THE AGE OF MENTAL VIRILITY

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AN INQUIRY INTO THE RECORDS OF ACHIEVEMENT OF THE WORLD'S CHIEF WORKERS AND THINKERS

BY

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What then! Shall we sit idly down and say
The night hath come; it is no longer day?
The night hath not yet come: we are not quite
Cut off from labor by the failing light;
Something remains for us to do or dare,
Even the oldest trees some fruit may bear.
For age is opportunity no less
Than youth itself, though in another dress;
And as the evening twilight fades away
The sky is filled with stars, invisible by day.

—*Henry W. Longfellow*

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TO THE
MATURE GENIUS
WHICH HAS REVOLUTIONIZED
THE WORLD

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CHAPTER I

THE WORLD'S CHIEF WORKERS AND THINKERS

IT is now over three years since the investigation which has culminated in the developments here recorded was undertaken. It began in this wise. In conversation with Dr. Harris A. Slocum of Philadelphia on the tendency—visibly increasing in this country—of relegating the older and middle-aged men to the oblivion of an "innocuous desuetude" in order that the more progressive and aggressive young men might be given a

clear track in the rush to the front, the question suggested itself to the writer: What has been the age of the acme of mental activity as shown by the records of the famous men of modern times?

It was evident that in order to arrive at any satisfactory conclusion the scope of the investigation should be comprehensive, since it was fully appreciated that a limited study could readily be so distorted as to prove anything the investigator might prefer. Two elements in the investigation were, therefore, recognized at the very start to be most essential; namely, a comprehensive view and a receptive mind, which would not preconclude and then institute a process that would demonstrate the accuracy of the conclusion. The study has been, accordingly, one primarily designed for the writer's own information, based upon

the following problem: At what period of their lives did men of distinction do their best work, and when were the *magna opera* accomplished?

Four hundred records of men famous in all lines of intellectual activity were most carefully compiled and analyzed. It was soon found that these records could conveniently be grouped into two classes more or less distinct, though not showing a clearly defined line of demarcation. These groups were, concisely, the *workers* and the *thinkers*. A word of explanation is necessary.

While it is true that all men whose records were included in the study are embraced in the broader signification of the thinking class, in a more restricted sense a division can be made. Thus, among the "thinkers" might be grouped all those whose intellectual activities

manifested themselves in processes of ratiocination, with the object in view of arriving at abstractions or metaphysical concepts or of drawing positive deductions from a careful analytical study of large numbers of correlated facts. This class could perhaps be best typified by the philosophers or by the natural scientists. By the "workers" in this restricted meaning is meant that group of men whose intellectual activities culminated in some practical and visible application of their lines of thought; these could best be represented by inventors or by the warriors of the world.

It will be noticed that the thinkers, pure and simple, must vastly outnumber those who have the ingenuity or who enjoy the opportunity of practically demonstrating their lines of thought. In a group of the "workers" would be found

actors, artists, chemists, and physicists, explorers, inventors, musical composers, physicians, surgeons, and warriors. A grouping of the "thinkers" would include astronomers and mathematicians, divines and reformers, dramatists and playwrights, essayists, historians, jurists, naturalists, novelists, philosophers, political economists, poets, satirists, humorists, and statesmen.

Merely to enumerate the names of these distinguished men of other days becomes an inspiration. Involuntarily we doff our hats, and with reverent mien note the procession as it passes before us:

First the statesmen: Talleyrand, Lincoln, Washington, and Daniel Webster.
Machiavelli, founder of one of the schools of modern diplomacy.
The immortal bard of Avon.

Robert Burns and Lord Byron.

Erasmus, the philosophical reformer.

Savonarola, the Florentine reformer and statesman.

The satirists: Sterne, Rabelais, and Cervantes.

Samuel Johnson, the lexicographer.

Sir Isaac Newton, the greatest of natural philosophers.

The novelists: Balzac, Hawthorne, Trollope, and Verne.

The statesmen: Crispi and Garibaldi.

Jean Paul Richter, greatest of German humorists.

Poe, the mystic and poet.

Arago, the celebrated astronomer and physicist.

John Napier, the inventor of logarithms.

The naturalists: Leidy, Agassiz, Buffon, and Cope.

Charles Darwin, the eminent naturalist and originator of the modern theory of evolution.

Le Sage, the dramatist and novelist, author of "Gil Blas."

Böhme, the father of German philosophy.

The distinguished American divines: Tal-

mage, Jonathan Edwards, Henry Ward Beecher, and Phillips Brooks.

Renan, the philologist and historian.

Blackstone, chief of jurists.

The novelists: Cooper, Charles Lover, and Thackeray.

Leibnitz, the philosopher and mathematician.

The great tragedians: Macready, Barrett, Booth, and Irving.

Michelangelo, the greatest of known artists.

The chemists: Priestley, Scheele, Lavoisier, and Liebig.

Sir Richard Burton, explorer and translator of the "Arabian Nights."

Morse, the inventor of the telegraphic alphabet.

The poets: Wordsworth, Southey, and Keats.

George Fox, founder of the Society of Friends.

Count Cavour, regenerator of Italy and one of the greatest of modern statesmen.

Dion Boucicault, the playwright.

The essayists: Addison and Sir Richard Steele, of "Tatler" and "Spectator" fame.

Sue, the novelist, whose "Wandering Jew" is a marvel of fiction.

Walt Whitman, the "good, gray poet."

Francis Parkman, the dauntless, whose histories were written under almost insuperable difficulties.

Rousseau, the eminent philosopher and essayist.

The historians: Freeman, Froude, Bancroft, and Hallam.

Audubon, the ornithologist.

Théophile Gautier, the essayist and novelist.

The Grimm brothers, authors of the popular German fairy tales; the beloved Hans Christian Andersen, the great Danish story-teller.

Savigny, the founder of modern jurisprudence.

Samuel Pepys, without whose "Diary" the history of the court of Charles II could not have been written.

The weighty philosophers: Bacon, Lotze, Kant, Spencer, and Schopenhauer.

Turgot, the political economist, who has been pronounced one of the most massive and imposing figures of the eighteenth century; Adam Smith, greatest of political economists.

The poets: Longfellow, Tennyson, Milton, and Whittier.

The reformers: Huss, Wyclif, Zwingli, and Knox.

The immortal Samuel Butler.

Bismarck, the "man of blood and iron" of Germany; the eloquent American statesmen, Patrick Henry, John Jay, Albert Gallatin, John Hancock, and Richard Henry Lee; Thomas Jefferson, father of American democracy.

The masters of painting: Correggio, del Sarto, Perugino, Rubens, Raphael, and Murillo; the pictorial satirists: Cruikshank and Hogarth.

The tragedians: Garrick, Forrest, and Kemble.

Thomas Chatterton, the unfortunate boy-poet.

Petrarch, founder of humanism and the inaugurator of the renaissance in Italy.

George Whitefield, one of the most elegant of pulpit orators.

Corneille, one of the greatest tragic poets of France, and Molière and Racine, French dramatists.

Ibsen, the "grand old man" of Norway.

John Ruskin, the eminent art critic.

The essayists: La Rochefoucauld, Montaigne, and Emerson; the genial George William Curtis, essayist and journalist; Thomas De Quincey, the English purist and essayist; Matthew Arnold, the ethical poet and essayist.

Washington Irving, novelist and historian.

Henry Alford, Dean of Canterbury.

Cardinals Newman, Richelieu, Wolsey, and Mazarin, divines, essayists, and statesmen.

The Hungarian statesman and patriot, Kossuth.

Marat, Mirabeau, Danton, and Robespierre of the French "Terror."

Robert Morris, financier of the American Revolution.

The masters: Titian, Paul Veronese, Leonardo da Vinci, and Vandyke; Millet, the painter of peasant life.

Christopher Columbus, chief of explorers; the African explorers, Du Chaillu, Speke, Livingstone, Stanley, and Mungo Park.

The great musical composers: Bach, Verdi, Weber, and Richard Wagner.

The physicists: Dalton, Boyle, and Faraday.

Galvani, the physiologist.

The naval heroes: John Paul Jones and Lord Nelson.

The Duke of Marlborough, victor of Blenheim, and Lord Clive, founder of the empire of British India.

The poets: Keble, Shelley, Cowper, Chaucer, and Spenser; Isaac Watts, the hymn-writer.

Sir Robert Peel, premier of England and organizer of the modern police system.

Fénelon, Archbishop of Cambrai.

James Rennell, most celebrated of English geographers, and Karl Ritter, probably the greatest geographer of modern times.

Beethoven, Mendelssohn, Mozart, Meyerbeer, Chopin, and Liszt, most eminent of composers.

Jenner, discoverer of vaccination, and Harvey, discoverer of the circulation of the blood.

The famous American statesmen: John C. Calhoun, John Adams, Henry Clay, and Stephen A. Douglas.

Gladstone, England's "grand old man"; the

premiers, George Canning, John Bright, William Pitt, and Sir Robert Walpole; the Earl of Beaconsfield, novelist and premier of England.

Schiller, dramatist and poet.

Rembrandt, the famous Dutch painter, known as the "Shakspere of Holland."

Sir Walter Raleigh, explorer, historian, and courtier.

The great generals: Sheridan, Sherman, Grant, and Robert E. Lee.

Gay-Lussac, the physicist.

The novelists: Dickens, Hugo, Bulwer Lytton, Wilkie Collins, Blackmore, and Chateaubriand; Scott, the poet and novelist.

The astronomers: Galileo, Copernicus, Herschel, Kepler, and Biot.

Dwight L. Moody, the evangelist and founder of Northfield Seminary.

Horace Greeley, the American editor and journalist, founder of the New York "Tribune."

The essayists: Charles Lamb, Oliver Wendell Holmes, Carlyle, Leigh Hunt, and James Russell Lowell.

Napoleon Bonaparte, conqueror of Europe;

Oliver Cromwell, Lord Protector of the British Commonwealth.

Littré, compiler of the best dictionary of any living language.

The naturalists: Geoffroy Saint-Hilaire, Huxley, Lacépède, Lamarck, and Baron Cuvier.

John Bunyan, the most popular religious writer in the English language.

Dean Stanley, the beloved prelate; Canon Farrar, Dean of Canterbury.

Voltaire, the prince of deists and brilliant essayist.

August Böckh, one of the greatest scholars that Germany has produced in modern times.

The philosophers: Hobbes, Comte, Descartes, Schelling, Spinoza, Condillac, Condorcet, and Diderot.

General Lew Wallace, soldier, statesman, and novelist.

Saint-Simon, founder of French socialism.

Von Baer, founder of the science of comparative embryology.

Georg Ebers, the orientalist and novelist; Du Maurier, the artist-novelist.

Tyndall, the philosopher and physicist.

The mathematicians: Euler, Lagrange, and D'Alembert.

Turner, the most celebrated landscape-painter of the English school.

Alexander Hamilton, the brilliant and lamented American statesman; Gambetta, silver-tongued orator of France; Baron von Bunsen, the German scholar and diplomatist.

Prescott, the eminent American historian.

Robert Burton, author of the "Anatomy of Melancholy."

Thomas Arnold, famous head-master of Rugby.

The playwrights: Ben Jonson, Douglas Jerrold, and Richard Brinsley Sheridan.

Grote and Hume, philosophical historians; Mommsen, the venerable German historian.

The famous American statesmen: Blaine, John Hay, and James Monroe.

Benjamin Franklin, the many-sided man, scientist, statesman, philosopher, diplomatist, patriot.

William Penn, the Quaker essayist and founder of Pennsylvania.

The composers: Haydn, Handel, Schumann, Schubert, Gluck, and Gounod.

Schliemann, the archæologist.

James Watt, inventor of the modern condensing steam-engine.

Rudolf Virchow, pathologist, and exponent of the democracy of learning.

The Duke of Wellington, victor of Waterloo.

Sir Astley Cooper, the great London surgeon.

Sir Humphry Davy, the natural philosopher, and inventor of the miners' safety-lamp.

The poets: Dante, Goethe, Robert Browning, Heine, De Musset, and Thomas Moore; Owen Meredith, the poet-statesman.

Thomas Cranmer, first Protestant Archbishop of Canterbury; Loyola, founder of the Society of Jesus.

Guizot, the venerable historian and statesman; William Lloyd Garrison, the great antislavery agitator.

Thiers, President of the French Republic and "liberator of the territory."

Doré, prince of illustrators.

Sir John Franklin and Dr. Kane, Arctic explorers.

The tragedian: Edmund Kean.

Benjamin Rush, the great American physician and statesman.

Bessemer, inventor of the pneumatic process in the manufacture of steel.

Sir Christopher Wren, the architect of St. Paul's; Rossetti, the poet-painter; Albrecht Dürer, best known by his engravings on copper.

Joseph Jefferson, most famous of American comedians.

The musical composers: Brahms, Spohr, Rossini, and Johann Strauss.

The generals: Von Moltke and Sir Charles Napier.

Hölderlin, the exquisite German poet; Béranger, the beloved French song-writer.

Christopher Marlowe, the father of English tragedy and the creator of English blank verse.

Emanuel Swedenborg, the profound dreamer of Sweden.

Dean Swift, author of the famous "Gulliver's Travels."

The statesmen: Charles James Fox, Bolingbroke, and Warren Hastings.

William Laud, Archbishop of Canterbury, and the upholder of church authority in the time of Charles I.

La Fontaine, the fabulist.

The inseparable Beaumont and Fletcher; Thomas Hood, the poet and humorist.

Lyell and Hugh Miller, the geologists.

Lavater, the great physiognomist.

The historians: Von Ranke, Gibbon, Motley, Michelet, Dean Milman and Niebuhr.

Max Müller, the eminent philologist.

The essayists: J. G. Holland, Nathaniel Parker Willis, James Kirke Paulding, Isaac D'Israeli, and Baron Friedrich von Grimm.

The painters: Botticelli and Constable.

John Hunter, the great English physician.

Corot, the famous landscape-painter, and "lyric poet of the Barbizon school," whose works have well been described as "painted music."

George Stephenson, the "father of railways."

The astronomers: Laplace and Leverrier.

Thomas Chalmers, the doughty Scottish clergyman.

The gifted Lamartine, poet, statesman, and historian.

Lessing, the dramatist and essayist.

James Boswell, the follower of Johnson.

The lamented De Maupassant, the most perfect master of the short story.

The novelists: Daudet, Henry Fielding, Samuel Warren, Charles Lever, Charles Reade, Kingsley, and Dumas *père;* Bret Harte, the humorous poet and novelist.

The philosophers: Locke, Hegel, Berkeley, Fichte, and John Stuart Mill.

Boerhaave, one of the most celebrated physicians of modern times.

The explorers: La Salle and Champlain.

Zola, the novelist and defender of Dreyfus.

The painters: Bouguereau, Reynolds, West, Landseer, Gainsborough, and Blake.

The poets: Coleridge, Dryden, Goldsmith, Lanier, and Gray.

The reformers: Calvin, Luther, and Melanchthon.

Burke, Sir Thomas More, and Lord Palmerston, able statesmen of England.

George Romney, historical and portrait painter.

The immortal Daniel Defoe of "Robinson Crusoe" fame.

The beloved Robert Louis Stevenson, poet, novelist, and optimist.

Baron Humboldt, the traveler and naturalist; Linnæus, the botanist.

Pasteur, the chemist and biologist, and discoverer of the cure for hydrophobia.

The learned and gifted Walter Savage Landor.

The poets: Young, Pope, Pollok, and Thomson.

Samuel Richardson, inventor of the modern novel of domestic life and manners; Dodgson (Lewis Carroll), mathematician and winsome story-teller, whose nonsensical "Alice in Wonderland" has fascinated both old and young.

The divines: Sydney Smith and Spurgeon.

Lord Macaulay, historian, poet, and essayist.

Velasquez, head of the Spanish school of painting.

Sir Edwin Arnold, the poet and eminent Japanese scholar.

William Cullen Bryant, the distinguished American poet and journalist.

Montesquieu, philosophical historian.

John Wesley, founder of Methodism.

Tintoretto, one of the greatest painters of the Venetian school; Meissonier, the military and genre painter of France.

Charles Augustin Sainte-Beuve, the most notable critic of our time.

Here is a magnificent array of genius and mentality having stupendous cerebrational power, whose influence upon the thinking world has been inestimable. The lives of such men, reduced to statistical records, will bear a close examination, and the resulting deductions will incontrovertibly carry with them a certain intrinsic value.

CHAPTER II

THE PERIOD OF MENTAL ACTIVITY

THE period of a man's life during which his mind asserts its sway and he determines his usefulness to his fellow-men, the period in which he becomes a producer and not merely a consumer, varies largely, according to the temperament, physical constitution, and mental inclination of the individual. Some realize much sooner than others the object of living. In many the inspiration of genius breaks through the shell at a very tender age, as is the case of the prodigies of the world in music, art, and poetry, who astonish mankind by evidences of mental virility that are vastly in advance of their years. In others the

process of mental development is slow or even retarded, while a sound physical basis is forming. This was true of many of the men who late in life became the profound thinkers and astute statesmen and diplomatists. In the light of advanced medical education, and according to the teaching of modern physiologists and neurologists, the latter method of growth would appear the more desirable, though not so brilliant and fascinating when examined in the limelight of public criticism. The world goes wild over a youthful wonder of mentality, but ignores the plodding genius who is compelled by sheer force of his matured mentality to command late in life the plaudits of his fellows. They both serve their time and generation: the genius of inspiration and emotion, and the genius of untiring effort. Both

have their place in the evolution of the race, and both bring material contributions to the world's accumulation of accomplishment.

In an investigation like that now on hand three questions arise at the outset, and these comprise the entire scope of the period of mental activity: At what age did a given individual begin to show evidences of mental activity along lines of original research? when did he accomplish the greatest work of his life? and how long did his mind continue to functionate and produce in the chosen sphere of activity? Advancing from the individual to the various groups in the special lines of work, we next must ascertain the average ages for these groups and the total average age for all the individuals studied at these three periods of their lives.

THE INITIAL AGE OF MENTAL ACTIVITY

In the first place, it is interesting and instructive to mark the beginning age of the mental activity of these men. By this is meant the age at which the man first began to manifest mental activity in the line or lines in which he subsequently became famous. Let it be noted that before this date in most instances, but not invariably, the youths proved unmistakably that their mentality was developing in an unusual degree, and in many cases this activity was manifested at peculiarly precocious periods.

The average initial age of the 400 records was twenty-four. It is suggestive that the workers began earlier than the thinkers,—at twenty-two,—while the thinkers' average stands at twenty-six.

The average, likewise, shows striking variation for the different classes or occupations. Thus, as might be anticipated from the remarkable careers of many of the musical composers, these men began their life-work at the average age of seventeen. The actors closely follow at eighteen, while warriors, artists, divines, and jurists show an average initial age of twenty-two. Dramatists and playwrights follow at twenty-three, and poets, physicians, and surgeons, inventors, chemists, and physicists, occupy the position of mental equilibrium, at the outset, at an average age of twenty-four. The naturalists average twenty-five; explorers, novelists, essayists, historians, astronomers, mathematicians, and statesmen generally began to develop their respective lines of thought at twenty-six; the phi-

losophers at twenty-seven; the reformers at twenty-eight; and the satirists and humorists not until thirty-two years of age. When it is recalled that satire is a highly specialized literary form, most rare and difficult of attainment, this late primary development acquires a peculiar signification in a study of this kind.

EVOLUTION OF THE MIND

THESE interesting and suggestive figures seem unmistakably to indicate a sure and progressive mental evolution which may be represented somewhat, though imperfectly, in the following manner: From infancy through adolescence to the full maturity of the adult, the emotional side of the individual is at its highest. Reaching its acme at

maturity, it then begins to diminish in intensity, as it is overtopped by the higher mental elements. Thus, musicians, who, save artists, are probably more justly entitled to the appellation of genius than any other class of men, do much of their best work at a remarkably tender age. The imaginative, imitative, religious, adventurous, and belligerent elements of the mind are strongly developed in these plastic years. It becomes evident, therefore, that actors and preachers, explorers and soldiers, poets and dramatists, all subject to the domination of the emotions, do excellent and masterful work in the early years of their lives. As the deeper and more rational elements of cerebration are developed, these either end their life-work altogether or modify it unconsciously to meet the changed mental

conditions. Thus, many who began as poets abandoned that esthetic and beautiful field of adventure for the broader and richer scope afforded by fiction and other prose writing. Many of the scientists, philosophers, and statesmen showed no special aptitude until the emotional period of their lives had passed. Epic poets and musicians brought the experience of maturer years to act upon and aid the imaginative and emotional brain-cells of their younger days. The bitter wrongs and injustices that every observant life-time entails dampen the ardor of youth, and the speculative philosopher, the biting and cynical satirist, or the more kindly disposed and dry humorist, grows into being.

Thus, just as surely as there is a physical and natural evolution of the being

and of the race, so there is an individual, a tribal or national, and a racial evolution of the mind. Such a conclusion is inevitably forced upon us by a study such as this. He was a deep observer who divided a man's mental working life into four decades; thus, from twenty to thirty bronze, thirty to forty silver, forty to fifty gold, and from fifty to sixty iron. Intellect and judgment are strongest in the average person between forty and sixty. It was Du Maurier who said: "I think that the best years in a man's life are after he is forty. A man at forty has ceased to hunt the moon." Then, as an afterthought, he says: "I would add that in order to enjoy life after forty, it is perhaps necessary to have achieved, before reaching that age, at least some success."

IS PRECOCITY A SIGN OF DEGENERACY?

In the light of the foregoing, it becomes evident that precocity is not always a thing to be desired. Indeed, it may, just as surely as a prematurely ripened fruit indicates decay and early death, mean an early degeneration and loss of the mental faculties. By many biologists it is considered an expression of premature senility. Few, if any, of the precocious children rise above the average in adult life, and the tendency rather is to fall below it. The explanation is largely to be found in the fact that during these tender years the brain is immature both in substance and form, and any unusual strain placed upon the delicate and plastic organ must be at the expense of its ultimate power.

These children are often of the scrofulous diathesis, and present certain well-known physical traits. Their complexion is clear and at times beautifully fair, the eyes blue and the hair golden. A writer in one of the scientific papers speaks of their mental condition in this way: "These children are delicately sensitive to mental impressions, and alive to the conversation of persons much older than they." The unwonted brilliancy continues until the age of puberty when the children begin to fail mentally and physically and frequently fall victims to tuberculosis.

As Lombroso has indicated, many of the men of genius were subjects of degeneracy, and this statement is made because of the well-known stigmata or marks of degeneracy which have been present in them. It must be understood, however,

that any individual of great mentality, as well as those of mediocre ability, may present one or two degenerate marks without in any sense proving, for his case, the presence of a degenerate mind. There is a period of antenatal growth known to scientists as the senile period, embracing the fourth and fifth months of prenatal existence. It has been found that a slight arrest of development at this period is characteristic of the class of beings known as degenerates, and precocity is recognized as one of the expressions of this developmental defect. Relief de la Bretonne, who composed at fourteen a poem on his first twelve loves, is a remarkable instance of this form of degenerate precocity. "A wit of five is a fool of twenty," is an adage founded upon the popular appreciation of this unpleasant truth.

