I form a history and tables of discovery for anger, fear, shame, and the like; for matters political; and again for the mental operations of memory, composition and division, judgment and the rest; not less than for heat and cold, or light, or vegetation, or the like.—Bacon, Novum Organum
I. A "POSITIVE PSYCHOLOGY"

"Agir par affection, et sentir pour agir: such is the motto of [Comte's] system, which indicates the predominance given to the emotive over the merely intellectual—in opposition to the old psychology which always subordinated the emotions to the intellect." George Henry Lewes singled out this aspect of Comte's philosophy as its most potent appeal. The emotive bias that suffused Auguste Comte's thought from its earliest exploration of positivistic method to the later manifestations of messianic fervor originated in and was founded upon a scientific source: the phrenological system of Franz Joseph Gall.

Lewes argued that Gall provided Comte with "a bias and point of departure." In the Cours de philosophie positive itself, Comte makes abundantly clear his debt on the subject of affective supremacy to Franz Joseph Gall, whose Recherches sur le système nerveux en général et sur celui du cerveau en particulier (Paris, 1809-11), coauthored with Johann Caspar Spurzheim, became the first textbook of the science of phrenology:

A full contemplation of Gall's doctrine convinces us of its faithful representation of the intellectual and moral nature of Man and animals. All the psychological sects have misconceived or ignored the preeminence of the affective faculties, plainly manifest as it is in all the moral phenomena of brutes, and even of Man; but we find this fact placed on a scientific basis by the discovery that the affective organs occupy all the hinder and middle portions of the cerebral apparatus, while the intellectual occupy only the front portion, which, in extreme cases, is not more than a fourth, or even a sixth part of the whole. The difference between Gall and his predecessors was not in the separation of the two kinds of faculties, but that they assigned the brain to the intellectual faculties alone.\(^2\)

Contemporary critics of the Cours made no secret of their disapproval of Comte's affiliations with the new cerebral psychology. W. H. Smith's 1843 essay on Comte, the first on the complete Cours to appear in England, bemoaned the fact that Comte was a phrenologist. Smith's orthodox piety was mightily offended by the heretical implications of the science: what
was to become of the soul if mind was reduced to mere matter?—such regions were better left a sacred mystery: "Upon the dial of a watch the hands are moving, and a child asks why? Child! I respond, that the hands do move is an ultimate fact." Two decades later, in *Auguste Comte and Positivism*, John Stuart Mill responded with equal disapprobation: "And what Organon for the study of 'the moral and intellectual functions' does M. Comte offer, in lieu of the direct mental observation which he repudiates? We are almost ashamed to say, that it is Phrenology!" But the bias of Mill's objection is antithetical to Smith's: "The later course of physiological observation has not tended to confirm, but discredit, the phrenological hypothesis." It was to be phrenology's fate, as it was positivism's, that it antagonized both men of religion and men of science; its heterodoxy was equally theological and physiological.

But there were many in the intellectual vanguard who approached phrenology with respect. Mill himself in 1842 had taken up Gall's second major work, the six-volume *Sur les fonctions du cerveau* (1825), at Comte's instigation: "J'ai commencé l'étude de Gall: il me paraît un homme d'un esprit supérieur. Je le lis avec plaisir et j'espère aussi avec fruit." A month later Mill submitted a lengthy progress report on his study, confessing his difficulty with Gall's physiological specifications, and finding his map of the brain premature, "vague et anti-scientifique." But yet a month later, Mill wrote again, and tempered his earlier objections: "Pour parler maintenant de Gall, je crain de vous avoir donné une idée exagérée de mon éloignement actuel de sa doctrine. Je suis bien loin de ne pas la trouver digne d'être prise, selon votre propre expression, en sérieuse considération; bien au contraire, je crois qu'elle a irrévocablement ouvert la voie à un ordre de recherches vraiment positives, et de la première importance."

Mill had introduced his young friend Lewes to Comte in the same letter in which he criticized phrenology. The juxtaposition of the two subjects was more than casual, for Lewes too was intrigued by the new science. When Lewes himself turned
to a series of essays on "Phrenology and Phrenologists" in the *Leader* between December 1853 and January 1854, he echoed Mill's reservations as well as his praise of phrenology for introducing "positive" researches into the human mind. "We believe in Phrenology, but not in the Phrenologists. . . . We believe in Phrenology and Physiology, both as sciences having a positive basis," asserts Lewes; "we admit the tentative [claims] made by Gall as the first and greatest step towards the positive psychology." 6

Psychology was to be the proving-ground of positivism; or, as Comte put it, "the last battleground, in the popular view, between the positive philosophy and the ancient." 7 Man's beliefs about his "intellectual and affective phenomena" were the final stronghold of the theologians—with their talk of soul—and the metaphysicians—with their notions of consciousness. Comte believed that he had found in Gall's phrenology the perfect organon of a purely positive psychology. He wrote in the *Cours*:

> It was not till our own time that modern science, with the illustrious Gall for its organ, drove the old philosophy from this last portion of its domain and passed on in the inevitable course from the critical to the organic state. . . . Neither enmity nor irrational advocacy has hindered the continuous spread, in all parts of the scientific world, of the new system of investigation of intellectual and moral man. All the signs of the progressive success of a happy philosophical revolution are present in this case. 8

Phrenology's premier English advocate, George Comte, echoes Comte in his ecstatic vision of the positivist millennium: "Before the appearance of Drs. Gall and Spurzheim . . . the science of Mind was very much in the same state as that of the heavenly bodies prior to the times of Copernicus and Newton." 9

The founder of phrenology, Franz Joseph Gall, was born in Baden in 1758; about 1800, he began his physiological researches, dissecting human and animal brains with his student and disciple, Johann Caspar Spurzheim. Official displeasure led to their departure from Vienna in 1805, whence they em-
barked on a successful lecture tour of Europe, settling in Paris in 1807; their jointly-authored *Recherches* appeared in 1809. The two parted ways when Spurzheim added philosophy to Gall's physiology and broke with the master in 1814. Gall, unlike his follower, was wary of emphasizing ideology over anatomy. In that same year, Spurzheim arrived in England to preach the new gospel, touring and lecturing extensively throughout the British Isles until his death in 1832.  

Franz Joseph Gall summarized the four chief tenets of this new positive psychology in the *Anatomie et physiologie*: "The moral and intellectual dispositions are innate; their manifestation depends on organization; the brain is exclusively the organ of the mind; the brain is composed of as many particular and independent organs, as there are fundamental powers of the mind;—these four incontestable principles form the basis of the whole physiology of the brain." Of Gall's four principles, it is the fourth that has remained in the memory of the twentieth century as "phrenology": the "crainioscopy" practiced by the phrenologists, bump-reading, the art of divining character by the contour of the skull (fig. 1.1). Admittedly, among a certain segment of the populace (particularly in the English provinces and in America), this aspect of phrenology had a large and popular following. But among the more intellectual observers of phrenology, adversaries and advocates alike were critical of the cruder populist applications of the science. Writing on "Phrenology in France" for *Blackwood's* in 1857, George Henry Lewes scoffed, "As the general public knows not fear, it buys treatises, attends lectures, collects skulls, and manipulates heads." On this point, at least, ardent phrenologist Charles Bray was in agreement: "The public, however, consider that manipulating the head is phrenology, and we cannot too much reprobate the practice of those persons who aid thus to deceive them, and who have brought the science into disrepute by their presumptions and confident assumption of accuracy which has not yet been attained," Bray wrote in an open letter to Lewes published in the *Leader.*  

Despite his reservations about phrenology as a fad, Lewes
was fascinated by it as a science. In his *Biographical History of Philosophy*, he made an eloquent plea for phrenology as a seminal influence on the development of physiological psychology:

> The day for ridiculing Gall has gone by. Every impartial competent thinker, whether accepting or rejecting Phrenology, is aware of the immense services Gall has rendered to Physiology and Psychology, both by his valuable discoveries, and by his bold, if questionable hypothesis. He revolutionized Physiology by his method of dissecting the brain, and by his bold assignment of definite functions to definite organs. To verify or refute his hypotheses, vast researches were undertaken . . . and now there is no physiologist who openly denies that mental phenomena are directly connected with nervous structure.\textsuperscript{11}
Gall’s first three principles may not seem particularly original, or even controversial—so much were they shared by the luminaries of later nineteenth-century psychology, and to such an extent as they are scientifically accepted today. But in Victorian England, it was these aspects of phrenology that were, in fact, the most truly controversial and profoundly significant. To British intellectuals of the 1830s and 1840s, the heirs of philosophical psychology, for whom mind meant a Lockean *tabula rasa* and for whom the psychologist was a meditative Cartesian cogitator, the ideological implications of phrenology were radical, whether or not one agreed with the specifics of Gall’s cerebral localization (such as the exact location of the “organ” of “amativeness” or “veneration”).

Despite the inadequacies and inaccuracies of Gall’s system, his contribution to psychology was extremely significant: not in terms of the physiological specifics of brain structure (where he erred grossly), but rather as a new *method* for studying the mind, a method that liberated psychology from the confining discipline of philosophy. Gall believed in psychology as a physical science, not a branch of epistemology. Quite simply, phrenology claimed that since the brain is the organ of the mind, mind is matter. As such, it can be subjected to the same scientific methods that might apply in investigating any other human organ—or any organic being—or inorganic nature as well. According to the Comtean hierarchy, the method of biology becomes that of psychology, just as the method of chemistry became that of biology; and so on, back to the cosmology of astronomy and the pure laws of mathematics. Universal causation reigns supreme throughout organic and inorganic creation.

For my purposes it is the broader assumptions informing the phrenological world-view that are of greater interest than the specific scientific strengths or weaknesses of phrenology’s “organology.” In his 1835 preface to *The Constitution of Man*, the most widely-read British gospel of this new philosophy, phrenologist George Combe himself admitted that his work “may be instructive even to those who contemn Phrenology as
unfounded,” insofar as it demonstrates the more fundamental assertion that “we are physical, organic, and moral beings, acting under the sanction of general laws, whether the connection of different mental qualities with particular portions of the brain, as taught by Phrenology, be admitted or denied.” Comte’s statement suggests that phrenology would have a potent ideological appeal to the Victorian intellectual immersed in Mill’s universal causation and Comte’s positivism.

Under Spurzheim’s missionary tutelage, phrenological enthusiasm had flourished; by the year of his death, there were twenty-nine phrenological societies in Great Britain. From its earliest arrival in England, phrenology intrigued many thinking men and women. Appropriately, we find Spurzheim taking a phrenological reading of Samuel Taylor Coleridge at Highgate in 1816; a year later, the poet proclaimed him “beyond all comparison the greatest Physiognomist who ever appeared,” praising “the undoubted splendor and originality of his and Gall’s Anatomical Discoveries to the Structure of the Brain.” Spurzheim’s lecture tours in the provinces were to have a seminal effect on Herbert Spencer as well; he recalls in his Autobiography that in about 1830 “Gall’s disciple, Spurzheim . . . went about the country diffusing knowledge of the system. Derby was among the towns he visited. Being then perhaps 11 or perhaps 12, I attended his lecture.” Despite the “considerable repugnance” the lad felt for the “grinning skulls” that accompanied Spurzheim, young Herbert “became a believer, and for many years remained one.” Spencer continued to take considerable interest in the science throughout the 1840s: phrenologist J. Q. Rumball came to Derby in 1842 and made a reading of Spencer’s head, which Spencer published in full in the Autobiography. In 1843 and 1844, Spencer published phrenological essays in the Zooist, a journal devoted to phrenology and mesmerism: “Partially dissentient though I was concerning special phrenological doctrines, I continued an adherent to the general doctrine.” Ultimately, after he began new psychological inquiries in the late 1850s, Spencer was led “to conclude that, though the statements of phrenologists
might contain adumbrations of truths, they did not express the truths themselves." Yet Gall’s theories were to have a profound influence on Spencer’s later thought.

