



Science News-Letter

The Weekly Summary of Current Science

A Science Service Publication



Edited by Watson Davis
Vol. X No. 297



10¢ a copy \$5 a year
December 18, 1926

PSYCHOLOGY

Geniuses of History Get Intelligence Ratings

By EMILY C. DAVIS

Can you imagine 300 of the world's most famous men and women from the year 1450 up to 1850 collected in a school room, and then all 300 of them reduced to childhood by some Alice-in-Wonderland magic? If you can picture this scene of famous boys and girls, perhaps you can drive your imagination a step farther and fancy the famous 300 being given an intelligence test, so that they can be rated according to their mental development.

At the end of the test, John Stuart Mill, who is destined to become a celebrated English philosopher, is politely requested to please walk up to the head of the class. Next in line are called young Goethe, who is to be one of Germany's greatest poets; Grotius, who will become a great Dutch theologian and will found the science of international law; and Leibnitz, who will shine as a remarkable mathematician. And so on, down the line, with Milton, Napoleon, Raphael, Dickens, and the rest taking their rank.

This dramatic scene can never take place in a literal sense. These master minds of history have escaped forever from the modern trial of doing mental arithmetic to a stop watch, and answering questions cunningly devised to show whether they can reason logically. But the 300 have not entirely eluded the resourceful testers. The test scene has been arranged, in effect, with the aid of old records and by use of the very recent science of historiometry.

Historians have always recorded what stories they could find about the youthful achievements and shortcomings of geniuses. We are told that Swift at three years could read any chapter in the Bible. Mozart composed a minuet at the age of five.

The poet Tasso spoke at six months and at seven years "was pretty well

acquainted with the Latin and Greek tongues." Farragut fought in the War of 1812 and commanded a boat at the age of eleven. Little Oliver Goldsmith was the despair of the mistress of the dame school who said "never was so dull a boy"; yet Oliver's sister, who saw another side of him, said that he exhibited signs of genius at an age when he could scarcely write.

Now, by studying the best accounts of childhood and comparing them with standards of mental development shown in living boys and girls, psychologists are able to rate the historic characters roughly in mentality.

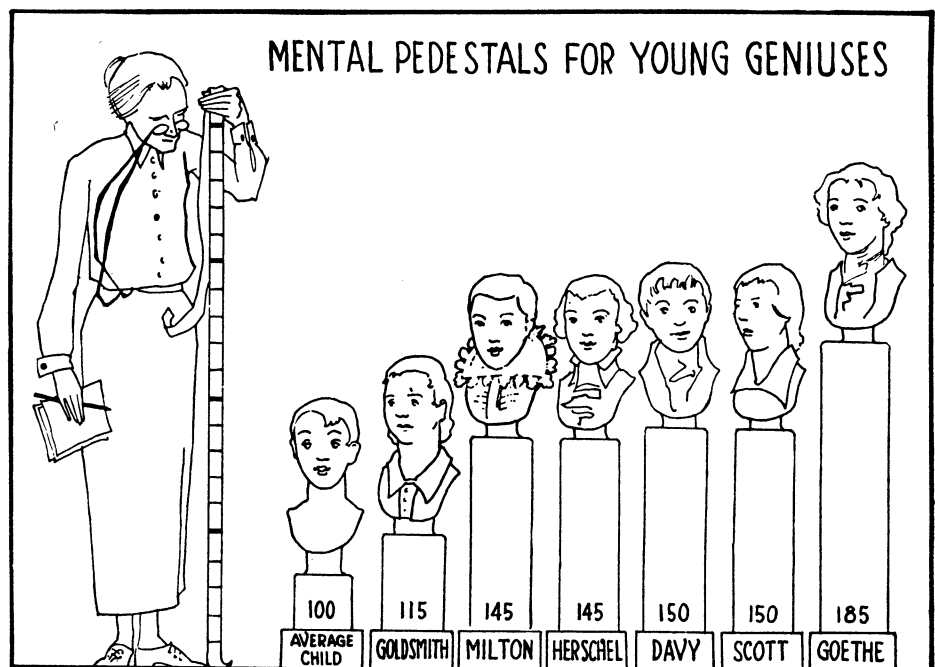
This difficult task in historiometry has been accomplished for 300 geniuses whose childhood has been recorded in sufficient detail, by Dr. Catherine M. Cox, working at Stanford University, California. Dr. Cox was assisted by Dr. Lewis M. Terman, professor of psychology, who

recently studied the mentality of 1,000 superior modern school children, and also by Ruth H. Livesay and Lela O. Gillan.

