On the Annihilation of Species



Charles Darwin — he still has the power to inspire

Darwin's theories provided the basis on which modern man still n the history of science there are few holy places, but the archipelago that views the natural world. Now the creatures which inspired him lies 650 miles off the coast of Ecuador is one. Here, in the dozen or so islands that are threatened by a devastating fire. Nigel Hawkes reports make up the Galapagos, Charles Darwin observed the to have been here created; yet creatures that helped to in-spire On the Origin of Speideas, which retain their nower to inspire and, in some, to the close affinity of most of cies. Today the island of Isabela, the largest in the

which set sail in 1831. Of the five-year voyage, only five weeks were spent on the islands, but what Darwin saw there slowly matured in his mind before emerging many years later in his theory of evolution by natural selection. No more important scientific book has ever been published than On the Origin of Species our whole understanding of the natural world is shot through with Darwinian

group, is in flames after a two-month drought turned the

semi-arid landscape tinder-dry. Tourism and uncon-trolled fishing are also threatening the unspoilt char-acter of the islands, but the fire

is the most urgent problem.

Darwin visited the islands as naturalist on HMS Beagle,

PECKING ORDER: DARWIN'S FINCHES

The large ground finch

infuriate

The young Darwin had no mission, when he set sail on the Beagle, to throw the Book of Genesis to the winds. Nor did what he saw of the animals and birds strike him with the force of revelation. Even his observations of the varieties of finches, later so important to his theories, had to wait until after the Beagle had returned home and he had had them

classified by John Gould.
Darwin's first remarks
about the Galapagos in The
Voyage of the Beagle scarcely hint at the islands' future importance. Of Chatham Island (now San Cristobal), he wrote: "Nothing could be less inviting than the first appearance. A broken field of black basaltic lava, thrown into the most rugged waves, and crossed by great fissures, is everywhere covered by stunt-ed, sun-burnt brushwood, which shows little signs of life. The dry and parched surface, being heated by the noon-day sun, gave to the air a close and sultry feeling, like that from a stove: we fancied even that the bushes smelt unpleasantly."

The reptiles made more of an impact. Not all of them charmed him: the unique marine iguanas of Galapagos, he said, were the "most disgust-ing, clumsy lizards... imps of darkness"

"As I was walking along I met two large tortoises, each of which must have weighed at least two hundred pounds: one was eating a piece of cactus, and as I approached, it stared at me and slowly walked away; the other gave a deep hiss, and drew in its neck. These huge reptiles, surround-ed by the black lava, the leafless shrubs, and large cacti, seemed to my fancy like

ike all navigators of the time, the crew of the Beagle ate tortoise. "A single Ship's company caught 500-800 in a short pany caught 500-800 in a snort time," Darwin wrote approv-ingly, and his own company netted 15. "The breast-plate roasted with the flesh on it is very good," he reported, "and the young tortoises make ex-cellent soup; but otherwise the meat to my taste is indiffer-ent." Darwin also climbed on the tortoise's backs, and "giving a few raps on the hinder part of their shells, they would rise up and walk away; but I found it very difficult to keep my balance." This practice is not recommended to today's

these birds to American species is manifest in every character, in their habits, gestures, and tones of voice.

"So it is with the other "So it is with the other animals, and with a large proportion of the plants, as shown by Dr Hooker in his admirable Flora of the archipelago. The naturalist, looking at the inhabitants of these volcanic islands in the Pacific, the continent, feels that he is standing on American land. Why should this be so? Why should the species which are supposed to have been created in the Galapagos Archipelago, and nowhere else, bear so plainly the stamp of affinity to those created in America?"



Giant tortoise --- one of the creatures Darwin studied

ordinary view of independent creation". Yet if it were as-sumed that the Galapagos Islands "would be likely to receive colonists from Amerireceive colonists from Ameri-ca... such colonists would be liable to modification, the principle of inheritance still betraying their original birth-

The evidence, stored in Darwin's capacious mind, allowed of only one explanation. The finches must have been blown to the islands from the mainland by a storm. (We now know what Darwin did not, that this was perhaps a million years ago.) Once there, their descendants became adapted to different types of food, natural selection favouring those with the beaks best suited to the food available.

From a single aboriginal finch, a total of 13 distinct species evolved: "A most singular group, related to each other in the structure of their other in the structure of their beaks, short tails, form of body, and plumage," as Dar-win wrote. "The most curious fact is the perfect gradation in the size of the beaks in the different species." Small wonder, then, that the

fires raging on Isabela strike a chill into all those who rejoice in natural history. So far, 3,000 acres have been burnt, and 300 to 400 of the island's tortoises are at risk. The Ecuadorean government does not have the equipment to put out the flames, but Canadian fire-fighting planes are on their way. Let us wish them all

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The medium ground finch



The warbler finch

THE PARTY from the Beagle collected animals and plants everywhere they went. Among the specimens returned from the Galapagos were 13 species of finches, whose beaks ranged in size from that of a hawfinch to that of a warbler. The largest, the ground finch, had a beak almost parrot-like in shape; the

smallest, the warbler finch, a tiny pointed beak.

If Darwin had realised these differences at the time, he would have been more careful in the way he collected and labelled the birds, ensuring that specimens were collected from each of the islands and were clearly distinguished. It was not until the

isianos and were cleary distinguisned. It was not until the specimens had been returned to England and classified that their importance struck him. Seeing this gradation and diversity of structure in one small, intimately related group of birds, Darwin wrote in 1845, one might really fancy that from an original paucity of birds, one species had been taken and modified for different ends. Fourteen years later, in On the Origin of Species, that is exactly what he did conclude.

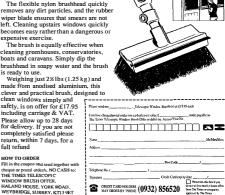
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visitors to the islands. The animals of the Galapagos were at once strange to Darwin, and familiar. What struck him first was how similar many of them were to those he had seen on the mainland. But later, when he had seen Gould's classifica-tion of the finches, he realised how they varied in a subtle way from island to island way from Island to Island within the archipelago. Here, he said, "both in space and time we seem to be brought somewhat near to that great

somewhat near to that great fact — that mystery of myster-ies — the first appearance of new beings on this earth".

The data were summarised in On the Origin of Species "There are 26 land-birds; of these, 21 or perhaps 23 are ranked as distinct species, and would commonly be assumed



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