Phrenology was eagerly received by the aspiring intellectuals of the provinces, removed from traditional centers of learning and hungry for the latest knowledge. Despite the fact the phrenologists had little praise for the female brain—"Women do not extend their reasonings beyond the range of the visible world," noted the *Phrenological Journal*, "nor do they make any great or daring excursions into the regions of fancy"—over half the audience for these provincial lectures was often female. A visiting phrenologist provided the educationally disenfranchised woman with a rare opportunity for instruction in the natural sciences. One such woman was Marian Evans, twenty years before she became novelist George Eliot: the mind of a genius in the body of a Warwickshire spinster, housekeeper for an ailing father, a woman with no formal education beyond provincial "dame" schools; a mind that devoured any of the all-too-scarce ideas (or "reasonings beyond the range of the visible world") afloat in the provinces. George Eliot’s first reference to phrenology—"my organs of ideality and comparison"—comes in one of her earliest extant letters, in November 1838. Her correspondent was teacher Maria Lewis, an ardent Evangelical (as was Eliot herself at that time); their interest in the science gives proof to the claim of many phrenologists that phrenology and religion were not necessarily mutually exclusive (I will have more to say on that subject in my discussion of George Combe). The two women continued to share this keen interest: "It was very kind of you to remember my requests about phrenology," Eliot writes a year later; "I have not at this moment any phrenological thoughts but when I have I will endeavour to tell you fully all I have been able to opine on the matter." Phrenological references recur in Eliot’s letters of 1840 to Martha Jackson: the "superior development of a certain region of your brain"; the "paucity of my cerebrum in a certain part."

Her meeting in 1841 with Charles Bray, ribbon manufac-
turer and resident philosopher of Coventry, was certainly central to George Eliot's continuing interest in and advocacy of phrenology. In his autobiography Charles Bray described the "free and easy mental atmosphere, harmonizing with the absence of all pretension and conventionality" that prevailed at his Rosehill home, with its "peculiar charm" for all who visited there. "Every one who came to Coventry with a queer mission, or a crochet, or was supposed to be a 'little cracked,' was sent up to Rosehill," he mused. Welcome above all were advocates of phrenology, a science that Bray saw as the sole basis of "the Natural Laws of Mind," and "surely the most interesting of all studies." Phrenology provided the foundation for all of Bray's pet reforms and for his philosophy of necessity. Even in the final years of his life, he devoted a large proportion of his autobiography to a defense of the science, asserting that his discovery of phrenology had changed his life.

Phrenology must have been an immediate bond between the Coventry circle and Marian Evans; within three months of her first meeting with the Brays, she writes Maria Lewis: "Having had my propensities sentiments and intellect gauged a second time, I am pronounced to possess a large organ of 'adhesiveness,' a still larger one of 'firmness,' and as large of conscientiousness." It is probable that both readings were made by Bray himself; later that year Eliot writes of her "lessons from the arch-phrenologist." Bray too was an eager pupil, for in February 1844 Cornelius Donovan, principal of the London Phrenological Institution, gave both Bray and George Eliot some phrenological tutelage. That summer Eliot accompanied Bray to London to have her head cast by phrenologist James Deville.

In 1851 George Eliot left the provinces for London, to begin her career as editor of the prestigious and radical *Westminster Review*. But she did not leave phrenology behind in Coventry; nor did she desert the friends of her youth. On 29 August 1851, the Brays introduced George Eliot to the heir to phrenology's English throne, George Combe, who stopped frequently at their Rosehill home en route to Scottish proselytizing. The
intellectual attraction between Combe and Eliot was instantaneous, strong, and mutual. Combe immediately pronounced Eliot “the most extraordinary person of the party,” on the basis of their conversation on religion, economy, and politics. He went on to a detailed phrenological description of her brain.26

A warm friendship quickly ensued: “The Combes are coming again on Tuesday!” Eliot noted enthusiastically in a letter to John Chapman on 14 September 1851. She traveled to visit the Combe family in Edinburgh in October of the following year (a visit that was also to take her to new friend Harriet Martineau’s Ambleside home), and enthused to Sara Sophia Hen­nell: “Yes, he is an apostle. An apostle, it is true, with a back and front drawing room, but still earnest, convinced, consistent, having fought a good fight and now peacefully enjoying the retrospect of it. I shall leave these good friends on Wednesday evening with regret.” Emotion and intellect were inseparable for Marian Evans; her mentors—Spencer, Lewes, and Combe—were always, in some sense, her lovers, the recipients of her emotions as well as her ideas. “I often think of you,” she effuses to Combe, “when I want some one to whom I could confess all my difficulties and struggles with my own nature, as the person, among all I have known, who is, as Madame de Staël said of her friend, the most completely ‘de son avis’—having a profound faith in his principles and acting them out.”27

A rash of phrenological descriptions in her letters to the Brays coincides with the most intense period of Eliot’s friendship with George Combe: of W. R. Greg (27 April 1852): “His brain is large, the anterior lobe very fine and a moral region to correspond”; of Charles Dickens (5 May 1852): “His appearance is certainly disappointing—no benevolence in the face and I think little in the head—the anterior lobe not by any means remarkable”; of William George Spencer (Herbert’s father) (23 June 1852): “a large-brained, highly informed man, with a certain quaintness and simplicity”; and finally, the report from George Henry Lewes of a conversation with Professor Robert Owen, “in which the latter declared his conviction that the cerebrum was not the organ of the mind [contrary to
Comte's belief] but the cerebellum rather! . . . The professor has a huge anterior lobe of his own. What would George Combe say if I were to tell him?"  

In fact, George Combe was to have a great deal to say over the next few years on the subject of George Henry Lewes's phrenological heresies, and of the seduction of his prize pupil from what he considered the true path of cerebral physiology. For Combe was not the only cause of Eliot's renewed interest in phrenology in the early 1850s. Within a month of her first meeting with Combe, George Eliot was introduced to George Henry Lewes; her friendship with Combe was to wane as her love for Lewes grew. The explanation of this is perhaps as much intellectual as it is emotional.

Lewes was a "reverent heretic" on the subject of phrenology as well as positivism. His own acquaintance with phrenology began as early as July 1836, the date he inscribed on his copy of George Combe's *System of Phrenology.* Lewes's study of Comte's *Cours* in the early 1840s would again have brought phrenology to his attention. But significantly, it was not until the early 1850s and the blossoming of his friendships with Spencer and Eliot that Lewes took a greater and more controversial interest in the science. His critique of phrenology in the 1850s climaxed with his new chapter on the subject in 1857 revised edition of the *Biographical History.* Although he there gave Gall his due for having revolutionized physiology, he also had harsher words for phrenology's premature conclusiveness and its methodological weaknesses: "We find Physiology confessing its incompleteness . . . whereas Phrenology claims to be complete, equipped, full-statured!"; "If Phrenology is the Physiology of the nervous system, it must give up Gall's approximative method for a method more rigorously scientific."

I would suggest that George Eliot's elopement to Germany with Lewes in 1854 was as offensive intellectually as it was morally to her phrenological friends. The editorial policies of the *Westminster Review* towards phrenology and mesmerism between 1851-54 became the focal point of increasing acri-
mony between Eliot and Combe. But her personal relationship with the apostle remained on apparently amicable terms; as late as 9 June 1854, she was politely refusing Combe’s invitation to visit him in Kingston. The very next month, she did indeed choose to travel—to Weimar, alone, with the married George Henry Lewes. A heated correspondence on the subject ensued between the Brays and the Combes. Although Charles Bray loyally defended Eliot’s conduct, George Combe was unappeased: “I should like to know whether there is insanity in Miss Evans’s family; for her conduct, with her brain, seems to me like morbid mental aberration.”

Combe’s moral indignation was as much a product of intellectual rivalry as it was of outraged morality. For as George Eliot’s relationship with Lewes continued, she began to qualify her acceptance of phrenology along lines similar to his. On 10 July 1855, Bray’s visit to the pair led to an ugly argument with Lewes, in which Eliot, to the dismay of her old mentor, sided with her new mate. Bray, outraged, accused her of deserting the cause.* Her ensuing apologetic letter of 16 July quickly grew into a staunch defense of Lewes:

Mr. Lewes begs me to say that he never meant to deny that size was a measure of power [in the brain], all other things being equal. . . . I am not conscious of falling off from the physiological basis.” I have never believed more profoundly than I do now that character is based on organization. . . . But I do not, and I think I never shall, consider every man shallow or unconscientious who is unable to embrace all Mr. Combe’s views of organology and psychology.4

George Eliot still retained her interest in the organization of the brain that phrenology had inspired; but Lewes was introducing her to methods of physiological investigation that were more firmly based on scientific fact than the crainioscopy of the phrenologists.5

In concluding this biographical summary, however, I would stress the continuity of Eliot’s and Lewes’s commitment to the essential methodology and doctrine behind the science of phrenology, their conviction that Gall was fundamentally
THE THIRD APOSTLE AND HIS TWO GOSPELS

correct in claiming psychology as a natural science. A few months after the unhappy visit from Charles Bray, noted above, George Eliot writes to Sara Sophia Hennell: "We are reading Gall's Anatomie et Physiologie du Cerveau, and trying to fix some knowledge about plexuses and ganglia in my soft mind!"  

In October 1854 Eliot wrote an essay on "Women in France" for the Westminster Review. "I think [it] would please you much," Bray conciliatorily pointed out to Combe, "as having the 'physiological basis.'" In that essay George Eliot provides ample documentation of her belief in Gall's tenets that the moral and intellectual dispositions are innate, their manifestation dependent on organization:

What were the causes of this earlier development and more abundant manifestation of womanly intellect in France? The primary one, perhaps, lies in the physiological characteristics of the Gallic race: the small brain and vivacious temperament which permit the fragile system of woman to sustain the superlative activity requisite for intellectual creativeness; while, on the other hand, the larger brain and slower temperament of the English and the Germans are, in the womanly organization, generally dreamy and passive. . . . Throughout the animal world, the higher the organization the more frequent is the departure from the normal form.  

But it was not merely the "physiological basis" that drew Victorians to phrenology; it was a world view, with powerful appeal to a Victorian sensibility.