Libraries were scoured for reliable accounts of the childhood and youth of the 300. On the basis of the data obtained, each child was rated in intelligence and 67 character traits by three psychologists. And finally, the figures were put through statistical processes to show the degree of reliability of the figures. Four years were spent on the task, and the results have just been published at Stanford University in a large volume.

The psychologists have not been poring over old records and histories merely in order to appraise the geniuses of the past and to accumulate interesting information. Their aim was to find out whether genius reveals any significant traits in childhood. They hoped that these signs would be found

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plain enough, so that the gifted children of today can be taught more intelligently and given a better chance to do their best for the world.

The records collected about the famous children do show, what is so often disputed, that the great minds of the world almost always have showed signs of brilliance in childhood. The more complete the account of a famous man's boyhood, the greater the evidence that he was an unusual child.

Because of this fact, the intelligence ratings given to the famous characters are likely to be too low. Thus, John Stuart Mill, who stands at the top of the list of bright boys, deserves a high pedestal by right of remarkable achievements, but had the childhood of some other famous men been recorded in as much detail, Mill might have stiff competition for first place. In other words, Mill's rating is reasonably fair and accurate, while some of the other boys who didn't do so well on the intelligence score may not have put their best foot forward—in the biography books.

If we take a look at this Mill boy who outshines young Napoleon and Beethoven and Milton, we find him at the age of five holding an animated conversation with Lady Spencer on the comparative merits of Marlborough and Wellington. This might equal the ability of a kindergarten child of today who could discuss the ideals of Mussolini as compared with those of, say, President Wilson.

At six years Mill was writing a history containing such sentences as "the country had not been entered by any foreign invader," and using language typical of a twelve-year-old child. At eight John was giving Latin lessons and was held responsible for the errors of his pupil.

What this teaching performance means to a psychologist is shown by Dr. Cox's comment:

"Teaching a foreign language involves mastery of his own and the foreign idiom. Success depends in no small degree upon ready familiarity with a considerable vocabulary in each language. Mill's achievement indicates facility in comprehending and using new symbols and in substituting them for old ones; it is proof of the capacity to compare, abstract, and generalize, more characteristic of 16-year than 8-year intelligence. In connection with his teaching he expounded Latin grammar, Nepos, and Caesar's Commentaries, indicating thus

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STUDY HELPS FOR SCIENCE CLASSES

These articles will be found to be especially useful in class work

GENERAL SCIENCE

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HYGIENE

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CHEMISTRY

Forty Years of Chemistry,* p. 179. New Ant Poison, p. 185.

BIOLOGY

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PHYSICS

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(This will fit on a 3 x 5 card.)

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News-Letter Features

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SCIENCE NEWS-LETTER, The Weekly Summary of Current Science. Published by Science Service, Inc., the Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Publication Office, 1918 Harford Ave., Baltimore, Md. Editorial and Executive Office, 21st and B Sts., N. W., Washington, D. C. Address all communications to Washington, D. C.

Entered as second class matter October 1, 1926, at the postoffice at Baltimore, Md., under the act of March 3, 1879. Established in mimeograph form March 13, 1922.

Subscription rate—\$5.00 a year postpaid. 10 cents a copy. Ten or more copies to same address, 6 cents a copy. Special reduced subscription rates are available to members of the American Association for the Advancement of Science.

Advertising rates furnished on application.

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Intelligence of Geniuses

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the possession at the age of 8 of general ability that would register successes in intelligence tests at the 14- or 16-year level."

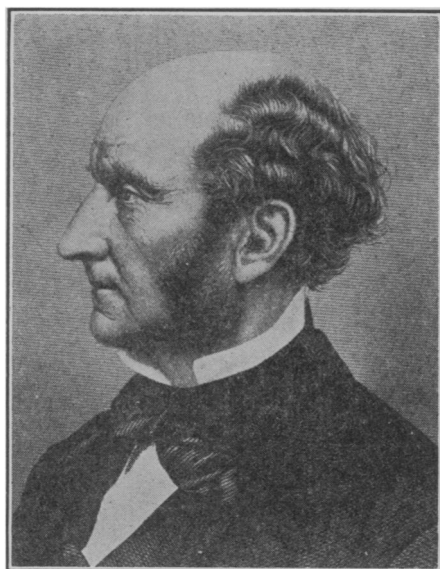
Throughout the account of Mill's boyhood he is always seen, not learning and repeating parrot lessons, but thinking and challenging the ideas of other thinkers.

