

AN UNUSUALLY LARGE SPECIMEN OF *BERCHEMIA SCANDENS*

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A recent collection of *Berchemia scandens* (Hill) K. Koch was made in a low wooded area near a stream in Stanly County, North Carolina. The stem of this vine measured 9.45 in. in circumference, 2.4 in. in diameter, and was approximately 32 years old (determined by counting growth rings). No attempt was made to determine the over-all size of the plant at the time of the collection. The specimen, however, was well established with many other smaller specimens growing in the immediate vicinity.

A check of the literature revealed no data pertinent to the maximum size of the species. In fact, no records of any sort were found with which to compare this specimen. Those who have examined the specimen and who are familiar with the species have all stated that it is by far the largest they have ever encountered.

At present, an examination of the secondary xylem is under way to determine whether anything of special interest can be found to aid in explaining the unusual size.

The plant was collected in Stanly County, approximately 4.8 miles east-northeast of the city of Albemarle, N. C., near Little Mountain Creek. The collection (Ahles 19982) was made on September 24, 1956, by Harry E. Ahles with Robert S. Leisner on a trip made as a part of the Flora of the Carolinas Project now in progress at the University of North Carolina.

Voucher specimens and wood samples are on deposit at the Yale School of Forestry and at the University of North Carolina. Anyone interested in obtaining wood samples may do so by writing to the Botany Department of the University of North Carolina.

THE CHILDHOOD PATTERN OF GENIUS

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Genius by any definition is rare. If, following Galton, we make lasting fame one of the requirements, it is very rare indeed, and we are reduced to studying it at a distance through biography. Now, biographies have their limitations; as Havlock Ellis noted, one may search through them in vain for the most ordinary vital statistics. Above all, they cannot be expected to yield information on those details of early life, such as nursing and weaning and toilet training, to which

psychoanalysis has attached so much importance. When, therefore, one proposes as I do here to explore the question whether there is some pattern of environmental influences operating on children of genius which might help to account for their later achievement, it should be self-evident that the question is necessarily adjusted to something less than microscopic precision. Not only so, but, because the factor of heredity cannot be controlled, any answer whatsoever must be regarded as partial and tentative and ambiguous. Nevertheless, there may be some profit in asking the question, and insofar as it is directed simply toward the discovery of uniformity of environmental pattern there is no inherent reason why it should not be answerable, provided we do not insist on minute detail.

Table I presents the twenty geniuses into whose childhood this paper will inquire. The selection was partly deliberate, on theoretical grounds, and partly random, as will be explained. In Cox's monumental study of great geniuses (7) the main sample consists of 282 men drawn from the list of 1,000 which was compiled by J. McKeen Cattell on the principle that the amount of space allotted to them in biographical dictionaries could be taken as an objective measure of their true eminence. Though one may certainly quarrel with some of Cattell's results, the sifting process applied by Cox was admirable. She arrived at her smaller list by requiring: one, that the attained eminence should clearly depend upon notable personal achievement; and two, that the biographical material available should be sufficient to permit a reliable estimate of early mental ability. Men born before 1450 were eliminated. The chief task of Cox's investigation was to estimate the intelligence level displayed by these rigorously selected geniuses during childhood and youth. For this purpose the appropriate information was extracted from biographical sources and submitted to the judgment of three raters thoroughly experienced in the use of intelligence tests and the evaluation of IQ from behavior. Their three independent ratings, expressed as IQ's, were combined. Separate estimates were made for two periods of life: from birth to age 17, and from age 17 to age 26. As might be expected, the reliabilities of the estimates increased in proportion to the amount of biographical information, and, in general, the IQ's based on the more adequate material were higher. Consequently, one in search of illumination on the early environment of genius would naturally turn most hopefully to the geniuses in Cox's list who had been assigned the highest childhood IQ's. This I did. From her list I chose as my preliminary sample the 27 men whose IQ's in childhood had been estimated at 160 or higher. The final sample of 20, as given in Table I, was reached by dropping out those individuals for whom the biographical material in the University of North Carolina Library appeared to be inadequate.¹ As will be observed, the order of listing in the table is from the highest childhood IQ downwards. The reputation of each man is indicated in the column headed "Fame" by his rank number in Cox's sample, as based on Cattell. With respect to fame the sample appears to be a fair cross-section of Cox's larger group; with respect to IQ, as explained, it is highly selected. One sees at a glance that here are individuals who did extraordinary work in

¹ The seven omitted were Schelling, Haller, Wolsey, Sarpi, Constant, Brougham, Bossuet. In order to retain Leibniz an interlibrary loan was arranged for Guhrauer's biography.