II. THE THIRD APOSTLE AND HIS TWO GOSPELS:
GEORGE COMBE'S THE CONSTITUTION OF MAN
IN RELATION TO EXTERNAL OBJECTS (1835)

And had we such a Knowledge of the Constitution of Man, from which his Faculties of Moving, Sensation, and Reasoning, and other Powers flow; and on which his so regular shape depends, as 'tis possible Angels have, and 'tis certain his Maker has, we should have quite other Idea of his Essence, than what now is contained in our Definition of that Species, be it what
it will: and our Idea of any individual Man would be as far
different from what it now is, as is his, who knows all the
Springs and Wheels, and other contrivances within, of the fa­
mous Clock at Strasburg, from that which a gazing Country­
man has of it, who barely sees the motion of the Hand, and
hears the Clock strike, and observes only some of the outward
appearances.—Locke, Essay Concerning Human Understand­
ing

At the time of Johann Caspar Spurzheim’s death in 1832,
Scotsman George Combe “was left as the sole chief of phrenol­
ogy,” writes his biographer. As the heir apparent to Gall and
Spurzheim, he was “the last of its three first apostles.” Among a prolific outpouring of tracts and treatises through­
out his lifetime, The Constitution of Man was unquestionably
the received gospel of phrenology’s creed. Harriet Martineau’s
memoir of Combe for the Daily News opened: “A man must be
a conspicuous member of society who writes a book approach­
ing in circulation to the three ubiquitous books in our lan­
guage—the Bible, ‘Pilgrim’s Progress,’ and ‘Robinson Cru­
soe.’” This was not simply the hyperbole of the eulogist. As
a point of comparison, it took over fifteen years for Darwin’s
Origin of Species to sell 16,000 copies in England; The Con­
stitution of Man sold 2,000 copies in ten days. Combe’s biog­
rapher, Charles Gibbon, prints some of the astounding pub­
lishing statistics for the book: the first edition, published in
June 1828, sold a mere 1500 copies; by October 1836, 11,000
copies of the first through fourth English editions of the book
had been printed. “The People’s Edition” at Is. 6d. sold 59,000
copies (including a “school edition”) in England between No­
vember 1835 and October 1838.

The Constitution of Man was firmly grounded in the science
of phrenology, but it was much more than a mere handbook
of the science. Its appeal clearly extended to an audience be­
yond the phrenological faithful. “Upon the physiological
studies of Gall had been erected a mighty superstructure, var­i­ously termed a social science, a universal philosophy, a guide
to reform life itself," writes historian John D. Davies; phrenology contained "a scientific philosophy applied to the whole progress of man," David deGiustino concurs. The Constitution of Man was the textbook of that philosophy, and its Victorian students were legion. Having established the strong ties between this Victorian circle and the science of phrenology, I would now like to explore the more specialized appeal of its philosophy to a group of intellectuals steeped in the universal causation of John Stuart Mill and the positivistic promise of Auguste Comte.

Combe's gospel of phrenology was to have a seminal influence on some of the finest scientific minds of the century. In the early 1840s, Alfred Russel Wallace—a decade later to "discover" evolution at the same time as Charles Darwin (and I shall address myself later to the close relationship between phrenology and evolution)—read Combe's Constitution of Man and other works on phrenology. Wallace remained a lifelong believer; when he looked back upon his times in 1899 in The Wonderful Century, he heralded "The Neglect of Phrenology" as the premier failure of the age, avowing it to be "a Science of whose substantial truth and vast importance I have no more doubt than I have of the value and importance of any of the great intellectual advances already recorded," and commending Combe as "the best English advocate of the science, and probably one of the best practical phrenologists of any country."

Similarly, Alexander Bain, leading psychologist of the mid-Victorian age, whose work represented the culmination of association psychology and the beginnings of respectable physiological psychology, studied the Constitution at the Mechanics' Mutual Instruction Class in Aberdeen from 1835–38. In his extensive discussion of Bain's work in Mind, Brain, and Adaptation, Robert M. Young persuasively presents evidence of phrenology as an important early source of Bain's interest in physiological psychology.

We have both direct and indirect evidence that the Constitution was well-known to the Victorian circle that this study delineates. Writing to George Henry Lewes on 15 December
1853 (a letter that Lewes published in the Leader), Charles Bray declared Combe's *Constitution of Man* "a more perfect system of psychology than any other." The opening sentence of Bray's 1841 preface to his *Philosophy of Necessity* contains an unmistakable echo of Combe: "The object of the present Work is to inquire into the nature of the constitution of man; to ascertain his place in creation, the object and aim of his existence, and the boundaries of his mind." In light of Herbert Spencer's conversion during the 1830s, it seems likely that he was well-versed in the leading gospel of phrenology's third apostle. And what of George Eliot? I have documented her eager belief in phrenology throughout the 1840s and her personal friendship with Combe in the early 1850s. As with Herbert Spencer, it seems unthinkable that she would not have known the *Constitution* well, although her only direct reference to the book is a casual one, in an extended and fairly technical letter to Combe dated 22 January 1853, on the subject of Biblical criticism (perhaps its very casualness belies her comfortable acquaintance with the work): "By the bye, I wonder if you have read a clever work on 'Jésus-Christ et sa doctrine,' by Salvador, a free-thinking Jew, in which the writer attempts to shew that the Mosaic system presented the quintessence of political and social wisdom, and that, morally, it was an adumbration of the doctrine contained in 'The Constitution of Man'." *The Constitution of Man* is a work extremely significant to this Victorian frame of mind. Mill, Comte, Combe, Chambers, Bray, Martineau, Lewes, Spencer, Eliot: one of the key common denominators among them all was some degree of interest in the science of—and more important, the philosophy that grew out of—the study of phrenology. And George Combe's *Constitution of Man* was the Bible of this new faith.

After the fanfare of the preceding pages, let me state at the outset of this discussion that I do not intend to claim the *Constitution* as a neglected masterpiece of Victorian intellectual prose. In fact, one suspects that it was its considerable weakness as a work of philosophy that was paradoxically the source of its immense popularity with the general reading public. In
her sketch for the *Daily News*, Harriet Martineau had an accurate fix on both the limitations and the value of Combe's work: "If he did not advance his own department of science, but rather hindered its development by his own philosophical incapacity, he prepared for its future expansion by opening the minds of millions to its conception." Later critics were to be less charitable: "Combe, benignly rhetorical, had only partially reached a scientific synthesis, and could not compass a philosophic one," wrote John M. Robertson in the *History of Free Thought in the Nineteenth Century*. George Eliot herself said what perhaps is the most that can be said on Combe's behalf, in the course of offering the phrenological philosopher her editorial commentary on his *Relation of Religion of Science* in 1853. Her comments there apply equally well to the *Constitution of Man*: "We wish to know the moral and religious views of a thoughtful, experienced and distinguished man, not because we expect him to tell us something new on these subjects, but because he is himself a new fact—a new mind which has gone through the steps of the great problem."

And indeed, much of *The Constitution of Man* is nothing new. We will find its message in the rational divines of the eighteenth century—Paley, Bishop Butler—whom Combe quotes generously throughout the book: "The system of sublunary creation, so far as we perceive it, does not appear to be one of optimism, yet benevolent design, in its constitution, is undeniable." Whatever is, is right; this is the best of all possible worlds; the hand of God is to be seen in his creation. *The Constitution of Man* offered deism for the masses; a populist Victorian version of tenets once held by an eighteenth-century intellectual elite. There is considerable irony implicit here: the heterodoxy of one century was to become the best-selling orthodoxy of the next; to find God in nature rather than in the sacraments might be shocking to the eighteenth century; to many Victorians, it was a comfort to find him *anywhere*. J. D. Y. Peel writes in his study of Herbert Spencer that *The Constitution of Man* "furnished a bridge between traditional
religion and purely secular amelioration. . . . a deistic, this-worldly, natural religion. . . . it was one of the agencies of popular secularization."

But once we strip away the comforting trappings of Butler and Paley, just how religious is The Constitution of Man? This is a question that aroused considerable controversy. Among the pious conservatives, phrenology was inextricably associated with atheism. If one believed that mind was matter, surely little room was left for an immortal soul or divine inspiration. But George Combe himself would not have agreed. In fact, he opens with the unequivocal pronouncement that "there is not one practical result of the natural laws expounded in the subsequent pages, which does not harmonize precisely with the practical aspects of the New Testament." Yet Combe closes with a provocative (and characteristically egotistical) comparison of himself to Galileo. In any clash between the Church and Nature, the latter will win, says Combe, "because the evidence of physical nature is imperishable and insuperable, and cannot give way to any authority whatever. The same consequence will evidently happen in regard to phrenology. If it were possible that any facts in physiology did not actually and directly contradict any interpretation of Scripture, it is not difficult to perceive which must yield." So much for the Church!

In fact, The Constitution of Man consists of two arguments that have little to do with each other. What I will call its first gospel, the pious deistic veneer, the optimistic "handbook of natural religion," undoubtedly accounted for the book's mass appeal. What it offered that seemed new and attractive to the Victorian reader was this: Combe apparently places eighteenth-century deism within the context of nineteenth-century science, a new, positivistic world-view; exemplified for Combe by phrenology. The Constitution of Man teased the Victorian reader with the assurance that the old religion could continue to exist side-by-side with the new science.

But a closer look at the Constitution reveals that Robertson was absolutely correct in his accusation that Combe failed to
achieve a philosophic or scientific synthesis. Combe never offers any convincing arguments to explain how phrenology and faith coexist. He persistently shirks the Galilean clash between religion and science, avoiding any real explanation of the religious implications of his second gospel: that is, the genuinely radical view of human nature and the relation between man and his environment predicated on the science of phrenology.

"I do not intend to teach that the natural laws, discerned by unassisted reason, are sufficient for the salvation of man without revelation," equivocates Combe. Actually, he will eschew the other-worldly altogether: "To enjoy this world, I humbly maintain, that man must discover and obey the natural laws." Combe's real subject in *The Constitution of Man* has nothing to do with religion at all: "My object, I repeat, is to investigate the natural constitution of the human body and mind, their relations to external objects and beings in this world, and the causes of action that, in consequence, appear to be beneficial or hurtful in this life."

It would remain for the two thinkers to whom I turn in the next chapter, Charles Bray and Harriet Martineau, to confront more honestly the theological and ethical implications of these natural laws; to face uncomfortable words like "determinism"; and to receive (in contrast to the mass popularity that greeted Combe's *opus*) outraged accusations of atheism. But here I wish to look more closely at Combe's second gospel, his investigation of "the natural constitution of the human body and mind, their relations to external objects and beings in this world." This was the book, I believe, that was read by and had a significant influence on this circle of Victorian intellectuals; not Combe's vague and optimistic rehash of eighteenth-century deism.

As I have suggested above, Combe had little of real interest to say about religion, or about the relationship between science and belief. But he did have a great deal that was more revolutionary to offer on the subject of man's place "in this world." I will shortly argue that through the work of Combe's close
friend Robert Chambers, who possessed in abundance just what Combe lacked—a brilliant ability to synthesize—Combe's notions of "the constitution of the human body and mind" and their implications for man's place in nature would pass into the mainstream of Victorian evolutionary thought.

But first, let me explicate Combe's second gospel. Chapter 1 of *The Constitution of Man* is entitled "Of Natural Laws"; it contains much that should strike the reader as familiar after Mill and Comte. Combe begins with the premise that the laws of nature "are universal, unbending, and invariable in their operation." These laws "have formed an interesting subject of inquiry to philosophers of all ages," admits Combe; "but, so far as I am aware, no author has hitherto attempted to point out, in a combined and systematic form, the relations between those laws and the constitution of man." Reviewing Combe's book *On The Relation Between Science and Religion* for the *Westminster Review* in 1857, H. B. Wilson offers a good summary of the phrenologist's logical progression from "laws of mind" to "universal law": "If it could indeed be sufficiently established, that there exists an uniform relation between certain ascertained forms of the brain, in its parts, and certain intellectual and moral powers . . . this would certainly furnish an illustration of the general laws of uniformity, order, and mediate action in the universe." The final bastion has fallen: mind too is subject to universal causation. For Combe, as for Auguste Comte, a science of psychology is the last battleground, the ultimate proof that law reigns everywhere.

