

**SUPPLEMENTARY
APPENDIX TO TRAVELS
AMONGST THE GREAT
ANDES OF THE EQUATOR**

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Supplementary Appendix to Travels Amongst the Great Andes of the Equator by Edward
Whymper

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 TO
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 OF THE EQUATOR

BY
 EDWARD WHYMPER

WITH CONTRIBUTIONS BY

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ILLUSTRATED

Quæ fuit durum pati,
 Meminisse dulce est.
 SENECA

LONDON
 JOHN MURRAY, ALBEMARLE STREET
 1891

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PREFACE.

I HAVE already explained in the narration of my Travels amongst the Great Andes of the Equator the circumstances under which the collections were formed that are described in this Supplementary Appendix to that work. It is said there, and it may be desirable to repeat here, that, whilst it was my aim to secure all we might discover in the highest zones of the Andes of Ecuador, it was not intended to attempt to examine zoologically the lower regions of that country. The latter have often been worked by professional collectors, and they are easy of access, and can be explored with comparatively little trouble at any time. The loftier and highest regions, on the other hand, had not previously been examined; they offer nothing that is attractive to a commercial collector; they are more or less difficult of access, and they are, in consequence of the violent and rapid meteorological disturbances which frequently occur, well-nigh inaccessible to all except those who are prepared to remain for a length of time at a great height, provided with such equipments as will afford efficient protection against the inclemency of the weather.

After our experiences in these elevated regions, I should call the work of collection in them one of the most arduous that a Botanist or Zoologist could undertake. In the intervals of fine weather acquisitions are likely to be small, and there are long periods in which nothing can be accomplished; and, since my return, I have felt even more strongly than before our departure, it is improbable that for

a considerable length of time any one will be delegated to, or will impose upon himself, the task of collecting either in Zoology or Botany amongst the *highest* zones of the Andes. For this reason, as well as for the others which have been given elsewhere, it seemed of more importance and utility to give such moments as could be spared from our other work to research in the higher and highest zones than to attempt to investigate the lower regions.

We accordingly pushed rapidly across the lower country both in going to and returning from the interior;¹ and only acquired, whilst passing through it, such objects as came readily to hand. In respect to the interior, it should be noted (1) that the exigencies of travel often caused us to traverse considerable stretches of country without attempting to collect at all; (2) that, at such places as we stopped at, our researches never even *approached* an exhaustive character; and (3) that the more minute species were rejected, owing to the known difficulty of inducing specialists to undertake their examination. Bearing these various points in mind, it appears to me improbable that in the interior (say, in the areas more elevated than 8000 feet) we obtained as much as *one-tenth* of the number of species which might have been collected by a person who could have given his whole time and attention to zoological research.

Amongst the Insects collected from the level of the sea up to 8000 feet, 16 per cent are new to science. One hundred and sixty species were obtained from 8000 feet and upwards, and of these exactly 60 per cent were previously unknown; and at the greatest heights (15-16,000 feet) the whole are new. The following table exhibits

¹ In speaking of the "interior," it is to be understood that I refer to tracts of country seldom less elevated than 8500 feet. The neighbourhood of the town of Ibarra (7300 feet), and the bottom of the great ravine of Gualabamba (8472 feet), were the only localities we visited in the interior which were at a lower level. During the 212 days we passed in the interior, there were only four upon which we were at a lower elevation than 6000 feet.

It has not been considered necessary to place the word 'Ecuador' after the *habitats* which are quoted throughout this volume; but it should be understood that the whole of the localities which are mentioned are situated in that country.

the increasing proportion of unknown to known species the higher we ascended :—

Height.	No. of species obtained.	Previously known.	New to science.	Not identified.
8- 9,000 feet	18	12	4	...
9-10,000 "	48	21	22	5
10-11,000 "	3	...	3	...
11-12,000 "	34	4	24	6
12-13,000 "	18	3	13	2
13-14,000 "	17	4	11	2
14-15,000 "	14	3	10	1
15-16,000 "	9	...	9	...
above 16,000 "	1	1
Totals . . .	160	47	96	17