TABLE I

	Estimated IQ in Childhood	Fame (Rank in 282)	Birth Order	Age at Marriage
J. S. Mill (1806-1873).....	190	103	1 in 9	45
Leibniz (1646-1717).....	185	19	Only	—
Grotius (1583-1645).....	185	72	1 in 5	25
Goethe (1749-1832).....	185	4	1 in 6	39
Pascal (1623-1662).....	180	35	2 in 3	—
Macaulay (1800-1859).....	180	53	1 in 9	—
Bentham (1748-1832).....	180	181	1 in 2	—
Coleridge (1772-1834).....	175	157	10 in 10	23
Voltaire (1694-1778).....	170	2	5 in 5	—
Leopardi (1798-1837).....	170	280	1 in 5	—
Chatterton (1752-1770).....	170	163	3 in 3	—
Niebuhr (1776-1831).....	165	135	2 in 2	24
Mirabeau (1749-1791).....	165	30	9(?) in 11	22
J. Q. Adams (1767-1848).....	165	274	2 in 5	30
Wieland (1733-1813).....	160	152	1 in ?	32
Tasso (1544-1595).....	160	48	3 in 3	—
Pope (1688-1744).....	160	50	Only	—
Pitt (1759-1806).....	160	9	2 in 5	—
Musset (1810-1857).....	160	261	2 in 2	—
Melanchthon (1497-1560).....	160	77	1 in 5	23

science, law, literature, or politics, and who fully deserve to be called geniuses. Their biographies should be relevant to the proposed question.

It should be understood from the outset that Cox did not neglect the problem of environment. Her biographical sketches furnish some very pertinent information, and she states as an important conclusion that, on the whole, youths who achieve eminence have superior advantages in their early days. Though she notes exceptions, she says: "The average opportunity of our young geniuses for superior education and for elevating and inspiring social contacts was unusually high. . . . The extraordinary training for leadership received by Pitt the younger, John Quincy Adams, Niebuhr, and the Humboldt brothers; the specialized instruction of Mozart, Weber, and Michelangelo undoubtedly contributed to the rapid progress of these great men among the great" (7, p. 216). The object of the present study is to push forward in the same direction of inquiry, but with more pointed attention to the social relations and their repercussions.

In Table I, one column briefly summarizes facts concerning order of birth. Considerable theoretical importance is sometimes attached to the chronological position of a child in the family. In particular, Galton, who was not prone to overemphasize environment, thought enough of order of birth to pay some heed to it in his investigation of British scientists; and he comments that "the elder sons have, on the whole, decided advantages of nurture over the younger sons. They are more likely to become possessed of independent means, and therefore able to follow the pursuits that have most attraction to their tastes; they are treated more as companions by their parents, and have earlier responsibility,

both of which would develop independence of character; probably, also, the first-born child of families not well-to-do in the world would generally have more attention in his infancy, more breathing-space, and better nourishment, than his younger brothers and sisters in their several turns" (13, p. 26). There is an intuitive appeal in the argument, but Galton does not support it by any precise analysis of his data. What may be said about the present sample? First, it must be admitted that there are several ways of stating the facts, depending on whether one includes or excludes half-siblings and siblings who died at an early age. The figures given in the table stand for full siblings and include all births. The half-siblings excluded in the three cases involved (Leibniz, Coleridge, Pope) were children by previous wives of their fathers. The impression produced by inspection is that there may be an excess of only and first children among these twenty geniuses. But an analysis of the probabilities does not favor this view very strongly. The average likelihood of being born in first place in the twenty families works out to about $\frac{1}{3}$, and the observed frequencies deviate from the theoretically expected only enough to yield a chi square of 2 in support of the hypothesis; since this corresponds to a confidence level of between .2 and .1 for the one degree of freedom, one is left in doubt. Pascal, Niebuhr, and Adams were first sons. If we estimate in terms of first sons, a total of 13, and adjust the probabilities to the expectation that about half the children in multiple births would be girls, the chi square is 1.8, again too small to support the hypothesis firmly.