*The Constitution of Man* can be read as a practical exercise in Mill's ethology or Comte's social physics: "The present Essay," writes Combe, "is an attempt, (a very feeble and imperfect one indeed), to arrive, by the aid of phrenology, at a demonstration of morality as a science." "We are physical, organic, and moral beings, acting under general laws," he asserts. Like Comte, Combe organizes his system hierarchically: "The organic law rises above the physical, and the moral and intellectual law above the organic." We can translate for Combe's "physical" Comte's astronomy and chemistry; for "organic,"
biology; for "moral and intellectual," "social physics." But like Comte, Combe stresses the fundamental unity of this hierarchy: it is the same law that rules on all levels. Man himself embodies the living proof of this unity: at the apex of creation, he is a walking synthesis of the physical, the organic, and the moral. Like Comte, Combe desires to unite the parts into the whole, to formulate the grand synthesis, in which the many become the one: "Hence it is only after ultimate principles have been discovered, their relations ascertained, and this knowledge systematized, that science can attain its full character of utility." Combe's claim that phrenology will do for the human sciences what Copernicus and Newton did for the physical sciences may seem almost comically hubristic; but this systematizing and unifying impulse is absolutely central to the phrenological philosophy.

And after all, what better model for the many in the one, the one in the many than phrenology's chart of the human brain, "that unhappy continent on which Gall had already put more federated faculties than there are states in the German Bund," as James Martineau once sarcastically observed. In The Constitution of Man Combe offers the classical phrenological outline of the human mind (fig. 2.1). There are two "orders": "feelings" (significantly first) and "intellectual faculties"; the former broken down into two "genus(es)": "propensities" and "sentiments," containing a total of eighteen separate "organs," from "amativeness" and "philoprogenitiveness" through "veneration" and "hope," to "conscientiousness" and "firmness"; the latter, into four "genus(es)": "external senses," "intellectual faculties" (of two sorts), and "reflecting faculties"; the four breaking down into a total of fifteen different "organs." But ultimately, of course, we are talking about a single human mind, that living personality that is the sum of its many parts.

And thus we come to the other pole of the phrenological philosophy, that aspect of the science that entitles it with certainty to rank as a Victorian yoking of polar opposites. For as surely as phrenology was a monistic cosmology, it was also a science
CONSTITUTION OF MAN.

Order I. FEELINGS.

Genus I. PROPENSITIES—Common to Man with the Lower Animals.

1. AMATIVENESS—Uses: Produces sexual love.

2. PHILOPРОГЕΝTVENESS—Uses: Love of offspring.

3. CONCENTRATIVENESS—Uses: It gives the desire for permanence in the mind.

4. ACQUISTIVENESS—Uses: Attachment; friendship, and society result from it.

5. COMPATIVENESS—Uses: Courage to meet danger, to overcome difficulties, and to resist attacks.

6. DESTRUCTIVENESS—Uses: Desire to destroy noxious objects, and to kill for food.

7. ACQUIETIVENESS—Uses: In the mind the various emotions and ideas that involuntarily present themselves, until the judgment has approved of giving them utterance; it also aids the artist and the actor in giving expression, and is an ingredient in prudence.

8. ACQUIETIVENESS—Uses: Desire to possess, and tendency to accumulate articles of utility, to provide against want.

9. ACQUISITIVENESS—Uses: Tendency to restrain within the mind the various emotions and ideas that involuntarily present themselves, until the judgment has approved of giving them utterance.

10. TASTE—Uses: The desire of novelty, admiration for permanence of inanimate objects, and for permanence of impressions.

11. WОNΔΕΡ—Uses: It gives origin to the sentiment of justice, or respect for the rights of others, openness to conviction, the love of truth.

12. INNOCENCE—Uses: Scrupulous adherence to noxious principles when ignorantly embraced, excessive refinement in the views of duty and obligation, excess in remorse, or self-condemnation.

13. IDENTITY—Uses: Love of the beautiful and splendid, the desire of excellence, poetic feeling.

14. DECEPTIVENESS—Uses: Extravagance and absurd enthusiasm, preference of the showy and glaring to the solid and useful, a tendency to dwell in the regions of fancy, and to neglect the duties of life.

15. WONDER—Uses: The desire of novelty, admiration of the new, the unexpected, the grand, and extraordinary.

16. INNOCENCE—Uses: Love of the marvellous, astonishment.

17. CONSCIOUSNESS—Uses: It gives origin to the sentiment of justice, or respect for the rights of others, openness to conviction, the love of truth.

Genus II. INTELLECTUAL FACILITIES—Which perceive existence and experience.

18. INDIVIDUALITY—Takes cognizance of existence and events.

19. EVENTUALITY—Takes cognizance of occurances and events.

20. FORM—Renders man observant of form.

21. SIZE—Renders man observant of dimensions, and of facts.

22. LIGHT—Communicates the perception of momentum, weight, resistance, and aids equilibrium.

23. COLOURING—Gives perception of colours.

24. LOCALITY—Communicates the perception of external objects.

25. RELATION—Communicates the love of physical arrangement.

26. TIME—Gives rise to the perception of duration.

27. NUMBER—Gives a turn for arithmetic and algebra.

28. TONE—The sense of Melody arises from it.

29. LANGUAGE—Gives a facility in acquiring a knowledge of arbitrary signs to express thoughts—a facility in the use of them—and a power of inventing them.

Genus IV. REFLECTING FACILITIES—which compare, judge, and discriminate.

30. COMPARISON—Gives the power of discovering analogies and resemblances.

31. CAUSALITY—To trace the dependencies of phenomena.

32. WIT—Gives the feeling and the ludicrous.

33. IMITATION—To copy the manners, gestures, and actions of others, and nature generally.

The first glance at these faculties suffices to show, that they are not all equal in excellence and elevation; that some are common to man with the lower animals; and others peculiar to man. In comparing the human mind, therefore, with its external condition, it becomes

Fig. 2. From George Combe, The Constitution of Man (New York, 1835).
of human nature that took into account, more fully than any previous attempts at such a science had done, the intense particularity of the individual personality. Just as seriously as phrenology proclaimed the deductive abstraction, it investigated the empirical detail.

Each individual, according to phrenology, is a highly variable and absolutely unique combination of these multiple "propensities," "sentiments," and "faculties." Phrenology was the first psychology to focus on individual differences rather than normative faculties; Gall is thus "the first modern empirical psychologist of character and personality." With phrenology, psychology took a giant step toward the science as we know it today; Gall and his followers found evidence for their theories not in the library, or even entirely in the laboratory, but also in the living world of human society, as they turned "away from speculations and toward common society, family life, schools, the jails and asylums, medical cases, the press, men of genius, and the biographies of great or notorious men." If phrenology was biology, it was also natural history.

Needless to say, this vision of human nature had a wealth to offer the would-be novelist, George Eliot, who wrote on "The Natural History of German Life" for the *Westminster Review* in 1856 in scorn of the tendency created by "the splendid conquests of modern generalization, to believe that all social questions are merged in economic science, and that the relations of men to their neighbours may be settled by algebraic equations," championing instead the same "natural history" she would herself employ as a novelist: "a real knowledge of the People, with a thorough study of their habits, their ideas, their motives." Nothing could seem more rational than the elevated abstractions of the phrenological cosmology; yet as we have already seen, phrenology placed emotion above intellect (topologically as well as ideologically!). "In my view," writes George Combe, in words worthy of sympathetic novelist George Eliot, "knowledge by itself is comparatively worthless and impotent, compared with what it becomes when vivified by elevated emotions. It is not enough that Intellect is informed; the moral faculties must simultaneously cooperate."
One other aspect of the phrenological view of human nature is also worth noting here: "No faculty is bad, but, on the contrary, each has a legitimate sphere of action." The infinite variables into which the mental faculties could combine, and the infinite shadings of the use and abuse of each (no faculty is necessarily good, either), in conjunction with phrenology's emphasis on the primacy of emotion and the "moral faculties," led to a philosophy with a rich potential for exploration of the intricacies of human nature without the reductive onus of good and evil to inhibit the investigation.

"This is the doctrine of Phrenology exactly: that the endowments of men are unequal; and that, as their circumstances vary, their faculties for the cultivation of their powers, vary also; and consequently, that their responsibility varies." With this statement Combe introduces a new and crucial variable into the investigative process: circumstances. Thus far I have focused my discussion on the first half of Combe's title: "the constitution of man." But with the second half of the title of this work, "in relation to external objects," Combe removes phrenology from the eighteenth-century realm of static, innate mental endowment where it had begun with Gall, and places it within the changeful Victorian cosmos.

I conclude by returning to the distinction with which my discussion of The Constitution of Man began: the two gospels of George Combe; one, of the eighteenth century, the other, of the nineteenth. This dichotomy reappears when we turn to the question of the relation between "the constitution of man" and "external objects." I will indulge in a vast generalization for the purposes of sorting out Combe's two arguments: from the eighteenth-century viewpoint, the static world is benevolently adapted to "the constitution of man," "it is constituted in harmony with the whole faculties of man"; in the nineteenth-century view, man is adapted to the constitution of the world: "It is obvious that the very scheme of creation which I have described, implies that man is a progressive being." As the remainder of this chapter will illustrate, phrenology and the pre-Darwinian development hypothesis were to prove remarkably compatible.
III. MORE THAN METAPHOR: PHRENOLOGY AS MENTAL GEOLOGY

The Bedesman ought to profit by such a journey; whether any glimpse of beauty will irradiate my Physiology may be more confidently questioned. It was so very amusing to find myself thinking of 'nerve cells' amid the grand mountains, and of physiological processes on the shores of a lake. But after all the two went perfectly well together.—G. H. Lewes to John Blackwood, Dresden, 19 July 1858

Although she was to chide Aristotle for his praise of metaphor, indulging in a "lamentation that intelligence so rarely shows itself in speech without metaphor that we can so seldom declare what a thing is except by saying it is something else," George Eliot herself was an inveterate employer of metaphors long before she put them to brilliant novelistic use. In Eliot's letters of the late 1830s and 1840s, the young and self-conscious phrenological enthusiast repeatedly describes the human mind in physical, chemical, biological, and geological metaphors.

Since George Eliot here speaks vividly for herself, let me simply list some examples. Physics: "The poor girl's brain is fast loosing its little specific gravity and is flying off to Milton's limbo." Chemistry: "He is evidently a character made up of natural crystallization, instead of one turned out of a mould" (1:98); "My brain is a very wishy-washy material . . . the ideas are like the imperfect crystallizations from thin salt and water" (1:210); "Yours was a sort of alkali nature which would detect the slightest hint of falsehood" (1:243); "My thoughts are all aqueous—they will not crystalize—they are as fleeting as ripples on the sea" (1:274). Biology and "natural history": "I take too much mental food to digest" (1:47); "I should like to send you an abstract of his argument. I have gulped it (pardon my coarseness) in a most reptile-like fashion; I must chew it thoroughly to facilitate its assimilation with my mental frame" (1:64); "The intellectual errors which we once fancied were a mere incrustation have grown into the living body and . . . we cannot . . . wrench them away without destroying vitality" (1:162); "I have been in a sort of molluscos-aneous state without voluntary motion" (1:172); "I have been a horrid stagnant pool where you can hear nothing but
croakings of miserable batrachian reptiles” (1:244); “I have
gone through a trial of the same genus as yours, though rather
differing in species.” (1:260).

