VESUVIUS

SINCE writing on May 3 Vesuvius has continued to pour forth a continuous stream of lava. From the lowering of the general level of lava in the main chimney no reflection could be seen at its mouth, as is usually the case. This state of things continued till the 6th, when the vapour could only escape in intermittent puff in consequence of the accumulation of *débris* from the crumbling edges of the inner crater edge. As these puffs escaped, they resembled balls of dark grey smoke, from which fell a shower of fine ash, the result of the grinding up of the fine materials that had fallen in as above described, and partially blocked the upper outlet. The crater plain was scattered over with ash and rounded fragments of lava from which that had been ground off. Soon after a faint glimmer was visible, which gradually increased each night until it came to a stationary point, since which little change has taken place. The lava still continues to flow with more or less regularity, but from the small quantity it only gutters and collects on the slope of the great cone. The whole series of events since May 2 is identical with what occurred under similar circumstances in December, 1881, and January, 1882, which I have already described in these pages. The whole sequence of phenomena are easily explicable on the most simple mechanical principles, and do not require that *vulcanological magic* which, even at the present time, is too often employed in describing volcanoes or earthquakes.

I may mention that the above estimate might seem too low as the surface of the streams moved quicker (about 1 m. in 17 seconds), but the lava was particularly viscuous on this occasion, and towards the edges it could not have progressed more than the above distance in two or three minutes. A similar retardation no doubt occurred wherever in contact with its channel, so that I think the estimate of 1 m. per minute is a very fair one. If we allow an average outflow of 5000 cm. during the last twenty-two days (*i.e.* from May 2 to 24), which I am sure many would think under-rated, we have the prodigious output of 110,000 cm.; the product of what would usually be called a very small eruption. But the flow has not stopped, and shows no indication of so doing.

This large amount of material, added to the surface of the great cone, is already making a difference in its outline, and should the outflow continue for nearly three years, as occurred after the December, 1881, outburst, the Vesuvian cone will have another gigantic hump of lava to spoil the graceful curves of its back.

Either as the result of bad writing or of printer's errors some obvious mistakes have crept into my last communication. For "*unattached* pyroxene crystals" read *unattacked*. For "*salbam*" read *salband*. Read for "about one metre per *second*," about one metre per *minute*.