Though the figures do not support a birth order hypothesis, there may nevertheless be something about position in the family which is significant. Let us look at the seven who do not rank as first-born children or first-born sons. Coleridge was born in his father's old age and was his "Benjamin"; Voltaire was so sickly during the first year of his life that there was daily concern over his survival, and his mother, an invalid, was incapable of having any more children; Chatterton was a posthumous child, and the previous boy in the family had died in infancy; Mirabeau was the first son to survive after the death of the first and a succession of girls; Tasso was the only surviving son, his older brother having died before he was born; Pitt was in the interesting position of being able to follow his father in a parliamentary career in the House of Commons, as his older brother could not do because of the inherited title; and Musset, the second of two sons, was younger than the first by a significant span of six years. When we weigh these additional facts, the general notion of some sort of positional effect begins to reassert itself.

One way in which position in the family might favor the development of a child would be by giving it higher attentional value for the parents. Close examination of the biographical data leads to the conclusion that these twenty men of genius, whether because of their position in the family or not, did as children receive a high degree of attention from their parents, as well as from others. In several cases it is clear that the attention exceeded that accorded to their brothers and sisters. Both very decided and very positive parental interest was displayed toward Mill, Leibniz, Grotius, Goethe, Pascal, Macaulay, Bentham, Coleridge, Niebuhr, Adams, Wieland, Pope, Pitt, and Melanchthon. Voltaire and Musset were far from neglected, but the attention bestowed upon them may have lacked

some of the intensity of focus notable in the preceding cases. If any of the children suffered comparative neglect or abuse, they would be Leopardi, Chatterton, and Mirabeau. Chatterton had no father from the time of his birth, and the fathers of Leopardi and Mirabeau were lacking in sympathy or worse. On the other hand, Chatterton's mother and sister helped him to learn to read, saw that he went to school, and were good enough to him that the promise he made them when a child to reward them with all kinds of finery when he grew up was fulfilled in the last year of his short life; Leopardi was provided with tutors and had access to his father's rich library; and Mirabeau, cuffed and persecuted as he finally was by his erratic father, was received into the world with an outburst of joy and was always provided for educationally, even though the arrangement may have been savagely disciplinary.

Favorable parental attention may take the two forms of displays of affection and intellectual stimulation. There is strong evidence for both in most of the cases in our list. Remarkable indeed are the educational programs followed by Mill, Goethe, Pascal, Bentham, Niebuhr, Adams, Wieland, Tasso, and Pitt, under the encouragement, guidance, and powerful insistence of their fathers. Yet it is not the educational program itself which requires our notice so much as it is the intimate and constant association with adults which it entails. Not only were these boys often in the company of adults, as genuine companions; they were to a significant extent cut off from the society of other children. The same statement can be made, on the whole, for others in the list whose educations proceeded less directly, or less strenuously under the guidance of fathers.

Warm attachments to children outside the family circle seem to have been rare, and there are several cases of isolation within the family, too. Yet it is within the family that most of the recorded intimacies between these geniuses and other children developed. Goethe, Pascal, Niebuhr, Macaulay, Voltaire, and Mirabeau experienced some intensity of affection for sisters; Musset for his older brother. Macaulay and Voltaire remained attached to their favorite sisters throughout their lives, becoming devoted uncles to their sisters' children; Goethe's and Pascal's affection for their younger sisters approached passion; and Mirabeau speaks of incestuous relations with his.

The reality and nature of the pattern to which I am pointing—the very great dominance of adults in the lives of these children, and their isolation from contemporaries outside the family and, sometimes, within—can be adequately appreciated only through a more detailed statement about each individual.

Mill, under his father's personal and unremitting tutelage, began hard intellectual work before he was three. From very early he was given the responsibility of acting as tutor to his brothers and sisters. This did not increase his affection for them. In fact, he came to share some of his father's own antipathy toward them and toward his mother. He explicitly states in his autobiography that his father kept him apart from other boys. "He was earnestly bent upon my escaping not only the ordinary corrupting influence which boys exercise over boys, but the contagion of vulgar modes of thought and feeling; and for this he was willing that I should pay the price of inferiority in the accomplishments

which schoolboys in all countries chiefly cultivate" (21, pp. 24f.) And again: "as I had no boy companions, and the animal need of physical activity was satisfied by walking, my amusements, which were mostly solitary, were in general of a quiet, if not a bookish turn, and gave little stimulus to any other kind even of mental activity than that which was already called forth by my studies" (p. 25).

Leibniz, his mother's only child, lost his father, a prominent university professor, when he was six. He retained two vivid memories of him, both of them expressive of the high esteem in which his father held him. His mother, who died when he was eighteen, devoted the remainder of her life to caring for him. He lived at home, free from "the doubtful liberties, the numerous temptations, the barbarous follies of student life" (18, p. 12). Before he was ten his father's carefully guarded library was opened to him, and he plunged into its treasures eagerly. It was conceivably no small thing to Leibniz that his father had regarded his christening as marked by a symbolic movement which seemed to promise that his son, as he wrote in his domestic chronicle, would continue in a spiritual and burning love for God all his life and do wonderful deeds in honor of the Highest (15, p. 4).