Eliot similarly frames a number of brief geological meta-
phors: “a few struggling animals of the new formation in the
early strata of the new [mental life]” (1:144); the “extinct vol-
canoes of one’s spiritual life” (1:282). But the most extended,
elaborate, and fully-developed of all George Eliot’s mental
metaphors drawn from the natural sciences grounds itself in
the vocabulary of contemporary geology. In a letter to Maria
Lewis, dated 4 September 1839, she writes:

My mind, never of the most highly organized genus, is more than
usually chaotic, or rather it is like a stratum of conglomerated
fragments that shews here a jaw and rib of some ponderous quad-
ruped, there a delicate altorelivo of some fernlike plant, tiny
shells, and mysterious nondescripts, encrusted and united with
some unvaried and uninteresting but useful stone. My mind pre-
sents just such an assemblage of disjointed specimens of history,
ancient and modern, scraps of poetry picked up from Shakespeare,
Cowper, Wordsworth, and Milton, newspaper topics, morsels of
Addison and Bacon, Latin verbs, geometry entymology and chem-
istry, reviews and metaphysics, all arrested and petrified and
smothered by the fast thickening every day accession of actual
events, relative anxieties, and household cares and vexations. May
I hope that some pure metallic veins have been interjected, that
some spiritual desires have been sent up, and spiritual experience
gained? (1:29)

“It was very kind of you to remember my requests about Phre-
nology,” George Eliot goes on to say in this same letter; “I
have not at this moment any phrenological thoughts but when
I have I will endeavour to tell you fully all I have been able to
opine on the matter” (1:30).

In these early letters, George Eliot reveals herself an enthu-
siastic student of physics, chemistry, biology, and geology. But
it is phrenology, I would suggest, that provides a rationale for
her metaphor-making; a more than casual, or purely imagi-
native, basis for analogy between psychology and the natural
sciences of the day. In her mental metaphors, Eliot implicitly
reveals her adherence to phrenology's claim to be a science of mind which is fully analogous to the other sciences, both inorganic and organic.

"Phrenology is a science of observations as truly as is geology itself," wrote Alfred Russel Wallace;70 Wallace, significantly, was an ardent believer in phrenology at the same time that he developed his theory of evolution. John Stuart Mill added an extended expository footnote to a later edition of the Logic, offering two examples of the concept "hypothesis," in what may prove more than a random juxtaposition: "The attempt to localize in different regions of the brain the physical organs of our different mental faculties and propensities was, on the part of its original author, a legitimate example of a scientific hypothesis"; "Mr. Darwin's remarkable speculation on the origin of species is another unimpeachable example of a legitimate hypothesis."71 Over a century later, historian Robert M. Young makes the identical point: "The analogy between the theory of evolution and that of crainiology is instructive... Logically [evolution] was in the same position as phrenology for most of the nineteenth century. It rested on naturalistic observations and a mass of anecdotes collected more or less systematically. Doubt remained whether the causal relations proposed by the theory were real, or only mistaken references from correlations reflecting the union of chance circumstances."72

But I will go one step beyond Wallace, Mill, and Young, to claim that the analogy between phrenology and geology or natural history was not merely formal or logical; similar methods were to lead to similar conclusions. Phrenologist Charles Bray made the point with an appropriate metaphor in The Education of the Feelings (1849): "As geologists show the formation of the earth to have been gradual, layer after layer being added, more perfect plants, and animals of a higher order of feeling and intelligence appearing, as the world was prepared for them, so has the mind of man been developed, region added to region."73 The phrenologist could excavate that "stratum of conglomerated fragments" that constitute the human brain
and arrive at the same developmental conclusions as the geologist with fossil in hand.

For all his assertions of the world's benevolent adaptation to the constitution of man, George Combe is finally as much of a Victorian in his views of nature as he is in his religious beliefs (or lack thereof). Combe's cheerful assertion of man's capability of determining his own "progression" ("Intelligent beings are capable of observing nature and of modifying their actions") is only the reasonable eighteenth-century half of the picture. As early as page four of *The Constitution of Man*, Combe reveals that he has been reading the geological speculations of Sir Humphrey Davy, Charles Lyell, and Dr. Buckland: "Physical nature itself has undergone many revolutions, and apparently has constantly advanced. Geology seems to show a distinct preparation of it for successive orders of living beings, rising higher and higher in the scale of intelligence and organization, until man appeared." I would suggest that new discoveries in geology did not so much reveal to Combe the existence of the evolutionary process, as harmonize perfectly with the evolutionary notions already implicit in the science of phrenology.

Phrenology stressed man's physical and organic as well as his moral nature; his oneness with the natural world was implicit in phrenology's assertion that mind was also matter. Although the "intellectual faculties" on phrenology's chart were man's alone, all thirteen faculties of the first genus of "feelings," entitled "propensities," come under the heading "Common to Man with the Lower Animals"; half of the second genus, "sentiments," are similarly categorized. Darwin might suggest how man was related to the ape, but that he was so related should come as no surprise to the phrenologist.

"The physical world [is] gradually improved and prepared for man," blurbles Combe in a bit of Butlerian balderdash. But George Combe had also read Malthus as early as 1805, and made a statement based on phrenology's credo, three decades before *The Origin of Species*, that was uncannily prophetic of the conclusions to which Malthus combined with ge-
ology and natural history would lead Charles Darwin: “Man is to a certain extent an animal in his structure, powers, feelings, and desires, and is adapted to a world in which death reigns, and generation succeeds generation.”

George Combe opens The Constitution of Man not with *homo sapiens*, but with a discussion of contemporary geology: “The crystalline rocks, or, as they are called by geologists, the primary rocks, which contain no *vestiges of a former order* of things, were the result of the first consolidation on its surface”; “Five successive races of plants, and four successive races of animals, appear to have been created and swept away by the physical revolutions of the globe, before the system of things became so permanent as to fit the world for man.” This geological history is a necessary backdrop for The Constitution of Man’s more original subject: “Let us now contemplate Man himself.” Phrenology complements geology: “The order of creation seems not to have been adapted at his introduction:—he appears to have been adapted to it. He received from his Creator an organized structure, and animal instincts.” Phrenology recognizes both man’s similarity to the animal kingdom—the continuity of creation—and man’s higher cerebral development. Hence the conclusion: “Man is evidently a progressive being; . . . the Creator having designed a higher path for him than for the lower creatures. . . . Time and experience are necessary to accomplish these ends, and history exhibits the human race only in a state of progress towards the full development of their powers.”

In 1844 an anonymous amateur scientist, man of letters, and synthetic philosopher was to explore these “vestiges of a former order of things,” in a work animated by unmistakable similarities to the progressive optimism of The Constitution of Man: “There is, nevertheless, a general adaptation of the mental *constitution of man* to the circumstances in which he lives, as there is between all parts of nature to each other.” The author of these words was Edinburgh publisher Robert Chambers; the book, *Vestiges of the Natural History of Creation*. I reserve my wider analysis of the *Vestiges* for the follow-
ing section of this chapter. But here, I would like to stress the important links between phrenology and geology in this classic Victorian evolutionary cosmology.

Chambers proclaims Franz Joseph Gall’s system of mind “the only one founded upon nature.” He goes on to summarize phrenology’s chart of the mental faculties, and in that chart, finds evidence of evolution: “Bound up as we thus are by an identity in the character of our mental organization with the lower animals we are yet, it will be observed, strikingly distinguished from them by this great advance in development.” Citing studies from the Phrenological Journal, Chambers gives evidence that “when the human brain is congenitally imperfect or diseased, or when it is in the state of infancy, we see in it an approach towards the character of the brains of some of the inferior animals.” The author of the Vestiges finds this resemblance not degrading to man, but rather elevating evidence of the “wonderful unity of the whole system, the grades of mind, like the forms of being, are mere stages of development.” This “wonderful unity” does not limit itself to the structure of the brain. Like Combe, Chambers finds analogous evidence of progressive development in the macrocosm as well as the microcosm: “Geology and physiology exhibit lively vestiges or traces of that [usual natural order in the organic creation] having actually been followed.”

George Combe and Robert Chambers have both been chronicled by twentieth-century historians: Combe, in David deGiustino’s Conquest of Mind (1975); Chambers, in Milton Millhauser’s full-length study, Just Before Darwin: Robert Chambers and the Vestiges (1959). But it is regrettable that they were not better-acquainted with one another’s subject matter. Millhauser’s book is a wide-ranging exploration of the Vestiges itself, its role in Victorian evolutionary thought, and its public reception, all within the context of main currents of Victorian biology, zoology, geology. But Millhauser knows little of the science of phrenology, and suffers from embarrassment that the discussion above should have shown to be unnecessary. As a result he seriously underestimates the im-
portance of phrenology to the *Vestiges*: "Chambers would have liked to draw upon phrenology for further evidence as to the materiality of mind. He does not quite do so (recognizing, no doubt, that his 'science' was not highly regarded by his contemporaries); he does however, refer to it in passing, and he cites some of the more technical studies of the great Dr. Franz Joseph Gall." Conversely, deGiustino is equally dismissive and bemused on the subject of geology: "Later editions of *The Constitution of Man* provided a definition of geology (which Combe spelled with a capital 'g') and quotations from contemporary geologists. Everyone was fascinated by the study of natural history in the 1830s and forties, and the phrenologists were no exception." But I would argue that phrenology plays far more than a passing role in the *Vestiges of Creation*; the link between phrenology and geology is more than a faddish simultaneity.

Outraged contemporary critics of the *Vestiges* had no difficulty in recognizing the connections between that book and phrenology: "If all the mental phenomena in man result from organization, in the same way as they do in animals, of what is the author's 'immortal spirit' to consist? . . . As to where such a philosophy could come from few men can have little doubt," insinuates the *British Quarterly Review*. "For the sake of his argument, we cannot but regret the stress which [Chambers] has laid on the details of Gall's and Spurzheim's phrenology," mourns Francis Newman in *The Prospective Review*. The most infamous and vituperative reviewer of them all, Adam Sedgwick of the *Edinburgh Review*, spends seven full pages of attack on the phrenological basis of the *Vestiges*:

He believes that he is a great metaphysician—that mind and soul (as our fathers understood the word) are all a dream—that material organs are all in all—that he can weigh the mind as a butcher does a joint, by a steelyard . . . that Gall and Spurzheim are the only mental philosophers since the days of Plato—that he can swallow their whole system without any grumblings among his digestive organs. . . . He believes that the human family may be (or ought
to be) of many species, and all sprung from apes—that while he bestializes men and humanizes beasts, he is a great moralist.

