

The most regrettable feature in the book is the author's habit of using native or local names for animals without giving the zoological name. Comparatively few of his readers are likely to recognise the *hyrax* or coney in the "dassie," especially as this term is not mentioned as a synonym in the notes on the fauna in the last chapter. The author's interesting remarks on some snakes lose much of their value, owing to the uncertainty of knowing which species he is describing.

The author's account of life on the game-fields shows that these are not Edens. His realistic account of a fight between a lion and a sable antelope, which resulted in the death of both combatants, and of a zebra which he shot, only to find that it had been so wounded by lions, that much of its flesh was putrid, and that it was full of maggots, help one to realise the tragedy of the struggle for existence. The author blames the Boer Government for allowing the destruction of the game; but the case of South America shows how a fauna, much richer than that of Africa, has become extinct in comparatively recent times, and without human intervention. The extermination of some species in regions of Africa where the game has not been seriously hunted, shows that natural agencies help in that destruction of the game, for which man generally bears the whole of the blame.

J. W. G.

GENERAL J. T. WALKER, R.E., C.B., F.R.S.

BY the death of General James T. Walker, on February 16, the Indian Army, all scientific bodies, and geographical societies, at home and abroad, have to deplore the loss of a gallant and accomplished officer. It is a loss which will be felt most by past and present members of the Indian Survey Department who survive him, who are better cognisant of and can appreciate the many years of service he rendered that Department from first to last, and the talents he devoted to its accurate execution.

Following in the footsteps of previous Superintendents of the Trigonometrical Survey, Colonel Lambton, Sir George Everest, and Sir Andrew Waugh, his principal aim, in guiding the trigonometrical work they had performed, was to carry it to a successful issue, and with the greatest accuracy, more modern instruments, and all that mathematical and geodetical knowledge could achieve. These operations could not have fallen into more zealous, able hands, for it may be said, for the information of those who hear and read little of such work (often insufficiently rewarded), that as a survey of a very large area of the earth's surface, no other area has been so laboriously measured, the observed angles so rigorously computed, and dealt with, and with so little resultant error. Many accomplished brave officers, assistants, and men have also fallen victims to the climate in which the operations were carried on, ranging as it did from the plains of India to the often deadly Terai up to the highest peaks of the Himalayas. In achieving this result, to General Walker, and the officers he directed, is due the greatest measure of praise for its perfectness. All that it entailed from the very commencement in 1800, is to be found in the "Account of the Operations of the Great Trigonometrical Survey of India," twenty volumes, the first nine of which were compiled by General Walker. My first knowledge of his name and work was as far back as 1855, when serving with my regiment at Peshawur I drew for the Quarter-Master General's Department, under the direction of Dr. P. Lumsden, the first map of the Kooram Valley, on which were laid down the peaks on the Sufaidkoh Range, of which Walker had been the first to fix the position. Lieut. Walker's name was well known then in the Panjab, for up to 1853 he had been working single-handed with his usual zeal at the military survey of the