Grotius was close to his father. He signed his early poems Hügeianus, thus joining his own name Hugo with his father's name Janus or Joannes. At eight he reacted to the death of a brother by writing his father consolatory Latin verses. He had competent teachers at home, and entered the University of Leiden at eleven; there he dwelt with a devoutly religious man who impressed him deeply. He was famous in the literary world very early, and received high praise from distinguished men. He sought his father's advice when he chose a wife. One would infer from the limited evidence that his association from early childhood was primarily with adults.

Goethe throughout his childhood was carefully and energetically supervised in his varied studies by his father. He associated frequently with numerous skilled and learned and eminent men in Frankfort, among whom was his grandfather Textor. He enjoyed considerable freedom of movement through the city, in the intervals of his studies, and struck up several acquaintances outside the home among boys and girls; but these were certainly far outweighed by his adult contacts, and by his intimacy with his sister, who had much less freedom than he and who became increasingly embittered by the educational discipline of their father. In his autobiography he notes that he was not on friendly terms with a brother, three years younger, who died in childhood, and scarcely retained any memory of the three subsequent children who also died young. How close he and his sister were may be gauged by these words regarding the after-effects of his love-affair with Gretchen, at about fourteen: "my sister consoled me the more earnestly, because she secretly felt the satisfaction of having gotten rid of a rival; and I, too, could not but feel a quiet, half-delicious pleasure, when she did me the justice to assure me that I was the only one who truly loved, understood, and esteemed her" (14, p. 192).

Pascal was so precious in the eyes of his father, after his mother's death when

he was three, that, as the older sister tells us, the father could not bear the thought of leaving his education to others, and accordingly became and remained his only teacher. At eighteen Pascal's health broke down from ceaseless application. He was frequently in the company of the learned men surrounding his father. His primary emotional attachment was to his younger sister, Jacqueline; her religious retirement strongly influenced his own religious development.

Macaulay early became absorbed in books, but his studies were more unobtrusively guided by his father and mother and other relatives than in the cases preceding. He was especially attached to his mother in early childhood, and at home among his brothers and sisters was overflowingly happy and playful. A sister writes: "He hated strangers, and his notion of perfect happiness was to see us all working round him while he read aloud a novel, and then to walk all together on the Common" (30, p. 67). He was reluctant to leave home for school for even a single day, and he was acutely homesick when placed in a boarding school at about twelve; there, though tolerated and even admired by his fellow pupils, he had little to do with them, living almost exclusively among books. The children at home passionately loved him. It should not be overlooked that his father was a deeply religious man of great force of character, energetic in religious and political reform movements of considerable scope.

Bentham's father, ambitious to make a practical lawyer of his first and for nine years his only child, kept him to a rigorous schedule of instruction in everything from dancing and military drill to Greek from a very early age. From seven to twelve he spent the winters at a boarding school, which he did not enjoy; in the vacations at home his schooling, under private tutors, was much more intensive. He was happiest on visits to grandparents in the country, where he could talk to an old gardener or climb up in a tree and read a novel. Too small and weak to win the admiration of his fellows, "he tried to be industrious and honest and noble and dutiful, finding that such a course brought praise from his elders" (10, pp. 20f.). When the death of his warmhearted mother desolated his father and himself, Jeremy "was just turned twelve, and was ready for Oxford, if a frail and undersized boy of twelve could be said to be ready for anything" (10, p. 22).

Coleridge's father, though unambitious in general and not very attentive to the education of his numerous other children, took special pride in him and endeavored from the beginning to prepare him for the Church. Coleridge was the last of fourteen children (ten by his mother), and the extreme fondness of his parents aroused the hostility of the older boys toward him. They drove him from play and tormented him. On one occasion, when he was eight, he ran away from home after a ferocious combat with the brother whom he had displaced as baby of the family; he was found only after a prolonged search, and he remembered all his life the tears of joy on his father's face and his mother's ecstasy when he was recovered. Death of the father, when he was nine, deprived him of his most valued companion. Shortly afterwards he was sent to a charity school in London. Here he made a few friends, notably Lamb, but he lived a great deal in books and in his own imagination.

