

make them more accountable. This is a long way from the centralising tendency of many governments—not all in the Third World.

The authors dispel other stereotypes: urban bias is in reality bias towards the rich. They insist that patterns of urbanisation defy generalisation: the way cities grow is determined by cultural, local, traditional characteristics. Promoting smaller urban centres doesn't mean simply building desolate industrial estates in the middle of nowhere, but requires that such cities become the focus of dynamic economic activity. This has implications for rural land ownership, and demands that prices paid to local farmers for their crops are sufficient to stimulate supportive industries and services. The spread of agribusiness and ranching merely disempowers more rural people and sends them to seek refuge in distant cities.

Of course, there are horror stories. In Shanghai, the rain is so acid that it burns holes in nylon shirts. Delhi has absorbed over 100 villages since 1900. The population of Nouakchott has increased 40-fold since 1965. Because the urban poor must endure lack of water and drainage, sites polluted or contaminated by toxic wastes, or live on hillsides liable to landslips, they are the absorbers of vast unseen costs of "development" that are elided by existing accounting systems.

Apocalyptic predictions may be exaggerated, but the growth of cities does create increasing shadows of blight and resource-stripping in their hinterland: they exhaust water supplies; nature can no longer process their pollutants. Whether they break down in chaos depends upon whether those in power heed the recommendations of this book which, unusually, manages to be both informative and wise.

Nature's lottery

WONDERFUL LIFE: THE BURGESS SHALE AND THE NATURE OF HISTORY
Stephen Jay Gould
Hutchinson Radius £14.95

Steven Rose

Certain phrases are so commonplace we scarcely stop to consider their implications. How easily terms such as "the evolutionary tree", "the evolutionary scale," trip off the tongue, giving force to the belief that all of life has been a progression towards its ultimate summit of perfection: humans, or in the common usage, "Man". The use of the term "evolution" in such an ostensibly scientised way masks the fact that the idea of the continuity of life, ordered hierarchically in a great chain of being, long predates Darwin. It is intimately part of the Judaeo-Christian tradition, absorbed into science via the work of Linnaeus in the 18th-century.

Yet the idea of evolution as linear, or even sparsely branched progress, is profoundly misguided. So too is the suggestion that any living species found today is "more primitive" than

any other. Clearly all living forms evolve and today's amoeba is no more the "primitive forebear of Man" than are humans themselves; it is the evolved descendant of that primitive forebear, just as we are.

If we must represent evolutionary sequences diagrammatically, a highly-branched hollybush is a better model than a poplar tree, as Stephen Gould reminds us at the beginning of his new book. So humans are but one tip of one set of branched twigs on the bush, no more the endpoint of evolution than any of the other myriad twigs. But are we, large-brained, bipedal, social organisms, nonetheless an inevitable product of evolution? In Gould's metaphor, which occurs again and again through this splendidly assured text, if one could wind back the tape of life a few million years and replay it, would it repeat, and human-like creatures as well as all the other present-day life-forms, emerge once more?

Latter-day heirs to the Judaeo-Christian great chain of being, like many sociobiologists, would be inclined to say yes; adaptation is the key to evolutionary success, and adaptive pressures through natural selection have forced the best available choice onto living forms. So, too, would another school of biological thought, working in the structuralist tradition, who claim that there are exact laws of form, determined by physical forces which limit the range of shapes available to organisms. For the first school, evolution is Whig history written by the hand of nature, for the second the study of evolution is of merely antiquarian interest.

Wonderful Life is concerned to refute both these positions, not by theoretical argument alone, but by a detailed discussion of the discovery and interpretation of an astonishing set of fossils discovered in 1909 high in the Canadian Rockies by CD Walcott of the Smithsonian Institute in Washington. Odd though the organisms he found were, Walcott, in accord with prevailing evolutionary thought, shoehorned them (Gould's phrase) into a sequence which made them primitive forms of presently living arthropods. Over the last 20 years the Burgess fossils have been re-evaluated by the Cambridge-based trio of Whittington, Conway-Morris and Briggs. And they were forced to the conclusion that they are representatives of a vast mass of species, families and phyla which have no extant living descendants at all. They are astonishing creatures of wildly varied forms; one has five eyes, another seven spike-like legs; one is so weird that it has been named *Hallucigenia*.

Gould is himself a paleontologist and his own joy in the unfolding drama would carry along even those least turned on by old rocks. But of course there is a much deeper lesson to be learned from the Burgess fossils. There is no evidence, Gould insists, that these creatures were any less well-adapted to their environment than those forms which did finally survive—and indeed their great diversity suggests that evolutionary history is one of the winnowing of species rather than their proliferation. These organisms failed to leave descendants, he claims, through the merest contingency, the accident of history. If we wound the tape of life back to when these shales were the mud above

which multitudes teemed, and then replayed it, it would be in the highest degree unlikely that we would arrive today at anything recognisably like our existing life forms—including humans.

Far from being the mechanism of ordered transformation along a great chain of being towards adaptive perfection, evolution is a lottery in which winners and losers are determined by forces over which they have little control. Nearly everything is possible; what survives, including ourselves, confirms the truth that nothing in biology makes sense except in the context of history.

Gay Messiah

KINGDOM COME
Bernice Rubens

Hamish Hamilton £13.99

Martyn Harris

This is the story of a gay Messiah. His name is Sabbatai Zvi and he is born, the son of a poor poultryer, in Smyrna on the coast of Asia Minor. The date is 1626.

There are rumours about him at once, for the day of his birth is the Ninth of Hav in the Jewish calendar, the anniversary of the destruction of the Second Temple and the day, according to Jewish tradition, when the Messiah will be born.

The rumours grow in strength when his mother reports that the baby smells of angels, though others detect about him a whiff of sulphur. The child is precocious, a prodigious scholar of the Torah, the Talmud, and even the forbidden Kabala. When he is credited with the miraculous recovery of his grandmother, the stories about him spread around the Jewish communities of the Mediterranean, to Leghorn, Cairo, Constantinople, even to the ghetto Jews of Poland. The Saviour is at hand and in Constantinople even the Ottoman Sultan quakes.

Sabbatai's story is also the story of a dozen other false Messiahs who appeared around the Jewish world in this period of pogrom and fast expanding communications. What Bernice Rubens explores in this very fine and subtle novel is the web of hopes and deceptions, both personal and social, which conspire to create a myth.

Sabbatai's mother, and two of his brothers are convinced of his divinity. His father and younger brother, while devoted to him, are stolidly sceptical. Sabbatai himself is an hysteric, a liar, a pretentious manipulator and a secret voluptuary. Sometimes he believes in his role, sometimes he sees himself as a mere puppet pushed towards martyrdom by the passion of others for redemption. "Those people had led him on, seduced him into saviourhood, connected him with miracles. Their *will* to believe was so sublime it needed no proof, no hard and fast evidence."

Sabbatai indulges in homosexual orgies, he