THE MARKS OR STIGMATA OF DEGENERACY

THERE are, then, certain physical peculiarities that are almost invariably present in decadent men and races. Thus, while the hardy people of the North, whose physical star may be regarded as in the ascendency, are generally tall and athletic, the decadent races, including many of the Latin stock, are characterized by shortness of stature and stockiness of build. Runts these people are, and this general undevelopment comprises a well-recognized stigma of degeneracy. It is likewise exceptional to find an unusually short nose, such as that possessed by Darwin and Socrates, among men of intellect. Nasal abbreviation is one of the well-known signs

of degeneracy, as is also the sessile or otherwise misshapen ear, the sugar-loaf skull, the close-set eyes, and other physiognomic irregularities, including the cretinoid face. The latter, strange to relate, has been noted in certain men of remarkable genius, including Darwin and Carlyle, Rembrandt, Pope, and Socrates. Other physical traits characteristic of individuals of degenerate taint are marked emaciation, facial pallor, stuttering, and stammering, infantile and adolescent sickliness, left-handedness, sterility, and certain mental and nervous diseases, more particular mention of which will be made in another chapter.

I wish to emphasize at this point the assertion that not every individual who chances to possess one of the above mentioned physical peculiarities is to be im-

mediately stamped as a degenerate. It is only when there is a combination of two or more of these traits, especially if this combination has been noted as a family peculiarity, that the suspicion will be awakened, and this may then be confirmed and the condition established by close and careful investigation. It is probable that all of these degenerate geniuses manifested unusual mental development in early childhood.

Nevertheless, it stands to reason that not every instance of unusual childish brilliancy is dependent upon a degenerate state of mind. There is a precocity due to parental influence and unconscious infantile imitation. This we may designate as the environmental precocity, a perfectly normal condition, but one which involves close parental supervision in order to maintain the

mental and judicial balance, and thereby avoid a brain-tire with serious and even permanent intellectual impairment.

Properly guided and fostered through the plastic and impressional period of tutelage, these young men will be directed into the channels of life-work for which they are best designed. They will thereby be thoroughly prepared for the true period of productiveness in intellectual lines, which extends not infrequently well beyond that absurdity which has been designated as the "dead-line of fifty." It will not be inappropriate at this point to call attention to some of these early indications of mental activity on the part of the young not subject to the precocity of degeneracy.

CHAPTER III

UNUSUAL MENTAL ACTIVITY IN THE YOUNG

THE astounding array of facts that have been grouped together has been collected from literature after a most thorough search and investigation (wherever this was found to be possible) as to the authenticity of the statements, and they are presented without other words of explanation or apology.

ACHIEVEMENTS OF THE YOUNG IN MUSIC

As has already been intimated, the poets, musicians, artists, and soldiers, representing the true geniuses of the world,

and those in whom the imaginative and impulsive elements are the strongest, have distinguished themselves early in life. This is eminently true of the musicians, whose records are, in this respect, truly marvelous. Thus, Mozart, when only three years of age, shared the harpsichord lessons of his sister Maria, who was eight years old. At four he played minuets and composed little pieces. He performed in public for the first time when five years old. At eight he played before the English royalty, made his first attempt at the composition of a symphony, published his third set of sonatas, and wrote "God is our Refuge," an anthem for four voices. At ten he first essayed the oratorio; at eleven he composed an opera bouffe, "La Finta Semplice"; at fourteen, composed the music for the opera, "Mitri-

date, Re di Ponto"; at fifteen wrote the serenata, "Ascanio in Alba"; at sixteen, the operas, "Il Sogno di Scipione" and "Lucio Silla," both of which were brilliant successes; and at nineteen, the opera, "La Finta Giardiniera."

Meyerbeer was an excellent pianist at five; at seven played Mozart's concerto in D minor in public; at ten had written an opera, "Jephthas Gelübde," and at thirteen produced his second opera, "Wirth und Gast." At six Eichhorn and Eybler gave public concerts, and Spohr at the same age took the leading part in Kalkbrenner's trios; at nineteen he printed his first violin concerto. Handel showed his musical talent at a very early age. At eight his playing attracted the attention of the Duke of Saxe-Weissenfels; in his twelfth year he made his début as a virtuoso at the

court of Berlin; at thirteen he composed a mass; at seventeen wrote "Florinde" and "Nero"; and at nineteen was a theater director. At the age of nine Liszt displayed great musical ability; in his eleventh year he played before enthusiastic audiences in Vienna; and at fourteen he wrote the operetta, "Don Sancho."

Mendelssohn first played in public at nine, and at eleven he began to compose with astonishing rapidity. At that age he wrote his cantata, "In rührend feierlichen Tönen," and produced nearly sixty movements, including songs, pianoforte sonatas, a trio for pianoforte, violin, and violoncello, a sonata for violin and pianoforte, pieces for the organ, and a little dramatic piece in three scenes. At twelve he wrote five symphonies for stringed instruments,

each in three movements; motets for four voices; an opera in one act—"Soldatenliebschaft"; another, "Die beiden Pädagogen"; part of a third, "Die wandernde Comödianten"; and an immense quantity of other music of various kinds. At thirteen he produced an opera in three acts—"Die beiden Neffen, oder der Onkel aus Boston"; a pianoforte concerto; and an immense amount of other music. At fifteen he composed his fine symphony in C minor, a quartet in B minor, and a pianoforte sestet. At sixteen he wrote a "Kyrie" for five voices; his pianoforte capriccio in F sharp minor; and an opera in two acts, "Die Hochzeit des Camacho," a work of considerable importance. Before he was eighteen he had completed his famous overture to Shakspere's "Midsummer Night's Dream." Here was a

remarkable instance of precocious productiveness.

Verdi, when only ten, was appointed organist at Le Roncole, and at fifteen wrote his first symphony. Rossini sang solos in church at ten; at thirteen appeared in the opera house as Adolfo in Paer's "Camilla," and at eighteen produced at Venice his first opera, "La Cambiale di Matrimonio." Weber at twelve published a set of "Six Fughetti"; at thirteen wrote "Variations for the Pianoforte" and an opera, "The Power of Love and Wine." When he was fourteen, his opera, "The Wood-Maiden," was publicly presented; at seventeen he published his third opera, "Peter Schmoll and His Neighbor"; and at eighteen he was appointed conductor of opera at Breslau. Cherubini awoke popular enthusiasm with a mass

at thirteen. Schubert began writing music at thirteen, and when eighteen composed two symphonies, five operas, and no less than one hundred and thirty-seven songs, besides a multitude of other important pieces.

At seventeen Wagner published his first important composition,—the overture in B flat,—and at twenty his first symphony was performed. Brahms at the age of twenty had written a string quartet, the first pianoforte sonata, the scherzo in E flat minor, and a group of songs, including the dramatic "Liebestreu." It is a truth pregnant with suggestion that Beethoven, that prince of musicians, who occupies in music the place held by Shakspere in poetry, did not compose anything entitled to mention until after he had reached his twenty-fifth birthday.

THE MEN OF WAR

THE bellicose vein of youth has from time immemorial produced many of the famous fighters of the world, who have turned and overturned the world, and repeatedly altered its geography. The fighting strain, once established, is hard to overcome, however, and though the young have distinguished themselves in war, as will be seen directly, they cannot usurp to themselves all the trophies of Mars. Still, their record of achievement forms no mean page in the history of the world. At sixteen Henry IV of France was at the head of the Huguenot army, at nineteen he became King of Navarre, and before the age of forty-four he overthrew his enemies and became King of France. Scipio Africanus the Elder

distinguished himself at the battle of Ticinus at the age of sixteen, and at twenty-nine overthrew the power of Carthage at Zama. Alexander the Great defeated the celebrated Theban band at Chæronea before he had attained the age of eighteen, ascended the throne at twenty, had conquered the world at twenty-five, and died at thirty-two. Charles XII completed his first campaign against Denmark at eighteen, overthrew 80,000 Russians at Narva before nineteen, conquered Poland and Saxony at twenty-four, and died at thirty-six. Peter the Great of Russia was proclaimed Czar at ten years of age, organized a large army at twenty, won the victory of Embach at thirty, and founded St. Petersburg at thirty-one. At the age of twenty-one, Eugene of Savoy was colonel, at twenty-four he

was lieutenant field-marshal, and shortly after general field-marshal; at thirty-four he won the battle of Zenta, and at forty-one coöperated with Marlborough at Blenheim. Condé defeated the Spaniards at Rocroi at twenty-two, and won all his military fame before the age of twenty-five. Julius Cæsar commanded a fleet before Mitylene, and distinguished himself before the age of twenty-two; he completed his first war in Spain, and was made a consul before the age of forty. Philip of Macedon ascended the throne at twenty-two and was the conqueror of Greece at forty-five. Lord Clive distinguished himself at twenty-two, attained his greatest fame at thirty-five, and had founded the British Empire in India by forty. Napoleon was a major at twenty-four, general of brigade at twenty-five, and

commander-in-chief of the army of Italy at twenty-six. He achieved all his victories and was finally overthrown before the age of forty-four. Saxe was a *maréchal-de-camp* at twenty-four, and marshal of France at forty-four. Vauban, the great engineer, had conducted several sieges at twenty-five, and was *maréchal-de-camp* at forty-three. Charlemagne was crowned king at twenty-six, was master of France and the larger part of Germany at twenty-nine, placed on his head the iron crown of Italy at thirty-two, and conquered Spain at thirty-six. Hannibal was made commander-in-chief of the Carthaginian army in Spain at twenty-six, and had won all his great battles in Italy, concluding with Cannæ, at thirty-one. Frederick the Great ascended the throne at twenty-eight; terminated the first Silesian war

at thirty, and the second at thirty-three; and ten years later, with a population of only five hundred thousand, he triumphed over a league of more than one hundred millions of people. Montecuculi, at the age of thirty-one, with two thousand horse attacked ten thousand Swedes, and captured all their baggage and artillery; at thirty-two he won the victory of Triebel. Wolfe was conqueror of Quebec at thirty-two, and Turenne, passing through the grades of captain, colonel, major-general and lieutenant-general, became a marshal of France at thirty-two, and won all his distinction before forty. Pizarro completed the conquest of Peru at thirty-five and died at forty, while Cortez effected the conquest of Mexico and completed his military career before the age of thirty-six. At thirty-six Scipio Afri-

canus the Younger had completed the destruction of Carthage. Genghis Khan had achieved many of his victories and became emperor of the Mongols at forty, and Gonsalvo de Cordova achieved a great reputation and was made commander-in-chief of the army of Italy at forty-one.

It is a curious fact that the three great wars of recent times were fought largely by older generals. Some one has gone to the trouble to compile the ages of these officers, and with interesting results: Thus, in 1861, the ages of some of the Union commanders in the great Civil War were: Grant, 39; Sherman, 41; Sheridan, 30; McClellan, 35; Rosecrans, 42; Thomas, 45; Buell, 43; Hancock, 37; Meade, 46; McDowell, 43; Pope, 38. Among the Confederates, Lee was 55; Bragg, 46; Jackson, 37;

Hood, 30; Early, 43; Longstreet, 40; Beauregard, 45; Stuart, 28; Hill, 36; Buckner, 37. The Franco-Prussian War was fought largely by old generals. Von Moltke was 70 and Von Steinmetz was 74. The triumphs of the recent Russo-Japanese conflict were those of old men. Marquis Oyama was 62; Nodzu, 63; Kuroki, 60; Oku, 58; Nogi, 55; Nishi, 58; Kodama, 52; and Fushimi, 46.

PRECOCITY AMONG ARTISTS, POETS, AND OTHERS

Evidences of environmental precocity have been noted in other lines of life. Thus, Visconti was a marvel of intelligence at sixteen months, and preached at six years. Horace Greeley, before he was two years old, gave evidence of re-

markable precocity; he had learned his letters before he could talk plainly, and at six had read the Bible through. Gassendi preached at four, and Mirabeau at three. The latter published books at ten. John Stuart Mill learned the Greek alphabet at three; by eight he had read much Greek; at eight he learned Latin; at twelve began a thorough study of scholastic logic; and at thirteen began the study of political economy. Wren invented an astronomical instrument and dedicated it in Latin to his father when only four years of age. Claude Joseph Vernet drew in crayons at four, and was celebrated as a painter at twenty. Pico della Mirandola in his childhood knew Latin, Greek, Chaldaic, Syriac, and Arabic. G. Wetton could translate Latin, Greek, and Hebrew at five, and at ten knew

Chaldaic, Syriac, and Arabic. Isaac Watts began the study of the classics in his fifth year, and at seven or eight composed some of his devotional pieces. Corot from childhood demonstrated that he was a born artist. Landseer in his fifth year drew fairly well, and excellently at eight years of age. At ten he was an admirable draftsman, and at thirteen he drew a majestic St. Bernard dog so finely that his brother Thomas engraved and published the work. Bulwer Lytton the novelist wrote ballads at five years of age, and at fifteen published "Ismael, an Oriental Tale, with other Poems." Scott at the age of six defined himself as a "virtuoso"; at ten he was a connoisseur in various readings. Dean Alford at six wrote a little manuscript volume, "The Travels of St. Paul"; before eight he had penned

a collection of Latin odes in miniature; at nine he had compiled a compendious "History of the Jews," and before ten he had produced a series of terse sermons. Wieland at seven knew Latin, meditated an epic at thirteen, and published a poem at sixteen. At seven Cope made drawings of jellyfish and other marine fauna which he had seen on a voyage to Boston. Kotzebue attempted comedies at seven, and wrote his first tragedy at eighteen. Reynolds at eight made a fine drawing of his school-house, and Leibnitz at the same age taught himself Latin, and at twelve had begun Greek. Macaulay at eight had written a "Compendium of Universal History" and a romance in three cantos—"The Battle of Cheviot"; at ten he wrote a long poem on the history of Olaus Magnus, and "Fingal," a

poem in twelve books of blank verse. Dante composed a sonnet to Beatrice at nine, and Goethe wrote several languages before the age of ten. Metastasio improvised at ten; and Robert Browning, while still a youth, acquired the triple reputation of poet, musician, and modeler. Edwin Forrest when scarcely eleven years old formed a Thespian society, and Gainsborough at ten had sketched every fine tree and picturesque cottage near Sudbury. Lope de Vega Carpio wrote poems at twelve, and at the same age Byron, Pope, and Tennyson began their work. Pope's "Ode on Solitude" appeared at this age, and his "Pastorals" were published at sixteen. At twelve Tennyson wrote an epic of six thousand lines, and at fourteen a drama in blank verse of perfect meter. Calderon published his "Chariot

of Heaven" at thirteen; and Ascoli, a work in Wallachian and Trioulian dialects. Hans Christian Andersen, before his fourteenth year, had written several tragedies and poems, including the "Dying Child." Raphael was renowned at fourteen; Fénelon preached an excellent sermon at fifteen; and at the same age Victor Hugo wrote "Irtamène." At sixteen Moore translated "Anacreon," and Lamennais wrote the "Words of a Believer." Spenser published verse at sixteen and seventeen; at eighteen Albert Gallatin was clear-minded, sober, and practical; at the same age Lessing wrote a comedy, "Der junge Gelehrte"; Jerrold, his first comedy, "More Frightened than Hurt"; and Byron, his "Hours of Idleness." Bryant at nineteen wrote his celebrated "Thanatopsis," and Gautier his "Al-

berta" and other poems. Galileo from his earliest childhood was remarkable for intellectual aptitude and mechanical invention. At nineteen he discovered the isochronism of the pendulum in the cathedral at Pisa, and fifty years later turned this to account in the construction of an astronomical clock. Before the age of twenty, Hugo had published "Hans of Iceland" and his first volume of "Odes and Ballads."

THE PHILOSOPHERS

THERE is a danger here, capable of becoming a bone of contention and a rock of offense, that as fair and impartial students of the human mind we must recognize and avoid. These remarkable statements that must astound us and arouse a wave of enthusiasm, admiration, and

respect, represent precocious beginnings only or in large part, and must not be confounded with the true life-work of the persons. Professor Wallin of Princeton and others are eminently correct when they call attention to the fact that Comte and Pascal, Kant and Schelling, Hume, Helmholtz, Schopenhauer, Bacon, and many others of the school of philosophers, were thinkers at unusually tender years. The work done then, however, was not their life-work, but only the faint dawning that indicated the brilliant day that was to follow. Thus, while Bacon may have conceived his "Novum Organum" at fifteen, it was not until the ripe age of fifty-nine that he gave it to the printers. While Kant, the greatest of all criticists, wrote his "Estimate of Living Force" at twenty-three, he published his "Cri-

tique of Pure Reason" at fifty-seven. Schelling began writing as a boy of seventeen, and at twenty-five published his "System of Transcendental Idealism," one of the most finished and satisfactory of his works; but it was not until after his death at seventy-nine that his substantial and weighty "Philosophy of Mythology and Revelation" was given to the world. Helmholtz at twenty-six wrote his "Kraft," the most important essay in natural science for centuries, but what of his magnificent work of the next quarter of a century? It is easy to advance arguments to prove the accuracy of any theory, but a study of the mentality of a given person requires a comprehensive review of all his work. It remains true, therefore, that beyond being suggestive of richness to come, these early beginnings do not indicate

the acme of mental ability. This is present only during the years in which the masterwork of the person is being accomplished. It is essential, accordingly, to find the age of the performance of the *magnum opus,* in order to affirm when a man is at his highest value to his fellows.

CHAPTER IV

THE ACME AND DURATION OF MENTAL ACTIVITY

HAVING in this manner disposed of the initial age of mental activity, and having reviewed the remarkable performances of the prodigies who have astounded and delighted their fellow-men and who have wonderfully helped in the mental development of the world, we reach what is probably the most interesting phase of the subject. When is an individual mind most useful to the world, and how long does it, as a rule, maintain the high standard to which it has aspired? Again, advancing from the individual to the various groups of

workers and thinkers, what is the average age of masterful production for these men of mentality, and what the average age for all the groups studied as a whole?

THE AGE OF THE MASTERPIECE

THE *summum bonum* of a man's life—who shall say when or what it is in any given case? It becomes almost a work of supererogation to attempt to designate any single act or performance as the one most valuable in any man's career. Reduced to the ultimate, it becomes, after all, only the expression of an individual opinion, save in those striking instances in which by general consent a certain achievement is recognized as the man's greatest work. No one would deny that in "Paradise Lost"

Milton attained the highest expression of his mentality, that Wellington achieved his greatest fame when he won the field of Waterloo, that Bacon's "Novum Organum" is his greatest accomplishment, and that "Don Quixote" exceeded anything else that Cervantes ever did. In other life-records one act may appear equal to another at different stages in the man's development; or to one observer the influence of one deed may far outweigh that of another, and contrariwise. This difficulty has been exceedingly hard to overcome, and without any attempt at dogmatism, but with the earnest desire to ascertain the truth as far as may be possible, has the decision been made in the disputable records.

Having been arranged in this manner, the records give an average age of

fifty for the performance of the masterwork. For the workers the average age is forty-seven, and for the thinkers fifty-two. Chemists and physicists average the youngest at forty-one; dramatists and playwrights, poets and inventors, follow at forty-four; novelists give an average of forty-six; explorers and warriors, forty-seven; musical composers and actors, forty-eight; artists and divines occupy the position of equilibrium at fifty; essayists and reformers stand at fifty-one; physicians and surgeons line up with the statesmen at fifty-two; philosophers give an average of fifty-four; astronomers and mathematicians, satirists and humorists, reach fifty-six; historians, fifty-seven; and naturalists and jurists, fifty-eight. As may be noted, there is a rearrangement of the order at this time, but the think-

ers, as before, and as would naturally be expected, attain their full maturity at a later period than the workers.

Interesting and unexpected as it may be, even this average age of fifty is misleading; for it must be remembered that the four hundred lives that have been analyzed included many that were snuffed out prematurely by accident, murder, suicide, and the untimely taking off by disease. Many of these men, as Byron, Shelley, Keats, Poe, Mungo Park, Christopher Marlowe, and Thomas Chatterton (who committed suicide when but eighteen years of age) completed their life-works before the age of forty had been reached. It is safe to conclude that had these men rounded out lifetimes of fifty, sixty, or seventy years, as they had every right to anticipate and expect, they would have

done even better work than that already accomplished. Would Byron at thirty-five with the completion of "Don Juan" have written his greatest poem even had he been permitted to attain the statutory age of seventy? Would Poe at thirty-six with his "Raven" and weird tales have reached the acme of a life that might have spread out to sixty years? Would Christopher Marlowe, who was but twenty-nine years old when slain by a drunken brawler, never have done anything greater than he had accomplished up to that time? It stands to reason that these men had only begun to show the wonderful possibilities of their minds, and had they been permitted to live longer doubtless still greater and more brilliant achievements of mentality would have been placed to their credit. It is probable that then the

average age of the masterpiece would be nearer sixty than fifty. However, this is but supposition, and the facts as ascertained must stand.

The corollary is evident. Provided health and optimism remain, the man of fifty can command success as readily as the man of thirty. Health plus optimism read the secret of success; the one God-given, the other inborn, also, but capable of cultivation to the point of enthusiasm.

THE DURATION OF MENTAL ACTIVITY

A LINE of mental activity, once begun may continue indefinitely, its duration being dependent upon a number of correlated conditions, such as the state of health, opportunity, accident, and ambition. In the four-hundred records com-

prised in the present study, the average duration of the mental process was forty years. For the thinkers it was thirty-nine years, and for the workers forty-one. This only confirms the natural inference, since the thinkers generally develop later in life. The only reason why there is not a greater difference is that a considerable number of the thinkers prolonged their mental labors, and most effectively, far beyond the usual limit of productive cerebration. The duration is the shortest for poets and satirists and humorists, being only thirty-three years. Explorers, reformers, novelists, dramatists, and playwrights show a duration of thirty-five years; warriors, chemists, physicists, and philosophers, thirty-seven years; statesmen, thirty-eight years; essayists, forty years; musical composers, forty-

one years; actors and artists, forty-two years; historians and divines, forty-three years; jurists, forty-four years; naturalists, forty-five years; physicians and surgeons, forty-six years; astronomers and mathematicians, forty-seven years; and inventors, forty-nine years.

Thirty-five per cent. of the men ceased their mental activity in the seventh decade; 22½ per cent. in the eighth; 20¾ per cent. in the sixth; 10¼ per cent. in the fifth; 6 per cent. in the ninth; 4½ per cent. in the fourth. One man, Chatterton, ended his career in the second decade; three in the tenth decade; and five in the third. Seventy-eight and a quarter per cent. closed their life-work between fifty and eighty years of age, and 85 per cent. after the fiftieth year.

