BOOKS & ARTS

Perils of perversity

Research is riddled with strong characters; **Walter Gratzer** applauds a spirited attempt to get their measure.

Rebels, Mavericks, and Heretics in Biology
Edited by Oren Solomon Harman and Michael R. Dietrich
Yale University Press: 2008. 352 pp.
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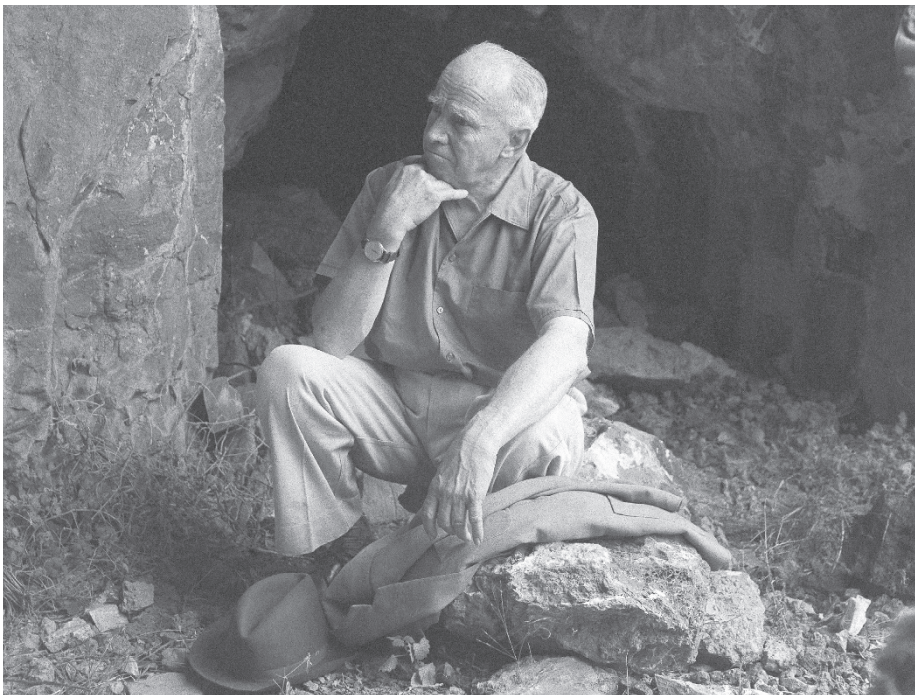

AP PHOTO

Palaeontologist Raymond Dart's description of the Taung skull outraged his peers.

The proposition put in the mouth of Lemuel Gulliver by Jonathan Swift that "there is nothing so extravagant or irrational which philosophers have not maintained for truth", still holds. The zealots, monomaniacs and obsessives at whose approach we scatter are in general just that, and nothing more. For it is hard for the free-ranging intellect to walk the fine line between scepticism, the stuff of science, and credulity, which would drown us in a deluge of homoeopathy, parapsychology, perpetual-motion machines and 'intelligent design'.

This collection of essays, each about a scientist held by the editors Oren Harman and Michael Dietrich to qualify for the accolade of rebel, maverick or heretic, aims at a definition of the species. Even if little emerges in the way of broad insights into these traits, most of the narratives make compelling reading, for the contributors manage to link the science to the personalities of the protagonists and to the social and professional milieu in which they functioned.

Of the nineteen subjects, eight were students of evolution, and only three biochemists or molecular biologists, so the biological terrain is a trifle skewed. History has been kind to most of them, for their heterodox views have largely prevailed. I would have liked to hear a little about some, prominent or scandalous in their day, who have faded into oblivion. Paul Kammerer, for one, whose purported demonstrations of Lamarckian inheritance brought him adulation, before accusations of fraud drove him to suicide. And Kammerer's apologist, the egregious E. W. MacBride who presided over a distinguished biology department in London and whose noisy affirmations of Lamarckian evolution and spontaneous generation continued into the middle of the twentieth century.

The most felicitous chapters are by writers who worked with or knew their man or, in two cases, woman. Most stirring is the account of the life and labours of the Australian palaeontologist, Raymond Dart, by his friend, protégé and successor, Phillip Tobias. Dart's description of the Taung skull, with anatomical attributes of humans and apes, and his conclusion that it represented the earliest hominid, was greeted by his confrères with outrage, or at best disdain. A correspondent advised Dart that he would "roast in the quenchless fires of hell" for his pains; another that he was "a priest of Baal"; while a third predicted that Dart's destiny was to be "placed in an institution for the feeble-minded". Dart was made to feel the hauteur of the academic mandarins Grafton Elliott Smith, his former patron in Oxford, Arthur Keith and Arthur SmithWoodward. It is a pleasing irony that these pillars of the English establishment had not hesitated a few years earlier to authenticate the fraudulent Piltdown skull as the earliest hominid.

Tobias suggests reasons behind the rancour. The Taung child had surfaced on the wrong continent, for according to the prevailing dogma, Asia was the seedbed of human evolution. This belief was allied to a conviction that nothing good could ever emerge from Africa. And there were technical questions, involving the favoured theories about teeth and other anatomical features, and dating. The whole field, moreover, was obfuscated by the Piltdown hoax, with its gratifying implication that early men with a large brains had sprung, like most good things, from the south of England.

