IN I RODUC I ION

THE CHRONIC ARGONAUTS

Nothing in biology makes sense except in the light of evolution.
--THEODOSIUS DOBZHANSKY

ambridge lies well east and north of London, nestled in a flat landscape softened by time. 1 he spacious farms surrounding this ancient college city are furrowed in white and brown, for the plows gutter into the white chalk making up this part of the British Isles. The chalk comes from a different time; it is a legacy of a long-ago tropical sea filled with the Cretaceous bestiary of a saurian world, an era when dinosaurs ruled and seemingly had all the time in the world to revel in their hegemony. In the oceans the dominant creatures were many-tentacled ammonites, relations of the modern-day octopus and squid. Now they and their world are but memories in chalk, to be disinterred each plowing season.

Slender lanes lead from the center of Cambrid• e and its splendid Universit to both rustic working farms and more genteel estates, many of some age. One such manor house sits amid hedges and spacious gardens going wild; around back a

slanting rain, while ancient trees afford some slight protection from the English

stone cold in the grand English tradition, counts its age in centuries. A huge kitchen is its warmth, but the book-lined study is its heart. Like many old English

ow let's addir rid there, burrowing amid its warrens, building a wall or tearing one down, marking the centuries with their successive versions of home improvement. Deep in the house's center a great clock ticks, marking time's unidirectional progress, while deeper still the ghost of H. G. Wells just might reside.

The current owners are people of the University. Martin Wells is a professor of zoology; his wife Joyce is a financial officer. Martin has had an influential scientific career, one now far nearer its end than its beginning; he started out investigating octopuses in Naples as part of his graduate studies and continued for years after that, probing the consciousness of these arcane kraakens, puzzling over their eyesight and superb reflexes, wondering how their large brains worked. Later he moved on to explore the brains and physiology of other cephalopods, including the most ancient of all, the chambered nautilus.

It was on an expedition to study *Nautilus* that I first met him. We lived together on an isolated island in the Gre. t B. rrier I • - .1. . -a I- .1 as•- seas in the sun-drenched tropics to probe the most ancient of living things. I remember thinking then that Martin was slumming a bit in his nautilus studies. ▪ • - • •• • • • e octopuses, those creatures that served as models for Martians in the most celebrated book by his grandfather, the English writer and luscan Martians. Did H. G. ever talk to his grandson Martin about these octopus like invaders? Somehow, in all of our long days and nights together, I never asked .- •• - •• - •• -• preoccupation runs in the Wells family, an odd recessive gene.

H. G. was a Londoner, not of Cambridge, and he never visited the manor house now serving as the ancestral home. But i any mg spin ua o . sti exists anywhere, it must be in this house. His memorabilia, the numerous first editions, even the remaining royalties from the great man's publishing empire make their way here. 1 his was not H. G. s house during his lifetime, but it is now.

I first came to this place on a cold March day now many years ago and stayed for a week, playing croquet with Martin, drinking his elder flower wine, and plotting new research on our favorite creatures. Here he critiqued and corrected the draft of my first book, a scientific treatise on the nautilus. We talked endlessly amid the playing and drinking, and when late at night I shivered under the piles of covers in my unheated room and listened to the ticking of clocks, it was of H. G. that I thou • ht, ima•inin• his life and wonderin• where his inspiration welled from.

coveries concerned H. G. e s s first book of iction, published in the final year s of the nineteenth century. At that time, Wells was surrounded by the same end-of-century hysteria that deluged my own world as the twentieth cen ury an• se o millennium) came to a close, and surely then (as now) all eyes gazed forward toward the uncertain future. Those of H. G. certainly did. His first novel remains among is •est nown, a rat er one story a •out a man w o •ui •s a mac me t at can travel through time. Given the choice of voyaging either 'forward or backward in time, he (like Wells) is interested only in the future. His motive is simple: to see the future of humanity. The name of this novel was *The Chronic* Argonauts. It was later renamed *The Time Machine,* and literary history was made.

Hollywood and armies of pulp science fiction writers have made this story (and this genre) now instantly recognizable to us. The wonderful 1960 George Pal movie of the same name is still staple fare to those surfing across the television bandwidth late at night. But the movie plot departs significantly from the novel it was based upon, and the novel, now not so widely read, holds a number of sur- s ei•ht hundred and two thousand years into the future from the site of present-day London, and finds won- have become smaller in stature, and more feminine: the mPn have rin_facial_hair their mouths and ears have been reduced in size, their chins are small and pointed,

might be called "future evolution." The Time Traveler finds himself in an ecological habitat very different from the England of today (or of Wells's yesterday). Wells por rays a wo protagonist describes this future world in the following fashion:

> over their head was of a tan•led waste of beautiful bushes and flowers, a long neglected yet weedless garden. I en petals. They grew scattered, as if witA4 aim'mg the variegated shrubs.