While in the vast majority of cases

declining physical and mental ability progressed *pari passu* to the cessation of life, there loom up amid the general wreck of the bodily and cerebral powers some striking instances of remarkable mental vitality and virility, standing out, like beacon-lights of hope, far beyond the period of normal decay. These mental heroes counterbalance the achievements of the young, already mentioned, if not in numbers, truly in productive value and influence upon the culture and welfare of the race. No greater inspiration can be found in all the records of life-work than in a review of these achievements of old age.

A GROUP OF TITANS

Thus Böckh, the "baby" member of the group, at seventy published one of

the greatest of his works, "Zur Geschichte der Mondcyclen der Hellenen." Between the ages of seventy and eighty-three, Commodore Vanderbilt increased the mileage of his road from 120 to 10,000 and added about one hundred millions to his fortune. Grote, in his seventy-first year, began his work on "Aristotle." At this time he writes: "My power of doing work is sadly diminished as to quantity, but as to quality (both perspicacity, memory, and suggestive association bringing up new communications), I am sure that my intellect is as good as it ever was." He died in his seventy-seventh year, leaving "Aristotle" unfinished. At seventy-two, Handel, blind for the last six years of his life, composed his oratorio, "Triumph of Time and Truth," and died at seventy-four, working until the last.

Eight days before his death he played the organ at a performance of his "Messiah." At the same age Meyerbeer produced his greatest opera, "L'Africaine," Samuel Johnson published the best of his works, "Lives of the Poets," and Littré completed his greatest of all dictionaries. Wordsworth was appointed to the laureateship at seventy-three, and lived to see his eightieth birthday. George Buchanan, the stout old Scotchman, wrote his "De Jure Regni" in defense of popular rights at seventy-three, and lived four years longer. Galileo at seventy-three made his last telescopic discovery—that of the diurnal and monthly librations of the moon. At seventy-four, Kant wrote his "Anthropology," the "Metaphysics of Ethics," and the "Strife of the Faculties," and Thiers helped to establish the French

republic and became President, holding that exalted office for two years. Tintoretto at the same age painted his crowning production, the vast "Paradise," a canvas seventy-four feet by thirty. Verdi, when seventy-four, produced his masterpiece, "Otello," which is thought to be an immense advance over anything he had yet written, and in his eightieth year wrote "Falstaff," which was as brilliant a work as "Otello." When eighty-five he wrote his "Ave Maria," "Laudi alla Virgine," "Stabat Mater," and "Te Deum," all wonderfully beautiful. Holmes at seventy-four published his medical essays, and "Pages from an Old Volume of Life"; at seventy-five wrote his essay on Emerson; at seventy-six published "A Mortal Antipathy" and "The New Portfolio"; at seventy-eight wrote "Our Hundred

Days in Europe"; and at seventy-nine published "Over the Tea-Cups," dying at the ripe old age of eighty-five. Longfellow at seventy-five wrote his imposing meditation "Hermes Trismegistus" and the beautiful "Bells of San Blas." At the same age Isaac D'Israeli published his "Amenities of Literature," a three-volume work, and that notwithstanding total blindness for three years preceding. At seventy-five Henry Clay was still a leader in the land, Hallam published his "Literary Essays and Characters," Metternich was driven from power, Bismarck was forced from the Chancellorship by the German Emperor, Crispi assumed the Premiership of Italy, and Allen G. Thurman was nominated for the Vice-Presidency of the United States. Hugo at seventy-five wrote "History of a Crime"; at seventy-

seven published "Le Pape"; at seventy-eight, "L'Ane"; at seventy-nine, "Les Quatre Vents de l'Esprit"; and at eighty, "Torquemada." Lamartine at seventy-six wrote a novel, "Fior d'Aliza." Washington Irving lived to be seventy-six, and wrote his "Life of Washington" in his last years. Perugino at seventy-six painted the walls of the Church of Castello di Fontignano, and Humboldt postponed until his seventy-sixth year the beginning of the crowning task of his life, the preparation of the "Kosmos," which he successfully completed in his ninetieth year. Biot at seventy-seven prepared an enlarged edition of his "Physical Astronomy," which he completed at eighty-three, living five years longer. Jacob Grimm died at seventy-eight, working to the last, and Laplace, dying at the

same age, said with his last breath: "What we know is nothing; what we do not know is immense." Lamarck at seventy-eight completed his greatest zoölogical work, "The Natural History of Invertebrates," and lived until eighty-five years of age. Whittier at seventy-nine published "Poems of Nature" and "St. Gregory's Guest." William Cullen Bryant, when seventy-five, published his "Letters from Spain and Other Countries" and "Letters from the East"; when seventy-seven he published his brilliant translations of the "Iliad" and the "Odyssey"; at seventy-nine, a volume of "Orations and Addresses," and was active until his death from heat-exhaustion when eighty-four years old. Browning wrote with undiminished vigor until his death at seventy-seven. When seventy-five he published "Par-

leyings with Certain People," and "Asolando" appeared shortly before the close of his life. Joseph Jefferson, the beloved American comedian, was as effective in all his rôles when seventy-five as when at the height of his physical power.

THE OCTOGENARIANS

WHAT shall we say of the octogenarians and of those who were older? As is well known, Cato at this age began the study of Greek, Plutarch began his first lessons in Latin, and Socrates learned to play on instruments of music. Arnauld, the theologian and sage, translated Josephus in his eightieth year. Gladstone began his great Midlothian campaign, which overthrew the Conservative Government, and put himself

and his party in power, at eighty years of age. He became Premier for the fourth time at eighty-three, and held the office for two years. West painted admirably until eighty years of age, and Goethe, at Weimar, completed "Faust" when as old. Hahnemann married at eighty, and was working at ninety-one years. Simonides won the prize for verse when over eighty years of age, and Ranke at the age of eighty began his "History of the World," and lived to complete twelve volumes, dying at the age of ninety-one. His later works show no diminution of power, and he wrote until within a few days of his death. Buffon, the great French naturalist, until shortly before his death at eighty-one, labored upon his "Natural History," a work of forty-four volumes. Henry G. Davis at eighty-one was nomi-

nated for the Vice-Presidency of the United States; Palmerston was Prime Minister of England when he died at that age, and John Quincy Adams was a power in the House of Representatives when stricken at eighty-one. Bancroft published the concluding volume of his "History" at eighty-two, and died at ninety-one. Charles Willson Peale, the painter, at eighty-two wielded his brush without the aid of spectacles and did some of his best work. Voltaire at eighty-three published a tragedy, "Irène"; and Tennyson, whose age was eighty-three, gave the world in his "Crossing the Bar" one of the most beautiful of swan-songs. Newton at eighty-three worked as hard as he did in middle life, and Herbert Spencer died at the same age, almost with pen in hand. Thomas Jefferson was fruitful

in council until the day of his death at eighty-three. Rennell at eighty-three read a paper "Concerning the Identity of the Remains at Jerash, whether they are those of Gerasa or Pella," and the next year another "Concerning the place where Julius Cæsar landed in Britain." Talleyrand, dying at eighty-four, had, under successive French rulers, been a power all his life. Landor wrote his "Imaginary Conversations" when eighty-five years old, and at eighty-seven published his last volume of "Heroic Idylls." Guizot at eighty-seven showed unimpaired mental vigor and activity, and Hobbes, the English philosopher, at the same age published his version of the "Odyssey," and his "Iliad" one year later. A few weeks before his death, in his ninetieth year, he wrote to his publisher, "I shall have something in Eng-

lish for you shortly." Von Moltke, when eighty-eight, was still chief of staff of the Prussian army, and John Wesley at that age preached almost every day and still held the helm of Methodism. At eighty-nine, Michelangelo was still painting his great canvases; Theophrastus's greatest work, "The Character of Man," was begun on his ninetieth birthday, and Izaak Walton wielded a ready pen at ninety. John Adams retained all his great mental ability up to the time of his death at ninety-one, and Pope Leo XIII showed no sign of intellectual decrepitude when he died of old age at ninety-three. Cornaro was in far better health at ninety-five than at thirty, and, it is said, was as happy as a boy. Fontenelle was as light-hearted at ninety-eight as at forty; Macklin, the Irish actor, born in 1690, performed in Eng-

land in 1789, being then in his ninety-ninth year; and, wonder of wonders! Chevreul, the great scientist, whose untiring labors in the realm of color have so enriched the world, was busy, keen, and active when death called him at the age of 103.

With such achievements of the truly aged confronting us, who so bold as to attempt to set a limit to the usefulness of any man? It remains true, as the venerable Dr. Cuyler has indicated, that for many of the purposes and achievements of life youth and early manhood are the most favorable; but for certain others the compacted mental fiber, long experience, and matured judgment of old age, are the most serviceable endowments. The one cannot usurp the place of the other, and the first only paves the way for the second. Not infrequently

those mentalities that ripen the slowest last the longest, and often the history of these great men has been persistent neglect and worldly coldness until forty or more years have passed before their greatness has been conceded by their contemporaries. Truly, "the life history of a great genius is almost invariably one of a sad and somber tone, a walk apart from the beaten path." Such are the words of one who should know what the "doers of deeds" must endure. Be this as it may, it is now recognized that many of the finest achievements in business, statesmanship, literature, and in all activities, have been wrought by men long past sixty. Writes one: "No strong man will accept sixty as the arbitrary limit of his ambition and working ability."

Axiomatically speaking, the deter-

mination and the capacity to hold on and to make never-ending effort are the main elements in deciding success in self-culture, advancement, and growth in every line of work. Heredity, however, counts for much. Innate nervous and mental energy are essential. He who comes into the world but feebly equipped in these qualifications is sadly handicapped in the battle of life. Likewise environment influences destiny to a noteworthy degree. Early surroundings, parental and associate, determine the direction and growth of the mind. Self-confidence, determined effort, and inherent mental force will work wonders, no matter how rugged the soil may seem.

CHAPTER V

WHAT THE WORLD MIGHT HAVE MISSED

A DISTINGUISHED citizen of the world, a man of extreme culture and erudition, whose achievements and literary contributions have incalculably enriched the storehouse of knowledge, not long ago remarked in a notable address: "Take the sum of human achievement, in action, in science, in art, in literature; subtract the work of the men above forty, and while we should miss great treasures, even priceless treasures, we would practically be where we are today. It is difficult to name a great and far-reaching conquest of the mind which

has not been given to the world by a man on whose back the sun was still shining. The effective, moving, vitalizing work of the world is done between the ages of twenty-five and forty."

No more genial and kindly disposed person exists than Professor Osler, the originator of these views. Love for his fellow-man and intense sympathy are his striking characteristics. Only the most honest belief prompts every utterance of his pen. Statements from such a source, however startling or distasteful to the average reader, command an earnest perusal, a close and searching investigation—but not a blind acceptance. For even the most thoroughly grounded may, if arguing from apparently sound, but actually incorrect, premises, arrive at logically correct, but virtually erroneous, conclusions. If the

deduction be correct, why, one would reason, should the earth be cumbered with so much intellectual deadwood, the span of life be extended to threescore and ten years only that there may be thirty years of regression and slow but progressive mental decay? Nature in all her many laboratories is prodigal in her profusion, but never aimlessly so. There is an excess of production, but never a useless accumulation. Only that survives which is found worthy; all else speedily makes way for more powerful, more efficient, and more productive successors. The Pre-tertiary times prepared the way for the Tertiary, this for the Quaternary, and all for the dwelling of man upon the earth. The antediluvian must perish in order that his more worthy successor should find the way clear for his development. The super-

stitions of antiquity and of medieval times vanish before the sunburst of education and accumulated knowledge. Only in the noblest creation of nature are we to find a notable exception. Man is at his best in his youthful days, and then, resisting the sublime law of the "survival of the fittest," insists upon lingering here that he may gloat over his early successes or bemoan his intellectual decay, according to the peculiar temperament with which he has been endowed.

The sweeping and iconoclastic statement of the brilliant savant at first sight would seem to discount temperament, experience, accumulated learning, judgment, discretion, maturity—all that go to make the intellectual granite and marble of the impressive and commanding man of middle age. Impulse, ini-

tiative, adventure, rise to the acme of desirability, and are the golden virtues to be cultivated and apotheosized. Only fifteen years of mental effort, and the climax is reached! Then begins the inevitable descent to oblivion and decay. Again, it would seem to indicate that all these virtues, desirable enough in their place and time, are strictly and irrevocably limited to a certain period of the human development. Beyond this epochal dead-line they cannot be found, save in monumental exceptions which are the wonder and perplexity of the hidebound scientist.

Does history warrant or corroborate such a conclusion? Most assuredly not, and doubtless it was far from the intention of the writer of the opening paragraph even to intimate as much. The record-book of the world is replete with

the opportunities and successes of age and experience. As some one has said: "The golden thread of youth is carried to a much later period of life now than it was in former years." An Indian, chided for being sixty, replied that the sixties contain all the wisdom and experience of the twenties, thirties, forties, and fifties. Yes, and some of the initiative, also. The Patriarch of the Exodus, when an impulsive and immature man of forty, deeming the hour had struck, took the initiative in his own hands, blundered, through a misconception of the times, and, because of his rash and inopportune murder of the Egyptian brawler, was compelled to flee the land. For forty years he was immured in the wilderness of Midian, buffeted by wind and tempest, exiled from human companionship, gnawed at by conflicting

mental emotions, there to learn the secret of self-control, and through protracted communion with nature to acquire the massiveness and robustness of character that were essential for his true work at eighty.

It is not the motive of the present essay, however, to make up the cudgels of defense for the unfortunates who have attained to the age of forty and over. Let them speak for themselves. A feeling of curiosity to know what would be subtracted from the sum of achievement had life arbitrarily been terminated at successive ages has prompted what can only properly be termed a retrograde analysis. Let it be supposed that all life had ceased at the individual age of seventy; then at sixty, fifty, and forty, and what then would have been left as the result of mental

activity in the first four decades of life? Here is a wide field for most interesting investigation. The scope is tremendous, embracing the outcome of mental activity throughout the period of the world's authentic history, and it at once becomes evident that only a few pivotal facts can be selected as illustrative of the accomplishments of the various decades. The omission of one or another of the great records must not be construed as in any sense depreciatory or as delimiting their values and influence upon the evolution of the race.

AFTER SEVENTY

THE Biblical limitation of life is threescore years and ten, and any attainment of years over and beyond this age is by reason of strength. If it had been de-

creed that no man should exceed this statutory limit, what, then, would have been missed from the category of the world's achievements? In addition to the wonderful work of the "group of Titans," of which mention has already been made, there must now be deducted a record of achievement even more astonishing than this.

In the first place, in the sphere of action, the great Mosaic law, which lies at the foundation of, and has virtually constituted, the moral law of the nations ever since its evolution, would never have been promulgated—at least as the Mosaic law. For let it be remembered that it was presented to the Hebrew exodists when its hoary-headed sponsor had rounded out a century or more of existence. It may be asserted that this law would inevitably have been enacted

sooner or later had not the ancient law-giver seized upon the opportunity when it presented itself. This is undoubtedly true, not only of the Mosaic law, but of all great achievements which wait the destined man and hour for their evolution and elaboration. It in no wise detracts, however, from the fact that this fundamental law was given to the world by one who had attained to extreme age —the twilight of life—far beyond the average working-period of man. Again, Savigny, the founder of modern jurisprudence, would not have published his famous treatise on "Obligations," which he did when seventy-four years of age. Palmerston would not have attained the primacy of England, nor Disraeli have served his second term in that office. Benjamin Franklin's invaluable service in France would have been lost to his

country; Gladstone would not have become the "Grand Old Man" of England and for eleven years have held the prime ministership; and Henry Clay's Omnibus Bill to avert the battle on slavery would not have been conceived.

In the field of science notable losses would have to be recorded. Galileo would not have made the wonderful discovery of the moon's diurnal and monthly librations. Spencer's "Inadequacy of Natural Selection" and Darwin's "Power of Movement in Plants" and "The Formation of Vegetable Mould through the Action of Worms" would not have been written. Buffon's five volumes on minerals and eight volumes on reptiles, fishes, and cetaceans, would have been lost. Von Baer, the eminent biologist, would not have composed his monumental "Com-

parative Embryology." Harvey's "Exercitationes de Generatione Animalium" would not exist; Euler's greatest astronomical work, "Opuscula Analytica," and Galileo's most valuable book, "Dialogue on the New Science," would have failed of publication.

Priceless treasures would be eliminated from the art-collections of the world. Titian would not have lived to paint his "Venus and Adonis," "Last Judgment," "Martyrdom of St. Laurence," "Christ Crowned with Thorns," "Diana and Actæon," "Magdalen," "Christ in the Garden," and his "Battle of Lepanto," which appeared when the artist was ninety-eight years old. Benjamin West would not have painted his masterpiece, "Christ Rejected"; Corot's "Matin à Ville d'Avray," "Danse Antique," and "Le Bûcheron," would not

exist; nor would Cruikshank's frontispiece to Mrs. Blewitt's "The Rose and the Lily," the latter having been completed when the artist was eighty-three years old. In music, Rossini's "Petite Messe Solennelle" would have been lost.

And what shall we say of the realm of literary effort? It is astonishing to note what these old men of seventy and over have contributed in this direction. Benjamin Franklin's inimitable autobiography; Disraeli's "Endymion"; Landor's masterful "Hellenics"; Schelling's "Philosophy of Mythology and Revelation"; Chateaubriand's celebrated "Mémoires d'outre-tombe"; Milman's "History of St. Paul's"; Voltaire's tragedy "Irène"; Leigh Hunt's "Stories in Verse"; Emerson's "Letters and Social Aims"; Ruskin's "Verona and Other Lectures"; Michelet's "History

of the Nineteenth Century"; Guizot's "Meditations on the Christian Religion" and his large five-volume "History of France"; Swedenborg's "De Cœlo et de Inferno" and his "Sapientia Angelica"; Tennyson's "Rizpah," "The Foresters," "Locksley Hall Sixty Years After," and other famous poems; Longfellow's "Ultima Thule"; Hallam's "Literary Essays and Characters"; Washington Irving's "Wolfert's Roost"; Holmes's "Iron Gate and Other Poems"; Ranke's "History of Wallenstein," and his "History of England"; Hobbes's "Behemoth," "Rosetum Geometricum," "Decameron Physiologicum," and "Problemata Physica"; the last three volumes of Bancroft's history; Froude's "Life of Lord Beaconsfield" and "Divorce of Catherine of Aragon"; much of Mommsen's "Corpus Inscrip-

tionum Latinarum"; and Goethe's "Wilhelm Meisters Wanderjahre."

BETWEEN SIXTY AND SEVENTY

HAD the seventh decade (that which may well be termed the period of history-making and autobiography) been eliminated from the totality of human life, still greater drafts upon the storehouse of knowledge and achievement would have to be made. From the field of action alone most important events would be deducted. That remarkable ethico-political system, Confucianism, which has done so much to mold the Celestial intellect, would have been lost to China; Bismarck would not have instituted the career of Germany as a colonizing power; Pasteur's discovery of the value of inoculation for the preven-

tion of hydrophobia would have been left for some other bright intellect to evolve. Monroe would not have enunciated the famous doctrine for the development and protection of the American nationalities. Von Moltke would not have executed the marvelous campaign that won the Franco-Prussian War, nor would Sir Charles Napier's famous campaign in the Sind, with its great and decisive victories of Meanee and Hyderabad, have been conceived. The United States would have lost the brilliant career of John Hay as Secretary of State, and the great principle of the preservation of the unity of China would not have been established, to the undoing of national, political, and territorial greed. Columbus would not have accomplished his third and fourth great voyages, wherein he discovered the

South American continent and the island of Martinique. England would not have profited by the magnificent statesmanship of Palmerston; John Adams would not have attained the Presidency nor Jefferson have served his second term. Beaconsfield's primacy in England, Crispi's in Italy, and Daniel Webster's second term in the Department of State would have been lost to their respective governments, while the American Colony would have been deprived of Benjamin Franklin's invaluable services at home. In the great religious struggle in Europe, Luther's pamphlet on the "Wittenberg Reformation" and much of his personal influence would have been abolished; and Savigny's great "Modern System of Roman Law" would not have enriched the literature of jurisprudence.

From the granaries of science must be extracted some of their choicest accumulations, including Darwin's famous "Descent of Man," his "Insectivorous Plants," and "Emotions in Man and Animals"; Buffon's "Natural History of Birds"; Tyndall's "Essays on the Floating Matter of the Air"; Herbert Spencer's "Factors of Organic Evolution"; Audubon's "Biography of American Quadrupeds"; Lyell's third great work, "Antiquity of Man"; John Hunter's masterpiece on "Blood, Inflammation, and Gunshot Wounds"; Max Müller's "Buddhist Texts from Japan," "Science of Thought," "Lectures on Natural and Physical Religion," and "Anthropological Religions"; Lagrange's remarkable work, "Theory of the Analytical Functions"; Biot's enlarged "Elementary Treatise on Phy-

sical Astronomy"; Galileo's famous "Dialogue with God upon the Great Systems of the World"; Leverrier's tremendous task of the revision of the planetary theories; D'Alembert's important work, "Opuscules mathématiques"; John Napier's masterful invention of the system of logarithms and his description thereof,—which is second only to Newton's "Principia,"—and his "Rabdologia," descriptive of the famous Napier enumerating bones; and Faraday's "Experimental Researches in Chemistry and Physics," and his "Lectures on the Chemical History of a Candle."

Truly priceless treasures would be missed from the galleries and laboratories of art and music. Michelangelo's celebrated "Last Judgment," the most famous single picture in the world, and

his frescos in the Sistine Chapel; Corot's "Solitude," "Repose," and other beautiful works; Cruikshank's elaborate etching for Brough's "Life of Sir John Falstaff," and his most important picture, "Worship of Bacchus"; Titian's period of artistic acme, including his "Battle of Cadore" and the portraits of the twelve Cæsars; West's famous canvases, including the celebrated "Christ Healing the Sick"; Perugino's frescos in the Monastery of Sta. Agnese in Perugia; Turner's inimitable "Fighting Téméraire," his "Slave Ship," and his Venetian sketches; Meissonier's famous "Friedland—1807," "Cuirassier of 1805," "Moreau and his staff before Hohenlinden," "Outpost of the Grand Guard," "Saint Mark," and many others of his works; Blake's great series of engravings illustrating the Book of

Job; Bouguereau's "Love Disarmed," "Love Victorious," "Psyche and Love," "Holy Women at the Sepulchre," "Little Beggar Girls," and other works; Hogarth's "The Lady's Last Stake," "Bathos," and "Sigismunda Weeping over the Heart of her Murdered Lover"; Murillo's series of pictures in the Augustinian Convent at Seville illustrating the life of the "glorious doctor," and his able portrait of the Canon Justino; Reynolds's portraits of Mrs. Siddons as "The Tragic Muse," the Duchess of Devonshire and her child, Miss Gwatkin as "Simplicity," and "The Infant Hercules"; Landseer's powerful "Swannery Invaded by Sea Eagles" and his "Pair of Nutcrackers"; Wagner's "Parsifal"; the two works on which Haydn's claims to immortality mainly rest, the oratorio, "Creation,"

and the cantata, "The Seasons"; Verdi's famous "Requiem"; Handel's oratorios, "Judas Maccabæus," "Joshua," "Solomon," "Susanna," "Theodora," and "Jephtha"; Gluck's "Armide" and his famous "Iphigénie en Tauride"; Gounod's brilliant oratorio "La Rédemption," his "Le Tribut de Zamora," the oratorio "Death and Life," and the "Messe à la Memoire de Jeanne d'Arc"; and Meyerbeer's "Star of the North" and "The Pardon of Ploermel."