Voltaire was born five years after the death in infancy of the next preceding

child, and his own life was despaired of daily for the first year. His mother was an invalid; his father was a busy lawyer and does not seem to have concentrated any particular attention on him, beyond desiring that the boy should himself be prepared for the law. His education at home proceeded under the guidance of three distinguished and learned men, particularly the Abbé Chateauneuf, his godfather. The two other surviving children were considerably older than he; the brother he disliked, but he was fond of his seven-years-older sister, and, after his mother's death when he was seven, it was she to whom he was chiefly attached in the family. At ten he was quartered in the best Jesuit school in France by his ambitious and wealthy father; here he made the warmest and most lasting friendships in his life, but they were with the teachers rather than with the boys.

Leopardi, the oldest of five children, remained until he was twenty-four, practically immured, in the house of his father, the Count, in a town which he despised. In Leopardi's own words: "Had no teachers except for the first rudiments, which he learned under tutors kept expressly in the house of his father. But had the use of a rich library collected by his father, a great lover of literature. In this library passed the chief portion of his life, while and as much as permitted by his health, ruined by these studies; which he began independently of teachers, at ten years of age, and continued thenceforth without intermission, making them his sole occupation" (29, p. 2). His closest companion was his brother Carlo, a year younger; but he was reticent even with him. With the other children he liked to produce plays in which the tyrant (his father) was worsted by the hero (himself). At a later age he regarded his home as a prison from which he had to break out.

Chatterton, born three months after his talented father's death, was the second surviving child of his very young mother, who had borne her daughter four or five years earlier before her marriage was legalized. Under their instruction, he learned the alphabet from an old illuminated music manuscript of his father's, which his mother had been about to throw away, and learned how to read from an old blackletter Testament. He had been dismissed from his first school as a dullard. Later, he went to the uninspiring charity school which had been attended by his father. A note on his relations with playmates before he was five speaks of him as "presiding over his playmates as their master and they as his hired servants" (20, p. 22). Already at five he was greedy for fame, and asked that a cup which had been presented to him by a relative should have on it "an angel with a trumpet, 'to blow his name about,' as he said" (20, p. 23). He did form friendships at school, one in particular; and the death of this boy plunged him into melancholy. But with none of these, or with his sister, was he intimate enough to share the secret of his Rowley poems, those impressive forgeries which seem to have been written under the inspiration and tutelage of the beautiful church of St. Mary Redcliffe rather than any human preceptor.

Niebuhr's father, who had been a military engineer and explorer, took up residence after his marriage at forty in a retired little town and devoted himself to his wife and family of two children. He liked to entertain his own and other children with stories, games, and music; but he concentrated particularly on the

instruction of his son, for whom he also provided tutors from about four or five. A cultured neighbor, Boje, who was editor of a literary periodical, took much interest in the boy; and Boje's wife began his instruction in French. Her death when he was ten overwhelmed him with grief and inclined him even more seriously to his studies. Between fourteen and eighteen he spent most of the day in hard work and general reading. When he was sixteen his father, thinking that his attachment to home was excessive and that he was studying too much alone, sent him off to a school in Hamburg in the hope that he would become more sociable; but he was unhappy, and insisted on coming back. From an early age ill health and his mother's anxiety contributed their share to his inclination to solitude.

Mirabeau, the first surviving son of a family of the nobility, was in the beginning his father's pride. Later, after disfigurement by smallpox at three and displacement from the position of only son by the birth of a brother when he was five, he became increasingly the object of his erratic father's dislike. Intense marital discord made him the more hateful because he resembled his mother's side of the house. He was unfavorably compared with the other children, and repeatedly put under severe disciplinarians as tutors. Eventually his father had him imprisoned more than once. In the face of this persecution, helped partly by the affectionate interest of an uncle, *Mirabeau* succeeded nevertheless in developing an extraordinarily winning manner in speech and personal contacts, even charming his jailers into relaxing their punishments. Whether or not he was inclined to solitude, it was forced on him by his father; much of his learning and literary production took place in prisons or their equivalents. He was highly erotic, and may have had sexual relations with his younger sister; for so he asserts.

Adams regarded even his name, John Quincy, which was his great-grandfather's, as a perpetual admonition to live nobly. The Revolutionary War and the battle of Bunker Hill, which he witnessed, confirmed a serious habit of mind from early childhood. As his father was absent from home a great deal, he was already as a small boy depended upon by his mother as if he were a man. His education commenced at home under a tutor, and continued in Europe in the company of his father and other men notable in the governmental service. It was not until he entered Harvard that he attended a regular school for any length of time. Both his mother and his father tried to keep him from the corrupting influence of other boys, and it is evident from the nature of his life that his chief contacts were with grown men of serious and intellectual character. He read a great deal under the guidance of his father, whom in his earliest letters he obviously wished to please.