Naples, May 24 H. J. JOHNSTON-LAVIS

THE RUAHINE RANGE, NEW ZEALAND

IN the summer of 1843, Mr. Colenso being at Hawke's Bay, first saw the Ruahine Range, looking sublimely grand under its crest of virgin snow. Hearing at this time of natives living secluded in the interior, in the country lying between this range and the famed central volcanic district, Tongariro, he determined to visit them, and he has lately published a most graphic and interesting account of several visits to and over the range, which were accomplished between the years 1845 and 1847. This narrative is, as would be expected from a botanist like the author, largely interspersed with valuable notes on the flora, and there are also some on the fauna of that region. It is also somewhat interspersed with quotations, for the most part appropriate ones, from the author's favourite poets. It is not necessary that we should make any comments on the fact that this little memoir does not appear in the *Transactions* of the New Zealand Institute, already so full of various important contributions to our knowledge of New Zealand forms from Mr. Colenso's pen, for the publishing Board of that Institute, having declined to publish more than an abstract of it, the memoir was, by request, returned to the Hawke's Bay Philosophical Institute, before which Society it had originally been read, and it has been by them laid before the scientific world with additional and copious notes. The first attempt to cross the range was made under great difficulties in February, 1844: the weather was bad, heavy rain flooded the rivers and mountain streams, and the guide had forgotten the route. Despite all disadvantages, many a rare and several new plants were found. On a Saturday night, after a slender supper amid the deepening gloom of the beech forest, we read: "Here, pendent from some of the trees, hung a most lovely species of Loranthus (*Loranthus flavidus*), while on many other trees that fine species *L. tetrapetalus* formed dense bushes, bearing crimson flowers in profusion, so that in some of the more open spots among the closely-growing trees the whole forest wore a reddish glare." At the very spot where they halted, a fine bushy composite shrub with hydrangea-like leaves was gathered, which has been since named by Sir J. Hooker, *Olearia Colensoi*. Fatigued with the day's work the party slept till 10 o'clock on the Sunday, and then awoke to find themselves completely invaded by a large "blue-bottle fly," which, it appears, inhabited the beech-wood in countless numbers, and was most teasing and audacious: their blankets and woollen clothing had been attacked, and were literally filled with the fly eggs, and the hair of the natives' heads had also similarly suffered. These blue-bottles spoiled the Sabbath day's rest; they had never before been met with by Mr. Colenso. We wonder if the species has been recognised by Baron Osten Sacken, who has recently been engaged in describing New Zealand Diptera. After two days' more fatigue, the party were obliged to descend without crossing the summit, being nearly starved into the bargain. But amid all these troubles, Colenso writes that he at least had some joys, certainly, under the circumstances, unknown to the natives, in that he discovered, on the return, several fine new plants (*Alsophila Colensoi*), several new species of Coprosma, some of which grew so compactly together that in some places it was impossible to get through them, and so they had to walk *upon* them. Here, but only in one spot, that beautiful fern, *Hypolepis millefolium*, was found. Many beautiful and new forms of Veronica, as *V. buxifolia*, *V. nivalis*, and *V. tetragona*, this last species in its barren state resembling much the branch of a Podocarpus. Here we venture to interpose a wish that Mr. Colenso would write an essay on the mimetic resemblances of the species of the genus. But this was not all: a little further up there were found "splendid Celmisias and Ranunculuses in countless numbers, intermixed with elegant Wahlenbergias and beautiful Ourisias, Euphraisias, Gentians, Dracophyllums, Astelias, and Calthas, and many others. Here were plants reminding one of those of our native land, with rare and little known novelties." After the first burst of surprise, the great difficulty of carrying off these prizes presented itself: no collecting materials were at hand. There was no time to lose. "First I pulled off my coat, and made a bag of that; then, driven by necessity, I added thereto my shirt, and, by tying the neck, got an excellent bag. Lastly the crown of my hat held a few. Fortunately the day turned out a fine one, and on returning to the camp the night was spent placing them among spare clothing, bedding, and books." Of this "find" drawings of nearly fifty were published by Sir W. J. Hooker, or Sir J. Hooker, in the "Flora Novæ Zelandiæ" or the "Icones Plantarum." The graphic account of that terrible plant, *Aciphylla Colensoi*, we must

content ourselves by thus referring to; it is too long to quote, and too good to condense.

Two solitary tufts of two Alpine plants were also detected on this occasion. One, *Helichrysum Colensoi*, the edelweiss of New Zealand, was found on the edge of the top of a mountain composed entirely of dry shingle of various sizes, from big lumps to dust. The other, *Geum parviflorum*, grew near the former, but, unlike it, has been found on the South Island. This first attempt to cross the range failed, though its summit was reached; but a second attempt, made in February, 1847, was successful. A short sojourn was made at Matuku, the principal of the Patea villages; the route thereto was the long round-about by Taupo. From Matuku, on March 25, the ascent of the Ruahine was made, and the Mission Station at Waitanga was reached on March 3, after many hardships and difficulties. The narrative abounds in numerous records of great interest. The following is an account of one of the largest, we suspect, of flower visitors, honey-seekers, and one unknown to Darwin or Hermann Müller:—

"Close to the village, and even within its fence, were several very large Kewhai trees (*Edwardsia grandiflora*); these were covered with their golden flowers, and mostly without leaves. The sun was shining brightly, and the parrots (*Nestor meridionalis*) flocked screaming from the forests around to the Edwardsia blooms; it was a strange sight to see them, how deftly they managed to go out to the end of a long lithe branch (preferring to walk parrot fashion), and there, swinging back downwards, lick out the honey with their big tongues, without injuring the young fruit . . . For, seeing but very few petals falling (and those only vexillæ), I sent some of the boys to climb the trees and bring me several marked flowering branches, which had been visited by the parrots. I found that all of the fully expanded flowers had had the upper part of their calyces torn open, and the uppermost petal (vexillum) torn out; this the parrots had done to get at the honey. As the flowers are produced in large thick bunches, some are necessarily twisted or turned upside down; still it was always that peculiar petal and that part of the calyx (though often in such cases undermost) which had been torn away. Through this no injury was done to the young fruit inclosed, which would in all probability have been the case if any of the other petals had been bitten off. It cannot be said that it is owing to the vexillum being the largest petal (as it is in many papilionaceous flowers) that it is thus laid hold of and torn away by the parrot, such not being the case in this genus: for the long fruit runs down through the two carinated lowermost petals, that are often quite two inches long, and is further protected by the two side ones (alæ), which four, from their being closely imbricated together, form a much larger and firmer hold for the bird's beak.

