

# RATIONAL MEMORY TRAINING

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"The defect of most methods which have been devised and employed for improving the memory lies in the fact, that while they serve to impress particular subjects on the mind, they do not render the memory, as a whole, ready or retentive."—DR. M. GRANVILLE.



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# RATIONAL MEMORY TRAINING

A SERIES OF ARTICLES ON

MEMORY, ITS PRACTICAL VALUE, ITS PHENOMENAL  
POWERS, ITS PHYSIOLOGICAL BASIS, THE LAWS  
WHICH GOVERN IT, THE METHODS OF  
IMPROVING IT,

ATTENTION, ASSOCIATION AND ARRANGEMENT OF  
IDEAS, CAUSES OF DEFECTIVE MEMORY,  
MNEMONICS, THEIR USE AND  
ABUSE, ETC., ETC.,

WITH

HINTS AND HELPS IN MEMORIZING FIGURES, LISTS  
OF WORDS, PROSE AND POETIC LITERATURE,  
NEW LANGUAGES, ETC.

BY

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## INTRODUCTION.

From the earliest times philosophers and educators have been impressed with the importance and value of a retentive and responsive memory. Since the time of Simonides numerous systems of Memory Training have been presented to the public. Most of these have been based on purely artificial associations of ideas and have proved valueless so far as any real development of memory is concerned. In many cases, it is to be feared, by diverting attention from the only rational method of Memory Training, viz.:—*daily exercise of the memory under the right physical and psychical conditions*—they have proved injurious mental crutches. What the authors of some of these much-vaunted systems have lacked in knowledge of Memory itself, and of the physical and mental conditions that modify its operations, they have made up in loud assertions of important “discoveries” and large promises of wonderful results to those who purchase their mental nostrums.

The association of ideas, under one name or another, is the principle underlying all these memory systems, and this was fully expounded by Aristotle. The “discoveries” amount to but little more than the finding of new names for old principles, and the erection of new and often fantastic structures on an old foundation.

In one respect we have in this day a decided advantage over the early philosophers who wrote upon the subject. The progress of physiological research has shown us to-day the intimate relations between all mental operations and certain modifications of the brain and nerves, and thus the physical conditions upon which the retentive and reproductive powers of the mind depend, are now much better known than in the earlier times.

In the following articles no attempt is made to develop a SYSTEM of Memory Training. The value and importance of good memory is set forth, some account of phenomenal memories is given and some of the physiological conditions of memory stated. The aim has been to discover, as far as possible, the laws that govern the reproduction of ideas, and especial emphasis has been placed upon ATTENTION, ARRANGEMENT AND NATURAL ASSOCIATION of ideas as aids to recollection. The importance of DAILY EXERCISE of the memory, as the RATIONAL METHOD of strengthening it, is urged upon the student.

The value of mnemonics in memorizing certain subjects is admitted, but the power of these mnemonic systems to strengthen the memory is denied. Hints and helps are given as to the best methods of memorizing word lists, figures, prose and poetic literature and new languages—the substance of talks given to my classes in Alma College.

The aim has been, in short, to start the student

intelligently along the path of rational memory training fully impressed with the thought that books, teachers and memory systems can do but little for him; in fact, can only teach him to HELP HIMSELF, but that PERSISTENT AND REGULAR USE OF HIS MEMORY, UNDER RIGHT CONDITIONS, WILL INCREASE HIS TWO TALENTS TO FOUR.



## CHAPTER I.

# MEMORY.

"He that shortens the road to knowledge lengthens life."

—LACON.

✥✥✥  
✥**M**EMORY is one of the richest gifts of the  
✥✥✥ great Creator to mankind. Kant pronounces it the most wonderful of the faculties. Without it, man becomes an imbecile, life is robbed of many of its richest joys, and improvement and progress are impossible. With it, we live over again the joys and sorrows, successes and defeats of the past, and these remembered experiences become guide-boards or gleaming danger-signals for future conduct. Memory thus retains for us the seeds of wisdom gathered by life's wayside. He who forgets profits little by his past life. Like the sieve he receives much and retains nothing.

To those who live in accordance with wisdom and virtue, memory becomes a fruitful source of delight as life advances. It recalls the joyous intercourse of past days, the innocent pleasures of childhood, the performance of virtuous deeds, and the reception of acts

**Memory a  
fruitful  
Source of  
Pleasure.**

of kindness from others—making the past life one long gallery of pleasant pictures.

It is true it recalls the sorrowful experiences of life also, but these have lost their bitterness, and to every cloud in Memory's horizon there is the silver lining of succeeding joy. Often in the midst of present sorrow, memory flashes the golden rays of the delightful experience of past days upon us. Who, in the midst of trouble, has not received at least temporary relief by viewing the pictures memory has presented to the mind—bright hours, when happiness reigned in heart and home; fair days, when love was his companion; glad moments, when life was rich with joy?

To those whose lives violate the laws of morality and virtue, memory must become a source of suffering. And no suffering in the short span of our mortal lives, is more acute than the memory of our own acts which have violated conscience and the laws of God. If the functions of memory continue in the life to come—and without memory there can be no conscious identity—it seems inevitable that it shall become a source of joy to the virtuous and a fountain of bitter waters to the wicked.

As a general rule the remembrance of past pleasures is pleasant, and, as has been said, "he who imparts an hour's real enjoyment to another, increases the sum of his happiness while the

memory of it lasts." Sidney Smith declares: "If you make children happy now, you make them happy twenty years hence by the memory of it."

Metaphysicians have given a great variety of definitions to the memory. Dr. Reid in his work on "The Human Mind," reviews not only the theories of the ancient Platonists and Peripatetics, but also the more modern theories of Locke, Hume, and other philosophers, and after exposing their falacies, sums up in these words: "Thus, where philosophers have piled one supposition on another, as the giants piled the mountains in order to scale the heavens, it is all to no purpose—memory remains unaccountable, and we know as little how we remember things past as how we are conscious of those present."

Views of  
Philosophers  
and Poets.

Cicero likens the memory to a treasury, in which is stored up acquired knowledge to be used when occasion demands. Plato likens it to a tablet on which acquired knowledge is engraved. Locke says: "Memory is the power to revive again in our minds those ideas which, after imprinting, have disappeared, or have been laid aside out of sight." Addison says of memory: "It is like those repositories of animals that are filled with stores of food, on which they may ruminate when their present pasture fails." Dr. Walsh says: "Memory hath no special part of



the brain devoted to its own service, but uses all those parts which subserve our sensations, as well as our thinking powers." Glanvill says: "Things are reserved in the memory by some corporeal exuvia and material images which, having impinged on the common sense, rebound thence into some vacant cells of the brain." Gassendi compares memory to linen or paper folded up, containing carefully within its folds the truths which are wrapped up for future use.