The devastation in the field of literature would be irreparable. Now would be eliminated Littré's great "Dictionary of the French Language," pronounced the best lexicon in any living tongue; Grote's "Plato and the Other Companions of Socrates"; Ranke's "History of England"; Grimm's celebrated "Correspondence littéraire"; Newman's "Apo-

logia," the greatest and most effective religious autobiography of the nineteenth century, his "Dream of Gerontius," a poem of great subtlety and pathos, and his "Grammar of Assent"; Sydney Smith's trenchant "Letters on the Ecclesiastical Commission"; Sir Richard Burton's translation of the "Arabian Nights"; Renan's "History of the Israelitish People"; Southey's "Doctor"; the third part of Butler's "Hudibras"; Grant's "Memoirs"; Landor's famous "Pericles and Aspasia" and his equally famous "Pentameron"; Herbert Spencer's "Man versus the State" and "Ecclesiastical Institutions"; Thomas Chalmers's noted "Institutes of Theology"; Lowell's "Old English Dramatists," "Heartsease and Rue," and some of his "Political Essays"; John Knox's "Historie of

the Reformation"; Carlyle's largest work, "History of Frederick the Great"; Corneille's "Attila" and "Tite et Bérénice"; Defoe's "Fortunes and Misfortunes of Moll Flanders," "Journal of the Plague Year," "Political History of the Devil," and "System of Magic"; the second part of "Don Quixote," which is much superior in invention to its predecessor, though composed when the author was sixty-seven years of age; also Cervantes's second best work, "Novelas Exemplares," and his most successful poem, "Voyage to Parnassus"; Saint-Simon's last and most important expression of his views, "The New Christianity"; Leigh Hunt's "Autobiography," "Wit and Humor," and "A Jar of Honey from Mount Hybla"; Swift's "Polite Conversation"; Schopenhauer's "Par-

erga und Paralipomena"; Goethe's "Theory of Color," his autobiography "Poetry and Truth, and many of his best poems; Young's "Night Thoughts"; Wordsworth's "Evening Voluntaries"; Bryant's "Letters of a Traveler"; Guizot's "History of the British Commonwealth"; Swedenborg's famous "Arcana Cœlestia"; Bulwer Lytton's "Kenelm Chillingly," "The Coming Race," and "The Parisians"; Edmund Burke's "Reflections on the Revolution in France" and his splendid "Letters on a Regicide Peace"; Bunsen's well-known "Bible-work," "God in History," and "Egypt's Place in Universal History"; Wilhelm Grimm's "Old German Dialogues"; Hugo's "Toilers of the Sea," "The Man Who Laughs," and "The Terrible Year"; Isaac D'Israeli's "Genius of Judaism"

and "Commentary on the Life and Reign of Charles I"; Du Maurier's "The Martian"; the second series of Matthew Arnold's "Essays in Criticism"; George William Curtis's "Easy Chair"; Wyclif's most important book, "Trialogus"; John Stuart Mills "Essay on Theism"; Huxley's "Evolution and Ethics"; Berkeley's famous "Common-Place Book," one of the most valuable autobiographical records in existence; many of Verne's best works, including "The Mysterious Island"; Dean Stanley's "Christian Institutions," an exceedingly important work; Coleridge's famous "Epitaph" and his "Confessions of an Inquiring Spirit"; Milton's "Paradise Regained," "Samson Agonistes," and "History of Britain to the Norman Conquest"; Condillac's "Logic" and the important work, "Com-

merce and Government"; Zola's "Vérité"; Parkman's "Montcalm and Wolfe" and "A Half Century of Conflict"; Hobbes's masterpiece, "Leviathan," and his famous "Elementa Philosophica de Cive," "De Corpore Politico," and "Human Nature"; Leibnitz's celebrated "Essais de Théodicée," his "Monadologie," and the "Principes de la Natur et de la Grace"; Mommsen's "Provinces of the Roman Empire"; Lamartine's "History of the Restoration" and "History of Russia"; Hallam's "Introduction to the Literature of Europe"; Böckh's great work, "History of the World-cycles of the Greeks"; Voltaire's unsurpassable tale "Candide"; Ruskin's "Arrows of the Chase," "Art of England," and the fascinating, though unfinished autobiography "Præterita"; Milman's great work, "History

of Latin Christianity"; Emerson's "Society and Solitude," his anthology, "Parnassus," and "Lectures on the Natural History of the Intellect"; Dryden's masterful second ode on "St. Cecilia's Day" and his translation of Vergil; the eighteen volumes of Lacépède's "General, Physical, and Civil History of Europe"; Michelet's monumental work, "History of France"; Jacob Grimm's two masterpieces, "History of the German Language" and the "Deutsches Wörterbuch"; Locke's "Thoughts on Education," "Vindication," and "Reasonableness of Christianity"; Francis Bacon's "History of Henry VII," "Apothegms," and "History of Life and Death"; Diderot's "Essay on the Reigns of Claudius and Nero"; D'Alembert's "Dream" and his play, "Jacques le Fataliste"; Washington

Irving's "Oliver Goldsmith" and "Lives of Mahomet and his Successors"; Whittier's "Among the Hills," "Ballads of New England," "Hazel Blossoms," "Mabel Martin," and "Vision of Echard"; Longfellow's "New England Tragedies," "Aftermath," "Hanging of the Crane," and "Mask of Pandora"; Tennyson's "Gareth and Lynette," "Last Tournament," "Queen Mary," "Harold,"—the best of his dramas,—the lyric "Revenge," "Defence of Lucknow," and "The Lover's Tale"; Browning's "Dramatic Idyls," "The Inn Album," and "Aristophanes' Apology"; Holmes's "Poet at the Breakfast-Table," "Songs of Many Seasons," "The Iron Gate," and "Memoirs of John L. Motley"; the fourth part of Le Sage's "Gil Blas"; Froude's lives of Cæsar and Carlyle and "The English in the

West Indies"; Lew Wallace's "Prince of India"; Lever's "The Bramleighs of Bishop's Folly" and "Lord Kilgobbin"; Reade's "A Woman-Hater," "The Wandering Heir," and "The Jilt"; Samuel Richardson's "Sir Charles Grandison"; Trollope's "The Prime Minister," "The American Senator," and "Is He Popenjoy?" and Ibsen's "Hedda Gabler," "The Master Builder," "Little Eyolf," "John Gabriel Borkman," and "When the Dead Awake."

BETWEEN FIFTY AND SIXTY

THE sixth decade of life has been most prolific in human achievement, and may well be designated as the age of the masterwork. In action alone its accomplishments have revolutionized history,

and it would be most difficult to conceive what would be the present status of the world's affairs had these ten years of individual life never existed. Columbus would not then have made his discovery of the American continent; Marlborough would not have won the great victory at Blenheim; Morse's invention of the telegraphic alphabet would have been lost; Richelieu would not have attained supremacy in France and concluded the Peace of Westphalia; Cæsar would not have corrected the calendar or have written his "Commentaries"; Cromwell would not have overthrown Charles I and established the Protectorate in England; Lincoln would not have issued his Emancipation Proclamation; Bright's great fight in Parliament for reform would not have been made; Loyola would not have

founded the Society of Jesus, nor Jefferson have established the Democratic party in the United States; Knox's great work of the Reformation in Scotland would have been lost; Wyclif would not have made the first complete English version of the Bible, nor Luther the first complete translation of that book; Schliemann's excavations at Troy and elsewhere would not have enriched archæology; Humboldt would not have established a line of magnetic and meteorologic stations across northern Asia; Galvani would never have enunciated his celebrated theory of animal electricity, nor John Hunter have discovered the uteroplacental circulation, first ligated successfully the femoral artery in the canal that bears his name, and have built his famous anatomical museum when generally recog-

nized as the first surgeon in England; Kepler would not have invented his wonderful table of logarithms, nor Faraday have lived through his second great period of research in which he discovered the effect of magnetism on polarized light and the phenomenon of diamagnetism. Lord Chesterfield's famous system of social ethics and the Hegelian and Lotzian systems of philosophy would have been lost. Leibnitz would not have founded the Academy of Berlin, nor Bunsen have urged the unity of Germany. Wellington would not have accomplished the Emancipation of the Catholics during his primacy. Penn would not have made his famous treaty with the Indians; Laud and Cranmer would not have influenced the church of England, and the latter have secured the legalization of

the marriage of the clergy. John Adams's celebrated "Defense of the American Constitution" would have been lost; Washington would not have become the first President of the United States, nor would Talleyrand have overthrown the Napoleonic Empire, secured the ascension to the throne of Louis XVIII, and achieved his supreme triumph at the Congress of Vienna; Robert E. Lee's services would have been lost to the Confederacy, and much of Von Moltke's remarkable activity in strategical and tactical military affairs would have been missed; Herschel would not have invented his great reflecting telescope, nor have made his sublime discovery of the action of mechanical laws in the movements of the celestial bodies. Swedenborg would not have experi-

enced his religious change and founded his order. Joe Jefferson would not have made the part of "Bob Acres" a national favorite, nor Irving have reached the apex of his career. Guizot would not have attained the primacy of France and ruled for eight years; Peel would not have contributed his masterwork in improving the finances of his country. Canning's brilliant career in Parliament would have been lost, together with the formation of the Triple Alliance between France, Russia, and Great Britain which resulted in the independence of Greece. Monroe would not have served through his administration, Edmund Burke have devised his famous India Bill and secured the impeachment of Warren Hastings, nor Garibaldi have become the dictator of Italy.

Scientific investigation would have been impoverished by the loss of Leidy's famous contributions to biology; the first fifteen volumes of Buffon's "Natural History"; Darwin's "Fertilization of Orchids" and "The Habits and Movements of Climbing Plants"; Cuvier's magnificent "Natural History of Fishes" and his "History and Anatomy of Mollusks"; and Huxley's "Physiography" and "Science and Culture." Herbert Spencer would not have contributed his "Study and Principles of Sociology," "Political and Ceremonial Institutions" and "The Data of Ethics"; Hugh Miller's masterwork, "My Schools and Schoolmasters," would have been lost. Saint-Simon would not have written his "L'Industrie" and "L'Organisateur"; Galileo his "Il Saggiatore"; La-

grange his great work "Mécanique analytique"; John Stuart Mill his "Representative Government" and "Utilitarianism"; Copernicus his great treatise on "The Revolutions of Celestial Bodies"; Boerhaave his famous "Elements of Chemistry"; and Adam Smith his masterpiece on the "Wealth of Nations." Biot's "Researches in Ancient Astronomy" would have been lost, as would also Condillac's "Study of History" and his "Treatise on Animals," Sir Richard Burton's "Zanzibar" and "Gold Mines of Midian," and Rennell's celebrated "Geographical System of Herodotus." Faraday would not have published the first two volumes of his "Experimental Researches in Electricity," Diderot would not have prepared the main part of his great French encyclopedia, nor Tyndall have

written the "Use and Limit of Imagination in Science."

Many famous pictures would be missed from the galleries of the world, including Velasquez's great portrait of Innocent X, which was pronounced by Reynolds the finest picture in Rome; his famous portrait of Pareja; the masterful "Spinners," the splendid "Venus and Cupid," "Maids of Honor," and many other of his works; some of Reynolds's best work; Cruikshank's tragical and powerful series of pictures for "The Bottle"; Perugino's masterpiece, "Madonna and Saints," in the Certosa of Pavia, and his wonderful paintings in the audience-hall of the Guild of Bankers of Perugia; Leonardo da Vinci's famous "Battle of the Standard," designed when the artist was the most famous painter of Italy; Gainsborough's

most noted work, the "Duchess of Devonshire"; Romney's famous "Infant Shakespeare attended by the Passions," and "Milton and his Daughters"; the most brilliant works of Rembrandt, including his masterpiece, "Syndics of the Cloth Hall," "Jewish Bride," and the "Family Group of Brunswick"; Corot's famous "Sunset in the Tyrol," "Dance of the Nymphs," "Dante and Vergil," "Macbeth," and "Hagar in the Desert"; Titian's "Venus" of Florence, and "St. Peter Martyr"; West's "Death of Wolfe" and the noted "Penn's Treaty with the Indians"; Tintoretto's magnificent "Plague of Serpents," "Moses Striking the Rock," and many of his memorable paintings, including the four extraordinary masterpieces, "Bacchus and Ariadne," "Three Graces and Mercury,"

"Minerva discarding Mars," and the "Forge of Vulcan"; Constable's famous "Valley Farm"; the best of Turner's work, including "Ulysses Deriding Polyphemus," "Bridge of Sighs," "Ducal Palace," and "Custom House, Venice"; Landseer's excellent "Flood in the Highlands," "Deer in Repose," and "Deer Browsing"; Hogarth's admirable prints of an "Election," "Paul before Felix," "Moses brought to Pharaoh's Daughter," and "Gate of Calais"; Rubens's equestrian picture of Philip IV, "Banqueting House at Whitehall," "Feast of Venus," the portraits of Helena Fourment, and over forty pictures in Spain; Millet's "The Knitting Lesson," "November," and "Buttermaking"; Meissonier's "Desaix and the Army of the Rhine"; and Bouguereau's well-known "Youth of Bac-

chus," "Mater Afflictorum," "The Birth of Venus," "Girl Defending Herself from Love," and "The Scourging of our Lord."

From the musical conservatories would be taken Spohr's great work, "The Fall of Babylon"; Meyerbeer's famous production, "The Prophet"; Verdi's "Don Carlos" and the great "Aïda"; Gluck's superb "Alceste" and "Paris and Helen"; Handel's great oratorios, "The Messiah," "Saul," "Israel in Egypt," "Samson," "Joseph," "Belshazzar," and "Hercules"; Bach's magnificent "Mass in B minor," pronounced one of the greatest masterpieces of all time; Beethoven's famous "Choral Symphonies"; Brahms's supreme achievement, the four "Ernste Gesänge"; and Wagner's "Ring of the Nibelung" and "Die Meistersinger."

And what shall we miss from the bookshelves? Priceless treasures in very truth. The works of Aristotle and Plato; Kant's "Critique of Pure Reason"; Bacon's celebrated "Novum Organum"; Locke's famous "Essay Concerning Human Understanding"; the second part of Butler's "Hudibras"; Raleigh's prison-written "History of the World"; Reade's "Foul Play" and "Put Yourself in His Place"; the last volume of Niebuhr's "History of Rome"; George Fox's "Journal"; Bunyan's "Holy War" and the second part of "The Pilgrim's Progress"; Hawthorne's second masterpiece, "The Marble Faun"; La Rochefoucauld's famous "Maxims"; Boswell's "Life of Johnson"; the third book of Montaigne's "Essays"; Voltaire's wonderful "Philosophical Dictionary" and his fa-

mous "Diatribe du Docteur Akakia"; Sir Edwin Arnold's "Light of the World" and "With Sa'di in the Garden"; Erasmus's celebrated "Colloquia"; Dickens's "Our Mutual Friend" and "Mystery of Edwin Drood"; Keble's famous "Lyra Innocentium"; Dryden's best play, "Don Sebastian," and his opera "Albion and Albanius"; Hay's (collaborated) life of Lincoln; Chateaubriand's "Les Natchez"; Boucicault's "The Shaughraun," and the beautiful "Daddy O'Dowd"; Grote's celebrated "History of Greece"; the second volume of Penn's "Fruits of Solitude"; Chalmers's work on "Political Economy"; Dean Stanley's "Historical Memorials of Westminster Abbey"; Goethe's "Natürliche Tochter" and the first part of "Faust"; the first series of Landor's "Imaginary

Conversations"; the third part of "Gil Blas"; "Robinson Crusoe"; Rousseau's celebrated "Confessions"; "Ben Hur"; the last two volumes of Macaulay's "History of England"; Lamartine's greatest prose work, "History of the Girondins"; Cowper's "Task"; "The Divine Comedy"; "Paradise Lost"; "Canterbury Tales"; "Les Misérables"; the first part of "Don Quixote"; Freeman's "Ottoman Power in Europe" and his famous "The Reign of William Rufus"; the second collection of La Fontaine's "Fables," pronounced divine; "Gulliver's Travels," and the "Drapier's Letters," Swift's greatest political triumph; Sainte-Beuve's "Study of Vergil" and the final and best series of the "Monday" articles; the last seven volumes of Sterne's "Tristram Shandy"; Gibbon's delightful

"Memoirs"; Zola's famous "Débâcle" and "Fecundity"; Montesquieu's masterwork, "L'Esprit des lois"; Ibsen's "A Doll House," "Ghosts," and "Rosmersholm"; many of Matthew Arnold's best essays; Racine's masterpiece, "Athalie"; Livingstone's "Narrative of an Expedition to the Zambesi"; Dodgson's "Mathematica Curiosa" and "Rhyme and Reason"; Du·Maurier's "Trilby" and "Peter Ibbetsen"; Leigh Hunt's "Captain Sword and Captain Pen," "Legend of Florence," and the charming "Imagination and Fancy"; the most singular of Lever's works, "Life's Romance"; Samuel Richardson's "Pamela" and his masterpiece, "Clarissa Harlowe"; Hood's "Song of the Shirt" and "Bridge of Sighs"; the third volume of Isaac D'Israeli's "Curiosities of Literature"; Molière's bril-

liant "Le malade imaginaire"; Francis Parkman's "The Old Régime in Canada" and "Count Frontenac and New France under Louis XIV"; Corneille's "Discourses on Dramatic Poetry" and his "Œdipe," "Sophonisbe" and "Sertorius"; Berkeley's celebrated "Siris"; Comte's greatest work, "System of Positive Polity," and his "Catechism of Positivism"; Froude's "English in Ireland"; Ranke's "History of Prussia" and "History of France in the Sixteenth and Seventeenth Centuries"; Browning's "Rabbi Ben Ezra," and his masterpiece, "The Ring and the Book"; Max Müller's "Origin and Growth of Religion" and "Selected Essays on Language, Mythology, and Religion"; Ruskin's "Proserpina," "Deucalion," and "Lectures on Art"; Descartes's essay on the

"Passions of the Mind"; Lowell's "Among My Books" and "My Study Windows"; Prescott's "Conquest of Peru" and "History of Philip IV"; Cooper's "The Deerslayer" and "The Two Admirals"; Michelet's "History of the French Revolution" and "Women of the Revolution"; Washington Irving's "Astoria"; Bulwer Lytton's "A Strange Story"; Coleridge's "Aids to Reflection in the Formation of a Manly Character"; Emerson's "English Traits" and "Conduct of Life"; Renan's "Marcus Aurelius" and his "Evangelists"; Whittier's "In War-Time," "Snow-bound," "Maud Muller," and "National Lyrics"; Tennyson's "Enoch Arden," "The Holy Grail," and "Lucretius"; Longfellow's "The Courtship of Miles Standish," "Tales of a Wayside Inn," "Birds of

Passage," and "The Children's Hour"; Holmes's "The Professor at the Breakfast-Table," "Elsie Venner," and "Humorous Poems"; Machiavelli's "Art of War," "History of Florence," and the powerful play, "Mandragola"; Ben Jonson's "The Staple of News" and "The New Inn"; Wordsworth's "Ecclesiastical Sketches"; Scott's last novels, "Woodstock," "The Fair Maid of Perth," "Chronicles of the Canongate," and "Anne of Geierstein"; Jean Paul Richter's "Comet"; and a host of other standard works.

BETWEEN FORTY AND FIFTY

FINALLY, the elimination of the fifth decade of life would cause tremendous inroads upon the already sadly depleted records of human achievement. John

Gutenberg would not have invented the art of printing from type, nor Franklin invented the lightning-rod. Humboldt would not have devised the system of isothermal lines, nor Galvani the metallic arc, nor would the latter have made his discovery of dynamic electricity. Priestley would not have discovered oxygen, nor Jenner have made his wonderful inoculation for smallpox, nor Harvey have announced his discovery of the circulation of the blood. Bessemer would not have invented his pneumatic process for the manufacture of steel, Watt the double acting steam-engine, nor Stephenson have instituted the modern era of railways. The colonies would have forfeited the invaluable services of Washington in the Revolutionary War; Morris would not have been the financial support of the Government; Jay

would not have become the first Chief-Justice of the Supreme Court of the United States; Hungary would have lost the statesmanship of Kossuth; Talleyrand would not have accomplished his diplomatic career, nor Webster his great Congressional record; Peel would not have made his great speech on Catholic Emancipation; Monroe would not have negotiated the Louisiana Purchase; and Calhoun would not have become the author of the doctrine of "nullification," to which the Civil War may be traced. Grant would not have won his great victories of the Civil War, nor would Sherman have achieved his military fame. Wren would not have designed St. Paul's Cathedral. France would have lost the services of Maret and Cardinal Mazarin. Cavour would not have

become the virtual ruler of Italy and convened the first Italian Parliament, nor would Savonarola have become the lawgiver of Florence. Blackstone would not have prepared his "Commentaries"; Nelson would not have won the battle of Trafalgar, nor Cromwell his victories at Marston Moor and Naseby. Cardinal Wolsey would not have enjoyed his successful career; Boerhaave would not have introduced the system of clinical instruction into the study of medicine. Richard Henry Lee would not have suggested holding the Continental Congress, and thereby have strongly incited to the revolution of the Colonies. Luther would not have published the famous Augsburg Confession, nor Knox have become a Protestant and begun the Reformation in Scotland. Bright would not have made

his great speech on the Crimean War, nor Turgot have accomplished his magnificent work in France as Minister of Finance; Richelieu would not have had his famous military and diplomatic career; Wellington would have missed his campaign in Spain and would not have overthrown Napoleon at Waterloo; Reynolds would not have founded the Royal Academy and have become its first president; Edmund Burke would not have made his great speech on Conciliation; Bunsen have accomplished his diplomatic career in Italy; nor Palmerston have lived through the most important and successful period of his life, during which he placed Leopold upon the throne of Belgium. Macready, Irving, and Forrest would not have attained the height of their power, nor would La Salle have explored the Mississippi, Liv-

ingstone have made the Zambesi expedition and discovered the Victoria Falls, nor Champlain have founded Quebec and established the French power in lower Canada.