Trans-Indus territory. This was dangerous service in those days on that disturbed wild frontier of the north-west of India, which the East India Company had very lately acquired, where the tribesmen might be seen following their bullocks at the plough, *jezail* slung on back. On this survey it may be said Walker carried his life in his hand, he and his party often being the target for these same *jezails*. The ascent of Turturrah Peak in the Khyber Hills is only one instance of a very hazardous piece of work, but the dash and rapidity with which his plans were made and the distance done, surmounted the difficulties, and brought him safe out of the expedition with the coveted angles secured. Similar risky exploration was effected by him on the borders of Eusofzai and along the base of the hills, near where our troops have been lately employed at the Malakand Pass, and in the neighbourhood of Umbeyla. In fact, all we knew of that border topography for many years, and up to very recently, was the outcome of the young engineer's reconnaissance. Very little was said about this work at the time. In those days it was not the fashion to write up, and make so much of such travel, as is now the case. It took place far off in time and distance from home and headquarters, and only those in the district—his immediate superiors and his brother officers—knew the value of it, and the pluck and endurance it demanded. Moreover, by his tact with some of the chiefs, he managed to penetrate even beyond the frontier; but on returning to Peshawur, and reporting his success in this way, and making certain of praise, he received a severe reprimand. It was perhaps feared that in risking his own life, and the men of his party, he also risked embroiling his Government. It was not until 1865, when I had been in the Survey Department some years, and knew more of his work, that I became personally associated with him and under his immediate orders. He was then engaged on the compilation of his first map of Central Asia. I shall never forget the great pleasure of meeting him daily, and how much I learned from him, discussing portions of that country, looking up books of travel, and the latest work of the Russian Survey, and getting that map completed with the Himalayan Range as far east as longitude 81°. It was the first large map turned out in India by the process of photozincography, then but lately introduced into the office at Deyrah Dhoon, and it went through many subsequent editions. It was when engaged on such researches that Walker's knowledge and his intense love for geographical study showed itself. There was at that period much new topography coming in. The work of the Kashmir Survey, under Captain T. G. Montgomerie, R.E., had filled up an immense blank in the northern frontier of India, from the confines of Gilgit and Hunza Nagar to the Chang Chingmo. Mr. W. H. Johnson had just returned from his trip over the Karakoram range to Ilchi in Khotan; his route survey and observations had to be brought into place, and affected the position of other places in that part of Asia.

It was never my good fortune to serve under General Walker in the field; but I can look back on a short spell of camplife with him, on the mountains north of Mussoorie, with those feelings of desire that the time might come over again. Walker had been working hard for months at his computations, and was overworked; I suggested his joining me in a collecting trip I had planned into the hills, and he fell in with the idea. How he enjoyed the complete rest, and entered with zest into my pursuits; how much there was to talk over that was interesting to both; how we revelled in the lovely scenery of the oak-crowned ranges, with the snows of Jumnutri in the distance, and enjoyed the splendid air of October in the Himalayas, which sent him back to duty again quite set-up. In those few days, however, I got to know Walker, and all the good traits in his character, better than per-

haps in a far longer interval of departmental work. Only as one of his many assistants do I now put on paper my own feelings on the loss we have all sustained. A full record of his service and life can only be written by some officer of the Survey who was closely and long associated with him in his geodetical labours.

General Walker passed out of Addiscombe into the Bombay Engineers in 1844, and landed in India in 1846; he retired in 1883. He was an officer of high training and ability, who worked zealously in his profession, and expected others to do the same, taking a keen interest in their work. He had a good record of hard military service during the Panjab campaign at the Siege of Multan and Battle of Gujerat, and during the Mutiny at the Siege of Delhi, where he was severely wounded; he also served in 1860 with the Mahsood Waziri Expedition. He was as good a field surveyor as a geodesist, with a reputation outside his own corps and country; for twenty-two years in charge of the Trigonometrical Survey, and five years Surveyor-General of India; and he was a constant writer on many subjects relating to geography, almost up to the time of his death. Fuller details of these services are to be found in an excellent obituary notice by Mr. Clements Markham, President of the Geographical Society, in the March number of the *Geographical Journal*.
H. H. G.-A.

NOTES.

LORD KELVIN has communicated to us the following telegram which he has received from Edison: "Just found calcium tungstate properly crystallised gives splendid fluorescence with Röntgen rays far exceeding platino-cyanide rendering photographs unnecessary."

THE Committee of the Athenæum Club, acting under the provisions of the rule of the Club which empowers the annual election by the Committee of nine persons "of distinguished eminence in science, literature, the arts, or for public service," have admitted to membership Prof. Arthur Schuster, F.R.S.

WE regret to announce the death at Madras, on February 14, of Mr. Marmaduke Alexander Lawson, M.A., F.L.S., Government Botanist and Director of Cinchona Plantations to the Madras Government. Mr. Lawson held for many years the posts of Sherardian and Sibthorpean Professor at Oxford, which were separated on his resigning to take up a new position in India in 1882.

