Waitomo Caves
and the New Zealand Glow-Worm
WAITOMO CAVES AND THE NEW ZEALAND GLOW-WORM

BY

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The Caves at Waitomo are now a National Reserve, and a Government Hostel recently doubled in size stands within five minutes’ walk of the most interesting, six miles from Hangatiki, a station hundred and twenty miles from Auckland on the main railway line to Wellington. While in all probability many caves exist in this well-watered undulating limestone district, three only are open to the public, namely, Ruakuri, Aranui, and the unique Waitomo, which gives the district its name.

Ruakuri Cave, some two miles by execrable road from the Hostel, is one of great heights and large distances, and although now dry, shows evidence of having been further eroded by a subterranean river at a lapse of time from the cessation of the first flow sufficient to allow of the deposit of stalagmites of some size, now stained with silt. A bench with alluvial silt some fifteen feet above the general level of the present floor marks the bed of the former stream, and the absence of stalactites argues the shortness, geologically speaking, of the period since the disappearance of the second stream. A waterfall, invisible in a limestone tube, fills the cave with roaring, which, after rainfall, can be heard outside the entrance, while the hollow sound of the floor at the caves’ extremity suggests the existence of a lower system.

Aranui Cave, called after the Maori who discovered it only a few years ago, is but a quarter of a mile from Ruakuri, is approached by a path winding through a forest of giant tree-ferns, and became known by the sudden disappearance from the hill-side of two dogs and the wild pig of which they were in chase. Here we have the beautiful and delicate shuttling of stalactites and stalagmites of unbelievable whiteness, the former ranging from the thickness of wire to that of a man’s waist, while the latter, lacking slenderness, assume the most fantastic shapes. One
Luminescent Glow-worm Threads hanging from the Roof of Waitomo Caves, North Island, New Zealand.
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needs no guide to point to Queen Victoria seated on her throne, no imagination to discover in three figures, fashioned as it were in rocksalt, the priest with uplifted hand blessing the bride and groom. And so on, amid many figures, beautiful, quaint, grotesque, while overhead spreads the lofty dome decorated as never yet a cathedral with a myriad inverted white spires and cunning filagree. Side aisles everywhere afford dazzling views of closely-knit, slender, white columns, betwixt which the passage of a man's body could not but undo the building of fifty thousand years: where the roof bends down and the pendants are small, an upraised palm might crush a score of fairy filaments. Nor is there a weariness of symmetry: any stoppage of the stalactite's central bore affords a change of form. Here a dangling cotton rope, there a string of turnips, foliage and all, a down-pointed spear, a toy balloon suspended by a thread, and through countless ages these have fashioned themselves in the dark, growing downward an inch in fifty to five hundred years. The quicker the drip the slower the growth of the stalactite, with the contrary result to the lowly brother aspiring towards him. And the most beautiful of all is the delicate lace curtain pendant gracefully from the roof, and of so thin a texture that the shape of the lantern's flame shows plainly through.

The entrance to the Waitomo cave is some sixty feet above the inflow of a stream, and the name affords another parallel between the Maori and Hawaiian tongues. (Wai-tomo, water-in-going, Maori; Wai-kiki, Water-spouting, Hawaiian; Wahine, girl, Maori; Machine, Hawaiian; Moana, big-lake, Maori; Moana, sea, Hawaiian). And this lures to a digression. It is difficult to understand the contradiction in the legends of these kin races—the Maori is confident that his ancestors came from the Hawaiian Group, and just as certain is the Hawaiian that his islands were colonized from New Zealand. A further straying: the wingless bird, the Kiwi (Apteryx), generally supposed to be peculiar to New Zealand, is still to be found on the outlying islands of the Hawaiian Group. Let us return to our caves. After tramping through castle halls and ascending to mediaeval battlements, after gazing at fairy transformation scenes lacking only the colour-pageant of the pantomime, we come to the pièce de résistance: having exhausted geological wonders, we are to see a marvel of the insect world. No smoking please, and as silent as possible.