Sedgwick concludes: "We turn away from the material and phrenological jargon of this author with feelings somewhat like those which would be raised within us by the impertinencies of a guide who could talk only of ladders and scaffolds, hammers, chisels, and mortar-hods, while we were first gazing at one of the most glorious monuments of human art."86

Robert Chambers's acquaintance with phrenology was much closer than Franz Joseph Gall and Johann Caspar Spurzheim. George Combe's biographer, Charles Gibbon, counts Chambers among Combe's "intimate friends."87 Publisher Chambers was converted by Comte to phrenology in 1834, and claimed that sales soared after he covertly introduced the doctrines of The Constitution of Man into Chambers' Edinburgh Journal.88 Gibbon offers direct evidence of the conversion in process (or rather, the proselytization in process), printing an 1833 letter from Combe to Chambers, in which Combe enumerates "the leading principles of 'The Constitution of Man,'" its promise of a truly "scientific" "moral philosophy," its exhortation that men must "modify their conduct systematically to adapt it to external nature." Combe was eager to enlist the powerful publisher of the popular Chambers' Journal on his side: "I am induced to express myself thus freely to you on account of the immense power which you wield over opinion."89

Chambers's role in disseminating the new philosophy did prove an important one. Gibbons notes that Chambers took a strong interest in the Constitution: the first four editions of the book sold only 11,000 copies between 1828-36; it was Chambers's more accessible "People's Edition" that sold 59,000 copies between 1835-38. ("Oh Mr. Chambers, how can you print that abominable book?" cried one distressed citizen; "If you had only heard our minister on it last Sunday you would have burned it!"90)

Chambers's own venture into the constitution of man, Ves-
tiges of the Natural History of Creation, was published anony-
mously (by Chambers's friend and fellow-phrenologist, Alex-
ander Ireland) in anticipation of its scandalized reception. Amo-
ng the least likely authors suggested by a curious public
was Prince Albert (!); among the more likely, George Combe
himself. The Constitution of Man helped prepare Victorian
readers for the controversial Origin of Species; but it also laid
the foundations for the Vestiges. "There were many in fact
who felt justified in seeing an antireligious conspiracy; they
were now quite certain that Combe's great essay of 1828 was
consciously designed as a prelude to the evolutionary ideas of
the Vestiges."^2

But Combe was not the only member of this Victorian circle
with whom Robert Chambers was acquainted. Nor was the
Vestiges of Creation simply an evolutionary reformulation of
the Constitution of Man. George Combe had failed to unify his
two gospels. Unlike him, Robert Chambers moved irrevocably
into the nineteenth century, to build a confident Victorian cos-
mology that truly "made it whole."

IV. "ONE MAJESTIC WHOLE":
ROBERT CHAMBERS'S VESTIGES OF CREATION (1844)

The Development Hypothesis is an inevitable deduction from
the Monistic conception of the world.—G. H. Lewes, "Mr.
Darwin's Hypothesis"

Robert Chambers was a lifelong friend of George Henry
Lewes. After Lewes's scandalous elopement with George Eliot
to Weimar in 1854, Chambers was one of the few to whom he
wrote to explain his actions. His brief but dramatic entrance
in George Eliot's biography rests in part on the basis of his
friendship with George Combe. Combe, as we have seen, was
aghast at the liaison, and John Chapman attempted to placate
Combe's moral outrage by "commission[ing] Mr. Robert
Chambers to say a few words to you concerning Miss Evans."
Chapman also wrote to Chambers himself, begging that their
more intimate knowledge of Eliot's situation "be regarded as
strictly confidential,” and indulging in a little moral hand-wringing of his own: “I think [Lewes] much the most blame-worthy in the matter. Now I can only pray, against hope, that he may prove constant to her; otherwise she is utterly lost.”

But Chambers’s role in this circle as a harbinger of new ideas was destined to be far more consequent than his entrance as a bearer of bad tidings. The *Origin of Species* came as little surprise to George Eliot; she viewed it simply as a more intellectually respectable but less compellingly readable version of *The Vestiges of Creation*:

We have been reading Darwin’s book on the ‘Origin of Species’ just now: it makes an epoch, as the expression of his thorough adhesion, after long years of study, to the Doctrine of Development—and not the adhesion of an anonym like the author of the ‘Vestiges,’ but of a long-celebrated naturalist. The book is ill-written and sadly wanting in illustrative facts. . . . This will prevent the work from becoming popular, as the ‘Vestiges’ did.

The subject of Herbert Spencer’s first conversation with George Henry Lewes was to set the tone of their shared interests in the early 1850s (although Spencer, characteristically, reacted to Lewes’s advocacy of Chambers in much the same way he had received George Eliot on Comte’s hierarchy of the sciences): “One of our topics was the development hypothesis; and I remember surprising Mr. Lewes by rejecting the interpretation set forth in the *Vestiges of The Natural History of Creation*: he having supposed that that was the only interpretation.” But just as Herbert Spencer could never quite detach himself from Comte, so subsequent critics of Spencer have suggested that Chambers’s evolutionary philosophy ultimately has more in common with Spencer than it does with Darwin.

Spencer’s own earliest pronouncements on “The Development Hypothesis” were published in the 20 March 1852 *Leader*, under Lewes’s editorship. Although it was not Spencer’s first essay, he later reprinted it at the head of *Essays Scientific, Political, and Speculative*, “because it came first in order of thought, and struck the keynote of all that was to follow.” Chambers initiated Herbert Spencer’s interest in ev-
olutionary psychology, which culminated in *The Principles of Psychology.*

George Henry Lewes’s shared fascination with the subject at this time was carried on in print as well as in private conversation. When Lewes wrote on “A Precursor of the *Vestiges*” for *Fraser’s* in November 1857, he claimed to “have been long collecting materials for the history of this and similar conceptions.” Always the historian of ideas, Lewes traced the development hypothesis through “‘Lyell and Owen on Development’ (*Leader*, 18 October 1851) and “‘Von Baer on the Development Hypothesis’ (*Leader*, 25 June 1853). But even in those essays, he had words in defense of the *Vestiges of Creation*: “There are faults in that delightful work; errors both in fact and philosophy; but compared with the answers it provoked, we cannot help regarding it as a masterpiece.” Lewes’s evolutionary essays climaxed with a series of four articles for the *Leader* on the *Vestiges* itself, on the occasion of the tenth edition of the work. Despite his characteristic reservations about the “metaphysical” dimensions of Chambers’s philosophy, Lewes was still able to find, nine years after its first publication, “novelty to startle, grandeur to enlarge and satisfy the intellectual longings of meditative minds.” Even this early in his career, long before writing on “‘Mr. Darwin’s Hypothesis’ in the *Forthnightly Review* (1868), Lewes was becoming known as a champion of the controversial concept of evolution.

In an essay on “The Argument for Organic Evolution Before the *Origin of Species*, 1830–1858,” A. O. Lovejoy claims that much of the disrepute into which the *Vestiges* retrospectively fell among historians of science can be traced to T. H. Huxley’s attacks on the book. Lovejoy is attuned to the rich ironies that the history of ideas can offer: Huxley was later to champion Darwin on many of the same grounds for which he earlier attacked Chambers. Lovejoy argues that in the early 1850s Huxley’s real objections to the *Vestiges* were more emotional than intellectual, a product of “religious tradition or temperamental conservatism.” Furthermore, Huxley overlooked the
forest for the trees; he was "so shocked by minor breeches of scientific propriety in the *Vestiges,*" writes Lovejoy, "that he forgot the weightier matters of the law of scientific method. In his irritation at Chambers's incidental slips in zoology, he became blind to the importance and suggestiveness of the general outline of the writer's reasoning." 104

Lovejoy's analysis of Huxley's attack comes very close to Robert Chambers's self-defense in the 1846 "Explanations" that he offered his critics as a "sequel" to the *Vestiges of Creation.* 105 Admittedly, much of Chambers's amateur biology and zoology appeared as outlandish in his time as it does today. Furthermore, Chambers's critics, like Darwin's, were immediately wont to fasten with alarm on the ghastly theological implications of man's brotherhood with lower forms of life. 106 Yet the *Vestiges of Creation,* explains Chambers, was not primarily intended to be a work of scientific fact; the accuracy of particular details finally does not undermine its broader thesis. The true precursors of the *Vestiges* are not to be found in treatises of the naturalists or geologists of the day, but in works like Auguste Comte's *Cours de philosophie positive* and John Stuart Mill's *Logic.* Darwin is above all a scientist; Chambers is a philosopher. Chambers's book seeks to incarnate a Victorian world view; its evolutionary theory is subservient to a larger monistic *credo*:

I must start with a more explicit statement of the general argument of *Vestiges,* for this has been extensively misunderstood. The book is not primarily designed, as many have intimated in their criticisms, and as the title might be thought partly to imply, to establish a new theory respecting the origin of animated nature. . . . The object is one to which the idea of an organic creation in the manner of natural law is only subordinate and ministrative, as likewise are the nebular hypothesis and the doctrine of a fixed natural order in mind and morals. This purpose is to show that the whole revelation of the works of God presented to our senses and reason is a system, based on what we are compelled, for want of a better term, to call LAW. 107

For Robert Chambers organic creation in the manner of natural law, the nebular hypothesis, and a fixed natural order in
mind and morals are unified under one principle: "LAW." These three phrases contain the essence of Chambers's monistic synthesis. The nebular hypothesis (the formation of the universe) stands at one pole of creation: the macrocosm, inorganic nature. The fixed natural order in mind and morals (embodied for Chambers in the science of phrenology) is the other pole: the microcosm of the human mind, organic nature in its highest form. As a student of Mill and Comte, George Henry Lewes understood Chambers's intentions perfectly: "Life, and life in its most complex form, society, are as amenable to rigorous Law as any of the phenomena of the inorganic world," he wrote in summary of the Vestiges. All of Chambers's science—his astronomy, geology, zoology, embryology, psychology—is quite frankly borrowed (and much of it is of dubious worth). What was revolutionary and unique in the Vestiges of Creation was its methodological synthesis: "The book, as far as I am aware, is the first attempt to connect the natural sciences into a history of creation," Chambers accurately claims.

The Vestiges opens with a consecutive account of creation, from "the Bodies of Space," formation of the earth, beginnings of organic life, to the "commencement of the present species." Chambers argues that all these processes, this endless creative variety, are manifestations of a single mode: "One set of laws overspread them all with life. The whole productive or creative arrangements are therefore in perfect unity." Like Mill and Comte, Chambers believed that the same scientific method that informed geology could be applied to biology. As might be expected, Chambers is an enthusiastic reader of Mill's Logic: "There is . . . no more interesting or valuable testimony to universal causation than that presented in the System of Logic of Mr. Stuart Mill." His advocacy of phrenology led Chambers to agree with Mill that universal causation reigned in mind as well as matter. In the Vestiges Chambers simply extended the notion to the whole of natural creation. Like Darwin, Chambers saw the conceptual link between geological uniformitarianism and biological evolutionism. Lewes sum-
marized Chambers's radical insight: "the novelty consists in linking on the hypothesis of Laplace [the nebular hypothesis] to a modification of Lamarck [biological evolution], thus bringing the inorganic and organic worlds under one magnificent generalization of progressive development." Phrenology, the geology of the mind, helped Chambers make this vital connection between the inorganic and the organic.