Wieland was educated at home under the eyes of his father, a pastor, in somewhat the same severe manner as was Goethe. He studied hard from three years of age. He says of his childhood: "I was deeply in love with solitude and passed whole days and summer nights in the garden, observing and imitating the beauties of nature" (26, p. 19). He was much more attached to books than to people. Prior to age seventeen, says his biographer, "We encounter not a single friend of his own age, only books and those who helped with them!" (26, p. 24).

He was sensitive and unsociable when away at school, and when he returned home he lived alone or associated only with older men. His biographer makes no mention of his relations with his several siblings.

Tasso, whose old father was often compelled to be away from home, lived with his young mother and his sister until he was separated from them forever at ten, to join his father at the court of his patron prince. Even while he remained at home he was being strictly educated, first by an old priest, and then in a Jesuit school, which he loved. His mother, of whom he was passionately fond, died two years after he went to join his father. Of his childhood, Boulting says: "The prolonged absences of his father, the tears of his mother, the straitened circumstances and this sudden death were not healthy influences for a sensitive lad, and there was a great deal too much educational pressure put upon him. Bernardo was proud of Torquato's talents and ambitious as to his future. He forced him on and took scudi from a slender purse to pay for special lessons in Greek. But a cousin came to Rome from Bergamo to share in Torquato's studies. No book-worm was this lad, but full of fun and a thorough boy. Nothing could have been luckier" (3, p. 31). A little later he had as his companion in the study of the graces (horsemanship, jousting, etc.) a boy of eight, son of Duke Guidobaldo. Otherwise he seems to have associated primarily with men, often men of great dignity and learning.

Pope, the only child of his mother (there was a half-sister more than nine years older), was from the earliest period a domestic idol, as Stephen says. His father and mother, both forty-six at his birth, and a nurse, concentrated their affection upon him, which must have been all the more intense because he was sickly, and humpbacked like his father. "The religion of the family made their seclusion from the world the more rigid, and by consequence must have strengthened their mutual adhesiveness. Catholics were then harassed by a legislation which would have been condemned by any modern standard as intolerably tyrannical" (28, p. 2). Most of his education was accomplished at home, with some help from a family priest and his father, who corrected his early rhymes. From twelve he threw himself into his studies so passionately that his frail constitution threatened to break down.

Pitt was born at the high peak of his father's career as Prime Minister of England. When the title of Earl of Chatham was conferred on him, this second son, then seven, exclaimed, "I am glad that I am not the eldest son. I want to speak in the House of Commons like papa." Partly because of his feeble health, the boy was brought up at home under the instruction of his father and a tutor. His father concentrated upon developing his oratorical powers. At fourteen he was sent to Cambridge, where he was placed in the care of a sound scholar, who remained his inseparable companion, and practically his only one, for more than two years. He had no social life there. He read with facility such books as Newton's *Principia* and the obscurest of the Greek poets. "Through his whole boyhood, the House of Commons was never out of his thoughts, or out of the thoughts of his instructors" (17, p. 129).

Musset was the second son in a family devoted to literature, "an infant prodigy

on whom the intelligence of his brother, six years his elder, did not fail to exercise a stimulating effect. Alfred developed his mind in the constant companionship of Paul much more rapidly than he would have in the company of children his own age" (5, p. 12). He was notable from early childhood for his sensitivity, charm, emotional ardor, dramatic power, and susceptibility to feminine beauty. At a very tender age he was already disappointed in love. He went to school for a short time with his brother, but sickness and the hostility of the other children toward these Bonapartists soon led to their being tutored at home, by a young man who knew how to combine pleasure with instruction.

Melanchthon always remembered the dying injunction of his father: "I have seen many and great changes in the world, but greater ones are yet to follow, in which may God lead and guide you. Fear God, and do right" (25, p. 6). Before this time (his father died when he was eleven) he was, by his father's express wishes, strictly educated, for a while in a local school, and then by a tutor, a conscientious teacher and stern disciplinarian. Afterwards, he came more directly under the influence of the celebrated scholar Reuchlin, who was his relative. It was Reuchlin, impressed by the scholarship of the little boy, who changed his name from Schwartzerd to its Greek equivalent *Melanchthon*. Of his earlier childhood it is related that he often gathered his schoolfellows around him to discuss what they had been reading and learning; and his grandfather delighted to engage him in learned disputes with traveling scholars, whom he usually confounded.