THE French Government has decided to continue to M. Pasteur's widow the annual pension of 25,000 francs (£1000) granted to her regretted husband in 1883.

PROF. ARTHUR AUWERS and Prof. Karl Weierstrass, both of Berlin, have been elected foreign members of the Royal Academy of Mathematical and Physical Sciences of Naples, in the place of the late Profs. Cayley and Hermann von Helmholtz.

THE Royal Academy of Mathematical and Physical Sciences of Naples offers a prize of 1000 lire for the best essay (illustrated by specimens) on the geology of the quaternary lakes of the Basilicate. The essays have to be sent in on or before June 30, 1897.

MR. W. L. SCLATER has left England to take up his appointment as Curator of the South African Museum, Capetown. His successor in the science-mastership at Eton College is Mr. M. D. Hill, of the University of Oxford.

MR. EDWIN WHEELER, of Clifton, Bristol, has presented to the Natural History Museum a valuable series of water-colour drawings of fungi—2449 in number—made by him in illustration

of the British fungus flora. The drawings, which fill twelve bulky volumes, represent the result of assiduous labour and observation extending over many years, and the Museum authorities are fortunate in receiving so munificent a gift.

THE "Coral-Reef Expedition," under the command of Prof. Sollas, F.R.S., will shortly leave England for the Pacific. Mr. J. S. Gardiner, of Cambridge, who has been selected as Assistant Naturalist, will devote himself to an examination of the fauna and flora of the Ellice Islands, while a deep hole is being bored into the coral-beds of Funafuti, with the object of ascertaining the depth and exact structure of the formations.

EXCELLENT accounts continue to be received of the progress made by Dr. Forsyth-Major in Madagascar, and several valuable collections made by him have already arrived at the British Museum. Amongst these are numerous remains of the extinct gigantic birds of the family *Epyornithide*, the study of which will, it is expected, considerably increase our knowledge of the structure of this group. The specimens are being examined by the officers of the Geological Department.

AMONGST the natural history collections from British Central Africa, last received from Sir Henry Johnston, is a small series of birds obtained, by Mr. Alexander Whyte, on the previously unexplored mountain of Chiradzulu, half-way between Blantyre and Zomba. With the specimens is an example of a new and very beautiful species of Oriole, which Captain Shelley will describe and figure in the next number of the *Ibis*, as *Oriolus chlorocephalus*.

MR. J. E. S. MOORE, who is gone on a mission from the Royal Society to explore the fresh-water fauna of Lake Tanganyika, arrived at Zomba, British Central Africa, on his way there in December last. He was obliged to stop there on account of the Stevenson Road being blocked by the Arabs; but the road having been since cleared by the Commissioner's forces, will now be open for Mr. Moore's further progress to Lake Tanganyika, where we have no doubt he will reap an abundant harvest.

THE Zoological Society have lost the large male Indian elephant which was brought home by the Prince of Wales on his return from India in 1876, and presented by his Royal Highness to the collection. After carrying an innumerable number of children up and down the walks for the past twenty years, "Jung Pasha" died quite suddenly on the 8th inst. Although tuskless, he was pronounced by all those experienced in such matters to be one of the finest and largest of living Indian elephants. His skin has been presented to the British Museum of Natural History, and is being stuffed for exhibition in the Mammal Gallery.

As a direct outcome of Mr. Saville-Kent's book on "The Great Barrier Reef of Australia," Prof. Alexander Agassiz has, as already briefly announced, determined to undertake an expedition, having as its express object the investigation of the many subjects associated with this vast and specially interesting biological area. Soundings, and an examination of the ocean bottom and the study of the pelagic and surface faunæ, are subjects which will especially occupy Prof. Agassiz's personal attention. In order to utilise the opportunities that will be presented to their fullest extent, Prof. Agassiz takes with him a trained staff of artists and assistants, and has also engaged the services of the experienced American collector, Mr. W. Ward, to make typical collections of the Madreporarian corals characteristic of the Great Barrier region; and with the special purpose of securing extra large specimens, for exhibition at the Cambridge, Mass., and other of the United States museums.