Down, down, down the slippery rocky steps, down until a forlorn jetty juts towards ink-black water, holding a boat in its teeth. The painter undone, a gentle push, and we are at once on the bosom of a placid lake with an illimitable firmament overhead studded with a million million stars. Now we can see each other's faces and even read those of our watches, and though from time to time a dark mass, as of storm clouds, obscures the sky, ever as we drift along our heavens shine down on us again with such a galaxy as those of the open air never boasted. Dark pillars on the shore supporting ribbed arches even darker against the starlight emerge from the gloom like palm-trees as we glide, serving to enforce the impression that we are drifting down a tropic river on a starlight night, and fancy fans our cheeks with a midnight breeze.

It is time to introduce Boletophela luminosa. This insect, better known as the New Zealand glow-worm, commences life as an egg on the
cavern roof, and, devoid of any food save what his egg-covering may afford, spins and attaches to the cavern roof six to ten threads of a viscid substance like spider's web within a circumference of three inches. A king-thread is then fastened to the roof across the circle and this is gradually thickened to form a transparent tube of the colour of vaseline, in which the worm lies. A brilliant green light on the worm's rearmost extremity then appears (to be dulled or even extinguished should sound-waves agitate the pendant filaments too roughly), and the trap is set and baited. Up from the caves sandbanks like moths to a star, rise countless midges, and from the eternal dark where they were bred seek the light. Upon encountering a thread, the midge makes only a perfunctory attempt to escape before resigning itself to the fate to which it was born, but even that slight vibration is sufficient, and B. luminosa reaches out of his hammock. Grasping the thread in his jaws an inch from the roof, by the contraction of the body it is transferred to a pair of legs half way down the body, a new grip taken by the jaws, and the bight dropped by the legs. Thus the end gets shorter and the bight longer until the midge is seized and its juices sucked out. This aerial fishing is repeated at intervals for some four months, during which the threads have been lengthened from four to fourteen inches and increased in number to eighteen or twenty-two, closely studded with droplets of a gummy but brilliantly clear liquid which multiply the light above. By this time the worm is one and a half inches long, rather thicker than the lead of a pencil, of a pale greenish-yellow hue, but so transparent that the contents of the alimentary canal appear as a longitudinal dark line. The point to notice is that there is no vegetable in the cave, and the worm has existed, save as afterwards noted, as a carnivore by its piscatorial proficiency (which sounds Irish), nor has the light been used for any purpose but that of attracting food. The writer has witnessed every process here described. The worm now declines food, hauls up its lines one by one, either consuming them or using them to close the orifices of its tube, which now shrinks and hardens to form a chrysalis, three-quarters of an inch long and dark-brown. After twelve days or a fortnight, the imago splits the back of the frugal covering, and emerges as a fly with one pair of wings, shaped like those of a dragon-fly, which insect it also resembles in the shape of the body, less the elongated tail. The colour is a dark indeterminate brown with three gold bands. Length of mating and egg-producing periods cannot be stated: the flies are rarely ever outside the cave.

Since the temperature of the cave varies but little, all stages of existence are in process at the same time, and while the fly is probably strong enough to escape the fatal fringe of threads pendant half an inch apart over large areas, when approaching the roof for egg-laying it must often happen that a larva feeds on a pupa, so close is the association. Mr. G. V. Hudson, F.E.S., F.N.Z.I., observed a case of this in September 1926, and writes: "It is practically certain that these cannibalistic habits must at times occur."

The fringe of filaments alluded to above under the light of an electric-torch resembles a vast curtain of minute cut-glass beads, but it is necessary
to keep the ray pointed below the insects, as a bright light causes a stoppage of operations.

An unsolved riddle is this: why does the chrysalis continue to emit light? The answer may be that the light is caused by the life-processes of the insect, as it is still to be observed in the perfect fly.

While wandering o'er old Earth's wide bounds
Strange sights I've seen a few;
But glow-worms fishing in the air
To me is something new.