Science would lose Huxley's "Anatomy of Vertebrates and Invertebrates"; Darwin's "Origin of Species"; Hugh Miller's "The Footprints of the Creator"; Lacépède's "Natural History of Fishes"; Herbert Spencer's "Principles of Biology" and his "Synthetic Philosophy"; Geoffroy Saint-Hilaire's celebrated "Anatomical Philosophy"; Von Baer's "Development of Fishes" and "History of the Evolution of Animals"; Linnæus's masterwork, "Species Plantarum"; Cope's famous work in paleontology; Agassiz's great work on "Zoölogy"; Lamarck's famous "Botanical Dictionary" and his invention of the

name "invertebrate"; Newton's monumental "Principia"; the first volume of Audubon's "Birds of America"; Kepler's extraordinary production, "Celestial Harmonics," and his "Stereometria Doliorum," which entitles him to rank among those who prefaced the discovery of the infinitesimal calculus; Rennell's great work, "Memoir of a Map of Hindustan"; Tyndall's studies on heat-radiation and his "Natural Philosophy" and "Dust and Disease"; Diderot's monumental "Encyclopedia"; D'Alembert's "Elements of Philosophy"; Hegel's famous "Science of Logic"; Berkeley's "Alciphron" and "The Analyst"; Descartes's "Discourse on Method," "Meditations on the First Philosophy," and "Principia Philosophiæ," all great works; Lotze's fine work, "Mikrokosmos"; Biot's magnificent "Treatise on

Experimental Physics"; Lyell's famous "Elements of Geology"; Lavoisier's "Method of Chemical Nomenclature"; and Laplace's celebrated "Celestial Mechanics," which contains his enunciation of the nebular hypothesis. Lagrange would not have published his theory of cometary perturbations; Dalton have originated the volumetric method of chemical analysis; Galileo have solved the riddle of the Milky Way, discovered the satellites of Jupiter, and the triple form of Saturn, and have published his famous "Sidereus Nuncius"; nor Herschel have discovered Uranus, and have begun the most important series of observations culminating in his capital discovery of the relative distances of the stars from the sun and from one another.

The art-galleries would have lost Tin-

toretto's magnificent "Crucifixion"; many of Gainsborough's finest portraits; Leonardo da Vinci's "Last Supper," the third most celebrated picture in the world; the best of Du Maurier's illustrations; Doré's illustrations for the "Ancient Mariner"; Velasquez's "Surrender of Breda," one of the greatest of historical paintings; Perugino's celebrated "Pietà"; Cruikshank's famous illustrations for Dickens and Ainsworth; Rubens's pictures illustrating the life of Maria de' Medici, and his magnificent "Assumption of the Virgin" and "The Massacre of the Innocents"; Millet's "Angelus," "The Man with the Hoe," and "The Gleaners"; Meissonier's "Reading at Diderot's"; Rembrandt's greatest works, including the famous "Portrait of Jan Six," "John the Baptist in the Wilderness," and "Jacob

Blessing the Sons of Joseph"; Blake's illustrations for Blair's "Grave"; West's famous "Death on the Pale Horse"; Turner's "Decline of the Carthaginian Empire," "Hostages Leaving Carthage for Rome," and his paintings for the "Rivers of England"; Titian's "Assumption of the Madonna," one of the most world-renowned masterpieces, the famous "Bacchus and Ariadne," "Entombment of Christ," "St. Sebastian," and "The Three Ages"; Dürer's masterwork, "Adoration of the Trinity by all the Saints"; Hogarth's admirable "Strolling Actresses," the famous "Marriage à la Mode," and the series of twelve plates, "Industry and Idleness"; Paul Veronese's "Feast of Simon the Leper," "Feast of Levi," and "Venice Triumphant"; Murillo's "Return of the Prodigal," "Moses Striking the Rock,"

and "St. Elizabeth of Hungary"; and Landseer's well-known "Stag at Bay," "Sanctuary," "Monarch of the Glen," and "Peace and War." In music must be noted the loss of Meyerbeer's "Les Huguenots"; Handel's oratorios, "Deborah" and "Athalia"; Liszt's "Third Symphonic Poem"; Wagner's "Tristan und Isolde"; Beethoven's pastorals and his grand "Missa Solemnis"; Bach's "Christmas Oratorio"; Rossini's great "Stabat Mater"; Gounod's "Faust" and "Roméo et Juliette"; the greatest of Spohr's sacred compositions, "The Last Judgment" and his oratorio, "The Crucifixion"; and Gluck's "Orfeo ed Euridice."

From literature would be missing all of Shakspere's masterpieces and most of his plays; the last three books of Spenser's "Faerie Queene" and the magnifi-

cent "Epithalamion"; Rabelais's "Pantagruel" and "Gargantua"; Coleridge's "Kubla Khan" and "Christabel"; John Stuart Mill's masterful "Political Economy"; Kingsley's "Water-babies"; Defoe's famous "Mrs. Veal"; Le Sage's "Turcaret," one of the best comedies in French literature; Samuel Johnson's famous "Rasselas" and his "Dictionary of the English Language"; Rousseau's "La Nouvelle Héloïse"; "The Wandering Jew"; most of Scott's novels; Emerson's "Representative Men" and the second volume of his "Essays"; Whittier's "Voices of Freedom" and "Songs of Labor"; Rossetti's masterpiece, "Dante's Dream" and his "Rose Mary"; Racine's famous "Esther"; Jonathan Edwards's "Freedom of the Will"; many of Béranger's songs; Burton's marvelous "Anatomy of Melan-

choly"; most of Addison's essays, including his creation, "Sir Roger de Coverly"; "Mrs. Caudle's Curtain Lectures"; Wordsworth's "Excursion"; Gibbon's "Decline and Fall of the Roman Empire" and his able "Mémoire Justificatif"; Hume's "History of England"; Dodgson's "The Hunting of the Snark"; Hallam's "Middle Ages" and "Constitutional History of England"; "The Scarlet Letter," "Mosses from an Old Manse," "The House of the Seven Gables," "The Blithedale Romance," and "Tanglewood Tales"; Carlyle's "The French Revolution" and "Oliver Cromwell's Letters and Speeches"; Pope's "Essay on Man"; the first two parts of "Hudibras"; the first portion of Bancroft's "History," and of Mommsen's monumental "Corpus Inscriptionum Latinarum"; Lew Wallace's

"The Fair God"; Lamartine's "Souvenirs of the East"; Ranke's "Roman Papacy" and "History of Germany in the Time of the Reformation"; Boehm's great "Theologia Germanica"; most of Boucicault's plays; "Lorna Doone" and "The Maid of Sker"; the first two volumes of Macaulay's "History of England" and his "Lays of Ancient Rome"; Washington Irving's "Conquest of Granada" and "Life of Columbus"; Bulwer Lytton's "Harold," "The Caxtons," and "My Novel"; the first two books of Montaigne's "Essays"; La Rochefoucauld's "Memoirs"; Trollope's excellent "Barchester Towers"; Ebers's "Homo Sum," "The Sisters," "The Emperor," and "Serapis"; Schiller's "Maria Stuart" and his great "Wilhelm Tell"; Petrarch's famous "Epistle to Posterity"; the first volume of

Thiers's "History of the Consulate and the Empire"; "Henry Esmond," "The Newcomes," and "The Virginians"; Verne's "Twenty Thousand Leagues Under the Sea," "Around the World in Eighty Days," and "Hector Servadac"; Lowell's "Fireside Travels" and the second series of "The Biglow Papers"; "The Song of Hiawatha," "The Golden Legend," and "Kavanagh"; Isaac D'Israeli's "Calamities" and "Quarrels of Authors"; "A Tale of Two Cities," "Hard Times," "Uncommercial Traveller," "Great Expectations," "Little Dorrit," and "Bleak House"; Sir Edwin Arnold's "Light of Asia"; Schopenhauer's "Will in Nature"; Motley's "Rise of the Dutch Republic" and "History of the United Netherlands"; "The Deserted Village" and "She Stoops to Conquer"; Gray's

great odes, "The Bard" and "Progress of Poetry"; Prescott's "Ferdinand and Isabella" and "Conquest of Mexico"; Milman's "History of Christianity under the Empire"; "Handy Andy" and "Treasure Trove"; Du Chaillu's "Land of the Midnight Sun"; "Pilgrim's Progress"; "Monte Cristo" and "The Three Musketeers"; Henry Fielding's "History of Tom Jones" and "Amelia"; Daudet's famous "Sapho" and "Port-Tarascon"; Balzac's "Modeste Mignon" and "Béatrix"; Steele's famous political paper, "The Plebeian," and his successful comedy, "The Conscious Lovers"; Michelet's "History of the Roman Republic" and "The Jesuits"; Condorcet's lives of Turgot and Voltaire and his famous "Historic Table of the Progress of the Human Soul"; Farrar's lives of Christ and St. Paul;

"The Moonstone" and "The New Magdalen"; Matthew Arnold's "Essays in Criticism," "St. Paul and Protestantism," "Literature and Dogma," and many of his poems; Spurgeon's "Commentary on the Psalms"; Corneille's "Héraclius," "Nicomède," and "Andromède"; the first collection of La Fontaine's "Fables" and the famous "Books of the Contes"; Dryden's "Marriage à la Mode," "Love in a Nunnery," "Œdipus," and his best drama, "All for Love"; Cooper's "The Pathfinder," and "The Bravo"; Ben Jonson's "Book of Epigrams"; Richter's masterpiece, "Flegeljahre"; Reade's "Never Too Late to Mend," "The Cloister and the Hearth," and "Hard Cash"; Tennyson's "In Memoriam," "Charge of the Light Brigade," "Maud," and "Idylls of the King"; Willis's "People I Have

Met" and "Famous Persons and Places"; Lessing's "History and Literature" and "Nathan the Wise"; Erasmus's "Adagia" and "Edition of the Greek Testament with Corrected Latin Version and Notes"; Voltaire's "La Pucelle"; Ruskin's fifth volume of "Modern Painters," his popular "Sesame and Lilies," "Ethics of the Dust," and "Crown of Wild Olives"; Dean Alford's Edition of the Greek Testament, with running commentary; Fichte's remarkable "Treatise on Science"; the first series of Sainte-Beuve's celebrated "Monday" articles; Machiavelli's famous "Il Principe"; Chateaubriand's "René" and "Adventures of the Last of the Abencerages"; Max Müller's "Chips from a German Workshop" and "Introduction to the Science of Religion"; Leibnitz's "History of

the Brunswick-Lüneburg Family"; the first and second volumes of Froude's "History of England"; Holmes's "The Autocrat of the Breakfast-Table"; Freeman's masterpiece, "History of the Norman Conquest"; Chalmers's celebrated work in defense of endowment, literary and ecclesiastical; most of Watt's hymns; Goethe's "Tasso," his great "Wilhelm Meisters Lehrjahre" and the noted "Hermann und Dorothea"; Parkman's "Pioneers of France in the New World," "Jesuits in North America," and "The Discovery of the Great West"; Guizot's famous "History of Civilization in France"; the best of Molière's works; Thomson's "Castle of Indolence"; Fénelon's famous "Adventures of Télémaque"; the first and second volumes of Stanley's "History of the Jewish Church" and his "Sinai

and Palestine"; the first six volumes of Sterne's "Tristram Shandy" and the first series of "Sermons by Yorick"; Penn's "History of the Quakers" and the first volume of "Fruits of Solitude"; and Young's "Love of Fame the Universal Passion."

SUMMARY

What more need be said? Were the impossible to come to pass, and the work of the veterans of life subtracted from the "sum of human achievement," the world would not be virtually where it is to-day. Well has the gist of the matter been condensed in the words of a medical contemporary:

"In one respect at least the man of intellectual capacity and pursuits is much better off than his brother who works

with his hands. In the world of manual labor the pitiful dictum seems well established that at forty the laborer is 'a dead one'; he must not hope for employment or a wage after that period. The intellectual man, however, despite the expression of a famous colleague, maintains the vigor of his mind unabated almost until he is ready to step into his grave; and if by this means he gains his livelihood, then need he not fear the lack of employment or emoluments even though his years be far advanced."

CHAPTER VI

GENIUS AND INSANITY

One of the noted brain specialists of the present day, himself a man of much more than ordinary ability, Professor Horatio C. Wood of the University of Pennsylvania, has been credited with the statement that "every man of genius is insane," but, as the distinguished southern physician, L. G. Pedigo, has shown, the popular association of genius with insanity can be traced to the earliest periods of antiquity. Thus, while Dryden wrote, "Great wit to madness nearly is allied," the philosophic Aristotle, who was as close an observer as he was a great philosopher and thinker, re-

marked: "Men, illustrious in poetry, politics, and arts, have often been melancholic and mad like Ajax, or misanthropic like Bellerophon." These men but voiced a general observation, and it must be conceded, therefore, that the high degree of mentality popularly designated as genius is acquired, or possessed, at the expense of perfect mental equilibrium.

What is actually meant by this popular idea can be more scientifically expressed as a lack of balance in the cerebrational powers due to an excessive specialization with a corresponding over-development of a certain few of the brain cells. As a consequence of this over-stimulation of a limited portion of the brain with a necessary neglect of the rest, brilliancy of intellect in one direction may be most incongru-

ously associated with deficient judgment in another direction, while the most unexpected and "sulphitic" manifestations of brain power will often astonish and delight the associates of these men of genius. So long as these scintillations of wit do not assume *outré* characters or become morbid in their effects upon their originators or hearers, they must be regarded as entirely physiologic, and they then become the most desirable traits of genius. It is to these brilliant men and women that we owe the *bons mots* of literature and the bewildering strokes of genius that have revolutionized the sciences and the arts. These individuals become the gifted orators, the spell-binding writers, the renowned statesmen, and the wizard-like inventors and "doers of deeds." Often they are brilliant in spite of themselves, and are

as astounded at their accomplishments as are their less talented companions. When the realm of eccentricity is reached, however, we may consider that genius and insanity are overlapping. It would appear, therefore, that while every man of genius is not insane, genius and insanity are border-lands the one to the other, and it is but a step across.

It was Emerson, I believe, who said, "Genius does what it must, talent what it can." The work of a true genius is done irrespective of his volition—therefore it is genius; while the work of volition is labor only, and is often—though not always—vastly inferior to the spontaneous creation of the mind. Who can deliberately think out brilliancy of repartee? It must come quickly, unconsciously, without labor—therefore is it

brilliant and charming. The normal man is conscious, volitional; the abnormal or insane man is unconscious, involuntary. The more readily the former can pass into the involuntary, unconscious state the more nearly does he approach the condition of insanity. Now, if true genius is the result of the involuntary action of the mind, it stands to reason that it is closely allied to, if not partaker of, the insane state. In other words, it must be at the border-line between sanity and insanity that true genius is to be found; therefore it is not remarkable, nor is it to be wondered at, that these men of genius are frequently the victims of habits or whims that seem peculiar and abnormal to their saner companions. Not every genius, however, is afflicted with these peculiar or unpleasant traits; therefore not every

genius has planted his foot across the border-line of insanity, although it may be but a matter of months or years before he does so. So long as his volitional powers are able to govern and direct the subconscious genius he is a sane man endowed with brilliancy of intellect. When the will is no longer supreme and fails to restrain the subliminal consciousness the latter runs riot, and the man of genius has overstepped the boundary-line of sanity.

THE TYPES OF GENIUS

These individuals of genius comprise two distinct types of men, differing in all their characteristics save that of mental superiority. "Moody" men they often are—these men of genius. Yet not all. Plodders many of them have

been, and while deep in the monotony of their plodding has the flash of genius illuminated the page, the canvas, or the work-bench. Thus it is recorded of Trollope, the practical "plodder," that he abhorred the expression "waiting for inspiration" to write. He claimed that a shoemaker or a tallow-chandler might just as well await the moment of inspiration for cobbling or melting the tallow. He agreed with Dickens and Scott and Bulwer and Johnson that persistent and unremitting labor will bring its reward in excellent and truly inspired work. It is said that frequently Dickens, when he felt least inclined to do so, would take up his pen and literally drive himself to write until, under the inspiration of the effort, the fountain would be let loose and the words would crowd themselves upon the paper.

How different this from Thackeray, who would destroy sheet after sheet of manuscript until seized by the inspiration, when he would scribble off pages of finished composition without a moment's hesitation. So there have been certain orators whose best addresses were delivered without preparation and when their authors were under the influence of mild alcoholic stimulation.

Men and women with highly developed emotional natures, as George Eliot, are especially subject to the influence of inspiration in their work. It is well known that George Eliot at times became so absorbed in her task that it seemed to her some other personality than herself was wielding the pen. Her imaginary characters for the time being became real to her, and it was while under this obsession she did her best work.

Samuel Johnson, on the other hand, claimed that any one could compel himself to produce good and even excellent work by setting himself "doggedly to it," and Francis Parkman is a striking example of this class of genius, working as he did for half a century against physical limitations that were almost insuperable.

These two classes of great men stand in vivid contrast—the moody, emotional, "inspired" group, who now and then bewilder the world with lightning-like strokes of genius that reveal the untold possibilities of their minds, while in the intervals they are dejected, inert, and non-productive; and the sturdy "plodders," who by mere force of their superior will keep persistently at work and flood the intellectual world with valuable effusions of wit, science, art, and

literature. With unremitting toil these latter become the great producers of the world, whose products form the bulwarks of intellectual development. Draper, Darwin, Dickens, Humboldt, and Carlyle were typical plodders, while Poe, Byron, Eliot, and Stephenson belonged to the moody and inspirational type of genius.

WHIMS OF GREAT MEN

At considerable expense of time and labor I have collected many of the queer fancies, antipathies, and striking peculiarities of the great men of the world. A mere perusal of this list will conclusively demonstrate the close relationship which exists between genius and insanity. These whims have taken various forms. Thus, while in many instances the aberration has appeared as a violent

and unreasonable antipathy or aversion, in others it has assumed some notable eccentricity in dress or manner, while yet again the mental condition is shown in some unusual fancy as to methods of living and working. Without any effort at explanation the curious facts are presented here just as they have been culled from literature.

ANTIPATHIES OF THE GREAT

FEAR has played an important rôle in the development of the antipathies of the great—fear that was often groundless in its origin and inexplicable in its manifestation. Thus, Marshal Saxe, for whom the horrors of a battle-field had no terror, was thrown into consternation and fled at sight of a cat, while Henry III of France entertained such

an aversion to cats that he fainted when he saw one, and the Duke of Schomberg, a soldier of repute, refused to sit in the same room with a feline. This aversion to cats is probably one of the most common dislikes of the great. It is reported that a courtier of the Emperor Ferdinand suffered a bleeding from the nose whenever he heard the mewing of a cat, and a well-known officer of the English army during the reign of Queen Victoria, the hero of numerous campaigns, always turned pale at the sight of a cat, and could even tell when one was in his vicinity though unseen. The unaccountable fear of dogs is not so common, although it is said that De Musset cordially detested them, and Goethe despised them, notwithstanding, forsooth, he kept a tame snake. Much more frequent is the fear

of spiders, centipedes, and other insects. Charles Kingsley, thorough naturalist though he was, entertained an unconquerable horror of spiders, even the common house-spider; Turenne became weak when he saw a spider; while the author of the "Turkish Spy" once asserted that he would far prefer with sword in hand "to face a lion in his desert lair than to have a spider crawl over him in the dark." Lord Lauderdale, on the contrary, while declaring that the mewing of a cat was "sweeter to him than any music," had a most intense dislike for the lute and the bagpipe; and Dr. Johnson was so fond of his cats that he would personally buy oysters for them, his servants being too proud to do so.

Rousseau, the philosopher Hobbes, and Sir Samuel Romilly dreaded the approach of night; the former was ter-

ror-stricken in the dark, Hobbes insisted upon keeping a light in his bedroom all night, while Romilly invariably looked under the bed to assure himself no one was concealed there. Voltaire, the bold and fearless one, was thrown into mortal terror at the sound of the cawing of rooks, while Julius Cæsar was almost driven into convulsions by the sound of thunder, and St. Thomas Aquinas suffered veritable agony during a thunder-storm. While Montaigne preferred odd numbers, he refused to sit down to a table with thirteen people, and had a strong aversion for Friday, as did also Byron who, brilliant though he was, believed in omens, dreams, apparitions, and presentiments. Talleyrand and Queen Elizabeth felt such a fear of death that neither of them would permit the word to be uttered in their

presence, and, strange though it would seem, the father of the Russian navy, Peter the Great, shuddered at the sight of water. He would never enter the beautiful palace-gardens because the river Mosera flowed through them, and when out driving he commanded his coachman to avoid all roads that ran by streams. If compelled to cross a bridge or a small brook the emperor would close the carriage windows and become drenched in a cold perspiration. Boyle was thrown into convulsions by the sound of water dropping from a faucet. James I of England detested tobacco and pork, and the sight of a drawn sword would throw him into a fit of terror. When giving the accolade he invariably turned his face away, and on one occasion, as a result of this peculiarity, almost wounded the new-made knight.

Even flowers have not escaped the aversion of some. Thus, Vincent, the painter, was seized with vertigo and swooned at the smell of a rose, and to the Countess of Lamballe a violet was a thing of horror. Scaliger states that one of his relatives became ill at the sight of a lily, and he himself could not drink milk, and would turn pale when he was confronted by water-cresses. The secretary to Francis I was compelled to stop his nostrils with bread or leave the room if an apple was on the table. Erasmus became feverish if he saw a sea-fish. Marshal d'Albret became nauseated when he looked on a boar's head. Tycho Brahe trembled and shook at the knees at the sight of a hare, and the Duke of Eperon fainted at the sight of a leveret.

NOTABLE ECCENTRICITIES OF THE GREAT

THE eccentricity of Goldsmith took the form of dandyism, and who does not remember the story of his peach-blossom coat? This is in striking contrast to the aged and diminutive Thiers,—he was scarcely over four feet in height,—who would not don the colored scarf of honor for fear it would make him look like a "Punch and Judy President." The farmer Grévy also had a strong aversion to uniforms and colors, and was pronounced the plainest-looking magistrate from Washington to Berne. It irked him, it is said, to wear even the funereal black with the cordon of the Legion over his breast.

Some of the relaxations of the great

have consisted in simple and even ridiculous sports. Thus it is said that Shelley would consume an entire day in floating tiny paper boats on any water he chanced to be near. When he thought he was in need of a little activity the great logician, Samuel Clarke, would leap over tables and chairs, frequently to their irreparable damage, while Cardinal Richelieu, the dictator of kings, found pleasure and amusement in jumping and leaping with boys. The learned Petavius would find refreshment in twirling his chair round for five minutes at the expiration of every two hours; while the most innocent amusement of King Charles II consisted in feeding the ducks in St. James's Park and in rearing the beautiful spaniels which bear his name. The Puritan Cromwell frequently indulged in blind-

man's-buff with his daughters and attendants; and the poet Cowper built bird-cages and consumed many an hour in feeding his hares. Nothing delighted Henry IV of France more than rambling about in disguise among the peasantry; while Salvator Rosa would assume the character of a mountebank in extempore comedies in the streets of Rome. Spinoza, the weighty philosopher, passed his idle hours in setting spiders fighting, and would laugh immoderately at their strange antics; while the celebrated librarian to the Duke of Tuscany, Antonio Magliabechi, cultivated the spiders which thronged his apartments and would caution his visitors not to injure them. Tycho Brahe amused himself by polishing spectacle-glasses; and Joseph Jefferson, ex-President Cleveland, and Paley, the erudite

author of "Natural Theology," found health and relaxation in the fishing-rod; while the unfortunate Louis XVI whiled away his time at locksmithing. It is said that Beethoven kept himself the constant victim of a cold by his inordinate love for cold water, in which he would splash and dabble at all hours of the day until his room was swamped and the water oozed through the flooring to the ceiling beneath. He would also take daily walks barefooted in the dewy fields.