But the garden is not so weedless, it turns out, for it is the former food crops that have escaped from the gardens and fields of Wells's time to become the weeds of the future. The Time Traveler also finds that the human inhabitants, the Eloi, are vegetarians. Some of the fruits that they eat are of new varieties. Even the flowers

occurred, and a great deal of evolution has transpired. All is not novel, though, for

world, including rhododendrons, apple trees, acacias, tree ferns, and evergreen trees, as well as the new types of fruits and vegetables.

plot quickly refutes that first impression, however, for Wells has populated his future world with a second human species—the Morlocks, a troglodyte race small in size, of apelike posture, with strange large grayish-red eyes" and white flaxen hair. Wells is quite clear about the affinity of this group of creatures:

> but had differentiated into two distinct animals: that my graceful children of
>
> this bleached, obscene, nocturnal Thing, which had flashed before me, was also heir to all the ages.

The Time Machine was first published in book form in 1895, and later reprinted innumerable times. Yet prior to its book public, [illegible] *National Review* [illegible] subsequent book editions. In these pages Wells amplifies his prediction about the [illegible] of the world's animals, "sparing only a few of the more ornamental." Wells is describing a mass extinction produced by the actions of humanity. There is a clear [illegible] the future will evolve from their state in the present, but many of the extant species of our world will not have a future: they will be driven to extinction by humanity.

[illegible] ages many millions of years into the future. The sun has turned orange. Plant and animal life is sparse; [illegible] Earth. The human race still exists, but has "devolved" into small creatures that look like rabbits or kangaroos. It is a dark and depressing chapter in a book already dark and hopeless in tone. The future of humanity is not extinction, it is evolution—but it is not a very "progressive" evolution, at least as many of us would like to define human progress. We do not end up as wiser, more beautiful, more refined creatures. Quite the contrary.

H. G. Wells made a number of unambiguous predictions in *The Time Machine*. First, the book clearly implies that evolution will continue in the future. Second,

humanity will LUd, *U* a great 111clbh extinction on Earth. Third, the bUlviving future flora will be filled with agricultural species run riot and turned into weeds. Finally, humanity itself is virtually extinction-proof, though it will evolve. Wells was, of course, a confirmed evolutionist. He passed his college years at the Normal School of Science in London, where he took classes on evolution from Thomas H. Huxley imse . e *time* ▸ *ac fine* is a science action nove , one o t e first ever, out a a ove all it is an early and prescient attempt to chart the future of evolution. A century later it is difficult not to concur with its predictions.

The Future of Evolution

What is the future of evolution? So ambiguous a question invites varied responses. As in *The Time Machine,* it might be interpreted in terms of outcomes: what will animals slants and other or • anisms be like at some time in the future .erha.s a thousand years from now, perhaps a thousand million years from now? The only certainty is that they will be different. Even in the near future, the mix of species and their distributions, r'lativ' numb'rs,and_ 'whips with one another will have changed, and by the far future the accumulated changes may be breath-

created the astonishing diversity of species on Earth in the past and into the present will continue creating new species and varieties, resulting in a global biotic invent°-

to informed speculation, and is one of the subjects of this book. This particular question was addressed some years ago by author Dougal Dixon in his delightful 1970 book After Man.

Ahead of his time (if still well after H. G. Wells), Dixon echoed Wells in forecasting an imminent mass extinction, prophesying that humanity would eliminate enough of the current biota on Earth to open the faucets of evolutionary change. But here Dixon parted company with the Wells vision, for Dixon posited his new fauna evolving in a world where humanity itself has gone extinct. Dixon predicted that most of Earth's post-extinction bestiary would evolve from the surviving meek, such as small birds, amphibians, rodents, and rabbits. Dixon's central assumption is that humanity will biotically impoverish the planet and then have the good grace to go extinct, opening the way for the evolution of many new species. His imagined new biota depends on this central fact __that humans have gone extinct, yet left the Earth in sufficiently good repair to allow wholesale evolution of new forms. The creatures figured show *evolutiona conver•ence:* the resemble the animals that *might soon be ex* i the present-day Earth