Memory is defined as the power or capacity of having what was once present to the senses or the understanding suggested again to the mind, accompanied by a distinct consciousness of its past existence. When we come in a subsequent chapter to discuss the laws which govern memory we shall see, that in place of a single function of the mind, memory really includes several mental activities and these require separate education and training if we would have a strong and serviceable memory.

Plutarch calls memory "the larder of the soul from which it takes its food and sustenance." John Locke styles it "the storehouse of our ideas," and Robert Hall, "the master of the rolls of the soul," while Seneca declares "a man without memory is a madman or an idiot." Lord Tennyson, in one of his beautiful odes thus glorifies memory:

"Thou who stealest fire  
From the fountains of the past  
To glorify the present; O haste!  
Visit my low desire.  
Strengthen me! Enlighten me!  
I faint in this obscurity,  
Thou dewy dawn of memory."

Among the Greeks, memory was a goddess to be revered and worshipped, under the name Mnemosyne. She was represented as the daughter of heaven and earth, and the mother of the nine Muses who presided over literature, music and art. In this they recognized the fact that for all progress in knowledge and art mankind was indebted to memory.

Dr. Watts, speaking of memory, in his work "On the Improvement of the Mind," observes: "All the other relations of the mind borrow from hence their beauty and perfection, for other capacities of the soul are almost useless without this. To what purpose are all our labors in wisdom and knowledge, if we want memory to preserve and use what we have acquired? What signify all other intellectual or spiritual improvements, if they are lost as soon as they are obtained? It is memory alone that enriches the mind by preserving what our labor and industry daily collect. . . . Without memory, the soul would be but a poor, destitute, naked being, with an everlasting blank spread over it, except the fleeting ideas of the present moment."

Like all other powers of the human mind the memory is capable of vast improvement. Its capacity is, in truth, unlimited. By

**May be  
improved or  
injured.**

rational methods, it may be strengthened and rendered more serviceable to its possessor, and by lack of attention to the laws which govern this faculty, as well as by irrational methods of memory training, it may be weakened and rendered comparatively useless. While everyone admits the value of a strong and active memory, it is doubtless a fact that the best period of life for memory culture is allowed to pass without any systematic efforts at strengthening this important faculty. Parents and teachers, by a little daily attention to rational memory training, could confer untold advantages on the youth committed to their care. So far from giving proper attention to this subject, the methods adopted in many schools directly tend to the injury of

**How  
Memory is  
weakened.**

this faculty. We need hardly refer to the cramming process which overburdens the memory, the "learning by rote," which often develops sensational to the neglect of intellectual memory and the failure of teachers to instruct their pupils in the important work of systematic arrangement of the facts acquired.

It is of the highest importance that the general principles upon which memory works should be

well understood by parents and teachers, and that the youth who are committed to their care should be taught to *observe carefully* whatever they would memorize, *thoroughly understand* every lesson, *arrange methodically* their knowledge, and *frequently reproduce* the same. All rational memory training must rest upon these four principles.

**The True  
Principles of  
Memory  
Training.**

IS MEMORY ETERNAL?

Sir William Hamilton and some other philosophical writers are of the opinion that what has once been apprehended by the mind is never utterly lost. Not that we all fully remember everything that we once knew so as to be able to recall at will our previously acquired knowledge, but that it still somewhere remains engraven upon the tablets of the brain. On the contrary, Locke says: "Ideas quickly fade after vanishing quite out of the understanding, leaving no more foot-steps or remaining characters of themselves than shadows do in flying over a field of corn." The opinion of Thackeray is different. He says: "It is an old saying that we forget nothing, as people in a fever suddenly begin to talk the language of their infancy; we are stricken by memory sometimes, and old affections rush back on us as vivid as in the time when they were our daily talk; when their presence gladdened our eyes; when,

with passionate tears and grief, we flung ourselves upon their hopeless corpses. Parting is death—at least as far as life is concerned. Passion comes to an end: it is carried off in a coffin, or weeping in a post-chaise; it drops out of life one way or the other, and the earth-clods close over it and we see it no more. But it has been part of our souls and is eternal."

Hail! Memory, hail! in thy exhaustless mine,  
From age to age unnumbered treasures shine!  
Thought and her shadowy brood, thy call obey,  
And place and time are subject to thy sway.

Lulled in the countless chambers of the brain  
Our thoughts are linked by many a hidden chain;  
Awake but one, and lo! what myriads arise,  
Each stamps his image as the other flies!

Sweet Memory! wafted by thy gentle gale  
Oft up the stream of Time I've turned my sail!  
To view the fairy haunts of long-lost hours,  
Blest with far greener shade, far fairer flowers.

—ROGERS.

## CHAPTER II.

### THE PRACTICAL VALUE OF A GOOD MEMORY.

"A well-cultivated memory means an intelligent manhood and an active old age. He who remembers most, thinks most, for he has the most to think with."

—CHAS. G. LELAND.

Few people are as deeply impressed as they should be, with the practical value of a good memory. Most persons look upon it as a desirable possession, but esteem it rather a luxury than a necessity- The fact is, a strong and active memory is one of the most powerful factors of success in life. In business, in society, in professional life, in literary pursuits, a good memory is in constant requisition, and contributes very largely to success. An active and retentive memory adds very largely to the enjoyment of life. It makes its possessor a better and more instructive conversationalist, more successful in all pursuits that involve intercourse with one's fellowmen, and, if the lessons of the past are improved upon, wiser and nobler in character.

**A good  
Memory is a  
powerful  
Factor in a  
successful  
Life.**

A good memory saves its owner from a multi-

tude of annoying and troublesome experiences that fall to the lot of forgetful people. Not long since a minister, an acquaintance of the writer, had two engagements to preach, one on a certain Sunday in E——, and one on the following Sunday in G——. Trusting to his memory, which was a treacherous one, he found, on arriving late Saturday evening in G——, that his appointment was at E——. Sitting down, he telegraphed his wife, a very sensible and matter-of-fact lady: "Am in G——, should be in E——; what shall I do?" To which, as fast as the electric current would carry it, she sent the following sensible reply: "Go to bed."

Now, as the above is only a fair illustration of a multitude of annoying experiences and disadvantages, which are constantly befalling persons of bad memory, it may be worth while to analyze the incident, and classify the results that sprang from it. The first result, then, was the disappointment of his audience, to which we must add his own and that of his good wife. The second result was undoubtedly a feeling of mortification over a failure, from which the exercise of an active memory would have saved him. The third result was financial loss, telegrams, railroad fare and incidentals. The fourth result was loss of time—the trip having to be repeated at a later date. Here then, we have a

Losses  
from Sluggish  
Memory.



summary—disappointment, mortification, financial loss, and loss of time, all directly traceable to a single lapse of memory, and from all of which a trusty memory would have saved him.