Now, in figuring the "mental age" of a growing child, psychologists figure that the intelligence rating of the average child of any physical age would be 100. An individual who is superior in intelligence for his physical age may be rated 110 or so on indefinitely upward. On the basis of his achievements up to 16 years, young Mill gets an Intelligence Quotient of 190.

In later life, Mill became prominent as a thinker and writer, though not one of the leading lights of history. Dr. J. McKen Cattell has ranked 1,000 of the world's most eminent men according to the space that is given to each one in biographical dictionaries. By this test, Mill ranks only 103d in adult eminence out of the group of 300 famous characters who were tested in childhood intelligence.

The next three brightest boys, Goethe, Grotius, and Leibnitz, all received Intelligence Quotients of 185, or 85 points above average mentality. Considering Grotius' biography, Dr. Cox says that at eight his ability was at least that of a youth of 16; at 16 it was that of a mature scholar. And combined with a rare intellect was its complement, a noble character.

"Grotius, Leibnitz, Goethe," she adds, "three universal geniuses, the evidence of whose overpowering intellect appeared and was recognized in earliest childhood as it was later



JOHN STUART MILL, who goes to the head of the class for precocious boys. At six years, John wrote a history of Rome and his conversation bristled with double-jointed words.

in their youth, are doubtless among the greatest minds with whom this study is concerned. A minimum childhood Intelligence Quotient for these cannot be less than 180. A maximum is probably close to the maximum for the human race."

These three, like Mill, grew up to make outstanding contributions to the world's thought, though critics might not agree to place them at the very head of their contemporaries.

Mme. de Stael, who stands highest in youthful mentality among the women of the group, is given an intelligence rating of 155. Mme. de Stael is outranked in intelligence by only 27 of the others, according to historical records of childhood. In adult eminence she ranks 94th among the 300 geniuses, by the biography standard. The quality of her brilliance as a woman may be estimated from Napoleon's remark that "She inspired thought in people who had never taken it into their heads to think or who had forgotten how."

Is there, then, any connection between a certain degree of childhood superiority and a certain amount of achievement in later life?

Dr. Cox says that if sufficient evidence was available a number of the famous characters would be entitled to childhood intelligence ratings of over 200. Such men as Michelangelo, Newton, Pascal, Comte, Grotius, Sarnpi, Voltaire, Wolsey probably belong this high.

"Occasionally in our day," she says, "a case is recorded that ranks at this high level. Shall we expect in such an instance a Comte, a Grotius, a Newton, or a Michelangelo? We are

probably warranted in expecting superior adult achievement wherever in childhood the Intelligence Quotient is above 150. But we may not be warranted in expecting a world genius even if the 200 IQ level is reached; for there are other factors involved in achieving greatness besides an essential degree of intellectual capacity."

Performances of individuals who have taken intelligence tests were the standard of comparison for the intelligence ratings of the famous children, and these tests cannot measure spontaneity of intellectual activity, it is pointed out. And there is the further possibility that the intelligence tests do not sufficiently reveal a difference between high ability of a talented individual and the unique ability of the extraordinary genius.

Why all equally intelligent children do not become equally great men and women is attributed partly at least to differences in personality.

"Youths who achieve eminence are characterized not only by high intellectual traits, but also by persistence of motive and effort, confidence in their abilities, and great strength or force of character," Dr. Cox declares. "The superior youths considered in the present study pursued high ideals, developed significant interests, and created new expressions of scientific and philosophical thought before they had reached the age of manhood.

