CHAPTER 12

Wallace and The Descent of Man

In March 1870, before the outcome of the bet with John Hampden and the Flat Earthists, Wallace and his family moved to the town of Barking, on the eastern outskirts of London, in part to reduce expenses but also to prepare for his directorship of the nearby Bethnal Green Museum. The move proved to be the first in a series that would gradually cut him off from many of his scientific friends and associates. Darwin regretted Wallace's departure from central London. "I heartily congratulate you on your removal being over," he wrote after the Wallaces had settled into an old, run-down cottage that they named Holly House. "I much more heartily condole with myself at your having left London, for I shall thus miss my talks with you which I always greatly enjoy."[1] Although this did not happen often, Darwin's kind words must have touched Wallace. At this point in his life, Darwin rarely left his house, and he entertained few visitors except family members and his most intimate friends. He came to London only to spend a few weeks once a year with his brother Erasmus, paying visits to friends in central London when his health permitted. He did not make special excursions except to a spa to treat his puzzling maladies. A trip to Barking would have been too arduous an expedition for a man who was always ailing and needed constant attention. Wallace and Darwin maintained an active correspondence, but—with perhaps one exception—they never saw each other again.

Barking was a miserable locale, surrounded by miasmatic marshes and smoke-spewing factories—a fearsome place for someone concerned about his health—but Wallace thought of it as a way station and planned to leave as soon as he could afford to move to a healthier environment. In the meantime, he met several other unlucky inhabitants who satisfied most of his intellectual needs: one had a fine fossil collection from a nearby district; another shared an interest in spiritualism; and a third, a "utopianist," had invented an ingenious scheme to fertilize his farm with sewage.

A month before he moved in, Wallace had published his second major book with Macmillan. His move to Barking was not his only act of distancing

from Darwin. *Contributions to the Theory of Natural Selection,* a collection of essays written over a fifteen-year period as well as a few others he had not yet published, marked his official departure from Darwin. The book included his two famous essays from 1855 and 1858—"On the Law Which Has Regulated the Introduction of New Species" and "On the Tendency of Varieties to Depart Indefinitely from the Original Type"—virtually unaltered; others were corrected, clarified, and enlarged. He presented his claims modestly:

> The present work will, I venture to think, prove, that I both saw at the time the value and scope of the law which I had discovered, and have since been able to apply it to some purpose in a few original lines of investigation. But here my claims cease. I have felt all my life, and I still feel, the most sincere satisfaction that Mr. Darwin had been at work long before me, and that it was not left for me to attempt to write "The Origin of Species." I have long since measured my own strength, and know well that it would be quite unequal to that task. . . . My own more limited powers have, it is true, enabled me now and then to seize on some conspicuous group of unappropriated facts, and to search out some generalisation which might bring them under the reign of known law; but they are not suited to that more scientific and more laborious process of elaborate induction, which in Mr. Darwin's hands has led to such brilliant results.[2]

His modesty and "more limited powers," however, did not prevent him from acting the gadfly. *Contributions* concluded with his two most provocative essays: "The Development of Human Races Under the Law of Natural Selection" and "The Limits of Natural Selection as Applied to Man."

The first was a reprint of Wallace's controversial 1864 presentation to the Anthropological Society: "The Origin of Human Races and the Antiquity of Man Deduced from the Theory of 'Natural Selection.'" He had planned to rewrite the essay but changed his mind, preferring to leave it as written except for changing the title and reworking "a few ill-considered passages" at the end. He removed the "dream" that James Hunt had ridiculed and replaced it with something many viewed as worse. The progress toward a homogeneous race was slow but steady, Wallace stated. Europeans had entered an abnormal period in history, when the inventions of science gave an illusion of moral and intellectual progress. The civilized societies of his day were too low intellectually and morally to know how best to make use of

these inventions. Natural selection could not act in any way, because the mediocre, the lowest, the least moral, and the least intelligent were succeeding best and multiplying the fastest. Yet he had not given up hope. A high morality could still influence public opinion, he said. It was a sure sign that human beings were raised far above the animals and proof that there were other, higher existences from which our distinguishing qualities were derived and toward which we were "ever tending."

The second essay expanded on his review of Sir Charles Lyell's *Principles of Geology*. Wallace said that he would touch on a class of problems usually considered beyond the boundaries of science but that he predicted would someday fall within its domain. Above the law of natural selection operated some more general and fundamental law, one that required the intervention of higher intelligences. "It is . . . probable, that the true law lies too deep for us to discover it; but there seems to me," he wrote, "to be ample indications that such a law does exist, and is probably connected with the absolute origin of life and organization."

He also addressed the problem of the origin of consciousness by quoting John Tyndall, who, as president of the Mathematical and Physical Sciences Section of the 1868 meeting of the British Association for the Advancement of Science, had remarked that

> the passage from the physics of the brain to the corresponding facts of consciousness is unthinkable. Granted that a definite thought, and a definite molecular action in the brain occur simultaneously, we do not possess the intellectual organ, nor apparently any rudiment of the organ, which would enable us to pass by a process of reasoning from the one phenomenon to the other. . . . Were we intimately acquainted with the corresponding states of thought and feeling, we should be as far as ever from the solution of the problem, "How are the physical processes connected with the facts of consciousness?" The chasm between the two classes of phenomena would still remain intellectually impassable.

