

Geological Map of Cape Colony, 1873, published by Stanford, London.

In the southern portion of Cape Colony no formation has excited so much interest, or proved so inscrutable a puzzle to the earlier geologists, as the zone of rock named "Porphyry" and "Trap Conglomerate" by the late A. E. Bain, "Trappean Ash" by Wylie, "Metamorphic Rock" by Pinchin, &c., and called "Bushman Graves" by the Boers. In Natal the same formation occurs, and Dr. Sutherland (of that colony) was the first to consider it as possibly of glacial origin, but he obtained no direct evidence to support that view.

As the names applied to this singular conglomerate were all misleading in my Sketch Geological Map of 1875, I named it the "Dwyka Conglomerate," on account of the excellent and characteristic sections exposed where the river of that name cuts through it.

While at Matjes Fontein, Cape Colony, in June, 1885, I obtained the first evidences of glaciation in this southern extension of the conglomerate among the loose pebbles, and more abundant evidence at Prince Albert, close by. In my report of 1886 to the Cape Government, the full extent of these conglomerates in South Africa is shown. Incidental reference and sections of the conglomerate occur in my report to the Cape Government dated 1879. The full extent of the conglomerate is also shown in my Sketch Geological Map of South Africa of 1887, published by Sands and McDougall, Melbourne.

Australia.—In 1887 I obtained indubitable evidence of glaciation in the conglomerate of Worragee, near Beechworth, Victoria, and placed well-striated pebbles and boulders in the local museum and in the Technological Museum, Melbourne. These were the first glaciated stones discovered in the palæozoic conglomerates of Victoria. Shortly afterwards, on visiting Bacchus Marsh and the Wild Duck Creek, I obtained abundant and unchallengeable testimony to the glacial origin of these conglomerates also for the first time, although their glacial origin was suspected thirty years ago by Sir A. Selwyn and the late Mr. Daintree. A paper on the subject was read before the Royal Society of Victoria in 1887, and several localities besides the above described. Another was read before the Australasian Association Meeting, December, 1890. A special report on the Wild Duck Creek conglomerate, prepared in 1891 for the Geological Survey Department, was published in 1892.

Tasmania.—In October, 1892, I once more encountered this remarkable conglomerate at the base of Mount Reid, near Strahan, and at an elevation of 3000 feet above sea-level. At this site it corresponds in a remarkable manner with both the Dwyka conglomerate of South Africa and the Wild Duck Creek conglomerate of Victoria. At the same time, and at a few miles' distance, I discovered around Lake Kora very extensive and marvellously well developed evidences of modern glaciation on a large scale. These discoveries were made public through the press at Hobart and at Melbourne in the beginning of November following, and a paper and plan has been submitted to the Royal Society of Melbourne, and read. The whole of my reports and maps have been supplied to the Geological Society, Burlington House.

Melbourne, July 15.

E. J. DUNN.

Astronomical Photography.

LORD RAYLEIGH, in his letter (August 24), raises the interesting question of the adaptability of the plate to the object-glass. This is a novel idea, and I hope with him that we shall have the opinion of Captain Abney or some other authority on the question, or that it will be settled experimentally whether the use of an object-glass corrected for visual work will give, with properly prepared plates, results approximating those obtained with the photographic object-glass. In the case of Cambridge Observatory, there is already an object-glass of nearly twice the area of the proposed photographic telescope, so that it is quite possible as good results might be obtained with the Newall telescope as with the proposed one.

With the collodion process, where the curve of sensibility of the photographed spectrum had a well-defined summit, the photographic object-glass corrected for that part left very little to be desired. Now, the curves of sensibility of the different kind of plates vary extremely. We have long flat curves, or curves with two maxima; in fact, there is such a range now that it is a matter of surprise to me that any object-glass produces such good results as are obtained. Some years ago, after read-

ing Dr. H. W. Vogel's "Photography of Coloured Objects," I thought that astronomers would be driven to the use of the only instrument that will use any and every plate—the Reflector; or if they would use the object-glass, that they would have to first find the most sensitive plate, and then make their object-glass to suit it. They should be made to suit each other. If this can be done by a variation of the photographic process without paying too dearly for it in the loss of sensitiveness, a great deal will be gained in many ways.

The great doubt in my mind is whether it is possible to get rid of the blue rays without the use of screens.

In any case, the object-glass can never properly use all the available light in the way the Reflector does, and it is a matter of extreme surprise to me that, notwithstanding the magnificent results obtained by the Reflector in astronomical photography astronomers still seem to prefer the expensive object-glass.

Ealing, September 11.

A. A. COMMON.

The Greatest Rainfall in Twenty-four hours.

As a resident of Dehra Dún, I was interested in a paragraph at p. 297 of NATURE for July 27, 1893, saying that the *Indian Planters' Gazette* had recorded a rainfall of 48 inches at Dehra Dún on the night of January 24, 1893. As 48 inches is considerably more than half our average yearly rainfall (86 inches). I have looked up the official returns of the Meteorological Reporter to the Government of India. They give for the rainfall recorded at 8 a.m. on January 24, 1893, 0.26 inches only, 1.07 inch being the recorded fall on the same date at Mussoorie, on the hill range 11 miles off. I have examined the Dehra Dún rainfall records since January 1, 1867, and find that the largest amount recorded for any one day since that date is 11.60 inches, which is given for July 30, 1890. It is possible that the correspondent referred to wrote 4.8 inches, but even that amount, though not an uncommon fall for the monsoon season between June and September inclusive, would be a heavy fall for January. The highest recorded fall for any day in January is 2.84 inches on January 26, 1883.

J. S. GAMBLE.

Imperial Forest School, Dehra Dún, Aug. 22.

[The paragraph in question was taken from the *Ceylon Observer*. We append it as it appeared in our issue for July 27, together with a remark we made at the time.—ED.]

"If the *Indian Planters' Gazette* of 28 Jan., 1893, is correct, the following paragraph establishes a still higher record. On page 59 one reads: 'Our Dera Doon correspondent writes on January 24, 1893: last night we had 48 inches of rain, and all the hills are covered with snow. It is still raining.'" For this to have any scientific value, however, it must be known who were the observers, and by what means the rainfall was gauged.

Wasps.

OF late much has been written about the seasonal prevalence of wasps, and the mischief, in several places, wrought by them. May not, however, their use in keeping down many forms of insect pests be set off as some sort of palliative? Wasps are exterminators of aphides, and although the season has been favourable to insect-life, next to no damage has been done to the hop-bines or the corn or pulse crops of Worcestershire or Herefordshire by these latter pests—frequent destroyers of crops.

Is it suggestible that the excessive wasp prevalence is attributable in some measure to the abundance of their insect prey, just as has recently happened in Scotland, in the instance of the multiplication of the short-eared or "Woodcock" owl, owing to the plague of field voles? The owl is a winter immigrant, usually leaving in spring. "Nests in ordinary seasons are of rare occurrence in Great Britain, but owing to the vast increase of their favourite food—the field vole—these owls have not only arrived in increased numbers, but have remained and bred in Scotland all over the affected districts, laying from eight to thirteen eggs, and rearing large broods," instead of the few eggs these owls have hitherto been accredited with laying.

I am a fruit grower. Much damage has this year been done to the fruit; not, however, by the wasp tribe, but by hungry birds, the fruit having even been attacked in an unripe state. According to my experience wasps do not become household pests till the falling-off of insect prey towards autumn.

Worcester, September 1.

J. LLOYD BOZWARD.