

The reason why we have so little snow, and consequently so little ice, in temperate regions, is not, as Mr. Murphy seems to suppose, that the heat of summer melts it all, but that there is so little to melt. And the reason why we have so little to melt is that, owing to the warmth of our winters, we have generally rain instead of snow. But if you increase the eccentricity very much, and place the winter in perihelion, we should probably have no snow whatever, and it would then, in so far as glaciation is concerned, matter very little what sort of summer we had.

But it is not correct to say that the perihelion summer of the glacial epoch must have been hot. There are physical reasons which go to prove that, notwithstanding the nearness of the sun at that season, the temperature would seldom if ever rise much above the freezing point. See *Philosophical Magazine* for August, 1864, pp. 134, 135; February, 1867, pp. 125, 126. JAMES CROLL.

EDINBURGH, July 8th, 1869.

DINORNIS AN AUSTRALIAN GENUS.

SIR,—It will be interesting to your readers to know, that evidence has at length been discovered of the former existence in Continental Australia of birds of the Pleistocene New Zealand genus *Dinornis*.

A short time since a well was dug in that part of the Peak Downs in Queensland (about lat. 22° 40' S.) between Lord's Table Mountain and the heads of Theresa Creek, near the track from Clermont to Broad Sound.

The well passed through 30 feet of black trappean alluvial soil, so common in Australia, which rested on 150 feet of drift pebbles and boulders, on one of which (at that depth) rested a short thick femur, so filled in with mineral matter (calc spar and iron pyrites) as to give the internal structure more the appearance of a reptilian than an ornithic bone. I have never yet seen any bone in Australia so much mineralised and yet retaining its distinctive osseous features. When placed in my hands it had been already broken in two, just as a bird's bone would be likely to break. But besides this there are two crushed-in fractures of ancient date, which have broken in the surface of the bone, and if not made in the life time of the bird, were probably made by the violence of the heavy drift in which it was found.

I had an opportunity of comparing it hastily at the Australian Museum in company of Mr. Gerard Krefft, our able Curator, and was convinced of its being a bird bone allied to *Dinornis*, to which opinion I was afterwards led by reference to the writings of Professor Owen. Since then Mr. Krefft has compared it with a collection sent over from New Zealand by Dr. Haast, and has been enabled to determine it to be a bone belonging to *Dinornis*.

I take advantage of the departure of the mail to-morrow to announce this fact, waiting for a further account of the specimen from Mr. Krefft.

The Peak Downs were discovered by Leichhardt in his famous expedition to Port Essington in 1845.

Since then the district has been traversed by Mr. Gregory, to whose journal as well as to that of Leichhardt your readers are referred. The Peak Downs are now settled, and a considerable population have been digging gold on Theresa Creek and in other places, and mining for copper has made advances to the westward at Mount Drummond.

Some time ago my attention was invited to a statement made by the Gold Commissioner there, to the effect that a "*Tertiary River*" had been discovered, and I was requested to examine the facts alleged. On breaking up a vast amount of the pebbles and boulders said to have been found in this "*Tertiary River*," I discovered that there was no clear evidence of anything that could be called Tertiary; but that they were pebbles of probably Quaternary accumulation, consisting of Silurian, Carboniferous, and Secondary rocks with the igneous rocks of the neighbourhood, which latter may be in part of Tertiary age.

In some of the creeks running more to the south-eastward from the Peak Downs, and like Theresa Creek, belonging to the Mackenzie River system (e.g., Crinum Creek), occur bones of *Trionyx* and *Crocodile*. A year or two ago I forwarded some of these to my friend Professor Huxley, whose determination I have not yet received.

The naked fact of the discovery of *Dinornis* in this country is of some value as to Geological inferences.

I may add, in conclusion, that I look forward to further discoveries in the vast accumulations of drift that encumber some of the localities in the neighbourhood of the rivers watering the Leichhardt district, where, among other relics, are those of the Carboniferous formation which now presents only the wreck of a mass of strata that once must have been nearly continuous over an area comprising several degrees of latitude and longitude on one side or other of the Tropic of Capricorn.

W. B. CLARKE, F.G.S.

ST. LEONARD'S, NEW SOUTH WALES,
19th May, 1869.

P.S.—I have omitted to mention, that in the collection I exhibited at Paris in 1855, No. 49 consisted of *Osseous breccia* (Bird bones) from the Coadrigbee Cavern, in New South Wales. So, *Dinornis*, though new, is not the first of its order.

THE SO-CALLED HYOID PLATE OF *ASTEROLEPIS*.

SIR,—It may gratify the workers in the Old Red Sandstone to learn that I have solved the puzzle of the so-called Hyoid plate of *Asterolepis*. It is in reality a Dorsal plate fitting on immediately behind the "Cranial Buckler" in nearly the same position as that occupied by the Dorsal plate of the *Coccosteus*. I have succeeded in obtaining two fine specimens of the head of the *Asterolepis* with these plates in their proper positions, from the Great Flag Deposits of Caithness, and I hope to be able to lay them before the Geological Society of London in the course of the next winter.

JOHN MILLER.

27, BLOOMSBURY STREET, BEDFORD SQUARE,
LONDON, 10th July, 1869.