Tyndall was addressing the position of those scientific materialists who believed that "molecular groupings and molecular motions" explained everything. In fact, he said, they explained nothing; the problem of the connection between mind and body was as insoluble in the modern era as it had been in the prescientific ages.[3]

Wallace purposely chose Tyndall's comments to make a jab at Thomas Huxley, who had adopted a purely materialistic position by reducing the thinking process to molecular behavior. In his essay "On the Physical Basis of Life," Huxley had written, "Our thoughts are the expression of molecular changes in that matter of life which is the source of our vital phenomena. Consciousness is a function of nervous matter, when that nervous matter has attained a certain degree of organisation, just as we know the other actions to which the nervous system ministers, such as reflex action and the like, to be."[4] Huxley's theory, Wallace felt, was not only untestable but inconsistent with "accurate conceptions of molecular physics."

He then proceeded to give a discourse on the nature of matter, including a sketch of the most recent discoveries and speculations about the action of atoms. From atoms emanated attractive and repulsive forces, he said. By grouping atoms in symmetrical figures, all the general properties of matter could be explained. With more complex arrangements, the special chemical, electrical, and magnetic properties of various kinds of matter also could be elucidated. Each chemical element consisted of a molecule composed of simple atoms in greater or lesser numbers. Organic compounds were created by combining molecules. Combining organic compounds in ever greater complexity produced "organised beings." Wallace continued: "This view enables us to comprehend the *possibility*, of the phenomena of vegetative life being due to an almost infinite complexity of molecular combinations, subject to definite changes under the stimuli of heat, moisture, light, electricity, and probably some unknown forces." But this increasing complexity, even if carried out infinitely, could not have the slightest tendency to originate consciousness in such molecules or groups of molecules. "If a material element, or a combination of a thousand material elements in a molecule, are alike unconscious," he said, "it is impossible for us to believe, that the mere addition of one, two, or a thousand other material elements to form a more complex molecule, could in any way tend to produce a self-conscious existence." A more definite conception of matter was therefore required, one with clearly enunciated properties, explaining precisely how self-consciousness emanated from atoms. There was no escaping this dilemma; either all matter was conscious, or consciousness was something distinct from matter. If it was something distinct, then conscious beings were independent of what was termed "matter."

After accusing Huxley of using words "to which we can attach no clear conception," Wallace made statements equally abstruse. Matter was force

and nothing but force, he said. Matter in the popular sense did not exist, but its reality was demonstrated whenever we touched something and felt a resistance or repulsive force. He identified two types of force: the first was "primary," which included gravitation, cohesion, heat, and electricity. The second was what he called will-force, which he defined as a power that directed the action of the forces stored up in the body. However minute the changes required in the cells or fibers of the brain to set in motion the nerve currents that excited the pent-up forces of certain muscles in the "animal machine," he said, some force was required to initiate those changes. That force was will-force. The origin of will-force could be traced not to something inside but to something outside humans—the will of higher intelligences or of one Supreme Intelligence. The theory claiming that matter, force, and consciousness were separate phenomena yet somehow interconnected was too complicated and contradictory and led to endless philosophical dilemmas. His theory was simpler. Matter as an entity distinct from force did not exist, and force was a product of Mind. But his theory that this Mind, or Supreme Intelligence, used the laws of organic development for a special end—that is, for humanity's spiritual development—did not negate the theory of natural selection. "I do not see that the law of 'natural selection' can be said to be disproved," Wallace wrote, "if it can be shown that man does not owe his entire physical and mental development to its unaided action, any more than it is disproved by the existence of the poodle or pouter pigeon, the production of which may have been equally beyond its undirected power."[5]

Darwin, who received his copy of *Contributions* in April, wrote to thank Wallace for the flattering remarks in the preface. "I hope it is a satisfaction to you to reflect—and very few things in my life have been more satisfactory to me—that we have never felt any jealousy towards each other, though in one sense rivals," Darwin said. "But I groan over Man—you write like a metamorphosed (in retrograde direction) naturalist, and you the author of the best paper that ever appeared in the Anthropological Review! Eheu! Eheu! Eheu!" After having reread that paper, he added, "I defy you to upset your own doctrine."[6]

Wallace's concluding essay also disturbed his old friend Henry Bates. "I have been having some conversations with the Editor of the 'Academy' about Mr. Wallace's last book & the appearance of backsliding from the Darwinian theory which it contains," Bates wrote to Darwin shortly after the publication of *Contributions*. "Other sincere friends of the pure truth have expressed a little surprise & bewilderment at the same phenomenon. The

views of friend Wallace are so plausible & suit so well widespread prejudices that you no doubt think with me they might be controverted. But who is to criticise them? No one but yourself."[7]

