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An unpublished letter by Richard Spruce on the theory of evolution

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The unparalleled plant explorations of the British botanist Richard Spruce in the Amazon Valley and the northern Andes from 1849 to 1864 are now well known in scientific circles. What is not so widely recognized, however, is the depth of philosophy characteristic of this man, a depth of philosophy nurtured especially during his many years of living alone in closest association with nature in the forests of South America.

Spruce's thoughts on evolution, very new at the time, have, so far as I know, not been recognized or analyzed. This man had long been hard at work studying and interpreting some of the world's richest and least understood floras just prior to the time of Darwin and Wallace. It is incredible that a scholar of Spruce's perspicacity and depth would not have himself been moved to ponder the problems of relationships of plants, of speciation and of many other aspects of research touching either directly or tangentially on the theory of evolution which, when propounded in London, rocked the whole scientific world.

The original of the following letter, written in 1870, is preserved in the Royal Botanic Gardens, Kew, Surrey, England. I am indebted to the authorities of this institution for permission to publish the document.

Note on the Theory of Evolution (In a letter written to W. Wilson of Warrington, 28 May, 1870.)

"Whilst travelling in S. America (about 1852-7—long before I heard of Mr. Darwin and his speculation) I thought much of this subject, and I came to the conclusion that surely the same laws and the same Forces are in existence now as have been from all eternity, and will continue to be, in secula seculorum. Also that the Evolution of Organic Forms is continuous, without any break. It follows that the incessant variation of living beings is a movement of progression—not merely an oscillation around fixed points, which we choose to call species; so that if we could have before our eyes all the individuals now existing and that have ever existed of any (so-called) species or genus, we



Figure 1. Richard Spruce shortly after his return to England from South America. Drawn by Elmer W. Smith.

should find it impossible to draw any lines of separation—or to indicate any central (specific) points—distinguishing our species and genera.

“Mr. Darwin’s doctrine that A Natural Classification is one based on community of descent, seems to me irrefragable. To take an example: *Hypnum denticulatum* + *H. sylvaticum* may be sexual states of the same existing species. I think they are. But others may consider them so truly separated that they do not interbreed, and that no exactly intermediate forms now exist: if so, they merit the name of ‘species’—i.e., they are two (not merely a single) species. But, even so, it is clear to me that at no very remote period the two must have had a common progenitor. At a period more remote there was but one species of *Plagiothecium*, from which all of that subgenus have descended; the forms having gradually multiplied by the accumulation and inheritance of minute changes induced by varied external conditions, and having become (been) segregated into species by Nature’s selection of those best fitted to survive, and by the disappearance of all other forms.—At a period still more remote, every *Hypnum* (as we used of old to understand that name) must have had but a single progenitor. It is this genealogy we attempt to trace in our Species, Genera, Tribes and Orders; and the more closely we can do it, the more natural will be all our groups. So with regard to species, it matters not (were it not for the awful question of ‘names’) whether we give a doubtful species a distinct name, or regard it as a variety of the species to which it stands most nearly related. We are unfortunately often called on to make up our minds as to the

degree of consanguinity of individual forms when our materials are quite insufficient. A tyro will not hesitate to give the rank of species to three forms whose differences appear (to his slender experience) constant, while an experienced naturalist may have to confess that the materials are quite inadequate for deciding on their proper (or relative) rank.

"Wherever we are able to rigidly define, or assign limits to, our genera and species, surely it is because either we do not possess all the intermediate forms that actually exist, or else those forms have already ceased to be, through the action of the inevitable law of the Survival of the Fittest.

"Mr. W. had adduced the improbability that the Misteltoe, and the Apple tree on which it grows, should ever have had a common origin: on which I remarked.

"The Misteltoe may be very widely separated in structure from the tree whereon it grows. (I have gathered in S. America above 60 species of Misteltoe, growing on trees of many different families). Still the difference is only one of degree, and it is sometimes not needful to go very far back (down the genealogical tree) to arrive at a type of plant which may have been their common progenitor. With the whole existing vegetable kingdom before us, we may see in space something very like what must have taken place in time."