The brief sketches preceding tend to confirm the rule, I believe, that children of genius are exposed to significantly great amounts of intellectual stimulation by adults and experience very restricted contacts with other children of their age. Nor should we overlook the fact that books themselves, to which these children are so much attached, are representatives of the adult world. This is true in the superficial sense that they are provided by adults and, more significantly, may be drawn from a father's sacred library (one thinks of Leibniz, Leopardi, even Chatterton); it is true in the profounder sense that they are written by adults, and, in the case of most of the reading done by these children, *for* adults. Books extend the boundaries of the adult empire.

There is an effect of this constant intercourse with the adult world which may be especially important in the development of genius. Not only is there an increase of knowledge, which is the usual aim of the instructors; there is also, in many cases, a profound excitement of imagination. Even John Stuart Mill confesses that he did not perfectly understand such grave works as the more difficult dialogues of Plato when he read them in Greek at seven. What, then, happens to such adult material pouring into the child's mind? Mill does not elucidate his own case; but there is evidence in a number of the biographies before me that the dynamic processes of phantasy go to work on it and richly transform both what is understood and what is not.

Much of Goethe's association with other children was simply an occasion for expressing his vivid phantasy life; he entranced them with stories of imaginary adventures. Musset, also, reveled in a world of make-believe based upon the

Arabian Nights and similar literature, and bewitched his enemies by the magic power of imagination. These were to become poets. But Bentham, who was no poet, imagined himself growing up as a hero like Fénelon's Telemachus and was stirred to moral fervor by sentimental novels. And two of the practical politicians in the list, Pitt and Niebuhr, may give us some insight into the process. When Pitt was around thirteen or fourteen he had written a tragedy, of which Macaulay has this to say: "This piece is still preserved at Chevening, and is in some respects highly curious. There is no love. The whole plot is political; and it is remarkable that the interest, such as it is, turns on a contest about a regency. On one side is a faithful servant of the Crown, on the other an ambitious and unprincipled conspirator. At length the King, who had been missing, reappears, resumes his power, and rewards the faithful defender of his rights. A reader who should judge only by the internal evidence, would have no hesitation in pronouncing that the play was written by some Pittite poetaster at the time of the rejoicings for the recovery of George the Third in 1789" (17, pp. 68f.). Out of his learning Pitt had constructed a dream prescient of his own future career. And who can say that the actions of a Prime Minister are not as much the expression of a private drama as they are the realistic application of the sciences and the laws? Niebuhr, who became a practical man of business and politics as well as the historian of Rome, writes explicitly about his own childhood experience, in a letter to Jacobi in 1811: "Our great seclusion from the world, in a quiet little provincial town, the prohibition, from our earliest years, to pass beyond the house and garden, accustomed me to gather the materials for the insatiable requirements of my childish fancy, not from life and nature, but from books, engravings, and conversation. Thus, my imagination laid no hold on the realities around me, but absorbed into her dominions all that I read—and I read without limit and without aim—while the actual world was impenetrable to my gaze; so that I became almost incapable of apprehending anything which had not already been apprehended by another—of forming a mental picture of anything which had not before been shaped into a distinct conception by another. It is true that, in this second-hand world, I was very learned, and could even, at a very early age, pronounce opinions like a grown-up person; but the truth in me and around me was veiled from my eyes—the genuine truth of objective reason. Even when I grew older, and studied antiquity with intense interest, the chief use I made of my knowledge, for a long time, was to give fresh variety and brilliancy to my world of dreams" (4, p.354).

My point is that phantasy is probably an important aspect of the development of genius, not only in those cases where the chief avenue to fame is through the production of works of imagination in the ordinary sense, but also in those where the adult accomplishment is of a different sort. Instead of becoming proficient in taking and giving the hard knocks of social relations with his contemporaries, the child of genius is thrown back on the resources of his imagination, and through it becomes aware of his own depth, self-conscious in the fullest sense, and essentially independent. There is danger, however, in the intense cultivation of phantasy. If it does not flow over into the ordinary social relations by some channel, if it has to

be dammed up as something socially useless, then it threatens life itself. An expression of what I am referring to is given in that powerful scene in the first part of Goethe's *Faust* where the physician-magician, tampering with incantations, raises a spirit of overwhelming presence and quails before him. Something nearer to an outright demonstration is furnished by the life of Chatterton and his suicide.