THE FANCIES OF AUTHORS

VERY curious and extremely interesting have been the methods adopted by authors in the preparation of their books. It is said that Scott wrote his finest works before breakfast while his friends

were enjoying their morning naps; while Coleridge could never compose so happily as when "walking over uneven ground, or making his way through a coppice with the twigs brushing his face." Wordsworth, on the contrary, composed most of his later poems while wandering up and down a straight gravel walk. Probably the most remarkable authorial whim was that enjoyed in common by the English poet, John Philips, and the great Dutch scholar, Isaak Vossius, son of the learned Gerardus Johannes Vossius. These men, strange to relate, found their greatest inspiration while a servant was combing their hair. Milton claimed he could not compose satisfactorily except between the spring and fall equinoxes, during which time he thought his poetry was inspired. The poets Thomson, Gray,

and Collins believed that their inspiration came during this same period and could not write at other times. According to Crabbe's son, who has published an excellent biography of that poet, his father "fancied that autumn was on the whole the most favorable season for him in the composition of poetry, but there was something in the effect of a sudden fall of snow that appeared to stimulate him in a very extraordinary manner. It was during a great snow-storm that, shut up in his room, he wrote almost *currente calamo* his 'Sir Eustace Gray'." It is well known that Southey could write only when surrounded by his books and other familiar objects.

The purring of Montaigne's cat, which he stroked with his left hand while he wrote, stimulated him to produce his finest "Essays." Most remarkable were

the whims of Hogg, the Ettrick Shepherd, and Graham, the author of "The Sabbath," who, as De Quincey relates, could not write satisfactorily unless fully booted and spurred; while, according to Horace Walpole, Lord Orrery found no stimulus to work so efficacious as a sharp attack of the gout. Lord Bacon, it is said, could do his best work when inhaling the fumes of a bottle of claret poured out on newly upturned earth. Buffon was mentally helpless without a spotless shirt and a starched frill; while William Prynne, the talented author of the "Histriomastrix," was nothing "without a long quilted cap which came an inch over his eyes." Equally as curious as these is the custom of one of the distinguished novelists of to-day who can create only when sitting surrounded by lighted

candles in a darkened room. Before Gray would attempt to compose he invariably read some cantos of the "Faerie Queene," and Corneille would precede his effusions by the perusal of "Lucan."

Physical and gastric stimulation were necessary to many celebrities in order that their minds could best functionate. Thus it is said that the ancient philosopher, Carneades, dosed himself well with hellebore before writing. De Musset was helpless without absinthe, while De Quincey, Coleridge, Psalmanaazar, Shadwell, Dean Milner, and Bishop Horsley invariably wrote under the stimulation of opium. Blackstone never wrote without a flask of port wine at his side, nor Schiller without his Rhenish wine; while it was necessary that they become intoxicated before Æschylus, Eupolis, Cratinus, and Ennius

could compose. The fumes of tobacco were necessary to stimulate the brains of Hobbes, Dr. Parr, and Boxhorne, the great Dutch scholar. "Ten or twelve pipes with a candle," were invariably present on Hobbes' desk; while Boxhorne, who preferred a long pipe, devised a hat with an enormous brim which depended before his face and which was perforated to support the stem of the pipe so that the author could have undisputed use of his hands. Fuseli and Dryden ate raw meat to assist their imagination, and the latter frequently had himself bled with the same object in view.

DIETARY HABITS OF FAMOUS MEN

As might be expected from the foregoing review as well as from a general

knowledge of mankind, curious habits of eating have distinguished many of the famous men of the world. Thus, while every one knows that John the Baptist preferred locusts and wild honey as his daily food, it is not so generally known that the Evangelist John was so abstemious that a handful of barley sufficed him for a day, and that Mohammed was content with a handful of dates and a mouthful of water after a day of hard riding. In fact, abstemiousness seems to have been a very common trait among the great, and it may be that much of their greatness depended upon this very habit, for a repleted system is not conducive to mental or physical activity. Pope Pius IX required but an egg and a piece of bread for his breakfast; Michelangelo during the greater portion of his life

subsisted on the plain food of an Italian peasant; Leonardo da Vinci contented himself at any meal with bread and oranges; Francis Bacon never ate more than one or two simple dishes at a meal; Locke considered that for a studious man a piece of fish with bread formed a proper breakfast; Raphael lived principally on figs and raisins and other dried fruits, with bread; and Alexander the Great, when on a campaign, partook of the rations of a common soldier.

On the other hand, there were some celebrated men who were connoisseurs of eating and who enjoyed certain special dishes according to the peculiarities of their gustatory nerves. Thus Peter the Great regarded baked goose stuffed with apples as the *pièce de résistance par excellence,* and Fielding thought

that tarts made with currant jelly were "heaven's own food." Rare Ben Jonson asked no better treat than a pork pie with an abundance of Canary wine, and Macaulay claimed that no man need ask for better food than plain roast beef and baked potatoes. Whose mouth has not watered at the luscious repasts described by Dickens, who doubtless portrayed his own cultivated taste in eating?

It is said that Henry VIII frequently ate himself into a condition of drowsiness on a haunch of venison, and Walter Scott preferred venison to any other meat, and potatoes to any other vegetable. Kaulbach's favorite dish was sauerkraut and pork, and Frederick the Great enjoyed immensely a meal of cabbage with salt beef or pork. The Duke of

Marlborough on one occasion declared that "no soldier can fight unless he is properly fed on beef and beer." Vitellius, the Roman Emperor, and Napoleon Bonaparte were both heavy eaters. The latter was not at all choice in his gastronomic habits, but would eat ravenously of whatever lay nearest to him on the table; while the Roman emperor would eat copiously until filled, and then would take an emetic and repeat the performance to his own satisfaction, doubtless, but to the intense disgust of his contemporaries and of countless generations since.

THE NEUROSES OF THE GREAT

If the foregoing array of whimsical fancies were not sufficient to demonstrate the kinship of genius and insan-

ity, there is a still more pathologic aspect of genius which has attracted the attention of both the medical and the non-medical world. It is a curious fact that a very large percentage of the notables of the world's history have been the subjects of epilepsy, catalepsy, and other major nervous affections. Because of this intimate association of mental disease with brilliancy of intellect genius itself has, by many neurologists, been regarded as a neurosis. Balzac pays tribute to the truthfulness of this observation in his notable presentation of "Louis Lambert," and in his still greater philosophical novel, "Seraphita." Lombroso, Pedigo, and others, who have themselves been free from this neurotic taint, have thoroughly searched the literature of the subject, and we, as scientists, are deeply indebted to them

for their great work in this line. It is interesting to note that the brilliant Charles Lamb, who most pathetically endeavored to disprove any such relationship between genius and insanity, and who was himself a pronounced neurotic, was at times incarcerated in a sanitarium, and in the intervals spent a life of devotion in behalf of his insane and epileptic sister.

If the genius himself was not a subject of one of these nervous affections, a strong family history could frequently be traced either in his own generation or in the generations immediately preceding. The neurosis most commonly assumed the type of epilepsy or the "falling sickness," although hysteria, catalepsy, St. Vitus's dance, idiocy, dualism, or dual personality, deaf-mutism, alcoholism, subconscious cerebra-

tion, and periodic insanity were frequent occurrences. This association of genius with families and individuals of the grave neurotic type is a curious phenomenon, and it doubtless largely influenced Lombroso to assume the advanced position he has taken which regards genius as "essentially an epileptiform neurosis." Did every genius who failed himself to manifest some grave neurotic affection have offspring, it is very probable that an unusually large proportion of them would develop some form of hereditary neurosis. A wise provision of Providence has intervened, however, for it is a noteworthy fact that the lines of great men most generally become extinct with them or their sons. A mere superficial investigation of the subject will bear out the accuracy of this observation.

THE NEUROSES OF HISTORY

This is too vast a subject to treat largely at this time, and all that can be attempted is to call attention to the direct proofs of the truthfulness of the relationship existing between genius and certain nervous affections in the numerous historical instances which may have escaped the attention of the average reader. In doing this the writings of Lombroso, Pedigo, and others have been searched for the most remarkable and striking cases that have been recorded.

It would appear that almost all the bright lights of ancient times were neurotic. "Socrates," writes Pedigo, "presented one of the most interesting studies in dual personality and subcon-

scious conditions in all history in his memorable *dæmon,* which he said guided him and inspired him with wisdom." Brutus and Julius Cæsar were victims of hallucinations, and the latter was a pronounced epileptic and subject also to attacks of vertigo in the midst of his public work. Petrarch was an epileptic, as was also Mohammed, who, in addition, at times during the heat of battle became a raving maniac. Peter the Great was afflicted with epileptic convulsions, and an attack would be induced by the sight of certain colors. Paganini was both epileptic and cataleptic. Martin Luther was subject to hallucinations, during one attack of which he is said to have thrown the historic inkstand. Chateaubriand, Thomas Campbell, and Samuel Johnson showed varying degrees of St. Vitus's dance,

or at least were subject to choreic movements. Napoleon, Oliver Cromwell, Shelley, Malebranche, Swedenborg, Bunyan, Hobbes, Columbus, Goethe, Samuel Johnson, and Descartes suffered at certain periods of their lives from hallucinations. Voltaire was a hypochondriac and the great Darwin gave a neurotic family history. Sir Isaac Walton had delusions of persecution, and Rousseau's confessions prove his insanity, which was still more conclusively demonstrated at the autopsy. Cowper, Poe, and Lincoln were melancholic. Byron's father committed suicide while insane, and the poet himself was a subject of melancholia and hallucinations. Napoleon believed in the dominance of his star; Richelieu, Dean Swift, Flaubert, the novelist, Mozart, Pascal, Handel, Schiller, Napo-

leon, Charles V, and Molière were all epileptic, and Dean Swift eventually developed an incurable insanity. John Ruskin had attacks of ungovernable rage, and spent some years in an asylum; Herbert Spencer was the victim of a fixed delusion.

This remarkable record is more than a mere coincidence. It must be looked upon as a positive proof of the close intimacy that exists between genius and the neurotic temperament.

CHAPTER VII

THE BRAIN OF GENIUS

THE old theory that weight of brain endows its possessor with superior faculties has long since been discarded. Sims has demonstrated conclusively that many celebrated men possessed brains having a lesser weight than the brain of ordinary mortals or even of idiots. The brilliant Gambetta had a brain which did not equal in weight that of the average child, while the brains of Agassiz, Byron, Daniel Webster, Napoleon, and other great men did not exceed in weight those of the ordinary commonplace man. A curious fact is

that heavy as it was, the brain of Turgenieff, the Russian novelist, was greatly exceeded in weight by that of an ignorant laboring man. All of which will go to prove that a heavy brain is no criterion of a person's intellectuality, nor does a light brain denote inferior mental capacity. Sims advocated the theory that the colder the climate the larger is the brain. Marchand, in some very interesting studies, has demonstrated that there is no constant relation between body weight and brain weight. In general, the weight of the brain is greater between the ages of twenty and sixty than between sixty and eighty. In estimating the mental capacity of a brain it is necessary to consider qualitative conditions and morphologic superiority as well as, and in preference to, the weight of the organ.

MORPHOLOGIC PECULIARITIES OF THE BRAIN OF GENIUS

THE preëminent morphologic peculiarities of brains characterized in life by high intellectuality are three. These are, probably in the order of their importance as far as our present limited knowledge of the brain will permit us to assume: the number of the connecting fibers, the number and depth of the convolutions, and the number of the gray cells. This is in reverse order to the popular idea that multiplicity of gray cells is most important in order that the individual attain to a high degree of mentality. It goes without saying that a deficiency of these working cells of

the brain will indicate inferiority in mental action, and it is well known that monkeys and apes and the lower races, as well as idiots and certain degenerates, show such a lack of gray cells. But given two hypothetic individuals of the highest races and with the utmost degree of cerebral development, and that one showing the larger number of connecting fibers will manifest the higher degree of cerebrational power. These fibers indicate that such a man has had better coördinating power whereby he could call into play a larger number of combinations of cells than could his brother who was compelled to depend more upon the individual action of the various gray cells, equally numerous though they might have been.

This view is still further carried out by the studies of comparative anato-

mists, who agree in stating that in no other species of animal life are the cerebral connecting fibers so numerous and complicated as in man. As is well known, even by the laymen, there is a great connecting band between the two halves of the upper brain known as the "hard body" or corpus callosum. Now, in direct line with the course of reasoning already given come the investigations of Spitzka and other brain experts who assert that this body is much larger, broader, and deeper in men of great intelligence than in men of average mental ability. If this be true, and there is no reason to doubt the accuracy of the observation, it can have but one signification: the telegraphic wires, so to speak, between the correlated gray cells of either cerebral half are multiplied, and by the mere physical law of bulk require

more space for their transmission. Accordingly, the cerebral impulses can be switched through a greater number of channels than in the individual less fortunate in his number of connecting-bands. The relation of this "brainy" individual to his fellow of smaller cerebral capacity may be compared to that of a full-diapason organ as contrasted with an instrument having a smaller number of pipes. He is brighter, broader, and better.

An examination of the brains of monkeys, higher apes, and men shows another striking morphológic peculiarity, namely, a progressive increase in the number, depth and tortuosity of the fissures, and a corresponding multiplication of the convolutions of the brain, according to the position of the individual in the scale of physical and men-

tal evolution. In other words, men possess brains that are more fissured and convoluted than are the brains of the other higher primates, and, again in line with the course of reasoning we have pursued, men of the higher Caucasian and Mongolian races show a greater degree of fissuration and convolution than do men of the lower types, as the Hottentots and Bushmen. This condition necessarily affords a greater surface extent over which the gray substance of the brain must be spread, and therefore indicates a corresponding increase in the number of the gray cells present in the brain. If, in addition to this surface expansion, there is noted, as is true in men of high mentality, an increased depth or thickness of the gray matter, we have again a greater number of gray cells present, with a necessary

increase in the cerebrational power of the individual.

All of which would seem to prove the older theory of superior brain weight associated with superior mentality. There is, however, another element which comes in to modify this conclusion, and that is the quality of the texture of the brain. It is here that the seeming error occurs. Men of extreme erudition have been found with brain weights below the average. In such cases undoubtedly the fineness of the texture of the cells and connecting fibers must be taken into consideration. There is neither a deficiency of the brain cells nor an inferior number of connecting bands, but a delicacy of structure which results in a smaller bulk of the brain when considered *en masse*. The general principle remains true,

however, that a large brain as a rule indicates superior brain force. It is this truth which establishes the supremacy of man over all other animal creation.

INFLUENCE OF THE BODY ON THE BRAIN

THERE are other disturbing elements which must be eliminated in order to arrive at a satisfactory conclusion as to the proper relationship existing between brain weight and great mentality. Thus, as has already been noted, the heaviest brain recorded was that taken from an ignorant laboring man. This may have been a brain pregnant with latent possibilities but which, owing to environmental defects such as extreme poverty or depressing and uncultured surroundings, was never given the opportunity of educational development.

Doubtless many a brain of genius has been snowed under by adverse circumstances and never found the chance to demonstrate its inherent abilities. Again, a brain of unusual weight may be the seat of some pathologic formation, as a tumor or an excessive hardening from an overgrowth of the fibrous tissue, whereby the specific gravity of the organ has been vastly increased over the normal. I have seen such a brain, the overweight of which resulted from the presence of a tuberculous growth which had been the cause of death. On the other hand, it is quite possible to conceive the case of an individual who has won fame in a particular line of work as the result of a remarkable specialization and development of a limited number of brain cells, while the great mass of his brain tissue has suffered from neglect and

may be quite deficient in every respect. Naturally, such a brain would be under weight, and yet its owner find his place among the great of the world. This was true of the brilliant French orator, Gambetta, who lacked many of the characteristics of even an ordinary brain development. The general law is pretty conclusively established that "all organs are in relation to function," and a brain that is persistently and systematically used must be larger and more productive than one which is allowed to "run to seed" and atrophy from disuse.

In addition, in a study of this kind, there must be carried in mind the natural association between body weight and brain weight, and the effect upon the size of the brain exerted by age, stature, sex, and condition of health. As bearing upon this aspect of the sub-

ject mention should be made of the work of Dr. A. Adam, of Paris, and Professor Lombroso. Adam concludes that "in general the weight of brain in man is greater than in woman," although he hastens to assert, probably for his own safety and peace of mind, that this does not mean that certain women may not possess heavier brains than men. He also finds that "height has an effect on brain weight, and muscular and bone development play their part." Lombroso has pointed out "that the great majority of men of genius are to be found in either of two classes—the tallest or the shortest. Among men of average mental attainments the greater number are of average height—of this class 16 per cent. are of high, 16 per cent. of low, and 68 per cent. of medium stature. Turning to men of genius, 37

per cent. are low, 41 per cent. high, and only 22 per cent. medium. Examples of short geniuses are Epictetus, George Eliot, and A. C. Swinburne; of the tall variety are Petrarch, Goethe, and Tennyson.

Nutrition has an important effect on the condition of the brain, and Adam quotes Matiegka as observing a difference of 36 grams in favor of well nourished persons. It must not be concluded, however, that in every instance this increased brain weight necessarily implies greater brain capacity, but probably a larger amount of blood and serum in the tissues. Of stout geniuses may be mentioned Victor Hugo, Renan, Lee, Rossini, and Balzac; of thin are Pascal, Kepler, Voltaire, and Giotto. Disease, especially when associated with hemorrhage, has a decided effect in

lessening the weight of the brain, while mental diseases will have a varied effect according to whether or not they are associated with atrophy or hypertrophy of the brain structure.

It is interesting to note Adam's classification of brain weights into six groups according to occupation, beginning with day-laborers, who have the smallest brain weight; men with regular trades; domestic servants; business men; artists, professors, and musicians; and men engaged in higher forms of intellectual activity, as scientists. In these different groups the average brain weight was found to be respectively 1410, 1433, 1435, 1449, 1469, and 1500 grams. Most men of genius have a high brain capacity. Thus, Lebon, on examining the skulls of twenty-six Frenchmen of genius, found that they

yielded an average capacity of 1732 cubic centimeters—a little more than 300 in excess of the average. On the other hand, of the brains of twelve famous Germans studied by Wagner and Buchoff, eight had either a decidedly low or a very high capacity. Döllinger, for instance, had a capacity of only 1207 cubic centimeters, and Liebig 1352 cubic centimeters.

BRAIN CAPACITY AND THE FACIAL INDEX

Other morphologic characteristics of the head that are supposed to have a direct bearing upon the brain are the facial index and the shape of the skull. It is a well recognized truth that the size of the facial index is directly associated with the degree of mental capac-

ity. In other words, the greater the index the higher the mentality. This would seem to indicate that prognathism, or forward protrusion of the jaw, decreases with the higher development of the brain, and it stands to reason that this must be so. For as the size of the brain increases, the skullcap must develop in order to accommodate the thinking-organ, and the greater the breadth and length of the skullcap the greater the facial angle and the less the prognathism. This law is modified somewhat by the degree of development of the masticatory muscles and this by the size and weight of the jaw. So that individuals with heavy jawbones and large teeth may be more or less prognathic and still show a high degree of mentality, as was the case of the naturalist Cope, who was markedly prog-

nathic. The general law remains true, however, and in men of high mentality we look for an approximation of the facial contour to the original embryonic orthognathism, that is, to a facial index of 90°.

DOLICHOCEPHALISM AND MENTALITY

JUST why it is, as has been asserted by some, that the brains of many of these great thinkers should show a tendency to assume the elongated elliptical form with the longer axis lying anteroposteriorly is more difficult to determine. The frequency of decided dolichocephalism, as it is called, or "long-headedness," among great men is, at least, suggestive. That it is not a necessary concomitant of large cerebral capacity is borne out by the fact that the Esqui-

maux and the negroes of West Africa are dolichocephalic, while many men of great mental capacity have been decidedly round-headed. That the long head is quite common among the great men is true, however, and it will make an interesting investigation to ascertain the frequency by percentage of the two types of heads among the thinkers and workers of the world. By many it is believed that the shape of the skull, whether round or long, has no relation to the intellectual faculty, and this belief will probably be verified by subsequent researches.

SIZE OF HEAD AND MENTALITY

AGAIN, it cannot be stated with any degree of positivism that men who wear the larger sizes of hats are brainier, man

for man, than those who wear the smaller sizes. There are certain morbid conditions of the brain in infancy and childhood which result in varying degrees of oversize of the head without a corresponding degree of mental development, but in which there is an actual deterioration of the brain substance. There is, on the other hand, a condition of premature union of the bones of the head which results in an extreme undersize of the head known as microcephaly, and which is always associated with more or less pronounced idiocy. Again, the size of the normal head does not bear an unswerving relationship and proportion to the size of the body, a corporeally small man often having a normally large head or the reverse, the mentality reaching the average or above in either instance. In a study of mentality all these modi-

fying influences must be carefully investigated and assigned their proper relationship to the subject in hand.

THE DEGREE OF INDIVIDUAL MENTAL EQUIPMENT

In direct line with this phase of the subject mention must be made of the exhaustive investigations that have been instituted by Dr. James McKeen Cattell of Columbia University to ascertain the degree of mental equipment of the individual. These investigations include tests for intelligence and memory and certain physical tests, such as the measurement of the head, the lung power, the strength of the grip, and the usual test for eyesight and hearing. On the mental side, memory, intelligence, apperception, suggestibility, and im-

agery figure as requirements. The tests of a given individual are to be repeated at intervals of five and ten years and should yield interesting data.

Finally, a most remarkable suggestion, recently made by Dr. Edward A. Spitzka, is well worthy of careful study and development. In a recent address before the American Philosophical Society he stated that his observations go to show that men of an aggressive military trend are born when their fathers are between twenty and thirty years old; when the father is between thirty and forty the son is likely to be given to the arts or literature; between forty and fifty, he is apt to become a great statesman, and when the father is past fifty, as in the cases of Aristotle and Benjamin Franklin, the son is destined to show remarkable brain development

and ability. The influence of the father's age upon the brain capacity of his offspring is a new subject awaiting the developing touch of some ambitious investigator.