A good memory then is strongly to be desired, that it may save us from adding needlessly to life's disappointments. Throughout life's career many engagements must be met, many duties discharged, many labors transacted, the proper performance of which requires an alert memory, one that answers instantly and correctly the demands of the hour. If our memories respond to the occasion, and act the part of faithful monitors, life proceeds with satisfaction and success. If, on the other hand, memory, like banks which refuse to pay on demand and require thirty days' notice, fails to present to the consciousness at the right time and place the ideas appropriate to the occasion, the result is dissatisfaction of ourselves and others.

A second reason why all, especially young people, should desire and seek after a good memory, is that they may escape those constant mortifications which come to those who are troubled with lapse of memory.

Can anything be more perplexing to the individual who desires the good opinion of his friends, and to appear to good advantage in society, than those failures of memory to recall the name and address of parties to whom he has been introduced?

Or, should the name be recalled, how annoying to have forgotten the address, or the place where the acquaintanceship was formed. Doubtless this single prank of bad memory produces as many petty annoyances as any other one cause. On the other hand, how smooth is the course to popular favor of the individual who remembers promptly

**An Active  
Memory  
contributes  
to Social  
Success.**

names, faces, the whims and prejudices, the likes and dislikes of those he meets, as well as the right thing to do and the right thing to say to each. Oftentimes, a person whose memory fails to recall the name and locality of a friend whom he had met, will seek to disguise the fact, and strive to attain by subterfuge what an active memory should have furnished on the spot.

A man who was thus attempting to find out the name of a friend whom he had met, said to him : "I believe I have forgotten how to spell your name." The friend, a very irascible man who at once perceived the trick, shouted in thunder tones, "J - O - N - E - S."

It is needless to enlarge upon this point as the mind of every reader will recall illustrations of a similiar character, from his own experiences or that of his friends.

Another strong reason for desiring an active memory is found in the fact that it saves its possessor from financial losses which always result

from deficient memory. A good memory is equivalent to a good investment yielding its owner certain cash dividends. If the testimonies of business men who are victims of bad memory were collected, it would be found there is a large annual loss to be credited to this cause alone. In the neglect to meet engagements promptly, to attend to certain details of business where delay means loss, to take advantage of opportunities at the favorable moment, all of which result largely from deficient memory power, business men lose large sums annually. How many men from lack of proper thought, resulting from sluggish memory, have to take two journeys where one should have been sufficient, to write two letters or send two telegrams, or two express parcels, where one should have answered, and, in numberless other ways are often put to loss.

A good memory is a great time saver. Not only does it save the time and vexation so many experience in "cudgelling their brains" for facts and ideas which should be ever at hand, but it enables its owner to perform nearly all the activities of life more expeditiously, accurately and successfully. It saves needless effort. It economizes human energy. By saving from needless disappointment, vexation and effort, it, in effect, lengthens life.

A good memory is a necessary handmaid to a

sound intelligence. It furnishes the reflective powers with the materials of knowledge. Bias declares: "Memory is the mother of wisdom ; for what is wisdom without memory, but a babe that is strangled in its birth."

Todd, in the Students' Manual, says: "He who has a memory that can seize with an iron grasp and retain what he reads (the ideas, simply, without the language), and judgment to compare and balance, will scarcely fail of being distinguished.

A Good  
Memory necessary to  
the highest  
Intelligence.

Many are afraid of strengthening the memory, lest it should destroy their inducement and power to originate ideas—lest their light should be altogether borrowed light. The danger does not seem to me to be very great, especially since I have noticed that *those who are so fearful of employing this faculty are by no means to be envied for their originality.*"

Students at school or college are often deeply impressed with the value of a good memory, as every step of their progress from the lowest forms to the highest classes, is determined by the correctness and alertness of their memories.

It is to be regretted that teachers do not take advantage of this impression, and adopt systematic efforts to strengthen, in a rational and safe way, the retentive and recollective powers of their students. It seems strange, too, that those who

have been deeply impressed by the examinations of their college course with the practical value of a good memory, should not discover on leaving school that all life is an examination, and that a good memory is as necessary to pass with "honors" this examination as it is to the college boy going up for his "final."

All persons are ready to admit the great value of good judgment, and by some, the memory and judgment have been looked upon, as, in a measure, antagonistic, so that the same person is not supposed to have a good judgment and a great memory. And yet it has been said by others that "soundness of judgment, without a fair development of memory, is impossible." Wayland declares: "The mistake on this subject has probably arisen from two misconceptions. In the first place, a cultivated and disciplined memory has been confounded with a miscellaneous and unclassified collection of facts. In the second place, the abuse of memory has been confounded with the use of it. Dugald Stewart, in his "Elements of the Philosophy of the Human Mind," says, "It is commonly supposed that genius is seldom united with a very tenacious memory. So far, however, as my observation has reached, I can scarcely recollect one person who possesses the former qualities, without a more than ordinary share of the latter." There can be no doubt

that a retentive and active memory is one of the first requisites to clear and correct judgment. The great men of all ages, in arms, in art, in letters, have been, almost without exception, men of more than average power of memory.

Sir Francis Bacon had a great memory. He rarely had need to refer to a book once read. Peter Boener says: "He only ordered his chaplain or me to look in such an author for a certain place. Ben Johnson, Descartes, Leibnitz, Pascal, the Scaligers, Grotius, Euler, Nieubuhr, Mackintosh, Dugald Stewart, Hamilton and Dean

The great  
Poets, Philos-  
ophers and  
Orators have  
great Memo-  
ries.

Mansel, all men remarkable in the domain of speculative thought, had uncommonly fine memories. An equally notable list of famous men of action—of famous men of intellect in any domain of life—could be readily made. Great orators and writers are far more indebted to their power to retain and reproduce freely upon occasion what they have once learned, than to their originality and clearness of apprehension."

In all the higher productions of human genius, in poetry, the fine arts and philosophy, memory is of untold advantage. Dr. Thomas Brown declares: "The richer the memory, and consequently the greater the number of images that may arise to the poet, and of powers and effects that may arise to the philosopher, the more copi-

ous in both cases will be the suggestions of analogy which constitute poetic invention or philosophic discovery, and the more copious the suggestions of analogy may be, the richer and more diversified, it is evident, must be the inventive power of the mind." Prof. Scott declares that "if we examine the endowment of men of genius and those famed for intellectual exertions, we shall find that a *retentive and capacious memory formed the basis* upon which their fame was reared."

