

matters within the cavity, the heavier bodies remaining within it, while the lighter are ejected. In this way, it appears to me that pits in the chalk may have been kept open for some time after the deposit of the crag had commenced.

The bending down of the lower strata of the crag into the hollows of the larger and deeper pipes, may be regarded as an extreme case of the stratification conforming itself to pre-existing irregularities of surface, a conformity which is so apparent in the same strata when extending over the broad and shallow hollows in the chalk. A subsidence to a limited extent in matters so deposited is not incompatible with the mode and circumstances of their deposition.

January 8. 1845.

George Dawson, Esq. of Birmingham, was elected a Fellow of this Society.

The following communications were read :—

1. *On the Discovery of the Fossil Remains of BIDENTAL and other REPTILES in SOUTH AFRICA.* By ANDREW GEDDES BAIN, Esq.* Surveyor of Military Roads under the Corps of Royal Engineers.

THE district in which these fossils were found is on the eastern frontier of the Cape Colony in South Africa, about 500 miles east of Cape Town. No granite has been observed here, and the lowest rocks are stratified, and in consequence of the dip, though variable, tending on the whole towards the interior of the country, the lower members of them are those nearest the coast.

A red quartzose crystalline sandstone is described by the author as the fundamental rock, and as alternating with a talcose slate. This sandstone is assumed to be of the carboniferous period, vegetable impressions, apparently of a *Lepidodendron*, having been found in it, and it is traced by the author towards the west, parallel to the coast to within 50 miles of the Cape.

Over this there occurs a rock, called by the author a claystone porphyry, containing fragments of the sandstone; next an argillaceous slate, alternating with sandstone and containing thin laminae of limestone, and at a little distance is a stratum full of vegetable remains.

Further to the north is a ferruginous sandstone with argillo-calcareous nodules, in which nodules were found the remains of reptiles characterised by the author as *Bidental*, and described by

* This and the succeeding memoir are published *in extenso* in the Transactions of the Geological Society, 2d series, vol. vii. p. 53.

Professor Owen in the subsequent memoir. From the basin of Fort Beaufort to near the southern foot of the Winterberg range (which is about 90 miles inland) the same beds appear to be continuous, but they are interstratified with beds of greenstone which also occasionally intersect them.

The Winterberg peak (between 5,000 and 6,000 feet high) is a flat tabular mass of basalt. Several hundred miles to the westward of the peak a region extends of horizontal sandstone capped on the eminences by basalt and intersected by numerous basaltic dykes. A similar region extends to the north of the peak. Here again reptilian fossils have been discovered, and they have also been brought from the country far to the north beyond the Orange River. Ammonites have been found at the summit of the Compass-berg 150 miles N.W. of the Winterberg.

The author does not venture to decide on the geological age of the formations he thus describes, but proceeds in conclusion to allude to some overlying deposits found near the southern coast of Albany, one of which is a red sandstone conglomerate, entirely without fossils and resting unconformably on the supposed carboniferous sandstone: others are distinctly tertiary, and abound in shells resembling those of animals still living on the South African coast. A thick diluvial deposit is found near Fort Beaufort, and from the plains far to the northward beyond the Orange river the fossil skull of a kind of buffalo has been obtained.

2. *Description of certain Fossil Crania, discovered by A. G. BAIN, Esq., in Sandstone Rocks at the South-eastern Extremity of Africa, referable to different Species of an extinct Genus of Reptilia (DICYNODON), and indicative of a new Tribe or Sub-order of SAURIA.* By RICHARD OWEN, Esq., F.R.S., F.G.S., &c.*

THE most remarkable character in these fossils is the presence of two long curved and sharp-pointed tusks, which, like those of the Walrus, descend one from each superior maxillary bone, and pass on the outside of the fore part of the lower jaw, a character rare even in Mammals, and hitherto only met with in that class; but in these specimens combined with a structure of the cranium, proving that the animals belonged to the class Reptilia, but were members neither of the Crocodilian nor Chelonian orders. The Lacertine Sauria offer characters for comparison, but the minor deviations from the ordinary Lacertian structure are so numerous, the mode in which Crocodilian and Chelonian characters are interwoven upon an essentially Lacertian base is so interesting, and the individual and distinctive characters of the Dicynodons so striking and peculiar as to require a detailed osteological description for their complete illustration.

* Transactions of the Geological Society of London, 2d series, vol. vii. p. 59.