pit in line of the same fault or dyke, and about a quarter of a mile distant, specimens of the *Productus* in similar brown shale and ironstone have been also found among its debris, and in that pit the main seam of coal was wrought for many years at 105 fathoms, there can therefore be little doubt but that when the mineral railway, shortly to commence in the immediate neighbourhood, induces more mining enterprise, this fossil bed will become more thoroughly developed, and throw greater light on the geological features of the locality.

The circumstance of the water coming in on the shaft in very considerable quantity, has compelled a stoppage in sinking beyond about 50 fathoms, preventing the ascertaining the character of the succeeding strata, or if there are any repetitions of fossiliferous beds; but a powerful pumping engine being now ready for operation, there are good hopes that the deepening of the shaft will, in the course of the Winter Session 1865-6, allow of complete information on all points being communicated.