For practical purposes, our knowledge and past experience are valuable to us just in proportion as memory retains them and furnishes us with them *on demand*. He who knows a great many things and has had very valuable experience, is practically in the position of the man who knows little and has had but little experience, unless his memory serves him promptly and well. The maxim of the old scholars was that so often repeated by Casauban—*Tantum quisque scit quantum memoria tenet*: Every man knows just what he remembers.

In 1555, Gulielmus Gratarolus published a work on the art of memory, and in 1562 William Fulwood published an edition of it "Englyshed," under the title of "The Castel of Memorie." In the dedication and preface, Fulwood drops into poetry. We quote one stanza:



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“For what helps it good bookes to read or noble stories  
large:

Excepte a perfecte memorie do take thereof the charge?

What profits it most worthie thing to see or else to heare,

If that same thing comes in at one and out of the other  
eare?”

## CHAPTER III.

### PHENOMENAL MEMORIES.

"The importance of cultivating a faculty that plays such an essential part in our mental progress can scarcely be exaggerated."—DR. WATTS.

Nature shows her accustomed partiality in the bestowal of the powers of memory. Some few have really great memories, others feeble memories, while most men have good native powers in this regard. But, as in the case of the talents, five gained other five, and two, other two, when employed, and the one talent hid, remained one talent, so the native powers of memory may, by exercise and training, be increased even many fold. The main differences between men, so far as the practical value of memory is concerned, depends much more on the way in which they have developed their memories, than upon the greatness of their natural powers.

In this chapter, we direct attention to certain persons of ancient and others of modern times, who were doubtless endowed with more than average powers of memory, and whose training had fortunately been favorable to its higher development. It may be that none of our readers will ever possess similar powers to those about to be

recounted, yet the recital may serve to show the truth of a statement already made: that there is really no limit to the development of memory. If this be true, it should encourage everyone, however moderate his native powers of memory, to persist in regular and systematic efforts for the strengthening of this faculty.

Lord Macaulay had a phenomenally powerful memory. When only three or four years of age he took in whole pages of what he read. His mind at that time would seem to have mechanically retained the form of what he read. His

Lord  
Macaulay,  
Magliabechi,  
Jedediah  
Buxton.

maid said he "talked printed words." Once, when a child, when making an afternoon call with his father, he picked up Scott's "Lay of the Last Minstrel," for the first time. While his seniors were conversing he quietly devoured the treasure. When they returned home the boy went to his mother, who, at the time was confined to her bed, and, seating himself beside her, repeated what he had read by the canto, until she was tired. In after life, one day at a board meeting at the British Museum, Macaulay wrote down from memory, in three parallel columns on each side of four pages of foolscap, a complete list of the Cambridge senior wranglers with dates and Colleges attached, for the 100 years during which a record

of the names had been kept in the university calendar. Many other examples of this kind, showing Macaulay's wonderful memory, might be presented; he once said, if all existing copies of "Paradise Lost" and "Pilgrim's Progress" were destroyed, he could restore them from memory.

Magliabechi, court librarian at Florence, was the literary prodigy of his times. He had crammed into his head the contents of an immense library. He could, upon demand, not only supply any quotation desired, but was also able to give page and paragraph. He at last became regardless of all social and sanitary rules and almost rotted amid a confused heap of books.

Jedediah Buxton, who died in 1774, possessed a remarkable memory. Although a schoolmaster, he was so illiterate he could scarcely scrawl his own name. On one occasion he mentioned the quantity of ale he had drunk since he was twelve years old, and the names of the gentlemen who had given it to him. The whole amounted, he said, to five thousand one hundred and sixteen pints, or "winds," as he termed them, because, like the toper Bassus, he emptied his jug at one draught. Although he had received very little instruction in arithmetic, and had never been assisted in his youth beyond learning the multiplication table, yet, without the aid of pen or pencil, he could multiply five or six figures by so

many, and in a much shorter time than it could be done by the most expert arithmetician. The product of the sum, which in his memory he had worked out, he would repeat, if it were required, a month afterward. He could, moreover, leave off the operation, and, without the slightest error, resume it at the end of a week or a month, or even after several months.

Dr. Abernethy had a singularly retentive memory. One day he invited a company of friends to do honor to his wife's birthday, when one of the guests of a poetical turn of mind, composed some verses complimentary to Mrs. Abernethy. The doctor listened attentively to the reading of them, and then exclaimed, "Come, that is a good joke, to attempt to pass off those verses as your own composition, I know them by heart." All were mute with astonishment, while Dr. Abernethy recited the verses without a single error. The "poet" was completely amazed, mystified and angry. The amused host explained his power of memory, and offered to repeat any piece of the same length that any of the company would recite.

There are recorded accounts of persons both in ancient and in modern times possessed of powers of memory so stupendous as almost to stagger belief. As in the case of Goldsmith's schoolmaster, we wonder that "one small head" could

carry all they knew. Such were the memories of Theodectes and Hortensius and Cineas, of whom Cicero speaks. The latter being sent on an embassy to Rome, was able, the day after his arrival, to address all the senators and knights by name. Hortensius, after coming out of the sale room, was able to repeat the auction list backward.

Dr.  
Abernethy,  
Secretary  
Stanton,  
Cyrus, Otho,  
and others.

Mr. Stanton, Secretary of War during the Rebellion, had a fine memory. One evening, in the early part of 1868, Dickens, then on a reading tour in this country, was dining with Charles Sumner, Stanton being present. To the surprise of Dickens, Mr. Stanton was able to repeat from memory a chapter from any of the novelist's work. Mr. Stanton explained that during the war he had formed the habit of invariably reading something by the author of "Pickwick" before going to bed.

It is related of Dr. John Leyden "that after he had gone to Calcutta, a case occurred where a great deal turned on the exact wording of an Act of Parliament, of which, however, a copy was not to be found in the Presidency. Leyden, who, before leaving home, had had occasion to read over the Act, undertook to supply it from memory; and so accurate was his transcript that when, nearly a year after, a printed copy was obtained

from England, it was found to be identical with what Leyden had dictated."

Cyrus, it is said, knew the name of every soldier in his army. Otho, the Roman Emperor, owed, in a great measure, his accession to the Empire to his prodigious memory. He had learned the name of every soldier of his army, when he was their companion as a simple officer, and used to call every one by his proper name. The soldiers being flattered by such attention, persuaded themselves that such an emperor could not forget in his favors those whose names he so well remembered. They all, therefore, declared for him and enabled him to overthrow his rival.