It should be readily apparent, even from this brief summary of the Vestiges, that Chambers's attempt "to connect the natural sciences into a history of creation" would harmonize readily with the interconnected Comtean hierarchy of the sciences, from astronomy through biology and "social physics." On 18 July 1845, John Stuart Mill sent Auguste Comte Sedgwick's review of the Vestiges from the Edinburgh Review, and introduced the French philosopher to a man who was in many ways his British counterpart: "Sous le titre de 'Vestiges of the Natural History of Creation' il tache de deviner une sorte de cosmogonie positive," Mill writes Comte. Though Mill was no more a convert to Chambers's development hypothesis than he was to Gall's phrenology, he was sympathetic with its larger implications: "Quoique d'une valeur purement négative, cet ouvrage n'a pas laissé de faire ici une sensation assez prononcée, et je crois qu'il tend a préparer un peu les esprits pour le positivisme."

In this review of the Vestiges, Sedgwick passes directly from his discussion of phrenology to an attack upon the nebular hypothesis. The transition is a logical one: the nebular hypothesis is to the cosmos as phrenology is to the mind; it is the other pole of a positivistic creation. Though it owed its genesis to Kant and Swedenborg, and was further developed by Laplace and Comte, the nebular hypothesis became inextricably linked in the public mind with Robert Chambers. George Eliot demonstrates this association when she ridicules Dr. Cuming in her essay on "Evangelical Teaching" (1855), in defense of the Vestiges of Creation:

He tells us that "the idea of the author of the 'Vestiges' is, that man is the development of a monkey, that the monkey is the embryo man, so that if you keep a baboon long enough, it will develope
itself into a man." How well Dr. Cumming has qualified himself to judge of the ideas in "that very unphilosophical book," as he pronounces it, may be inferred from the fact that he implies the author of the "Vestiges" to have originated the nebular hypothesis.\textsuperscript{116}

Herbert Spencer examined the nebular hypothesis "that stars, and their attendant planets, have been formed by the aggregation of nebulous matter" in his essay "The Nebular Hypothesis" (1858). Spencer opens this abstruse and technical essay with a statement that clearly places his scientific interest in the subject within the larger context of a Victorian cosmology: "Science has been proving uniformities of relation among phenomena which were before thought either fortuitous or supernatural in their origin. . . . Each further discovery of Law has increased the presumption that Law is everywhere conformed to. And hence, among other beliefs has arisen the belief that the solar-system originated, not by manufacture but by evolution."\textsuperscript{117}

"And hence . . . evolution." Chambers added something revolutionary to Mill's universal causation and Comte's hierarchy of the sciences, and Herbert Spencer and George Henry Lewes took the conceptual leap with him. In discussing Mill and Comte, I attempted to suggest how the notion of universal law leads inevitably to positivism, a universal method; and to show how phrenology became a proving-ground for such a method, what Mill called its "ultimate point": a law of human volitions. Such a universal method in turn suggests an interconnected hierarchy of the sciences. That hierarchy provides a model for a unified natural creation, inorganic and organic, the one in many. What Chambers makes explicit is the necessary process that attends the unifying method: development.

"The doctrine of the universality of natural causation, has for its inevitable corollary the doctrine that the Universe and all things in it have reached their present form through successive stages physically necessitated," writes Spencer in his Autobiography.\textsuperscript{118} Spencer and Lewes were to find more reliable biology or geology in other scientists of the day (Lyell, Owen, Lamarck); but it was Chambers who first provided the ideolog-
ical synthesis. In my discussion of Coleridge's *Theory of Life*, I pointed out that Lewes sustained a digression on the subject of the *Theory of Life* in the midst of his explication of Auguste Comte's *Cours*. Recall Lewes's fascination there with Coleridge's "definition of life": "'The principle of individuation,' or that power which discloses itself from within, combining many qualities into one individual thing." If we remember that Lewes was writing on Comte in the summer of 1852, in the midst of his series of essays on the development hypothesis, we can appreciate the fact that Coleridge was not the only inspiration for Lewes's exposition of positivism: "Thus in an ascending series of evolutions from the simple to the complex . . . we learn to gather the phenomena of the universe into one majestic Whole, and learn that all links of demarcation are subjective only. In a word, we learn that Life is an evolution, not a separate creation." Similarly, Chambers concludes in the *Vestiges of Creation*,

the masses of space are formed by law; law makes them in due time theatres of existence for plants and animals; sensation, disposition, intellect are all in like manner developed and sustained in action by law. It is most interesting to observe into how small a field the whole of the mysteries of nature thus ultimately resolve themselves. The inorganic has one final comprehensive law, GRAVITATION. The organic . . . rests in like manner on one law, and that is—DEVELOPMENT. Nor may even these be after all twain, but only branches of one still more comprehensive law, the expression of that unity which man's wit can scarcely separate from Deity itself.

It was that hovering Deity behind Chambers's creation, a Deity essentially one with George Combe's eighteenth-century Artificer, that persistently bothered Lewes. The "primary error" of the *Vestiges*, wrote Lewes in 1853, "is the quiet assumption of Nature's growth and development being a pre-ordained 'Plan.' " Such an assumption, Lewes believed, seduced Chambers into "treacherous metaphysics." But Lewes characteristically advocates a conciliatory middle ground between matter and spirit: "While Lamarck is too much of a 'materialist,' the
author of the *Vestiges* is too much of a 'metaphysician'; one lays the whole stress of his argument on 'external circumstances,' the other on a pre-ordained plan.”

Fifteen years later Lewes was still chastizing Chambers for "the helplessness of such metaphysical explanations," in his *Fortnightly Review* essay "Mr. Darwin's Hypothesis." Yet Lewes there affirms a more fundamental affinity between himself and Chambers: "The Development Hypothesis is an inevitable deduction from the Monistic conception of the world; and will continue to be the battle-ground of contending schools until the opposition between Monism and Dualism ceases. For myself, believing in the ultimate triumph of the former, I look on the Development Hypothesis as one of the great influences which will . . . hasten that triumph.”

No work of nineteenth-century thought better exemplifies a monistic conception of the universe than the *Vestiges of the Natural History of Creation*.

Before he turns more specifically to "Mr. Darwin's hypothesis," Lewes offers a provocative definition of what he calls the Monistic "Weltanschauung": "It reduces all phenomena to community, and all knowledge to unity. This conception, under its various forms of Pantheism, Idealism, Materialism, Positivism, is irreconcilable with the rival, or Dualistic, conception, which in phenomena separates and opposes Force and Matter, Life and Body, and which in knowledge destroys unity by its opposition of physical and final causes.”

With this deceptively simple categorization, Lewes offers an important key to a Victorian cosmos that may at times seem self-contradictory: the reconciling principle behind Auguste Comte's simultaneous idealism and positivism, or George Combe's and Robert Chambers's pantheism and materialism. They are embraced within a larger monistic synthesis of "Force and Matter," "Life and Body"—the same synthesis that was to be the subject of Lewes's own psychological *magnum opus*, *Problems of Life and Mind* (1874-79)—which could take a Protean variety of forms, yet still retain its essential monistic identity.

It is with this in mind that I turn briefly in conclusion to a
later chapter of Robert Chambers's intellectual biography. On 10 February 1867, Chambers wrote to Alfred Russel Wallace: "It gratifies me much to receive a friendly communication from the Mr. Wallace of my friend Darwin's 'Origin of Species' and my gratification is greatly heightened on finding that he is one of the few men of science who admit the verity of the phenomena of spiritualism. I have for many years known that these phenomena are real." At the end of Just Before Darwin, Milton Millhauser lifts the veil from Chambers' authorship in the 1850s and 60s of a series of anonymous articles and an unpublished manuscript on the subject of spiritualism. Millhauser suggests that the manuscript's inaccessibility accounts for its scholarly neglect. He offers a tantalizing hint of its contents, and argues that it is not an aberration, but a significant development in Chambers's thought.

On the face of it, Chambers's conversion in the 1850s to spiritualism was a radically disjunctive shift from his earlier materialistic scientific study of geology, zoology, psychology: "His conversion left the Chambers of 'Testimony' at the opposite pole from the Chambers of Vestiges." Millhauser conveniently employs the Coleridgean metaphor of polarity, and counters with a conclusion that interprets Chambers's later beliefs as a reconciliation of polar opposites, suggesting that Chambers's conversion from scientific theory to mesmeric mysticism was an evolution rather than a revolution. "My idea is that the term 'supernatural' is a gross mistake," Chambers wrote Wallace. "We have only to enlarge our conceptions of the natural and all will be right." Chambers believed that his later spiritualism was just as "scientific" as his earlier materialism; he continued to publish later editions of the Vestiges after his conversion, and saw no conflict between old and new beliefs ("Into how small a field the whole of the mysteries of nature thus ultimately resolve themselves").

In both the Vestiges of Creation and the later spiritualistic manuscript, Chambers concerns himself with "the general upward progress" of the "great chain of nature." Electricity and magnetism were the bridge between the simple laws of matter
and the more complex rules of spirit. In the true spirit of Victorian monism, Chambers's spiritualism is the logical counterpart of his materialism, since force and matter are fundamentally one, subject to the same physical laws; life and mind are inseparable. And, of course, these are the same assumptions that inform the science of phrenology, simply taken to their ultimate logical conclusion.

It should thus come as no surprise that phrenology was wed magnetism, mesmerism, and "electro-biology" in the 1840s, and that many phrenologists were as likely to be found at a seance as in a laboratory. In my next chapter, I turn to two other converts, Charles Bray and Harriet Martineau. Like Robert Chambers, their conversions were really continuities, as they walked a conciliatory line between matter and spirit.

1. Lewes, Comte's Philosophy, p. 217.
6. George Henry Lewes, "Phrenology and Phrenologists," Leader, 10 December 1853, pp. 1,192-99. See also "Noble on Insanity" (Leader, 24 December 1853, pp. 1,240-42) and "Phrenology and Physiology" (Leader, 7 January 1854, pp. 20-21).
in his study *Conquest of Mind*. Robert M. Young approaches phrenology from the history of science in *Mind, Brain, and Adaptation in the Nineteenth Century* (Oxford, 1970). He admits that he "originally studied Gall because his work was the starting-point of empirical localization, and I planned to spend only a few weeks on phrenology . . . the result is quite far from what I had anticipated. . . . I should acknowledge an important debt to Gall. The perspective on later work which his writings have provided has done more than any other single factor to shape my own view of the domain and aims of biological psychology" (p. xi).


15. Young writes: "The thesis that behavior and the functions of the brain . . . are amenable to objective observation" was given its modern impetus with the work of Gall. "Before Gall psychology was a branch of the philosophic discipline of epistemology, and division of the brain into functional regions had never been empirically related to behavior" (*Mind, Brain, and Adaptation*, p. 12).


NOTES


25. "Mrs. Bray writes me word how valuable your sympathy and encouragement are to Mr. Bray in his solitary labours at backward Coventry" (Eliot to Combe [*George Eliot Letters*, 8:74]).


30. Lewes, *Biographical History*, pp. 761, 765. Bray was infuriated, and counter-attacked in his 1865 edition of *The Philosophy of Necessity*: "This is so elementary a principle in phrenology that we must in all candour have supposed Mr. Lewes as well acquainted with the subject as every one who has read a sixpenny book upon the subject" (2d ed., p. 146).

