A Celebration and a Challenge

THIS ISSUE MARKS THE BEGINNING OF SCIENCE’S COVERAGE OF TWO PROMINENT ANNIVERSARIES. Charles Robert Darwin, originator of modern evolutionary theory, was born 200 years ago next month. His book setting forth this theory, On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life, was published 150 years ago in November. These anniversaries have special resonance for scientists worldwide, and the general public too, in that Darwin wrote specifically for a broad audience. As The Times (London) wrote in 1909 in honor of his first centenary, “To no other man has it been given to effect a revolution in human thought so large, so pervading, so sudden, and yet so enduring. Darwin taught mankind to see all things in a new light, not only the mysteries of nature, great and small, the mysteries of existence and the innumerable objects of research, but the common things of everyday life.”

Darwin’s gift was to sense the mystery of the diversification of living organisms, and his achievement was to make sense of it. Remarkably, he revealed the mechanism and process of evolution without having a clue about how variation was generated. He developed his arguments based on painstaking examination of paleontological and biological evidence, and the emergent properties of organisms, but with no knowledge of the underlying genetics. Evolutionary biology has been much transformed and enhanced since his time, but at its core remains Darwin’s electrifying idea: natural selection and descent with modification as the agent and manifestation, respectively, of evolutionary change.

The first centenary was marked in 1909 with an enthusiasm unprecedented for a figure so recently departed. Delegates from 20 countries attended a 3-day festival in Cambridge, UK (where Darwin studied), featuring garden parties, lectures, receptions, and the award of doctorates to many foreign visitors. In the United States, the pioneering geneticist T. H. Morgan spoke on “Darwin’s Influence on Zoology” at Columbia University, and there were events at the University of Georgia, the Massachusetts Institute of Technology, and many more.

We begin Science’s own celebration of Darwin’s bicentenary with a review article by Peter Bowler (see page 223), who analyzes the originality of Darwin’s contribution. We also feature an essay by Carl Zimmer (see page 198) on how life might have begun, the first in a monthly series about “Origins” that takes a broad look at key developments in evolution and in human culture. In February, we will feature a special issue on speciation and diversification, still major themes in evolutionary science. You will also find additional content online (www.sciencemag.org/darwin/), as well as an Origins blog (http://blogs.sciencemag.org/origins/), throughout the year.

Evolution is also woven into the theme of the AAAS annual meeting (www.aaas.org/meetings), which starts in February, on Darwin’s birthday. In July, the AAAS will be supporting the Darwin Festival in Cambridge, UK (www.darwin2009.cam.ac.uk/festival), which will echo, on a grander scale and with more public outreach, the prominent festival of 1909.

Beyond laying the foundations for evolutionary biology, Darwin built a home that biology could furnish with the concepts and findings from paleontology, ecology, and population genetics, and more recently molecular biology, developmental biology, and genomics. In marking his bicentenary, we reaffirm the values and practice of science, and the generous spirit of inquiry, observation, experiment, and discussion that Darwin himself exemplified.

These values, and their fruits, need continued public promulgation. In 1909, The Times also wrote that “[Darwin’s] achievement has, in a sense, become so familiar, its indirect influence has so closely interpenetrated the general consciousness of mankind that we can hardly see it plain or measure its proportions. It is not a matter for the learned only, but for all of us.” A century later, it is still a matter for all of us. In today’s society, where science is broadly integrated in enhancing human welfare, such a broad public understanding is required of not just new discoveries, but of their deep and enduring roots. This year’s bicentennial celebrations will only be a success if they meet this challenge.

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