Seneca, the distinguished Roman senator and philosopher, speaking of memory, says:—"Age has done me many injuries, and deprived me of many things that I once had, it has dulled the sight of my eyes, blunted the sense of my hearing, and slackened my nerves. Among the rest I have mentioned is the memory, a thing that is the most tender and frail of all the parts of the soul, and which is first sensible to the assaults of age; heretofore this so flourished in me that I could repeat two thousand names in the same order as they were spoken."

John Fuller, a land agent of the county of Norfolk, could correctly write out a sermon or lecture after hearing it once; and one Robert Dillon could,



in the morning repeat six columns of a newspaper which he had read the preceding evening. More wonderful still was George Watson, who, while in other respects the type of the hobbledohoy and country bumpkin, could tell the date of every day since his childhood and how he had occupied himself on that day.

Richard Porson, professor in the University of Cambridge, was alike distinguished for his learning and his memory. He had the Greek authors, book, chapter, verse and line at the tip of his tongue. When a lad at Eton, as he was going to his Latin lesson, one of the boys, wishing to play him a trick, took his Latin *Horace*, from him, and slipped into his hand some English book. Porson, however, who had learned *Horace* by heart before he went to Eton, was nothing disconcerted at the trick, but when called upon to begin, opened the English book which had been placed in his hand, and without hesitation commenced, and went on regularly, construing the Latin into English with the greatest ease. The tutor, perceiving some signs of amusement and mirth among the boys, and, suspecting there was something uncommon in the affair, asked Porson what edition of *Horace* he had in his hand. "I learned the lesson from the Delphin edition," replied the pupil, avoiding a direct reply. "That is very odd," said the master, "for you seem to be read-

ing on a different page from myself. Let me see the book." The truth, of course, came out, and the master said he would be happy to find other pupils acquitting themselves as well under similar circumstances.

Mezzofanti is said to have known seventy different languages and dialects, and upon one occasion to have succeeded, after twenty-four hours' study, in readily conversing in a language which before was entirely unknown to him, and which seemed totally different from all he knew. An old beggar of Stirling, some years ago, yclept Blind Aleck, knew the whole of the Bible by heart, so that he could give verse, chapter and book for any quotation, or *vice versa*, correctly give the language of any given verse.

Wesley tells us in his Journal of a young Irish preacher who had such a knowledge of the Greek Testament and such powers of memory, that, on the mention of any word from the Greek text, he would at once tell you all the various passages in which the word occurred, and the different shades of meaning in each. Charles Dickens, it is said, could, after passing down a street for the first time, tell you the names of the shop-keepers in order, and the kind of business in which each was engaged.

In the old days of Louisiana many of the representatives were Creoles who could scarcely speak a word of English.

On account of the large Creole element in the State all Acts of the Legislature were obliged to be published in both French and English, and all speeches made in the Senate were rendered in both languages. For many years General Horatio Davis, of New Orleans, Clerk of the Senate, translated all the speeches, and such was his memory that, after listening to a speech an hour or two long he would immediately deliver it in the other language, and with perfect accuracy. And this was accomplished without the use of any notes, and apparently without any effort.

No one could have filled his place, and his services were so highly appreciated and widely known that rival candidates for the office rarely presented themselves.

It is said, the Athenian Themistocles knew the name of every one of the 20,000 citizens of Athens. Morphy, the celebrated chess player, could play several games of chess simultaneously, without seeing any of the boards on which the various games were being conducted. The great thinker, Pascal, is said never to have forgotten anything he had ever known or read, and the same is told of Hugo, Grotius, Leibnitz, and Euler. All knew the whole of Virgil's "*Æneid*" by heart. The great critic, Joseph Scaliger, used to say of himself that he had a bad memory. Yet this good man, with his bad memory, complains that it took

him twenty-one days to learn the whole of Homer by heart; he had to devote three months to learning in like manner the whole of the remaining Greek poets, and in two years he succeeded in getting by heart the whole range of classical authors.

"Memory Corner Thomson," a resident of London in 1820, had phenomenal powers of recollection. He could take an inventory of the contents of a house from cellar to attic merely from memory, and could afterwards write out a list containing every article from memory.

Sir Benjamin Brodie, in his "Psychological Inquiries," cites the instance of the celebrated Jesuit, Suarez, who is said to have known by heart the whole of the works of St. Augustine. As these consist of eleven huge folio volumes they give some idea of the capacity of the memory that was able to take them all in and retain the whole; for it is said that if ever anyone misquoted St. Augustine, Suarez would at once correct the quotation, and give it with literal accuracy.

Woodfall, brother of the Woodfall who was Junius' publisher and editor of the London *Morning Chronicle*, would attend a debate, and, without notes, report it accurately next morning. He was called "Memory Woodfall."

Ben Johnson said of himself: "I can repeat whole books that I have read, and poems of some

selected friends, which I have liked to charge my memory with." Avicenna repeated by rote the entire Koran when he was only ten years old. Justus Lipsius, on one occasion, offered to repeat all the "History" of Tacitus without a mistake, on forfeit of his life.

The following is a quotation from Monte Christo, by Alexander Dumas. Dantes and the learned and shrewd Abbe Faria have been conversing, and the latter remarks: "I possessed nearly 5,000 volumes in my library at Rome, but after reading them over many times I found out that with 150 well-chosen books a man possesses a complete analysis of all human knowledge, or at least of all that is either useful or desirable to be acquainted with. I devoted three years of my life to reading and studying these 150 volumes, till I knew them nearly by heart. So that, since I have been in prison, a very slight effort of memory has enabled me to recall the contents as readily as though the papers were open before me. I could recite you the whole of Thucydides, Zophon, Plutarch, Titius Livius, Tacitus, Strada, Jornandes, Dante, Montaigne, Shakespeare, Spinoza, Machiavel and Bossuet. Observe I merely quote the most important names of interest."

Nor are these powers confined to gifted individuals. They are possessed by ordinary indivi-

duals, and manifested often under what is called by physicians, *Hypermnnesia*, or exaltation of memory, due to some change in the physical condition. This occurs frequently in fevers, in mania, ecstasy, hypnotism and hysteria. It is also frequently present in case of imminent death, when the whole life passes in review in a few seconds, facts and events long forgotten rushing with incalculable speed through the consciousness. During fever, the language of childhood, long disused and forgotten, has been recalled. A man of remarkably clear head was crossing a railway in the country, when an express train, at full speed, appeared closely approaching him. He had just time to throw himself down in the centre of the road between the two lines of rails, and as the train passed over him the sentiment of impending danger to his very existence, brought vividly to his recollection every incident of his former life in such an array as that which is suggested by the promised opening of "the Great Book at the last great day."

