

foot six inches, lying upon the Carboniferous strata. Farther researches this summer have fully confirmed my first impression, that the shell-bed lies below the lower Boulder-clay. The country around Kilmarnock is largely perforated with pits, and good opportunity is afforded for observing the surface-beds. In none of these pits has Boulder-clay been found underlying the sand and peaty beds. The sand bed is very irregularly developed, being as thick as thirty feet in one pit, and in others ten feet, twenty feet, and so on. The peaty bed is apparently the remains of an older bed, most likely of estuarine (?) formation, being found in patches, often at considerable distances apart, remnants no doubt of a larger bed that has suffered by denudation. The discovery of these shells throws light upon the former discoveries at Kilmarnock, and gives the true horizon of the bed where the elephants' tusks and horns of the reindeer were found.

R. CRAIG.

LANGSIDE BEITH,
October 7th, 1869.

SIR,—Will you kindly give publicity to a work which is now in progress, viz. Murray's Handbook to the Geology of England and Wales; and allow me to appeal, through the medium of the GEOLOGICAL MAGAZINE, to all brothers of the hammer for assistance and contributions, particularly in local geology, which will be most gratefully acknowledged.

PHILLIPS BEVAN, F.G.S., Editor.

4, SUFFOLK SQUARE, CHELTENHAM, Oct. 21, 1869.

OBITUARY.

DR. R. N. RUBIDGE.—We receive from Port Elizabeth the painful intelligence of the sudden death (on the 8th August), of R. N. Rubidge, Esq., M.B. Lond., F.G.S., etc., who was well-known as an enthusiastic labourer in the geology of South Africa. Beginning his medical studies under Dr. John Atherstone, of Port Elizabeth, his habit of accurate observation was acquired and fostered in company with his fellow pupil and friend, Dr. W. G. Atherstone, of that town, also known as an ardent and successful geological explorer of South Africa, sometime in company with the late Mr. A. G. Bain, who first worked out and mapped the geology of that region.

In 1854 Dr. Rubidge was requested by the merchants of Port Elizabeth to visit and report upon the newly discovered gold-diggings near Smithfield, in the Orange River Sovereignty. In company with Mr. Paterson he made a careful examination of the spot, and found that gold in small quantities was associated with quartz in the meridional set of trap-dykes there intersecting the Dicynodon or Karoo beds. In his clear and concise communication of these results to the Geological Society of London (*Quart. Journ.*, vol. xi., p. 1, etc.), Dr. Rubidge mentions a fact that may be of interest in connection with the possible origin of the diamonds that have of late

been so profusely found in Orange River territories, namely, that in the eastern ranges of the Stormberg, beyond Aliwal, the anthracitic coal of the Karoo beds has been converted into plumbago by the volcanic dykes. Hence it is possible that, by further change, purer carbon has been elicited from the carbonaceous matter by volcanic or metamorphic agency in the Natal ranges, and has been brought down in the form of *diamond* by the rivers, together with their common agate gravel, derived from the same igneous and often amygdaloidal rocks (see also his letter in the Journ. Geol. Soc., vol. xii., p. 237).

In the same year (1854), at the instance of a Mining Company, Dr. Rubidge went to Namaqualand, to report upon its metal producing capabilities. The results are given by him in the Geological Society's Journ., vol. xiii., a short notice only appearing in the previous volume. The gneissic and schistose rocks of this part of Western Africa being quite new to him, and so full of interesting mineralogical characters, afforded a rich field of observation; and he was particularly struck with the probable metamorphic origin of some granite, and with the apparent silification of some bands of schist, covered unconformably by sandstone, through which water had carried silica to replace the original felspar and mica of the gneissic bands below. This view of the metamorphic condition of some quartzite Dr. Rubidge regarded as a key to the elucidation of certain sections seen in different parts of South Africa, and considered by him to be of a very difficult nature, if left to be explained according to the usual view of geologists. Thus in 1858 (Geol. Soc. Journ., vol. xv., p. 196) he explained the section of Mitchell's Pass, at the village of Ceres, otherwise than Mr. Bain had interpreted it; and regarded the great sandstone formation of Table Mountain as occurring again and again in great patches of horizontal and unconformable beds, over the highly inclined schists and gneiss, both of the Cape and of Namaqualand, instead of dipping, at Ceres, down below the Devonian rocks of the Bokkeveld; and thus he made the schistose rocks of Cape Town, of the Bokkeveld, George, and southern Uitenhage (whence he got Devonian fossils) to be all of the same date: certainly a great advance was gained in proving the continuation of the Bokkeveld schists into the last-named district; but whether the schists and slates of the Cape come into the same category still requires careful inquiry.