Dart was pugnacious and opinionated, as were many of the other figures who stalk the pages of *Rebels, Mavericks, and Heretics in Biology*. Among them was C. D. (Cyril) Darlington, who maintained that his conception had been an accident, one that his father never risked repeating. He escaped from a claustrophobic family environment into an unpromising position as a volunteer assistant at the John Innes Horticultural Institute. Abrasive and unwilling to embrace the opinions of others, he managed nevertheless to get a toehold on the academic ladder, and soon discovered how chromosomes behaved during meiosis. Darlington's vision was viewed as a threat to the integrity of cell biology and an affront to its practitioners. A transatlantic researcher offered to cross the water and knock Darlington's head off, and at a lecture in the United States he was shouted down by an angry audience. Overtly at least, scientific discourse is conducted more decorously today.

J. B. S. Haldane, who flits in and out of these stories like a will-o'-the-wisp, saw the merits of Darlington's work and probably helped to advance his rock-strewn career. Genetics was

an exceptionally disputatious field. A schism had existed between a rigorous mathematical and the largely qualitative traditional approach since Francis Galton's time. Galton's successor at University College London, Karl Pearson, recalled indeed that, in 1900, when he submitted a paper to its *Proceedings*, "a resolution of the Council of the Royal Society was conveyed to me, requesting that in future papers, mathematics should be kept apart from biological applications". Pearson was sufficiently incensed to seek Galton's advice as to whether he should resign his fellowship. Darlington, by contrast, evidently relished the contumely.

Some of the biologists in this book scarcely qualify as rebels or heretics. They were first-rate scientists, sure of their data and of the obtuseness of their critics. Notable were Motoo Kimura, who established the principle of neutral evolution, Oswald 'Fess' Avery, who identified DNA as the genetic material, and Howard Temin, who discovered reverse transcriptase. Fine chapters — by James Crow, Kimura's PhD supervisor, by Ute Deichmann and by Daniel Kevles, who clearly knew and admired Temin as man and scientist — do them justice.

Barbara McClintock, on Nathaniel Comfort's evidence, was well liked too, despite portraying herself as swimming ever against the tide. She claimed to have been ostracized and thought "a little mad", when she first presented her observations on linkage groups. In truth, she was respected from the outset. Richard Lewontin in the book's epilogue relates an overheard conversation between two colleagues leaving a lecture: "That is the craziest thing I ever heard", one remarks, "but if Barbara says it, there must be something to it". The historical image diverges, as so often, from the reality.

Can one draw any moral from the sum of these excellent narratives? That the bloody-minded shall inherit the earth? Or perhaps merely the enduring principle of human endeavour, encapsulated by Charles Kettering of General Motors: "First they tell you you're wrong and they can prove it; then they tell you you're right but it isn't important; then they tell you it's important but they knew it all along". ■

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Bonding as key to hominid origins

Primatology meets socio-cultural analysis in a controversial account of human evolution.

Over the centuries answers to the question of what makes us uniquely human have varied. The Greek philosophers emphasized reason, Enlightenment scholars pointed to our political nature, and nineteenth-century historical evolutionists prioritized our complex social organization. After Charles Darwin and Sigmund Freud, answers became increasingly psychological, and in recent decades attention has turned to the genome and cognition. For the most part, modern social scientists eschew grand debates over human origins, fearful of becoming tarred with the brush of nineteenth-century social Darwinism.

P. BOWATER/ALAMY

A father in Papua New Guinea displays his marriageable daughters.

Primeval Kinship returns to the big questions about ancient society that mesmerized the prominent social theorists of the Victorian era such as Edward Tylor, Lewis Henry Morgan and Friedrich Engels. The author, primatologist Bernard Chapais, offers a powerful and controversial new account of hominid origins. The root of humanity, he argues, lies in pair bonding (the strong affinity that can develop in a breeding couple), the brother–sister tie, and the transfer of females between groups. Imagine a violent chimp-like encounter between two groups of early humans. An attacking dad in one group recognizes his daughter in the other and thinks twice about killing her baby. Meanwhile the daughter's bonded mate recognizes his sister in the attacking group, and refrains from a counterattack. We might even see some reconciliatory grooming. Both males have a vested interest in the same mother–offspring pairs, and hence, to cut Chapais' intricately woven argument short, females act as peacemakers between groups.

Primeval Kinship: How Pair-Bonding Gave Birth To Human Society
by Bernard Chapais
Harvard University Press: 2008. 368 pp. $39.95, £25.95, €30.00

A unique feature of human society is the largely peaceful relations between tribes. Chapais reiterates and builds upon the central claim in anthropologist Claude Lévi-Strauss' 1949 classic treatise *Les Structures Élémentaires de la Parenté* about what makes us human. Namely, that men exchange daughters and sisters between kin groups to form alliances. The idea goes back to Tylor's aphorism "marry-out or be killed-out". Placing the story in its phylogenetic context, Chapais radically reorders some of Lévi-Strauss' logic and develops a more fully fledged thesis. For instance, in contrast to Lévi-Strauss' claim, hominids did not invent incest taboos to achieve marital exchange, but inherited them from much deeper animal roots; outmigration of one sex (exogamy) was already in place when the last common ancestor of humans and chimpanzees stalked the forests.

Chapais' key contribution is to ask how hominids could recognize relatives who had transferred to other groups. He presents evidence from macaques and other primates that mother–child recognition, and cognizance of other mother–child dyads, can exist without the long-term establishment of sexual bonds between mates. Father–offspring recognition, by contrast, requires relatively durable pair bonds. Individuals who can identify a father–child relationship in others can more confidently identify their own siblings. Then, his logic goes, if one sex migrates to other groups, these long-distance sibling links will form the kernel of peaceable intergroup relations. Chapais stands apart from his eminent anthropological forebears, such as Leslie