Nor are these phenomenal powers of memory confined to gifted individuals and persons in abnormal condition. They are often possessed by entire classes and races as the direct result of memory training. The natives of India have remarkable memories. It is a well-known fact that an Indian druggist may have hundreds of

jars, one above the other from floor to ceiling, not one containing a label, yet he never hesitates placing his hand on the right vessel when the drug is required. The ordinary washermen go round to houses with their donkeys and collect clothes, some from one house and some from another. These they carry to the river and wash, and in returning with the hugh pile never fail to deliver each article to the rightful owner.

In Brittany the peasantry still recite the ancient oral traditions of their race. The tenacity with which the Briton clings to the habits and beliefs of his forefathers is shown by his retention of the Celtic language, and by his quaint costume. The Briton peasant will repeat a legend or story with scrupulous fidelity to the established form in which they have always heard the incidents related. They will instantly check a stranger who attempts to deviate from the orthodox version with "Nay, the story should begin thus," repeating the regular formulæ of the tale.

During the persecution of the Waldenses, in the thirteenth century, when their version of the Scriptures was prohibited and destroyed wherever found, their ministers committed whole books of the sacred volume to memory, and repeated chapters at their religious meetings. Even the lay members could repeat passage after passage with the utmost felicity and accuracy. Reiner could

neither read nor write, yet was able to repeat the whole book of Job.

That great Scottish philosopher, Dugald Stewart, himself a striking example of great memory power, says: "On the superficial view of the subject, the original differences among men, in their capacity of memory, would seem to be immense; but there is reason for thinking that these differences are commonly overrated, and that due allowances are not made for the diversity of appearance, which the human mind must necessarily exhibit in this respect, in consequence of the various walks of observation and of study to which mankind are led, partly by natural propensity and partly by accidental situation."

There is good reason for believing that it is clearly within the compass of the average memory to master and recall at will every syllable of the Holy Scriptures. G. C. Leland says: "It is recorded of a Slavonian Oriental sect called the Bogomiles, which spread over Europe during the middle ages, that its members were required to memorize the Bible verbatim. Their latest historian, Dragomanoff, declares that there were none of them who did not memorize the New Testament at least, one of their Bishops publicly proclaimed that, in his own diocese of four thousand communicants, there was not one unable to repeat the entire Scriptures without an error.



As an illustration of great powers of memory often found in common life, we insert the following interesting article from *The Call*, San Francisco:

In an Italian restaurant on O'Farrell street, there is a waiter who has a memory greater than that possessed by Memnon, or by a disappointed office-seeker. Better still, his bank account is longer than his wonderful memory.

A Waiter who possessed a Phenomenal Memory.

A wonder in many things is Mariani, for that is the name of the little man with the big memory. Many were the stories related in reference to the food-bearer's incomprehensible brain faculties, before I decided to test them for myself. "Why," said a Bohemian friend while relating some of Mariani's performances, "there is less likelihood of him forgetting a face or a dish, than of Chris Buckley, 'the blind devil,' failing to remember a voice. He will not only recognize one after a year's absence, but will also remember what your last meal consisted of. Don't believe it, eh? Well, you can put him to the test and decide for yourself."

So it was agreed to put the little waiter's memory to a most rigid test. It was on Christmas Eve., 1891, that two weary hungry reporters entered the restaurant where Mariani is employed. Hundreds of persons were dining there, and scarcely two order the same dishes.

"Hello, Shortpencil," was Mariani's greeting as he quickly appeared by my friend's side, "regular dinner to-night, or same as you had last time?"

In order that there might be a fair test, Shortpencil insisted that I should do the ordering. I did so, and the meal was a most satisfactory one. The circumstance had almost entirely escaped my memory, and I had forgotten there was such a person in the world as a disciple of the great Memnon, in the person of the modest little waiter, and was wondering where to dine when Shortpencil accosted me. This was Christmas Eve., 1892, just one year after our dinner was served by Mariani.

"Been to dinner? No, well, let's go and see Mariani. I'll wager you a small bottle of extra dry that he can repeat the dinner, dish for dish, without a single order.

The wager was accepted and half an hour later we were seated in the O'Farrell street restaurant. Mariani was soon before us with a large bottle of claret in his hands.

"Good evening," said he to Shortpencil, and turning to me he added, "and how are you? It must be nearly a year since you were last here.

Already his memory was beginning to assert itself. "Now then, gentlemen," he continued, "will you have a regular dinner or the same as last time?"

"Same," said Shortpencil. Then my own memory of the meal twelve months ago was revived as each delicacy appeared in the same order as before. First came the large bottle of Burgundy, with two small glasses and plenty of cracked ice. Shrimp salad, ox tail soup, Italiarena, broiled flounder, roast teal duck and rum omelette, came in their regular order without a word being spoken to Mariani.

"You had Oregan cheese last time," explained the knight of the napkin, when it was time for desert, "but we have a new brand which you will find even nicer."

"Give us the same as before," was the order.

By this time I began to marvel at the man's memory and to realize that I was about to lose the wager.

But there were several things yet to come before the first dinner had been entirely duplicated. Mariani was equal to the occasion, however, and without the least hesitation completed the meal by supplying black coffee, cognac and the same brand of cigars we had spoken before.

Shortpencil chuckled gleefully several hours later as he helped consume the champagne Mariani's memory had won for him. "Don't feel bad," he said soothingly, as he held the sparkling liquid to the light, "I lost a similar bet two years ago. Had to get even some way, you know.

Several days later I learned more about Mariani. For thirty years he has worked in the same restaurant, and has judiciously invested his savings. In addition to several houses and lots he owns a big factory in South San Francisco that supplies many of the delicacies he daily serves to patrons of the restaurant.

"Yes, he is a wonder," said the proprietor of the restaurant, when asked about Mariani, "and although he has accumulated a fortune, you could not hire him to quit his occupation as a waiter. As he declares himself, he was born to be a waiter, and a waiter he will be till called to that land where edibles are not required."

## CHAPTER IV.

### THE PHYSIOLOGICAL BASIS OF MEMORY.

"The leading enquiry in the art of education is how to strengthen the memory."—PROF. BAIN.

In former times men looked upon memory as a purely intellectual activity, having little relation to bodily conditions. To-day, through the fuller study of the brain and the nervous system in their relations to mental phenomena, the tendency among a large class of writers is to consider memory a department of physiology.

The intimate relations between the growth and development of memory and the cultivation of the organs of sense, is now admitted by all. If, as Sir Wm Hamilton holds, the soul feels at the finger tips, and if, as most eminent physiologists now believe, the whole body is the organ of the mind, there seems good reason for accepting Kay's doctrine, that memory has its seat, not only in the brain but also in the organs of sense and in the muscles.