Examining the neighbourhood of the Zuerberg, in occasional journeys, Dr. Rubidge endeavoured to throw light on the stratification and structure of that country, shewing that the Lower Ecca beds are probably of Devonian age. For the illustration of his views on this matter he sent several series of rocks and fossils to the Geological Society of London, and he communicated papers on the subject to that Society, to the "Geologist," to the British Association, and to the periodicals of Port Elizabeth. In 1864 he visited England and travelled to the north with the special view of studying similar schistose and quartzose rocks to those of the Zuerberg. He brought with him many new fossils, of Secondary age, from the Uitenhage

examined and determined, intending ultimately to produce a general work on the geology of the colony. The fossils constituted a valuable addition to the South-African collection in the Geological Society's Museum, and were fully described, with illustrations, in the Society's Journal, by Mr. R. Tate, in 1867.

So long ago as 1854, Dr. Rubidge wrote to his geological correspondents in London on the subject of aerial denudation, which had not then received as much attention from European geologists as it deserved. In 1866 he reproduced the chief points of his letters in the *GEOLOGICAL MAGAZINE*, No. 20, bringing forward evidence of the enormously extensive and long-continued denudation of the interior of South Africa subsequent to its leaving the sea, and since the lacustrine deposits of the Karoo formations were drained dry.

As an observer and as a generalizer, then, Dr. Rubidge was energetic and bold, adding much to the store of geological facts and thought, though working hard throughout in his professional practice, and often suffering from ill-health. Heart-disease has taken him off suddenly (at the age of about forty-eight) from amongst his friends, before his well-loved work was finished as he wished; but he had always given his best attention to the advancement of Science in general, and of Geology in particular, among the community around him; and having always identified himself with the Literary and Scientific Institutions of Port Elizabeth, and shewed the greatest personal interest in its Public Library, Museum, and Public Hospital, his townsmen, who in large numbers of all grades of society attended his funeral, regret him as a kind warm-hearted friend,—a loss which will not be readily replaced. His fellow colonists too in South Africa, and his geological friends in England, are all truly grieved to hear of his death, fully recognizing his amiable qualities, scientific attainments, and devotion to good works.—T. R. J.

MISCELLANEOUS.

MR. MARSHALL HALL'S SCIENTIFIC EXPEDITION.—The schooner yacht *Norna*, Mr. Marshall Hall owner and master, is being laid up at Brightlingsea for the winter, having returned from a Norwegian cruise. She experienced several gales, but has suffered no injury whatever. On passage out, at the same date, one of our largest and finest schooners lost boats and everything above deck. The *Norna* succeeded in penetrating to the furthest extremities of several fjords, where never yacht had been before, and her owner, who is a member of the Alpine Club, has partially explored, and even laid the foundation for a rough survey of, several portions of the large tracts of ice, of which at present but little is known. He proposes to continue his efforts next summer. Mr. Marshall Hall has also made geological investigations of the remarkable terraces very common in the inland valleys of Norway, more especially as regards the time occupied in their formation. Prof. Kjerulf, of Christiania, has also been occupied with this subject.—*Scientific Opinion*, Oct. 6, 1869.