THINKERS

Name	Date of Birth	Age at Beginning of Activity	Age of Acme of Ability	Magnum opus	Age at Cessation of Work	Duration of Mental Activity	Date of Death	Age
				ASTRONOMERS AND MATHEMATICIANS		*Years*		
Arago	1786, Feb. 26	20	39	Discovery of rotatory magnetism	67	47	1853, Oct. 2	67
Biot	1774, April 21	26	42	"Treatise on Experimental Physics and Mathematics"	83	57	1862, Feb. 3	88
Copernicus	1473, Feb. 19	27	57	"De Orbium Cœlestium Revolutionibus Libri vi"	70	43	1543, May 24	70
D'Alembert	1717, Nov. 15 (?)	22	63	"Opuscules Mathématiques"	66	44	1783, Oct. 29	66
Euler	1707, April 15	26	75	"Opuscula Analytica"	76	50	1783, Sept. 18	76
Galileo	1564, Feb. 18	23	72	"Dialoghi delle nuove Scienze"	75	52	1642, Jan. 8	78
Herschel	1738, Nov. 15	35	55	Demonstration of mechanical laws of starry firmament	80	45	1822, Aug. 25	84
Kepler	1571, Dec. 27	23	48	"Celestial Harmonics"	56	33	1630, Nov. 15	59
Lagrange	1736, Jan. 25	18	52	"Mécanique Analytique"	77	54	1813, April 10	77
Laplace	1749, March 28	18	47	"Mecanique Celeste"	77	59	1827, March 5	78
Leverrier	1811, March 11	24	66	Revision of the Planetary Theories	67	43	1877, Sept. 23	67
Napier, John	1550	43	64	"Mirifici Logarithmorum Canonis descriptio"	67	24	1617, April 4	67
Newton	1642, Dec. 25	27	44	"Principia"	84	57	1727, March 20	85
Averages		26	56			47		
				DIVINES				
Alford	1810, Oct. 7	6	51	Greek Testament with Commentary	60	54	1871, Jan. 12	60
Arnold, Thomas	1795, June 13	25	44	"History of Rome"	47	22	1842, June 12	47
Beecher	1813, June 24	24	65	Bible study sermons	74	50	1887, March 8	74
Brooks, Phillips	1835, Dec. 13	24	56	Bishop of Massachusetts	58	34	1893, Jan. 23	58
Chalmers	1780, March 17	25	62	"Institutes of Theology"	67	42	1847, May 21	67

Edwards	1703, Oct. 5	19	51	"Freedom of the Will"	55	36	1758, March 28	55
Farrar	1831, Aug. 7	24	43	"Life of Christ"	70	46	1903, March 15	72
Mather, Cotton	1663	23	61	"Biblia Americana"	65	42	1728	65
Moody	1837, Feb. 5	23	42	Founding of Northfield Seminary	62	39	1899, Dec. 22	62
Newman	1801, Feb. 21	20	63	"Apologia pro vita"	78	58	1890, Aug. 11	89
Smith, Sydney	1771, June 3	26	38	"Peter Plymley's Letters"	72	46	1843, Feb. 22	74
Spurgeon	1834, June 19	18	46	"Commentary on the Psalms"	57	39	1892, Jan. 31	58
Stanley, Dean	1815, Dec. 13	22	52	"Memorials of Westminster Abbey"	66	44	1881, July 18	66
Wesley	1703, June 28	23	36	Founded the first Methodist Church	87	64	1791, March 2	88
Whitefield	1714, Dec. 16	22	45	Evangelistic tours	56	34	1770, Sept. 30	56
Averages		22	50			43		

DRAMATISTS AND PLAYWRIGHTS

Boucicault	1822, Dec. 26	18	54	"The Shaughraun"	68	50	1890, Sept. 18	68
Corneille	1606, June 6	23	38	"Rodogune"	68	45	1684, Sept. 30	78
Ibsen	1828, March 20	21	51	"A Doll's House"	71	50	1906, May 23	78
Jerrold	1803, Jan. 3	18	43	"Mrs. Caudle's Curtain Lectures"	51	33	1857, June 8	54
Jonson	1573, Jan.	25	43	"The Book of Epigrams"	64	39	1637, Aug. 6	64
Molière	1622, Jan. 15(c)	31	44	"Le Misanthrope"	51	20	1673, Feb. 17	51
Racine	1639, Dec. 21	21	51	"Athalie"	56	35	1699, April 12	60
Sheridan	1751, Sept.	24	26	"The School for Scandal"	43	19	1816, July 7	65
Averages		23	44			35		

ESSAYISTS

Addison	1672, May 1	21	42	"Periodical Essays"	43	22	1719, June 17	47
Arnold, Matthew	1822, Dec. 24	35	43	"Essays on Criticism"	65	30	1888, April 15	65
Burton, Robert	1576, Feb. 8	23	45	"Anatomy of Melancholy"	60	37	1640, Jan. 25	64
Carlyle	1795, Dec. 4	19	42	"History of the French Revolution"	70	51	1881, Feb. 5	86
Curtis	1824, Feb. 24	27	52	Editorial writings	68	41	1892, Aug. 3	68
De Quincey	1785, Aug. 15	32	36	"Confessions of an English Opium-eater"	70	38	1859, Dec. 8	74
D'Israeli, Isaac	1766, May	22	51	"Curiosities of Literature"	75	53	1848, Jan. 19	82

THINKERS

Name	Date of Birth	Age at Beginning of Activity	Age of Acme of Ability	Magnum opus	Age at Cessation of Work	Duration of Mental Activity	Date of Death	Age
				ESSAYISTS		*Years*		
Emerson	1803, May 25	30	47	"Representative Men"	73	43	1882, April 27	79
Greeley, Horace	1811, Feb. 3	20	40	Founding of "Weekly Tribune"	61	41	1872, Nov. 29	61
Grimm, Baron von	1723, Dec. 26	26	67	"Correspondance littéraire"	73	47	1807, Dec. 19	84
Holland, J. G.	1819, July 24	30	51	Founding of "Scribner's Monthly"	62	32	1881, Oct. 12	62
Holmes	1809, Aug. 29	27	43	"Autocrat of the Breakfast Table"	79	52	1894, Oct. 7	85
Hunt, Leigh	1784, Oct. 19	18	60	"Imagination and Fancy"	71	53	1859, Aug. 28	75
Johnson, Samuel	1709, Sept. 18	29	72	"Lives of the Poets"	75	46	1784, Dec. 13	75
Lamb	1775, Feb. 10	21	35	Essays in "Reflector"	59	38	1834, Dec. 27	59
La Rochefoucauld	1613, Sept. 15	49	52	"Maxims"	65	16	1680, March 17	67
Lessing	1729, Jan. 22	18	50	"Nathan der Weise"	51	33	1781, Jan. 22	52
Littré	1801, Feb. 1	30	72	Dictionary	73	43	1881, June 2	80
Lowell	1819, Feb. 22	22	47	"Biglow Papers" (second series)	72	50	1891, Aug. 11	72
Montaigne	1533, Feb. 28	38	47	Essays	59	21	1592, Sept. 11	59
Müller, Max	1823, Dec. 6	21	55	"On the Origin and Growth of Religion"	69	48	1900, Oct. 28	77
Paulding, J. K.	1778, Aug. 22	29	57	"A Life of Washington"	75	46	1860, April 5	82
Rousseau	1712, June 28	37	53	"Confessions"	66	29	1778, July 2	66
Ruskin	1819, Feb. 8	24	46	"Sesame and Lilies"	75	51	1900, Jan. 20	81
Sainte-Beuve	1804, Dec. 23	23	45	"Causeries du Lundi"	61	38	1869, Oct. 13	65
Steele	1672, March	23	50	"The Conscious Lovers"	57	34	1729, Sept. 1	57
Voltaire	1694, Nov. 21	21	58	"Dictionnaire Philosophique"	83	62	1778, May 30	84
Willis, N. P.	1806, Jan. 20	21	48	"Famous Persons and Places"	53	32	1867, Jan. 20	61
Averages		26	51			40		

HISTORIANS

Bancroft	1800, Oct. 3	34	85	"History of the United States"	85	51	1891, Jan. 17	91
Boeckh	1785, Nov. 24	22	74	"Corpus Inscriptionum Græcarum"	80	58	1867, Aug. 3	82
Boswell	1740, Oct. 29	22	51	"Life of Johnson"	53	31	1795, May 19	55
Freeman	1823, Aug. 2	23	53	"History of the Norman Conquest"	63	45	1892, March 16	69
Froude	1818, April 23	29	52	"History of England"	74	45	1894, Oct. 20	76
Gibbon	1737, April 27	24	50	"Decline and Fall of the Roman Empire"	52	28	1794, Jan.15	57
Grote	1794, Nov. 17	20	62	"History of Greece"	77	57	1871, June 18	77
Hallam	1777, July 9	27	41	"Europe during the Middle Ages"	75	48	1859, Jan. 21	82
Hume	1711, April 26	28	50	"History of England"	53	30	1776, Aug. 25	65
Irving, Washington	1783, April 3	24	47	"The Alhambra"	75	51	1859, Nov.28	76
Lamartine	1790, Oct. 21	30	57	"Histoire des Girondins"	76	46	1869, March 1	79
Macaulay	1800, Oct. 25	25	55	"History of England"	55	47	1859, Dec. 28	59
Michelet	1798, Aug. 21	27	69	"Histoire de France"	75	48	1874, Feb. 9	76
Milman	1791, Feb. 10	23	64	"History of Latin Christianity"	75	52	1868	77
Mommsen	1817, Nov. 30	22	82	"Corpus Inscriptionum Latinarum"	84	62	1903, Nov. 1	86
Montesquieu	1689, Jan.	32	59	"Esprit des Lois"	66	34	1755, Feb. 10	66
Motley	1814, April 15	25	42	"Rise of the Dutch Republic"	60	35	1877, May 29	63
Niebuhr	1776, Aug. 27	34	53	"History of Rome"	53	19	1831, Jan. 2	55
Parkman	1823, Sept. 16	24	69	"A Half Century of Conflict"	69	45	1893, Nov. 8	70
Pepys, Samuel	1633, Feb. 23	27	65	"Diary"	65	38	1703, May 26	70
Prescott	1796, May 4	25	47	"Conquest of Mexico"	59	34	1859, Jan. 27	63
Ranke	1795, Dec. 21	29	52	"History of Germany in the Time of the Reformation"	91	62	1886, May 23	91
Renan	1823, Feb. 27	25	40	"Life of Jesus"	69	44	1892, Oct. 2	69
Averages		26	57			43		

JURISTS

Blackstone	1723, July 10	20	46	"Commentaries on the Laws of England"	57	37	1780, Feb. 14	57
Savigny	1779, Feb. 21	24	70	"Modern System of Roman Law"	74	50	1861, Oct. 25	82
Averages		22	58			44		

THINKERS

NATURALISTS

Name	Date of Birth	Age at Beginning of Activity	Age of Acme of Ability	Magnum opus	Age at Cessation of Work	Duration of Mental Activity (Years)	Date of Death	Age
Agassiz	1807, May 28	21	47	"Zoologie Génerale et Esquisses Génerales de Zoologie"	66	45	1873, Dec. 14	66
Audubon	1781, May 4	30	69	"Biography of American Quadrupeds"	69	39	1851, Jan. 27	70
von Baer	1792, Feb. 29	27	77	"Comparative Embryology"	82	55	1876, Nov. 28	84
Buffon	1707, Sept. 7	30	81	"Natural History"	81	51	1788, April 15	81
Cope	1840, July 28	24	55	Studies in American fossils	57	50	1897, April 12	57
Cuvier	1769, Aug. 23	26	48	"Regne Animal distribué d'après son Organization"	62	36	1832, May 13	63
Darwin	1809, Feb. 12	22	50	"The Origin of the Species"	72	50	1882, April 19	73
Geoffroy Saint-Hilaire	1772, April 15	21	50	"Philosophie Anatomique"	72	51	1844, June 19	72
Humboldt	1769, Sept. 14	21	89	"Kosmos"	89	68	1859, May 6	90
Huxley	1825, May 4	22	45	"Anatomy of Vertebrate and Invertebrate Animals"	68	46	1895, June 29	70
Lacépède	1756, Dec. 26	25	47	"Histoire Naturelle des Poissons"	68	43	1825, Oct. 6	69
Lamarck	1744, Aug. 1	34	78	"Histoire Naturelle des Animaux sans Vertebres"	80	46	1829, Dec. 18	85
Lavater	1741, Nov. 15	21	37	"Physiognomische Fragmente"	59	38	1801, Jan. 2	60
Leidy	1823, Sept. 9	22	52	Studies in Fossil bones	68	46	1891, April 30	68
Linnæus	1707, May 23	23	46	"Species Plantarum"	60	37	1778, Jan. 10	71
Lyell	1797, Nov. 14	22	66	"The Antiquity of Man"	70	48	1875, Feb. 22	78
Miller, Hugh	1802, Oct. 10	27	52	"My Schools and Schoolmasters"	54	27	1856, Dec. 23	54
Pasteur	1822, Dec. 27	25	63	Inoculation for Hydrophobia	72	47	1895, Sept. 28	73
Tyndall	1820, Aug. 21	29	45	"On Heat and Radiation"	63	34	1893	73
Averages		25	58			45		

Andersen, Hans Christian	1805, April 2	14	30	"Tales"	68	38	1875, Aug. 4	70
Balzac	1797, May 20	30	61	"La Comédie Humaine"	61	31	1858, Aug. 18	61
Blackmore	1825, June 7	29	44	"Lorna Doone"	69	40	1900, Jan. 20	75
Bulwer Lytton	1805, May 25	15	44	"The Caxtons"	68	53	1873, Jan. 18	68
Bunyan	1628	34	43	"Pilgrim's Progress"	57	23	1688, Aug. 3	60
Chateaubriand	1768, Sept. 4	29	77	"Memoires d'Outre-Tombe"	77	48	1848, July 4	80
Collins	1824, Jan. 8	24	44	"The Moonstone"	62	38	1889, Sept. 23	65
Cooper	1789, Sept. 15	30	37	"The Last of the Mohicans"	61	31	1851	62
Daudet	1840, May 13	18	44	"Sappho"	50	32	1897, Dec. 17	57
Defoe	1661	37	58	"Robinson Crusoe"	67	30	1731, April 6	70
Dickens	1812, Feb. 7	21	37	"David Copperfield"	58	37	1870, June 9	58
Dodgson (Lewis Carroll)	1832, Jan. 27	28	33	"Alice's Adventures in Wonderland"	59	31	1898, Jan. 14	66
Dumas *père*	1802, July 4	23	42	"Count of Monte Christo"	58	35	1870, Dec. 5	68
Du Maurier	1834, March 6	26	60	"Trilby"	62	36	1896, Oct. 8	62
Ebers	1837, March 1	28	40	"Uarda"	60	32	1898, Aug.	61
Fielding	1707, April 22	20	42	"The History of Tom Jones, a Foundling"	46	26	1754, Oct. 8	47
Gautier	1811, Aug. 31	19	52	"Le Capitaine Fracasse"	61	42	1872, Oct. 23	61
Grimm, Jacob	1785, Jan. 4	26	63	"Geschichte der deutschen Sprache"	78	52	1863	78
Grimm, Wilhelm	1786, Feb. 24	25	29	"Kinder- und Haus-Märchen"	73	48	1859	73
Harte, Bret	1839, Aug. 25	27	29	"The Luck of Roaring Camp"	59	32	1902, May 5	63
Hawthorne	1804, July 4	22	46	"The Scarlet Letter"	59	37	1864, May 19	60
Hugo	1802, Feb. 26	20	60	"Les Miserables"	80	60	1885, May 22	83
Kingsley	1819, June 12	29	36	"Westward Ho!"	56	27	1875, Jan. 25	56
Le Sage	1668, May 8	27	67	"Gil Blas"	72	45	1747, Nov. 17	79
Lever	1806, Aug. 31	31	35	"Charles O'Malley"	66	35	1872, June 1	66
Lover	1797, Feb. 24	21	45	"Handy Andy"	65	44	1868, July 6	71
de Maupassant	1850, Aug. 5	23	34	"Les Sœurs Rondoli"	41	18	1893, July 6	43
Reade	1814	36	47	"The Cloister and the Hearth"	70	34	1884, April 11	70
Richardson	1689	50	60	"Clarissa Harlowe"	65	15	1761	72
Scott	1771, Aug. 15	31	47	"Ivanhoe"	60	29	1832, Sept. 21	61
Stevenson	1850, Nov. 13	28	35	"Strange Case of Dr. Jekyll and Mr. Hyde"	43	15	1894, Dec. 3	44

THINKERS

Name	Date of Birth	Age at Beginning of Activity	Age of Acme of Ability	Magnum opus	Age at Completion of Work	Duration of Mental Activity	Date of Death	Age
				NOVELISTS		*Years*		
Sue	1804, Dec. 10	26	41	"The Wandering Jew"	53	27	1859, Aug. 3	55
Thackeray	1811, July 18	26	41	"Henry Esmond"	50	24	1863, Dec. 24	52
Trollope	1815, April 24	32	52	"The Last Chronicle of Basset"	67	35	1882, Dec. 6	67
Verne	1828, Feb. 8	20	44	"Tour Around the World in Eighty Days"	75	55	1905, March 24	77
Wallace	1827, April 10	34	53	"Ben Hur"	66	32	1905, Feb. 15	78
Warren	1807, May 23	23	34	"Ten Thousand a Year"	65	42	1877, July 29	70
Zola	1840, April 2	24	52	"La Débâcle"	62	38	1902, Sept. 29	62
Averages		26	46			35		
				PHILOSOPHERS				
Bacon	1561, Jan. 22	36	59	"Novum Organum"	64	28	1626, April 9	65
Berkeley	1685, March 12	22	48	"The Minute Philosopher"	63	46	1753, Jan. 14	68
Boehme	1575,	37	49	"Theologia Germanica"	49	12	1624, Nov. 17	49
Comte	1798, Jan.	24	56	"System of Positive Polity"	58	34	1857, Sept. 5	59
Condillac	1715	31	61	"Le Commerce et le Gouvernement"	65	34	1780, Aug. 3	65
Condorcet	1743, Sept. 17	22	50	"Esquisse d'un tableau historique des progrès de l'esprit humain"	50	28	1794, April 8	51
Descartes	1596, March 31	22	48	"Principia Philosophiæ"	54	32	1650, Feb. 11	54
Diderot	1713	31	59	"Encyclopedia"	71	40	1784, July	71
Fichte	1762, May 19	25	36	"System der Sittenlehre"	52	27	1814, Jan. 27	52
Hegel	1770, Aug. 27	26	57	"Philosophy of Religion," "History of Philosophy"	61	35	1831, Nov. 14	61
Hobbes	1588, April 5	40	63	"Leviathan"	92	52	1679, Dec. 4	92
Kant	1724, April 22	33	57	"Critique of Pure Reason"	76	43	1804, Feb. 12	80

Leibnitz	1646, June 21	17	68	"La Monadologie"	70	53	1716, Nov. 14	70
Locke	1632, Aug. 29	34	58	"Essay Concerning Human Understanding"	63	34	1704, Oct. 28,	72
Lotze	1817, May 21	21	57	"System der Philosophie"	63	42	1881, July 1	64
Mill	1806, May 20	19	42	"Political Economy"	67	48	1873, May 8	67
Saint-Simon	1760, Oct. 17	43	65	"Nouveau Christianisme"	65	22	1825, May 19	65
Schelling	1775, Jan. 27	18	70	"Philosophy of Mythology and of Revelation"	75	57	1854	79
Schopenhauer	1788, Feb. 22	25	30	"The World as Will and Idea"	72	47	1860, Sept. 2	72
Smith, Adam	1723, June 5	28	53	"Inquiry into the Nature and Causes of the Wealth of Nations"	67	39	1790, July 17	67
Spencer, Herbert	1820, April 27	22	76	"Synthetic Philosophy"	77	55	1903, Dec. 8	83
Spinoza	1632, Nov. 24	28	33	"Ethics"	44	16	1677, Feb. 20	44
Turgot	1727, May 10	23	47	Minister of Finance	54	31	1781, March 18	54
Averages		27	54			37		

POETS

Arnold, Edwin	1832, June 10	20	46	"Light of Asia"	60	40	1904, March 24	72
Beaumont	1585	17	25	"The Maid's Tragedy"	30	13	1616, March 6	30
Béranger	1780, Aug. 19	22	33	Songs	68	46	1857, July 16	77
Browning, Robert	1812, May 7	19	57	"The Ring and the Book"	77	58	1889, Dec. 12	77
Bryant	1794, Nov. 3	19	19	"Thanatopsis"	79	60	1878, June 12	84
Burns	1759, Jan. 25	22	29	"Auld Lang Syne"	37	15	1796, July 21	37
Byron	1788, Jan. 22	19	35	"Don Juan"	36	17	1824, April 19	36
Chatterton	1752, Nov. 20	10	16	"Resignation"	18	8	1770, Aug. 24	18
Chaucer	1340(c.)	30	51(c.)	"Canterbury Tales"	60	30	1400, Oct. 25	60
Coleridge	1772, Oct. 21	21	52	"Aids to Reflection"	61	40	1834	62
Cowper	1731, Nov. 26	42	54	"The Task"	62	20	1800, April 25	69
Dante	1265, May 27	25	56	"Divina Commedia"	56	31	1321, Sept. 14	56
Dryden	1631, Aug. 9	18	47	"All for Love, or the World Well Lost"	66	48	1700, May 1	69
Fletcher	1579, Dec. 17	28	42	"Rule a Wife and Have a Wife"	46	18	1625, Aug. 29	46
Goethe	1749, Aug. 28	17	80	"Faust" (second part)	80	63	1832, March 22	83
Goldsmith	1728, Nov. 10	30	43	"She Stoops to Conquer"	46	16	1774, April 3	46
Gray	1716, Dec. 26	26	35	"Elegy written in a Country Churchyard"	55	29	1771, July 30	55

THINKERS

Name	Date of Birth	Age at Beginning of Activity	Age of Acme of Ability	Magnum opus	Age at Creation of Work	Duration of Mental Activity	Date of Death	Age
				POETS		*Years*		
Heine	1799, Dec. 13	23	55	"Neueste Gedichte"	56	33	1856, Feb. 17	57
Hölderlin	1770, March 29	27	27	"Hyperion"	37	10	1843, June 7	73
Hood	1789, May 23	35	56	"Bridge of Sighs"	56	21	1845, May 3	56
Keats	1795, Oct. 29	22	23	"Endymion"	25	3	1821, Feb. 23	26
Keble	1792, April 25	35	54	"Lyra Innocentium"	71	36	1866, March 29	74
La Fontaine	1621, July 8	33	57	"Fables" (second collection)	70	37	1695, April 13	74
Landor	1775, Jan. 30	20	72	"Hellenics"	88	68	1864, Sept. 17	88
Lanier	1842, Feb. 3	25	38	"Science of English Verse"	38	13	1881, Sept. 7	39
Longfellow	1807, Feb. 27	26	40	"Evangeline"	75	49	1882, March 24	75
Lytton (Owen Meredith)	1831, Nov. 8	24	45	Viceroy of India	60	36	1891, Nov. 24	60
Marlowe	1564, Feb. 23	23	23	"Tamburlaine the Great"	29	6	1593, June 1	29
Milton	1608, Dec. 9	18	59	"Paradise Lost"	63	45	1674, Nov. 8	66
Moore	1779, May 28	29	38	"Lalla Rookh"	55	26	1852, Feb. 26	73
de Musset	1810, Dec. 11	17	26	"Il ne faut jurer de Rien"	45	28	1857, May	47
Petrarch	1304, July 20	35	47	"Epistle to Posterity"	65	30	1374, July 18	70
Poe	1809, Jan. 19	24	36	"The Raven"	39	15	1849, Oct. 7	40
Pollok	1798	25	29	"The Course of Time"	29	4	1827, March	29
Pope	1688, May 22	21	46	"Essay on Man"	50	29	1744, May 30	56
Schiller	1759, Nov. 10	22	40	"Wallenstein"	45	23	1805, May 9	46
Shakspere	1564, April 23	23	44	"Hamlet," "Macbeth," "Othello," "King Lear," &c.	52	29	1616, April 23	52
Shelley	1792, Aug. 4	21	27	"Prometheus Unbound"	30	9	1822, July 1	30
Southey	1774, Aug. 12	19	62	"The Doctor"	65	46	1843, March 21	69
Spenser	1552	17	44	"Faerie Queene"	45	28	1599, Jan. 16	47
Tennyson	1809, Aug. 6	18	50	"Idylls of the King"	82	64	1892, Oct. 6	83