Memory  
regarded To-  
day as a  
Physiological  
Fact.

It is known to-day that no mental activity takes place without a corresponding and definite change in the bodily structure. Not only is this the case in regard to sensation and perception, but

also in recollection, imagination and fantasy. A change of brain structure accompanies every thought, and now it is asserted that in recalling any idea that has come to us through the senses, we use the senses again and in much the same way as when we first received the idea. Wundt observes that nerve action is the same in sense perception and in memory.

The same  
Nerve  
Action in  
Memory as  
in Perception.

Prof. Bain declares that, "the organ of the mind is not the brain by itself, it is the brain, nerves, muscles, organs of sense, viscera," and if every sensation and thought leaves permanent traces in our physical structure, it naturally follows that memory is closely allied with the education of our senses and the training of our bodily powers. Memory writes its record, not alone upon the brain, but upon the organs of sense, the nerves, the muscles and the entire body. From this fact it may be inferred that the record of all our past lives may be found in our bodies. A man becomes a part of all he has seen and heard and thought about. The record of every man's life is in every man's body. Memory is in this sense eternal. Nothing we have ever heard, or known, or felt, is ever lost. We carry it within us. It is true we may not be able to recall all our experiences and bring them again into consciousness, but the consciousness, as we shall see a little further on, is but a small part of our mental

life. If we "feel at the finger tips," it is quite evident that we remember at the finger tips as well, and very much of the musician's memory is in the muscles of the hand and arm. Memory is, therefore, not one faculty, but a condition of the activity of all the faculties.

The fact that memory very largely depends on physical conditions has been noted from the earliest times. The memory is more active in health than in sickness, in vigor and strength than it is in physical weakness. Memory is more active and reliable in the morning than in the evening, because the physical nature is then recreated by sleep and rest. "Fatigue in any form," says Herbert Spencer, "is fatal to memory."

Not only is this the case, but it is also an admitted fact that our physical condition, when we receive an impression through the senses, very largely determines the depth and permanence of the impression itself. If the powers of the body are fresh and vigorous, the senses active, the attention fixed, the impression is deep and lasting—and every one knows how faint the impression upon the mind when the body is wearied, the senses dull and the attention wandering. Ribot declares that, "the reproduction of impressions depends in a general way upon the circulation," and there can be no doubt that the character of the impression, as well

**Memory  
modified by  
the  
Physical  
condition.**

as its recall to consciousness, depends on the conditions and circulation of the blood, in short, upon the state of health.

According to Ribot, memory includes three things, viz.: the retention of certain states; their reproduction, their localization in the past. The

**The Three  
Elements of  
Memory.**

first two are indispensable; the third which we call recollection, and which he calls localization in time, is purely psychological. It is the element which constitutes perfect memory, yet it is the unstable element, and may be regarded as an added element to memory proper. "Do away with the first two and memory is abolished; suppress the third, and memory ceases to exist *for itself*, without ceasing to exist *in itself*."

Muscle fibre, which at first responds feebly to the excitation transmitted by a motor nerve, responds more energetically the more frequently it is excited, pauses and rests being presupposed. The most highly developed tissue of the body, nerve tissue, presents to the highest degree the two-fold property of retention and reproduction of past states. This furnishes, in some degree, a type of organic memory, yet not the true type which is to be found in the *secondary automatic actions*, as opposed to the primary or innate automatic acts. These secondary automatic actions are the very groundwork of our daily life—our acquired movement, such as walking, writing, the



acquired movements of the laborer and mechanic. Acts which now seem to us entirely natural were acquired by laborious effort. Lewes observes that when a child is learning to write he cannot move the hand by itself, but must also move the tongue, the muscles of the face, and sometimes the feet. In time by practice he can suppress all these useless motions, and write while he consciously gives attention to other matters.

Dr. Carpenter mentions the case of an accomplished pianist who executed a piece of music while asleep—a feat which must be attributed largely to the muscular sense which possessed the memory of the succession of movements. Consciousness here, as in other recorded cases, dropped out of activity, showing that the mechanism of memory is, in a sense, a superadded element.

Secondary  
Automatic  
Action.

Ribot declares that the physiological conditions of memory are: 1. A special modification impressed on the nerve elements. 2. An association, a special connection established between a certain number of these elements.

The question is often asked as to the nature of the modification impressed on the nerve elements. Physiologists are not agreed as to whether the nerve filament receives a permanent modification

—whether the nerve is a real conductor, which, being disturbed for a moment by the impression, returns to its normal condition, or whether there is a chemical decomposition of its protoplasm. It seems to be agreed, how-

**The Physiological  
Conditions of  
Memory.**

ever, that in the nerve cell is to be found the element which receives, restores and re-acts. Delbœuf, in his "General Theory of Sensibility," declares that, "every impression leaves a certain ineffaceable trace, that is to say, the molecules, once they are arranged otherwise and forced to vibrate in a different way, will not return exactly to their original state. . . . Animal molecules that have been deranged have thereby gained, in a greater or less degree, aptitude for undergoing disarrangement. Doubtless, if this same external agency does not again act anew upon the same molecules, they will tend to resume their own natural movement; but the case will be very different if they are again and again subjected to the same action. Then they will, little by little, lose the power of returning to their natural movement, and will become more and more identified with that which is impressed upon them, till at last it becomes natural to them in its turn, and they obey the slightest cause that will set them in vibration."

The second physiological condition of memory, according to Ribot, the establishment of stable associations between different groups of nerve

elements, is one which the author considers of vast importance, and which he uses to explain the apparent difficulty in finding in the human brain a nerve cell for each of the countless impressions of the human mind. He regards the view, that memory, either organic or conscious, is impressed on a single cell, and that this cell, with its nerve filaments, has a monopoly of retaining or producing it, as an illusion. The fashion of speech common to-day, it is true, requires us to regard a perception, a thought, an image, a sentiment, as *one* thing. But each of these is made up of many and heterogeneous elements; is, in fact, an association, a group, a fusion, a multiplicity. "We, therefore, hold it to be of the utmost importance to call attention to this point, viz.: that organic memory supposes not only a modification of the nerve element, but also *the establishment between them of associations adapted to each special action*—of certain dynamic associations which by repetition, become as stable as the primary automatical connections. In our opinion, the thing that is of importance, as supplying a basis for memory is . . . the way in which sundry elements are grouped together to form a complex."

Memory  
from the  
Physiological  
Standpoint is a  
grouping of  
Activities.