But there were other critics. A Swiss naturalist from Geneva named Jean Louis René Antoine Édouard Claparède lambasted Wallace in the August 6 issue of the French journal *Revue des cours scientifiques* for what he felt were Wallace's inconsistencies. "While Mr. Wallace demands the intervention of a superior force to explain the foundation of the human races, and to guide man in the path of civilisation, he altogether denies the existence of such a force as assisting to produce the inferior races of animals and plants, which he attributes entirely to the operation of Natural Selection," Claparède wrote. He had sent a copy of his critique to Darwin and Wallace a month before its publication, prompting Wallace to write to Darwin that "his arguments in reply to my heresy seem to me of the weakest."[8] Darwin did not reply; in fact, he did not write again to Wallace until November. But he told Joseph Hooker, "I think well of Prof. Claparède's criticism and I think it would be well worth translating and publishing, partly because he is so capital a . . . naturalist, and chiefly because no sort of answer has yet appeared to Wallace. Bates thinks that Wallace's heterodox views have already done a great deal of mischief to the cause of evolution. . . . Wallace himself thinks Claparède's article very weak; but I conclude that he thinks so because Claparède has arrived at an unpleasant judgment."[9]

Claparède's arguments were summarized in the August 11 issue of *Nature*. Another review that appeared two months later in the same journal represented the prevailing opinion among scientific commentators. After paying homage to Wallace's important contributions to evolutionary theory, the reviewer remarked:

> To say that our brains were made by God, and our lungs by natural selection, is really to exclude the Creator from half His creation, and natural science from half of nature. All the phenomena we know are of necessity ultimately referable to the First Great Cause: the object of science is to discover their secondary causes; and if the theory of natural selection does not explain how the larynx or the brain of man were developed, then we must try to find another which will. To fall back for explanation upon the primary efficient cause of their existence and the design with which they were framed, is only to confuse two distinct branches of inquiry.[10]

Wallace had anticipated disapproval, though what the Darwinians perceived as an ever-widening gulf between themselves and Wallace he perceived as a mere wedge. In November 1870, he laid out his complete arguments against Claparède in *Nature,* but he was addressing all of his critics. None, he felt, had offered specific objections to the ideas set out in *Contributions.* They assumed that no characteristics of *Homo sapiens* differed in kind from those of other animals, whereas he had described substantial differences in kind that his critics could neither disprove nor deny. Claparède and others argued that natural selection must apply equally to humans and the rest of nature—or to neither. "But why must it do so?" Wallace asked. "I maintain . . . that man is descended from a lower animal form, but I adduce facts which go to prove that some other law or power than Natural Selection has specially modified him. If Darwin is not anti-Darwinian in admitting, as he does, the possibility that animals and plants may not have had a common ancestor, I may surely deny that I am anti-Darwinian when I show that there are certain phenomena in the case of man that cannot be wholly explained by the law of Natural Selection."[11]

Not all the reviews were damning. Although disagreeing with some of Wallace's conclusions, Anton Dohrn, a German naturalist, sympathized with his intellectual and philosophical dilemma. Since the question of how the motion of atoms and molecules could develop into thoughts was far from being solved, he said, one must concede Wallace's right to account for various psychic and organic phenomena by other principles. "We confess that Mr. Wallace's principles . . . admit of being methodically and consistently carried out. . . . If such principles do not directly help us onwards," Dohrn suggested, "they at least preserve us from onesidedness."[12]

Huxley would not let Wallace have the last word. He placed Wallace's objections at the center of current scientific debate, stating that *Contributions* was worthy of particular attention not only because of the competence of its author but also because of his willingness to raise important philosophical questions underlying all physical science. But after offering this faint praise, he attacked Wallace with his best weapon—his blistering wit. For example, in response to Wallace's remarks in his essay "The Limits of Natural Selection as Applied to Man" about the limited mental requirements of the "lowest savages," Huxley turned the tables on his friend, quoting a passage from another essay in *Contributions*, "On Instinct in Man and Animals," in which Wallace described the ability of savages to make long journeys requiring wide and accurate knowledge of the topography not only

of their own district but of the surrounding regions. "In complexity and difficulty, I should say that the intellectual labour of a 'good hunter or warrior' considerably exceeds that of an ordinary Englishman," Huxley pointed out. "The Civil Service Examiners are held in great terror by young Englishmen; but even their ferocity never tempted them to require a candidate to possess such a knowledge of a parish as Mr. Wallace justly points out savages may possess of an area a hundred miles or more in diameter." The gauntlet that Wallace had thrown at his feet provoked Huxley. Such a challenge was impossible for someone of his prickly temperament to ignore. He had no use for Wallace's discussion of elementary physics. "With all due respect for Mr. Wallace," Huxley wrote, "it appears to me that his remarks are entirely beside the question. I really know nothing whatever, and never hope to know anything, of the steps [by] which the passage from molecular movement to states of consciousness is effected; and I entirely agree with the sense of that passage which [Wallace] quotes from Professor Tyndall, apparently imagining that it is in opposition to the view I hold."[13]

The verbal blitzkrieg especially delighted Hooker. Wallace, once Darwin's glorious knight, was now—in his mind at least—divested of his noble garments and forced to abdicate his honored position. "The tumbling over Wallace" was a great service to science, Hooker wrote to Darwin in a letter praising Huxley's attack on Wallace and Darwin's other critics.[14]