Before he was eighteen Chatterton was dead by his own hand. If we examine his life, we see that it breaks apart into two distinct regions: an outer shell of schoolboy, apprentice, pretended antiquarian, and writer of brittle satire; and a core—the serious and deeply emotional 15th century poet Rowley, whose connection with himself he never publicly acknowledged. One must not forget that Chatterton's phantasy existence as Rowley has points of contact with his father, the musician schoolteacher who died before his son was born, but who, in a sense, presided over the boy's education through the music manuscript from which he learned his letters and the blackletter Testament in which he learned to read, and who, by his connection and the connection of his family with the magnificent church of St. Mary Redcliffe, which overshadowed the place of Chatterton's birth and was his favorite resort from the brutalities of Bristol, might surely continue to hold converse with the imaginative boy. The Rowley poems furthermore are related to Chatterton's search for a pedigree. In short, through Rowley, Chatterton established relations with the world of the dead; and since he could not admit that he himself was the author of the Rowley poems, but had to pretend to have found them in his role as antiquary, and was thus rejected as an impostor by Walpole, he could not through Rowley establish contact with the world of the living. The surface which he was able to present to the world was hard, brittle, violent, unreal. Yet even in his relations with the world he appeared to be doing the same thing he was doing through the Rowley phantasies, namely, seeking a father to love and protect him. He evidently placed great hopes in Walpole; but he had also tried and been disappointed in the patronage of men of lower caliber in Bristol. Eventually he came to a dead end in London, where he had no friends even of the quality of Bristol's Catcott. Just before he committed suicide he was Rowley once again in the most beautiful of his poems, the *Balade of Charitie*, which sums up his experience of the world and his yearning for a loving father. If it was Rowley who enabled Chatterton to live, it was also Rowley who opened the door of death for him and ushered him out of a world of constant bitter disappointment into a world of kindly and Christian spirits.

Chatterton is a supreme example of the dangers and costs of genius. Having no father or other appreciative adult to link him to the world, he was swallowed up by his imagination. But it is too often overlooked in the textbooks that genius in less tragic cases is generally a costly gift. Superficially an enviable piece of luck, it is actually a fatality which exacts tribute from the possessor. Extreme absorption in very hard work is one of the penalties, and sometimes broken health. Isolation from contemporaries, often increasing with the years, is another. Whether we should include heterosexual difficulties as another, I am not sure, but I have indicated some of the facts in the last column of Table I and wish to consider the

matter briefly. Fifty-five percent of our sample did not marry at all. There may be no special significance in this, since according to statistics for the United States (11) the marriage rate for the total population of males above fifteen is only about 60 per cent and may have been lower in earlier times. On the other hand, this group, with the exception of Chatterton, ranges in age from 39 to 84 and should be compared with the higher age groups. According to the 1930 census in the United States marriage had been entered into by 86 per cent of men in the age range from 35 to 44, and by age 60, which is about the median for our group of geniuses, it had been entered into by about 90 per cent. I will only note further that some delay or reluctance or dissatisfaction attended the marriages of Mill, Goethe, Coleridge, Mirabeau, Wieland, and perhaps Melancthon, but it would not be desirable here to go into greater detail because of the impossibility of making appropriate comparisons. It may be that for marriages both freely contracted and happily sustained a rate of 3 in 20 is not out of the ordinary, though I should be inclined to say that here too we have an expression of the costliness of genius.

In summary, the present survey of biographical information on a sample of twenty men of genius suggests that the typical developmental pattern includes as important aspects: (1) a high degree of attention focused upon the child by parents and other adults, expressed in intensive educational measures and, usually, abundant love; (2) isolation from other children, especially outside the family; and (3) a rich efflorescence of phantasy, as a reaction to the two preceding conditions. In stating these conclusions I by no means wish to imply that original endowment is an insignificant variable. On the contrary. Galton's strong arguments on behalf of heredity appear to me to be well-founded; and in this particular sample the early promise of these very distinguished men cannot be dissociated from the unusual intellectual qualities evident in their parents and transmitted, one would suppose, genetically as well as socially to their offspring. It is upon a groundwork of inherited ability that I see the pattern operating. Whether the environmental phase of it summarized under (1) and (2) is actually causally important, and to what extent the environmental factors are related to the blossoming out of phantasy, are questions which could be examined experimentally, though obviously any thorough experiment would require both a great deal of money and a certain degree of audacity. It might be remarked that the mass education of our public school system is, in its way, a vast experiment on the effect of reducing all three of the above factors to minimal values, and should, accordingly, tend to suppress the occurrence of genius.

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