"Further, as these parrots are large birds with huge bills, and as the flowers are always produced on the tips of the small branches, which bend and play about under the weight of their bodies, one cannot but suppose that it is no easy matter for the birds to get a bite at them at all, so as to make the proper openings whereby to insert their thick tongues and lick out the sweet contents without injuring the young immature fruits, especially when we further consider that the common practice of this parrot is to take up in its claws whatever it wishes to discuss. Of all the flowers I examined, only the upper part of the calyx and corolla had been torn, and on none was the young fruit wanting, nor did I notice any bunches which had had their flowers wholly torn off. What with the glistening snow, the sun shining, and the golden blossoms of those trees, the numerous parrots diligently and fearlessly at work so close to the village, yet often screaming, it was altogether a peculiar and interesting sight."

What delightful corners for the botanist are to be met with in this range the next paragraph will show. Many of the species are of the greatest interest—quite Alpine gems; and some few of them, or of closely-allied species, grow freely with us. We would be prepared to welcome them all.

"In the open ground, on two or three mound-like hills of peaty-looking soil, and near each other, on the west side, grew that remarkably fine Ranunculus, *R. insignis*. On my discovering it I was astonished at its size—its largest golden flowers being nearly 2 inches in diameter, its flowering stems 3 to 4 feet high, and some of its round crenated leaves measuring 8 to 9 inches across! Both Sir Joseph Hooker and his father were equally surprised and delighted, and as it was (then) by far the largest species known, Sir Joseph Hooker gave it that appropriate specific name—*insignis*. I only found it in that locality, but it was in great plenty; its principal neighbour was the notorious Tamarea plant (*Aciphylla Colensoi*), already fully noticed; and those splendid compositaceous plants *Celmisia spectabilis* and *C. incana*, which generally grew close together, forming large, dark-green, shining patches, and bearing a profusion of fine white flowers—a striking contrast to their leaves. At first sight I saw that this new Ranunculus was closely allied to *R. pinguis*, of Lord Auckland's group and Campbell's Island—then lately described in the "Flora Antarctica," of which work I had received an early part just before I left the station. Other plants of those far-off Antarctic islets were also found here, on the summits—notably *Oreobolis pumilio*, growing in dense tufts in exposed places; while the peculiar straggling *Cyathodes empetrifolia*, and the pretty little flowering-plants *Euphrasia antarctica* and *Myosotis antarctica* flourished in half-sheltered hollows with *Plantago Brownii* and the grass *Catabrosa antarctica*. With these last also grew, very closely intermixed (much as we have seen the daisies and buttercups among low turfy grasses in our English meadows), the curious plant *Drapetes dieffenbachii*; the little elegant *Ourisia cæspitosa*, abounding in flowers; a very small and new species of Plantago (*P. uniflora*); and a similar-sized botanical novelty, *Astelia linearis*, a tiny plant bearing a large orange-coloured fruit; a little Caltha (*C. Novæ Zealandiæ*), having pale, star-like flowers; two graceful Gentians (*G. montana* and *G. pleurogynoides*), and a very small, shrubby, prostrate Coprosma (*C. pumila*), together with several elegant, shrubby little Veronicæ. Two orchideous plants, *Pterostylis foliata* and *Caladenia bifolia* (of which I wished for better specimens), I also detected growing sparingly, and with them a couple of Carices, *C. acicularis* and *C. inversa*, and also two species of Uncinia, *U. divaricata* and *U. filiformis*; and with them several interesting Hepaticæ and Mosses. Only in one or two spots, in shady, sheltered places near the top, and just within the forest, did I meet with that pretty little plant, *Ourisia Colensoi*, but in those spots there were plenty of them, and always beautifully in flower; the plants of this species grew apart, as if they liked room—in this respect differing altogether from the other species of this genus I have seen."

The lover of flowers can easily judge from these extracts how interesting to them would be this memoir of the now venerable explorer; there is much more of the like nature throughout its pages, and we trust the Hawke's Bay Philosophical Institute will send some copies of this "In Memoriam" narrative to this country, on sale for their benefit.

NOTES

THERE will be a *conversazione* at the Royal Society on Wednesday next, June 10.

THE *conversazione* of Sir F. Bramwell, the President of the Institution of Civil Engineers, will be held in the International