

IV.—NOTES *on* CRINOIDS *from* INVERTEIL, FIFESHIRE. By
ARTHUR PRATT.

[Read 7th December, 1878.]

THE specimens now laid on the table are the product of two holiday excursions to a locality not much known to Glasgow geologists, but endeared to me by recollections of boyhood. There, along with my father, I used to search all the quarries round about for "curiosities;" and Inverteil lime-quarry was one of our favourite spots for picking up what we called "stone shells" "horns," and "spar." On my first excursion, which was at the Glasgow Fair time of 1875, there had been no working at the quarries for nearly thirty years. Still, in the old shale heaps, although almost covered with grass and vegetation, I got some beautiful specimens of crinoid heads, which had doubtless lain all that time. When our respected friend, Mr. Bennie, now of the Geological Survey of Scotland, was in Glasgow at the late meeting of the British Association, he told me that the workings were resumed, so I gladly availed myself of an early opportunity of paying the neighbourhood another visit, which happened to be when Glasgow was keeping holiday in honour of the Prince and Princess of Wales. I then set off to the diggings, and am glad to say I had no cause to regret going, although on that day east coast weather was no better than that in the west, for I was at work under my umbrella more than three hours. Indeed, the rain did me some service, for it washed the surface of the recently put-out shale, and showed the contained organisms most beautifully. I discovered altogether the heads of five or six various species of crinoids, and stems and arms of about a dozen different species. The heads were all found in the shale, where their stems were also met with, but so far as I could see there were no heads in the limestone, which seemed to be almost literally made up of stems. It looked as if some sudden influx of muddy fresh water had killed them all instantaneously, for in the case of these, as in that of many other marine animals, fresh water acts as a strong poison, and their heads, dropping away from the stalks, had been swept off to some other spot. Several beds of this encrinital limestone

alternate with layers of shale of various thicknesses, and I think that the reason of so many different species being found in the shale heaps may be accounted for by the fact that all the shale beds have been thrown together in the working—so that the species proper to each have got mixed. Amongst the species that I have been able to identify are examples of *Poteriocrinus nuci-formis*, M'Coy; *P. calyx*, M'Coy; *P. Maccoyanus*, De Koninck; *P. crassus*, Miller; *Cyathocrinus planus*, Miller; *Platycrinus*, species; also numerous stems referable to the above genera as well as to that of *Actinocrinus*. Besides the crinoids, I found several species of corals, and specimens of *Euomphalus*, *Pleurotomaria*, *Petalodus Hastingsia*, etc. Indeed, all the beds are rich in organic life. Under the encrinital beds lies the *Productus* limestone, from 15 to 16 feet thick, containing in plenty *Productus giganteus*, *P. semireticulatus*, etc., but good examples are very difficult to get out.

[ABSTRACT.]

V.—REMARKS upon Prof. HULL'S PROPOSED TRIPLE DIVISION of the CARBONIFEROUS STRATA, as contained in a paper entitled "ON the UPPER LIMIT of the ESSENTIALLY MARINE BEDS of the CARBONIFEROUS SYSTEM in the BRITISH ISLES, and the necessity for the establishment of a MIDDLE CARBONIFEROUS GROUP," which he READ BEFORE SECTION C. of the BRITISH ASSOCIATION, GLASGOW, 1876. By JOHN YOUNG, F.G.S., V.P.

[Read 7th December, 1876.]

MR. YOUNG stated that there were few geologists in Britain entitled to speak with more authority upon the strata of the Carboniferous system than Prof. Hull, who had long studied the relations of the strata in the coal-fields of Scotland, England, and Ireland, in connection with his work on the Geological Survey. His proposed plan is to have the system grouped into seven successive stages in an ascending series, marked A to G. These seven stages he would further group into three chief divisions—A B representing the Lower Carboniferous slates, grits, and conglomerates, and the Lower division of the Carboniferous limestone; C D E taking the Yordale beds, Millstone Grit, and Ganister