Thomson	1700, Sept. 11	26	27	"The Seasons"	48	22	1748	48
Watts	1674, July 17	22	45	"The Psalms of David"	72	50	1748, Nov. 25	74
Whitman	1819, May 31	19	36	"Leaves of Grass"	65	46	1892, March 27	73
Whittier	1807, Dec. 17	22	59	"Snowbound," "Maud Muller"	82	60	1892, Sept. 7	85
Wordsworth	1770, April 7	15	44	"The Excursion"	75	60	1850, April 23	80
Young	1681	32	63	"Night Thoughts"	82	50	1765, April 12	84
Averages		24	44			33		

REFORMERS

Calvin	1509, July 10	22	26	"Institutes of the Christian Religion"	55	33	1564, May 27	55
Cranmer	1489, July 2	34	50	Promoted the translation and circulation of the Bible	67	33	1556, March 21	67
Erasmus	1467, Oct. 27	25	57	"Colloquia"	75	50	1536, July 12	79
Fénelon	1651, Aug. 6	25	48	"Les Aventures de Telemaque"	63	38	1715, Jan. 17	64
Fox, George	1624, July	22	65	"Journal"	65	43	1690, Nov. 13	66
Huss, John	1369, July 6	29	40	Defence of Wycliffe	46	17	1415, July 6	46
Knox	1505	25	55	"On the Doctrine of Predestination"	67	42	1571, Nov. 24	67
Laud	1573, Oct. 7	28	60	Archbishop of Canterbury	71	43	1644, Jan. 10	71
Loyola	1491	30	50	Founding of the Society of Jesus	65	35	1556, July 31	65
Luther	1483, Nov. 10	25	47	"The Augsburg Confession"	63	38	1546, Feb. 18	63
Melanchthon	1497, Feb. 16	21	50	The "adiaphoristic" controversy	63	42	1560, April 19	63
Savonarola	1452, Sept. 21	22	42	The lawgiver of Florence	46	24	1498, May	46
Swedenborg	1688, Jan. 29	28	68	"Arcana Cœlestia"	76	48	1772, March 29	84
Wycliffe	1320(c.)	46	62	"Trialogus"	64	18	1384, Dec. 31	64
Zwingli	1484, Jan. 1	32	39	Established the Reformation in Switzerland	47	15	1531, Oct. 11	47
Averages		28	51			35		

SATIRISTS AND HUMORISTS

Butler, Samuel	1612, Feb. 6	33	66	"Hudibras"	68	35	1680, Sept. 25	68
Cervantes	1547, Oct. 5	21	68	"Don Quixote" (second part)	69	48	1616, April 23	69
Rabelais	1490(c.)	41	45	"Gargantua"	62	21	1553(c.)	63

THINKERS

Name	Date of Birth	Age at Beginning of Activity	Age of Acme of Ability	Magnum opus	Age at Cessation of Work	Duration of Mental Activity	Date of Death	Age
				SATIRISTS AND HUMORISTS		*Years*		
Richter	1763, March 21	20	42	"Flegeljahre"	59	39	1825, Nov. 14	62
Sterne	1713, Nov. 24	45	54	"Tristram Shandy"	55	10	1768, March 18	55
Swift	1667, Nov. 30	30	59	"Gulliver's Travels"	72	42	1745, Oct. 19	78
Averages		32	56			33		
				STATESMEN				
Adams, John	1735, Oct. 30	20	62	President of the United States	67	47	1826, July 4	91
Bismarck	1815, April 1	32	55	The creation of German unity	75	43	1898, July 30	83
Blaine	1830, Jan. 31	24	58	Secretary of State	62	38	1893, Jan. 23	63
Bolingbroke	1678, Oct. 1	23	36	Prime Minister	65	32	1751, Dec. 12	73
Bright	1811, Nov. 16	27	57	Reform Bill carried	77	50	1889, March 27	78
Bunsen, Baron von	1791, Aug. 25	21	57	Urged the unity of Germany	68	47	1860, Nov. 28	69
Burke	1729, Jan. 12	27	54	Drew up the famous India Bill	67	40	1797, July 8	68
Calhoun	1782, March 18	25	47	The doctrine of "Nullification"	68	43	1850, March 31	68
Canning	1770, April 11	23	57	Prime Minister	57	34	1827, Aug. 8	57
Cavour	1810, Aug. 1	37	51	Convening of first Italian Parliament	51	14	1861, June 6	51
Clay	1777, April 12	22	73	Drew up the "Omnibus Bill"	74	52	1852, July 29	75
Crispi	1819, Oct. 4	27	68	Prime Minister	81	54	1901, Aug. 11	82
Cromwell, Oliver	1599, April 25	28	54	Lord Protector of the British Commonwealth	59	31	1658, Sept. 3	59
Danton	1759	32	33	Minister of Justice	35	3	1794, April 5	35
Disraeli	1804, Dec. 21	22	64	Prime Minister	77	55	1881, April 19	77
Douglas	1813, April 23	22	45	Successful senatorial contest	48	26	1861, June 3	48
Fox, Charles James	1749, Jan. 24	19	48	"History of England from the Reign of James II"	57	38	1806, Sept. 13	58

Franklin, Benjamin	1706, Jan. 17	20	70	Aided in drawing up "Declaration of Independence"	84	64	1790, April 17	84
Gallatin	1761, Jan. 29	26	56	Minister to France	88	62	1849, Aug. 12	88
Gambetta	1838, April 3	30	43	Prime Minister	44	14	1882, Dec. 31	44
Garibaldi	1807, July 4	23	53	Dictator of Italy	67	44	1882, June 2	75
Garrison	1805, Dec. 10	23	58	Abolishment of slavery	65	42	1879, May 24	74
Gladstone	1809, Dec. 29	23	59	Prime Minister	85	62	1898, May 19	89
Guizot	1787, Oct. 4	22	53	Prime Minister	87	65	1874, Sept.	87
Hamilton, Alexander ...	1757, Jan. 11	17	31	Drew up the Federal Constitution	47	30	1804, July 12	47
Hancock, John	1737, Jan. 12	33	43	Governor of Massachusetts	56	23	1793, Oct. 8	56
Hastings	1732, Dec. 6	29	41	First Governor General of India	63	34	1818, Aug. 22	86
Hay, John	1838, Oct. 8	23	62	Preservation of the unity of China. Isthmian canal.	67	44	1905, July 1	67
Henry, Patrick	1736, May 29	27	48	Governor of Virginia	63	36	1799, June 6	63
Jay, John	1745, Dec. 12	29	45	First chief justice U. S. Supreme Court	56	27	1829, May 17	84
Jefferson, Thomas	1743, April 2	25	58	President of the United States	67	42	1826, July 4	83
Kossuth	1802, April 27	30	45	Leader of the Diet	47	17	1894, March 23	92
Lee, Richard Henry	1732, Jan. 20	25	46	In U. S. Congress	60	35	1794, June 19	62
Lincoln	1809, Feb. 12	23	53	Proclamation of Emancipation	56	33	1865, April 14	56
Machiavelli	1469, May 3	29	55	"Mandragola"	57	28	1527, June 22	58
Marat	1743, May 24	30	50	Defeat of the Girondins	50	20	1793, July 13	50
Mazarin	1602, July 14	27	46	Peace of Westphalia	59	32	1661, March 9	59
Mirabeau	1749, March 9	32	41	Member of Comite diplomatique of the Assembly.	42	10	1791, April 2	42
Monroe	1758, April 28	25	65	Monroe Doctrine	70	45	1831, July 4	73
More	1478, Feb. 7	26	51	Lord Chancellor of England	58	32	1535, July 7	58
Morris, Robert	1734, Jan. 20	25	52	United States Senator	65	40	1806, May 8	72
Palmerston	1784, Oct. 20	23	71	Prime Minister	81	58	1865, Oct. 18	81
Peel	1788, Feb. 5	22	54	Great financial success of England	62	40	1850, July 2	62
Penn	1644, Oct. 14	23	38	Founding of Philadelphia	67	44	1718, May 30	74
Pitt	1759, May 28	22	29	During first administration	47	25	1806, Jan. 23	47
Richelieu	1585	22	57	Defeat of the conspiracy of Cinq Mars	57	35	1642, Dec.	57
Robespierre	1758, May 6	24	35	One of the actual rulers of France	36	12	1794, July 28	36
Talleyrand	1754, Feb. 2	38	60	Congress of Vienna	84	46	1838, May 17	84
Thiers	1797, April 16	26	74	President of the Republic	76	50	1877, Sept. 3	80

THINKERS

Name	Date of Birth	Age at Beginning of Activity	Age of Acme of Ability	Magnum opus	Age at Cessation of Work	Duration of Mental Activity	Date of Death	Age
				STATESMEN		Years		
Walpole	1676, Aug. 26	25	45	Prime Minister	69	44	1745, March 18	69
Washington	1732, Feb. 22	19	55	President of the United States	65	46	1799, Dec. 14	67
Webster, Daniel	1782, Jan. 18	30	59	Secretary of State	70	40	1852, Oct.	70
Wolsey	1471, March	36	44	Lord Chancellor of England	59	23	1530, Nov. 29	59
Averages		26	52			38		

WORKERS

				ACTORS				
Barrett	1838, April 4	15	45		50	35	1891, March 20	53
Booth	1833, Nov. 13	16	56		58	42	1892, June 7	59
Forrest	1806, March 9	14	47	Season of 1853	66	52	1872, Dec. 12	66
Garrick	1716, Feb. 19	25	53		60	35	1779, Jan. 20	63
Irving, Sir Henry	1838, Feb. 6	18	57	"King Arthur," "Don Quixote," "Waterloo"	65	47	1905	67
Jefferson, Joseph	1829, Feb. 20	17	36	"Rip Van Winkle"	75	58	1905, April 21	76
Kean	1787, Nov. 4	20	46	"Othello"	46	26	1833, May 15	46
Kemble	1757, Feb. 1	19	52		60	41	1823, Feb. 20	66
Macready	1793, March 3	17	45	"Lady of Lyons," "Richelieu"	58	41	1873, April 27	80
Averages		18	48			42		

Blake	1757, Nov. 28	23	68	Engravings for Book of Job	69	46	1827	70
Botticelli	1447	21	44	Altar piece in Florence Academy	65	44	1515	68
Bouguereau	1825, Nov. 30	25	60	"The Youth of Bacchus"	75	50	1905, Aug. 20	80
Constable	1776, June 11	26	59	"The Valley Farm"	60	34	1837, March 30	61
Corot	1796, July	31	55	"Soleil couchant dans le Tyrol"	79	48	1875, Feb. 22	79
Correggio	1494	19	38	"Danæ"	40	21	1534, March 5	40
Cruikshank	1792, Sept. 27	19	70	"Worship of Bacchus"	83	44	1878, Feb. 1	86
Doré	1833, Jan. 6	21	33	"Christ Leaving the Prætorium"	50	29	1883, Jan. 27	50
Dürer, Albrecht	1471, May 21	26	38	"The Assumption of the Virgin"	57	31	1528, April 6	57
Gainsborough	1727	15	56	Portrait of the Duchess of Devonshire	61	46	1788, Aug. 2	61
Hogarth	1697, Nov. 10	27	48	"Marriage à la Mode"	67	40	1764, Oct. 26	67
Landseer	1802, March 7	13	48	"The Sanctuary"	67	44	1873, Oct. 1	71
Leonardo da Vinci	1452	26	46	"The Last Supper"	67	41	1519, May 2	67
Meissonier	1815, Feb. 21	19	40	"La Rixe" (the Quarrel)	70	51	1891, Jan. 31	76
Michelangelo	1475, March 6	19	66	"The Last Judgment"	76	57	1564, Feb. 17	89
Millet	1814, Oct. 4	26	45	"The Angelus"	60	34	1875, Jan. 20	61
Murillo	1617, Dec. 27	23	47	"Moses Striking the Rock," &c.	65	42	1682, April 3	65
Perugino	1446	33	58	"Madonna and Saints"	76	43	1524	78
Raphael	1483, April 6	19	37	"The Transfiguration"	37	18	1520	37
Rembrandt	1607, July 15	20	54	"The Syndics of the Cloth Hall"	60	40	1669, Oct. 8	62
Reynolds	1723, July 16	20	61	"Mrs. Siddons as The Tragic Muse"	67	47	1792, Feb. 23	69
Romney	1734, Dec. 26	22	52	"Infant Shakspere attended by the Passions"	64	42	1802, Nov. 15	68
Rossetti	1828, May 12	20	42	"Dante's Dream"	53	33	1882, April 9	54
Rubens	1577, June 28	21	54	"The Feast of Venus," "Helena Fourment entering the Bath," &c.	63	42	1640, May 30	63
del Sarto	1487	20	38	"Madonna del Sacco"	43	23	1531, Jan. 22	43
Tintoretto	1518, Sept. 16	19	70	"Paradise"	72	53	1594, May 31	76
Titian	1477	25	41	"Assumption of the Madonna"	98	73	1576, Aug. 27	99
Turner	1775, April 23	15	64	"The Fighting Téméraire"	75	60	1851, Dec. 19	76
Van Dyck	1599, March 22	16	36	Various portraits	42	26	1641, Dec. 9	42
Velasquez	1599, June 3(c.)	20	51	Portraits of Innocent X and Pareja	61	41	1660, Aug. 6	61

WORKERS

Name	Date of Birth	Age at Beginning of Activity	Age of Acme of Ability	Magnum opus	Age at Cessation of Work	Duration of Mental Activity	Date of Death	Age
				ARTISTS		*Years*		
Veronese, Paola	1528	20	35	"Marriage at Cana"	60	40	1588, April 20	60
West	1738, Oct. 10	18	65	"Christ Healing the Sick"	76	58	1820, March 11	82
Wren	1631	26	44	Planned St. Paul Cathedral	73	47	1723	92
Averages		22	50			42		
				CHEMISTS AND PHYSICISTS				
Boyle	1627, Jan. 25	33	55	President of the Royal Society	63	30	1691, Dec. 30	64
Dalton, John	1766, Sept. 5	20	39	Atomic theory of chemistry	69	49	1844, July 27	78
Davy	1778, Dec. 17	21	37	Invention of the safety lamp	50	29	1829, May 29	51
Faraday	1791, Sept. 22	21	56	"Experimental Researches in Electricity"	71	50	1867, Aug. 25	76
Gay-Lussac	1778, Dec. 6	24	30	Discovery of the law of combinations by volume	70	46	1850, May 9	72
Lavoisier	1743, Aug. 26	23	44	"Methode de Nomenclature Chimique"	51	28	1794, May 8	51
Liebig	1803	21	40	"Handbuch der Chemie"	70	49	1873	70
Priestley	1733, March 13	28	41	Discovery of oxygen	70	42	1804, Feb. 6	71
Scheele	1742, Dec. 19	26	31	"Treatise on Air and Fire"	40	14	1786, May 21	44
Averages		24	41			37		
				EXPLORERS				
Burton, Sir Richard F.	1821, March 19	21	67	Translation of the Arabian Nights	69	48	1890, Oct. 20	69
Champlain	1567	36	41	The founding of Quebec	68	32	1635, Dec. 25	68
Columbus	1436(c.)	35	56	First voyage to American continent	70	35	1506, May 20	70
Du Chaillu	1835, July 31	21	46	"Land of the Midnight Sun"	65	44	1903, April 29	68
Franklin, Sir John	1786, April 16	14	52	Founding of Royal Society of Tasmania	61	47	1847, June 11	61

Kane	1820, Feb. 3	23	34	"Open Polar Sea"	36	13	1857, Feb. 16	37
La Salle	1643, Nov.	26	44	Exploration of the Mississippi	44	18	1687, March 15	44
Livingstone	1813, March 19	27	51	Exploration of the Zambezi and its tributaries	60	37	1873, May 1	60
Park, Mungo	1771, Sept. 20	21	28	"Travels in the Interior of Africa"	35	14	1806	35
Raleigh	1552	30	52	"History of the World"	66	36	1618, Oct. 29	66
Rennell	1742, Dec. 3	16	51	"Memoir of a Map of Hindustan"	85	69	1830, March 29	88
Ritter	1779, Aug. 7	35	41	"Vorhalle europäischer Völker geschichten vor Herodot"	75	40	1859, Sept. 29	80
Schliemann	1822, Jan. 6	42	55	Excavations at Troy	68	26	1890, Dec. 26	68
Speke	1827, May 4	17	36	"Journal of the Discovery of the Source of the Nile"	37	20	1864, Sept. 15	37
Stanley, Henry M.	1841, Jan. 28	20	49	"In Darkest Africa"	60	40	1904, May 10	63
Averages		26	47			35		

INVENTORS

Bessemer	1813, Jan. 19	18	43	Discovery of pneumatic process for steel	70	52	1898, March 15	85
Morse	1791, April 27	24	53	First telegram (between Baltimore and Washington)	75	51	1872, April 2	81
Stephenson, George	1781, June 9	31	49	The modern era of railways inaugurated	67	36	1848, Aug. 12	67
Watt, James	1736, Jan. 19	21	29	Invention of condensing steam-engine	78	57	1819, Aug. 19	83
Averages		24	44			49		

MUSICAL COMPOSERS

Bach	1685, March 21	23	51	Mass in B minor	65	32	1750, July 28	65
Beethoven	1770, Dec. 16	25	46	"Missa Solemnis"	57	32	1827, March 27	57
Brahms	1833, May 7	20	60	"Ernste Gesänge"	64	44	1897, April 3	64
Chopin	1810, Feb. 8	19	34	Slavonic and Polish music	38	19	1849, Oct. 17	39
Gluck	1714, July 2	27	53	"Alceste"	65	38	1787, Nov. 18	73
Gounod	1818, June 17	21	41	"Faust"	69	48	1893, Oct. 18	75
Handel	1685, Feb. 23	8	56	"Messiah"	74	66	1759, April 14	74
Haydn	1732, March 31	20	65	"The Creation"	73	53	1809, May 31	77

WORKERS

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				MUSICAL COMPOSERS		*Years*		
Liszt	1811, Oct. 22	11	43	Third symphonic poem	75	64	1886, July 31	75
Mendelssohn	1809, Feb. 3	11	37	"Elijah"	38	27	1847, Nov. 4	38
Meyerbeer	1791, Sept. 5	10	72	"L'Africaine"	72	62	1863, May 2	72
Mozart	1756, Jan. 27	8	32	Symphonies E flat major, G minor, and C major	35	27	1791, Dec. 5	35
Rossini	1792, Feb. 29	18	47	"Stabat Mater"	74	56	1868, Nov. 13	76
Schubert	1797, Jan. 31	13	27	"Fierabras"	31	18	1828, Nov. 19	31
Schumann	1810, June 8	31	38	"Genoveva"	45	14	1856, July 29	46
Spohr	1784, April 25	14	48	"Die Weihe der Töne"	73	59	1859, Oct. 16	75
Strauss, Johann	1804, March 14	22	36	"At the Imperial 'Volksgarten'"	45	23	1849, Sept. 25	45
Verdi	1813, Oct. 10	15	80	"Falstaff"	85	70	1901, Jan. 21	88
Wagner, Richard	1813, May 22	17	63	"The Ring of the Niebelung"	69	52	1883, Feb. 13	70
Weber	1786, Dec. 18	12	34	"Der Freischütz"	40	28	1826, June 5	40
Averages		17	48			41		
				PHYSICIANS AND SURGEONS				
Boerhaave	1668, Dec. 31	25	56	"Elements of Chemistry"	65	40	1738, Sept. 23	70
Cooper, Sir Astley	1768, Aug. 23	23	59	President of Royal College of Surgeons	73	50	1841, Feb. 12	73
Galvani	1737, Sept. 9	25	54	Enunciated his celebrated theory of animal electricity	59	34	1798, Dec. 4	61
Harvey	1578, April 1	24	50	Announced the circulation of the blood	80	56	1658, June 3	80
Hunter, John	1728, Feb. 13	23	65	"Treatise on the Blood, Inflammation, and Gunshot Wounds"	65	42	1793, Oct. 16	65

Jenner	1749, May 17	25	47	Discovery of vaccination	74	49	1823, Jan. 26	74
Rush	1745, Dec. 24	24	50	Professor of Theory and Practice of Medicine	68	44	1813, April 19	68
Virchow	1821, Oct. 13	26	35	"Cellular Pathology"	76	50	1902, Sept. 5	81
Averages		24	52			46		

WARRIORS

Clive, Lord	1725, Sept. 29	21	40	Founding of the Empire of British India	42	21	1774, Nov. 22	49
Grant	1822, April 27	22	46	President of the United States	63	41	1885, July 23	63
Jones, John Paul	1747, July 6	28	32	Capture of "Serapis"	43	15	1792, July 18	45
Lee, Robert E.	1807, Jan. 19	22	57	Skilful retreat from the Wilderness to Richmond	63	41	1870, Oct. 12	63
Marlborough	1650, June 24	22	54	Battle of Blenheim	60	38	1722, June 16	72
von Moltke	1800, Oct. 26	22	70	The plan of campaign of the Franco-Prussian war	79	57	1891, April 24	91
Napier, Sir Charles	1782, Aug. 10	18	65	Conquest of Sind	63	50	1853, Aug. 29	71
Napoleon	1768, Jan. 7	28	39	Head of a great European confederacy	47	19	1821, May 5	53
Nelson	1758, Sept. 29	21	40	Battle of the Nile	47	26	1805, Oct. 21	47
Sheridan, Philip H.	1831, March 6	22	34	Raid from Winchester	58	36	1888, Aug. 5	58
Sherman	1820, Feb. 8	20	44	March to the Sea	64	44	1891, Feb. 14	71
Wellington	1769, April	18	46	Battle of Waterloo	77	59	1852, Sept. 14	83
Averages		22	47			37		
General Averages		24	50			40