31. From the start Eliot was caught between the *Westminster's* editor John Chapman and the scientific radicals with whom she had allied herself in the 1840s. "I wish to keep the Westminster in *our* hands—viz: in yours and mine and Miss Evans's et hoc genus omne," (Bray to Combe in 1852 [*George Eliot Letters*, 8:58]). Combe complained to Chapman that the *Review* was "about to become a very staid and decorous journal, conducted with due regard to the prejudices of the times" (8:38). Chapman counters that the journal will remain "the bold and uncompromising exponent of the most advanced and philosophical views," but that mesmerism is not numbered among them: "I am aware that Miss Martineau is not likely to approve . . . but since I cannot regard as verities all the articles of her *last formed* faith, it is not likely that I should allow the Review to endorse them" (8:38). Eliot's subsequent letter to Combe reveals that phrenology is also at issue: "The assertions that 'it will not admit even an incidental allusion, if respectful, to such subjects as Mesmerism and Phrenology' . . . is false. But I think you will agree with me that the great majority of 'investigations' of mesmerism are anything but 'scientific' " (8:41).

But Eliot was politic, agreeing to publish an article on "Mental Physiology" if Combe could find a suitable author (8:41). Nonetheless, phrenology became an increasing source of acrimony between Combe and the *Westminster*. In June of 1853, Eliot agreed to accept an article from Combe on "Prison Discipline" (an article riddled with references to phrenology). It did not appear until April 1854, after a series of acrimonious exchanges between Chapman and Combe, with Eliot as referee. Combe
even presented Eliot with a statement of "medical support" signed by leading physiologists, with the request that she pass it along to science editor T. H. Huxley. Eliot's refusal is graceful, emphatic, and somehow less than sincere: "Being a woman and something less than half an editor, I do not see how the step you propose could be taken with the naturalness and bienséance that could alone favour any good result" (8:90).

On 17 November 1853, Combe sent Eliot a copy of "Prison Discipline." Had he begun to doubt the phrenological loyalties of Eliot herself?: "You and Mr. Chapman may feel quite at ease about rejecting it, if found too phrenological and technical, for I shall print it as a pamphlet and distribute it, if you reject it" (8:86). Combe contradicts this Olympian stance by a manifest display of annoyance at a "loud paragraph of conglomerated nonsense . . . on Phrenology" which he had just read in the Leader (November 12, pp. 1,095-96). "I do not know who is now the Editor of the Leader," Combe confesses, deploring its "bending backwards on the science through which only certain and self-consistent progress in all interests emanating from and resting on the mind of man, can be made" (8:87). The culprit was, of course, G. H. Lewes, whose romantic intimacy with Eliot had begun (unknown to Combe) the previous January. Eliot's reply is interesting: she skirts any mention of Lewes, and appears to support Combe: "I agree with you that it is sufficiently shallow and shows profound ignorance of the 'Craniology' which he undertakes to pronounce upon" (8:88).

32. George Eliot to George Combe, George Eliot Letters, 8:111; George Combe to Charles Bray, George Eliot Letters, 8:129.
35. The final chapter in the relationship between Lewes and Combe is amusing. In 1856 Lewes published an essay on "Dwarfs and Giants" in Fraser's. "A curious thing happened the other day," Eliot wrote Sara Sophia Hennell: "A few days ago, came a letter from George Combe addressed to G. H. L. Esq., care of the Editor of Frazer [sic], expressing very high admiration of the physiological essay. . . . He didn't seem to know that G. H. L. was G. H. Lewes! . . . I fear Mr. Combe would be rather disappointed to find out whom he had been praising, Mr. Lewes being his favourite aversion, as a 'shallow, flippant man'!" (George Eliot Letters, 2:264). How Lewes must have relished his reply to Combe: "Your approbation of my article . . . is very flattering. . . . With respect to the method of comparative physiology to which you allude I am profoundly convinced that GALL was on the right track and that he laid down the basis of a positive psychology, but . . . I think our knowledge of the nervous system generally is still incomplete for more than approximate conclusions" (8:162).
37. Charles Bray to George Combe, George Eliot Letters, 8:127.
41. See deGiustino, *Conquest of Mind*, p. 3; Gibbon, *Life*, 2:262-63. There were also translations into French, German, and Swedish: The National Union Catalogue lists fifty-five different American imprints between 1828 and 1856.

42. Davies, *Phrenology*, p. 80.

43. deGiustino, *Conquest of Mind*, p. 33. He is interested in the phrenological philosophy's appeal to a mass audience: "It was logical and slightly mysterious, precise but hopeful. It meant amusement and improvement, common sense and social liberation" (p. 74).


45. Young, *Mind, Brain, and Adaptation*, p. 119. Young points out that Elizabeth Haldane claims in the *DNB* that Bain was "led by Mill to make a special study of the philosophy of George Combe" (p. 123). Young can find no evidence of this in Bain or Mill, but notes that "Mill introduced Bain to Comte's writings (which contained an enthusiastic treatment of Gall)," and that Bain's book *On the Study of Character, Including an Estimate of Phrenology* (1861) "follows almost exactly the programme laid down by Mill" in Book 6 of the *Logic*, where Mill calls for a science of ethology (pp. 123-24).


48. Young notes: "The phrenological work which corresponds most closely to Spencer's position is George Combe's Essay on the Constitution of Man" (*Mind, Brain and Adaptation*, p. 158 n).


54. Peel, *Herbert Spencer*, p. 11.

55. Combe, *Constitution*, pp. 24, 328. As recently as 1965, A. Cameron Grant wrote a very Victorian essay on "Combe on Phrenology and Free-Will: A Note on XIXth-Century Secularism" (*Journal of the History of Ideas* 26 [1965]:141-47) in which he argued, as did Combe's contemporary critics, that Combe's "system denied religion" (147). George Eliot apparently had little difficulty distinguishing between Combe's rhetoric and his reality: "You sometimes use phrases such as 'approaching the Throne of God' which are irreconcilable with your opinions elsewhere expressed. But I do not find any difficulty in ascertaining the views you really inculcate. The inconsistency arises probably from a momentary sympathy with views you are describing or alluding to" (George Eliot Letters, 8:85). Eliot speaks of Combe's *Relation of Religion to Science* (1857), but her words could apply equally to the *Constitution."

56. Combe, *Constitution*, pp. 37, 38; my emphasis.
57. This is not to imply that the Constitution was not as controversial as it was popular. Gibbon reports that when the book first appeared, "bewilderment, horror, and indignation took possession of many of [Combe's] best friends. Earnest appeals were addressed to him ... to suppress the whole series as subversive of Christianity and false to phrenology" (Life of Combe, 1:181).


60. Combe, Constitution, pp. 200, vii, 189.


63. Young, Mind, Brain, and Adaptation, pp. 18, 19.


65. Combe, Constitution, p. 96. See also pp. 113, 361 on a phrenological view of the relation between intellect and emotion.


69. George Eliot to Maria Lewis, George Eliot Letters, 1:108. Further references in this section to be cited in the text.

70. Wallace, Wonderful Century, p. 182.


72. Young, Mind, Brain, and Adaptation, p. 44.


74. Combe, Constitution, pp. 29, 4.


77. "George Combe's reading of Malthus in 1805 came as a 'flash of light'" (deGiustino, Conquest, p. 9).

78. Combe, Constitution, p. 6. Angus McLaren writes: "In addition to introducing the artisan to materialistic doctrine, phrenology was preparing his mind for an acceptance of the revolutionary biological theories of the second half of the century. Phrenological charts comparing the skulls of monkeys and men could not fail to popularize a crude conception of evolution." He notes that "the role played by phrenology in early evolutionary theory has not been fully appreciated" (Phrenology: Medium and Message, 93, 94 n).

79. Combe, Constitution, pp. 5-6, 11-12; my emphasis.

80. Chambers, Vestiges of Creation, p. 181; my emphasis.

81. Chambers, Vestiges of Creation, pp. 175, 179, 178, 215.
83. deGiustino, *Conquest*, p. 49.
88. See deGiustino, *Conquest*, p. 32. He doubts whether phrenology was really the source of the *Journal's* success.
90. Quoted in Gibbon, *Life*, 1:331. In 1843 W. & R. Chambers also published an "outline of Phrenology" as numbers 59-60 of their *Information for the People*: "We deem it right . . . to mention that Phrenology appears to us as beforehand likely to be true, in as far as it assigns a natural basis to mind . . . its leading doctrines have acquired a title to very respectful attention" (quoted in Gibbon, *Life*, 2:160-61).
91. See deGiustino, *Conquest*, p. 53.
92. deGiustino, *Conquest*, p. 53.
93. See Haight, *George Eliot Letters*, 2:176 n.; Carlyle was another in whom Lewes confided.
99. George Henry Lewes, "A Precursor of the Vestiges," *Fraser's* 56 (1857):527. Lewes's precursor was J. B. Robinet's *De la Nature* (1761). A. O. Lovejoy substantiates Lewes's thesis: "The principle of continuity . . . compelled him to postulate a single model for all animate and even inanimate natural individuals. Thus Robinet, though not the originator, was (so far as I know) the first elaborator and enthusiastic champion of that notion of an Urbild" (*Great Chain of Being* [1936; rpt. New York, 1960], p. 279).
100. George Henry Lewes, "Lyell and Owen on Development," *Leader*, 18 October 1851, p. 996.
101. George Henry Lewes, "The Development Hypothesis of the 'Vestiges,'"

103. Much to George Eliot's dismay, the new science editor of the *Westminster*, young T. H. Huxley, wrote a lacerating notice of Lewes's book on Comte. He was particularly antagonistic on the subject of evolution: "Mr. Lewes is a warm advocate of the Development Hypothesis, a speculation to which, as an hypothesis merely, . . . we have no objection whatsoever" ("Science," *Westminster Review* 61 [1854]:255-56; see also Haight, *George Eliot Letters*, 2:132 n). Huxley had similarly skewered Chambers four months earlier in the *British and Foreign Medico-Chirurgical Review* (13 [1854]:425-39). When Eliot filled Lewes's column in the *Leader* that spring (see *George Eliot Letters*, 2:150 n), she noted acerbically: "A writer who evidently delights in wielding the scalpel in more senses than one has chosen the 'Vestiges' as a subject, and dissects it with immense gusto" (April 15, p. 354).


105. Lovejoy writes that Chambers's "Explanations" is "little known," yet "in some respects superior to the original work" ("Argument of Organic Evolution," p. 375 n).

106. This alarm is implicit in Huxley's review of Lewes's *Comte*: "We cannot pass over such statements as the following without offering them to be unworthy of a place to be in any work claiming to be on a level with the science of the present day." Lewes's offending statement?: "Everyone knows how the animal and vegetable kingdoms are inextricably interlaced at their boundaries" (Huxley, "Science," p. 256).


108. Lewes, "The Development Hypothesis of the 'Vestiges,'" p. 784.


110. Chambers, *Vestiges*, pp. 5, 70, 86.


112. Lewes, "The Development Hypothesis of the 'Vestiges,'" p. 785.

113. Loren Eiseley numbers himself among the few who have recognized the originality of Chambers's contribution: Chambers "actually put the separate pieces of the lost chart of Hutton, Cuvier, and Smith together and came up with the idea that organic as well as cosmic evolution was a reality" (*Darwin's Century* [1958; rpt. New York, 1961], p. 136).


122. Lewes, "The Development Hypothesis of the 'Vestiges,'" pp. 883, 884.
123. Lewes, "The Development Hypothesis of the 'Vestiges,'" p. 832.
125. Lewes, "Mr. Darwin's Hypothesis," p. 354.