It may possibly be inferred, from the comparatively large number of beetles which were secured, that the Coleoptera much preponderate over other orders of Insects upon the Great Andes of the Equator. Such an opinion would, I think, be erroneous, though at the very greatest heights they are possibly as numerous as all other insects put together. Yet various Diptera range almost as high as the highest of the Coleoptera, and I can count up 75 species of spiders which were obtained at 9500 feet and upwards. At moderate elevations in Ecuador—say 10-11,000 feet—spiders were apparently more numerous than anything else, and at some localities, such, for example, as Machachi, they swarmed in countless numbers. Few Hymenoptera were found anywhere near the snow-line, and of this order it may be remarked that some of the largest species are found towards the superior limit of its range, which is an exception to the general rule.¹

¹ I strongly dissent from the statement made by the late Prof. James Orton (in "Contributions to the Natural History of the Valley of Quito," in the *American*

The insects referred to in this volume number 359 species, and of these less than one-half come from 8000 feet and upwards. In the remaining (undescribed) collections the proportion of species obtained from these altitudes is much larger, and there are probably amongst them not less than 350 species which were collected by myself and my assistants at heights greater than 9000 feet. It is with very great regret I find myself compelled, after so long delay, to publish only a portion of the results which were obtained on the journey, and unable to present a more substantial contribution towards the Zoology of the Great Andes of the Equator. Should it be found practicable, the remaining results may one day appear as a Second Supplement.

COLEOPTERA. The beetles which were obtained at heights greater than 15,000 feet belong to the *Pterostichina*, *Ottorrhynchida*, and *Curculionida*, and are described by Mr. H. W. Bates and Mr. S. Olliff. The strongly-marked characters of the species in the latter groups rendered the selection of specimens more easy than in the genera dealt with by Mr. Bates; and, partly owing to this, comparatively few examples came into Mr. Olliff's hands.¹ In most instances, the beetles which were obtained at the greatest heights were discovered by tearing up roots, digging, or by turning over stones, and I do not recall a single occasion on which they were found actually upon the surface. The two *Colpodes* which are described as *C. megacephalus* (p. 13) and *C. Pichinchæ* (p. 15), both came from the highest peak of Pichincha,—the

Naturalist, Nov. 1872, p. 651) that insects are few in number in the interior. In localities with vegetation, they are often conspicuously numerous, and they are not wanting in the most arid districts. But, in saying this, I mean that they are conspicuously numerous to those who will search for them. At the greatest altitudes scarcely anything was obtained except by diligent searching; and, as the majority of the insects which are obtainable are dull in coloration and small in size, they may readily be overlooked. Of the more minute insects (say those less than four millimètres in length), myriads can be found at heights between 9-13,000 feet.

¹ The smallness of my means, and the necessity of keeping down baggage to the lowest possible point, frequently caused the rejection of many duplicates which it would perhaps have been advisable to have retained.

former from the very highest point, and the latter from a place about 600 feet below, at which we encamped. In each case the insects were discovered in course of breaking out rock specimens, and were disinterred from amongst stones which were cemented together with ice. It is scarcely exaggeration to say that they were imbedded amongst the stones. In these instances, and in many others, the *Colpodes* were found in groups or clusters. The *Curculios*, on the contrary, were commonly met with as isolated individuals.

The most widely-diffused beetle that we observed in the interior is the *Astyus* described by Mr. Gorham (p. 52). It was collected at various heights between 9-13,500 feet, and was found almost everywhere within that range, congregated in such numbers that hundreds of specimens might have been obtained from a single bush. As this insect is of moderate size, and readily catches the eye, it is surprising that it has not been described long since. The beetle *Leucopelæa albescens*, Bates (p. 30), is also a remarkable example of oversight. This was found, in the first instance, upon a sandy plain to the northwest of Cotopaxi. Vegetation was scanty at this spot, and the insects, which were in large numbers, quickly attracted the eye. Dead as well as living were spread over the ground for a distance of several miles; and, although about a dozen only were secured, many hundreds might have been taken. This region has been traversed by several, at least, of my predecessors. It is indeed obvious that the middle zones of Ecuador have been very imperfectly worked by collectors, even in the localities most frequently visited by them, such as Quito. At the southern outskirts of that city there is a prominent hill called the Panecillo,¹ which is now almost surrounded by houses, and is used as a playground by the youth of the place. I visited this eminence one day alone, to obtain a round of angles, and by beating the dwarf vegetation into my hat secured about thirty species of insects of various orders, without any expectation that a place so frequented

¹ See the plan of Quito accompanying the narrative. The summit of the Panecillo is almost exactly 10,000 feet above the level of the sea.