"Schelling had outlined his philosophy at 20. Hume had defined his views before he was 25, Milton at 21 wrote an ode pronounced by an eminent critic to be perhaps the most beautiful in the English language. Peel at 24 was Chief Secretary for Ireland, Raphael at 21 painted the Granduca Madonna, Beethoven at 18 was appointed Chamber Musician to

(Just turn the page)

Intelligence ratings of the brightest boys in Dr. Cox's class of historic geniuses, and their rank in order of fame when they grew up:

Ten Brightest Boys	How they grew up	
Mill	190	103
Goethe	185	4
Grotius	185	72
Leibnitz . . .	185	19
Pascal	180	35
Macaulay . .	180	53
Bentham . .	180	181
Schelling . .	175	88
Haller	175	137
Coleridge . .	175	157

The ten greatest men out of the 300 geniuses, judged by the length of their biographies, compared with their intelligence ratings as children:

Ten Greatest Men	Intelligence as Boys
1. Napoleon	135
2. Voltaire	170
3. Francis Bacon	145
4. Goethe	185
5. Luther	115
6. Burke	135
7. Newton	130
8. Milton	145
9. Pitt (the younger)	160
10. Washington	125

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Intelligence of Geniuses

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his princely ruler, Newton had unfolded his doctrine of light and colors before he was 20, Bacon wrote his *Temporis Partus Maximus* before the age of 20. Montesquieu had sketched his *Spirit of Laws* at an equally early age, and Jenner, when he was still younger, contemplated the possibility of removing from among the list of human diseases one of the most deadly scourges of the race. Achievements like these are not the accidents of a day. They are the natural outgrowth in individuals of superior general powers of persistent interest and great zeal combined with special talents."

Persistence is a trait which stands out again and again in the fragments of biography that have been preserved about these young geniuses. Whether or not they astounded their relatives with profound remarks they almost all displayed a tenacity of interest. Some seem to have been intensely interested in a number of things. But in the majority of cases the child's attention seems to have become centered on one line. The better he became acquainted with the subject the more it attracted him.

This is most marked among the great musicians. Many of the scientists, too, showed an early curiosity about natural phenomena and began making collections and experimenting at an early age. Napoleon in another, quite different, field showed the same consistency of interest. As a small boy he preferred tin soldiers to other toys. A little later, he organized and led the village boys against the shepherd boys. At 14 he mastered the strategy of snow fights, and at the military college in Paris his spare hours were spent studying tactics and planning battles.

How important persistency is to achievement, may be seen from Dr. Cox's conclusion that "high but not the highest intelligence, combined with the greatest degree of persistency, will achieve greater eminence than the highest degree of intelligence with somewhat less persistence."

In addition to mental gifts and strong character traits, Dr. Cox finds one other significant factor which contributes largely to the development of genius. This factor is good heredity and superior advantages in early environment. It is true that many able and gifted parents have mediocre children, and equally true that a good many geniuses have risen from miserable surroundings. But among the geniuses studied, over three-fourths

belonged to the upper, educated classes. And in addition, the average opportunity for superior education and for inspiring social contacts was found to be unusually high.

The significance of the entire investigation, Dr. Cox believes, is derived from the evidence it presents that the genius who achieves the highest eminence is also the gifted individual whom intelligence tests may discover in childhood.

To what extent the youthful careers of the great geniuses of the past can be used in guiding the careers of gifted children of today has not yet been worked out. Children who are slow and mentally deficient are regularly given special attention in special schools, in our modern educational system. But so little has been known about the traits and education of gifted children that the development of their talents has always been largely a matter of chance. Now and again, parents and teachers have experimented radically with such children, sometimes with great success, occasionally with tragic results.

The investigation into the past made by Dr. Cox, and the investigation of 1,000 gifted children of the present by Dr. Terman, are the first steps toward an extensive survey of the question, which since Plato's time has been vaguely and helplessly recognized as "important".

Science News-Letter, December 18, 1926

In its earliest stages, tuberculosis can be cured in practically 100 per cent. of cases, specialists say.

A recent investigation shows that the average income of doctors in New York city is about \$2,000 a year.

A new electric lamp which gives off the same light as daylight is being used by artists for night work.

Traffic lanes in London are being marked by holes drilled in the paving and filled with porcelain buttons.

The Canadian Government has approved the scheme to harness the St. Lawrence at Morrisburg, Ontario.

A small folding airplane, which can be carried in a tank on a submarine, has been designed for the U. S. Navy.

The eruption of Vesuvius in 79 A. D. was preceded by a number of earthquakes beginning 16 years before.

Ancient and medieval philosophers believed that plant and animal life might arise spontaneously without parentage.