In support of this view attention is called: 1. To the fact that an acquired movement well fixed in the organism and firmly retained for a time, is

displaced only with great difficulty by another having nearly the same seat, but requiring a different mechanism. For example, anyone who has learned the American system of fingering in piano playing will find it very difficult to adopt the German system. 2. To the fact that sometimes, in lieu of one accustomed movement, we involuntarily perform another—a related movement. Knowing three doctors whose names begin with B, how natural to speak one when we intend to speak another, not because of any mental confusion, but because the one element B, being common, had excited the wrong group of nerve elements. From these and similar facts Ribot concludes that memory is a biological fact, and deduces the conclusion that “*a rich and well stored memory is not a collection of impressions, but an assemblage of dynamic associations, very stable and very readily called forth.*”

<b>Practical Inferences from the preceding Statements.</b>	These facts are very suggestive to every one who would improve his power of memory or aid others in this important work. They suggest that sound and vigorous health is a condition of rational memory training. They also suggest that in proportion as
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we educate and train the senses we improve and enrich the memory. It is also an obvious inference from the foregoing statements that the more we accustom the senses to accurate observation, to

careful discrimination and the more frequently and vividly we recall past impressions, the more we develop the powers of memory.

No inference is more obvious from the preceding statements than the necessity of frequent repetition of the sensation (with its appropriate nerve modification) by which the idea first entered the mind, and frequent repetition of the power of recollection which implies, in some degree at least, the same modification of the nerve element. These nerve modifications frequently repeated produce, as we have seen, an aptitude for like modification, which is one of the physiological bases of memory. If an idea, which we wish to remember, comes through the sense of our sight, we cannot too often see the object which produced it, or scan it too attentively, or too frequently call up its mental image, "visualize" it, because all of these repeat the nerve modification and develop the "aptitude" of nerve modification upon which the recall of the idea depends.

In recalling ideas we should endeavour to call to our aid the senses through which the ideas entered the mind, that is we should hear and see again, as vividly as possible, the objects which created the original sensations of sight or sound. Recollection should not be a purely psychical act. Vivid and frequent recalls to consciousness of the mental images resulting from sensation, will

develop the picture-making power of the mind and stimulate and strengthen the general memory. Another inference from the preceding statements is quite obvious to all: the morning is the proper time both for acquiring new ideas and for memory training. The student should make his first attempt at memorizing difficult lessons in the morning, and select this as the period for that daily and regular exercise of the powers of recollection, without which he will fail to effectually strengthen the memory.

## CHAPTER V.

### THE LAWS WHICH GOVERN MEMORY.

"Memory is a faculty so intimately associated with the operation of the vital forces, that no man doubts its entire dependence upon corporeal states."—DR. LAYCOCK.

"The manner in which the scar of a cut on a child's finger grows as the organ grows, evinces that the organic element of the part does not forget the impression that has been made upon it."—DR. MAUDSLEY."

"Consciousness forms but a small item in the total of psychical processes."—G. H. LEWES.

It is of the first importance to the student who would strengthen his power of recollection that he should gain clear ideas of the mental operations involved therein, and of the laws which govern memory. In place of a single mental operation memory involves several, and what is ordinarily called memory is but the final stage of a process which implies: 1. Acquisition of the original ideas or state. 2. Retention. 3. Reproduction. 4. Recognition—or what some have called localization in time. To the subject of the acquisition of ideas and the importance of employing the right methods we shall devote a special chapter, in which it will be seen that this

What is  
involved in  
Memory.

has a most important bearing upon the retention and reproduction of our ideas. In regard to retention of ideas it is sufficient here to state that the consensus of opinions among metaphysicians is strongly in favor of the view that no idea or mental impression is ever lost—though many of them pass beyond the power of voluntary recall.

To remember a thing implies, therefore, that we get it into the mind, that we keep it there, that we reproduce it, that we recognize it as belonging to a certain part of our past life, or as having certain relations.

No one can gain an intelligent view of the mental processes involved in memory and of the right method of strengthening it, without recognizing, first, the close dependence of all these processes upon bodily conditions, and secondly, the fact that *most of our mental life lies in the realm of the unconscious*. With some of the bodily conditions involved in memory we have dealt in a preceding chapter. We call special attention in this chapter to the mental processes, conscious and unconscious, which are related to memory.

At one time consciousness was looked upon as synonymous with mind—as co-extensive with mental operations. Leibnitz first disputed this view and established the doctrine that there are energies constantly at work in

The Mind  
conscious  
and  
unconscious.



the mind, of which we are unconscious. The psychologists of Germany since his time, have taught that much of our mental work is done without consciousness. Sir William Hamilton declares: "I do not hesitate to affirm that what we are conscious of is made up of the unknown and incognizable." The sphere of our consciousness is "a small circle in the centre of a far wider sphere of action and passion, of which we are only conscious through its effects." The mind constantly receives impressions from the outer world which are too faint to make themselves felt and do not come into the realm of consciousness at all. O. W. Holmes declares that, "there are thoughts that never emerge into consciousness, which yet make their influence felt among the perceptible mental currents, just as the unseen planets sway the movements of those that are watched and mapped by the astronomer." The fact of unconscious cerebration will be admitted by everyone who notices carefully the operation of his own mind. How often a problem, perplexing and incapable of solution at night, has opened out to us a complete solution in the morning! How many men are capable of charging the mind to wake at a certain hour and of relying with certainty on this unconscious cerebration to fulfil its appointed task. Carpenter mentions the following curious fact: "A business man in Boston, having an important question under consideration,

had given it up for the time as too much for him.

Unconscious      But he was conscious of an action  
Cerebration.      going on in the brain which was so  
                         unusual and painful as to excite his  
apprehensions that he was threatened with palsy,  
or something of that sort. After some hours of  
this uneasiness, his perplexity was all at once  
cleared up by the natural solution of his doubts  
coming to him—worked out, as he believed, in  
that obscure and troubled interval." The mind, then  
may be looked upon as a vast storehouse of ideas  
and impressions, any of which are capable under  
proper conditions, of emerging into the realm of  
consciousness, but only a small proportion of  
which can be brought under voluntary control. In  
dreams, in fevers, in cases of accident or sudden  
fright, and also of a mental disease known as  
Hypermnesia, many of these ideas and impres-  
sions that have not visited the realm of conscious-  
ness for years, come again into the mental view  
and appear to sweep with wonderful rapidity  
through the mind.

The fact that an idea cannot be recalled by a  
voluntary effort is no proof, therefore, that it has  
been lost.

Another fact pointed out by psychologists, is  
this: that our progress in mental and physical  
training is one *from the conscious to the uncon-*  
*scious*. Mental efforts that at first were difficult,  
become by training and practice so easy and re-

quire so little attention, that their performance hardly necessities any conscious activity. Physical acts that were painfully laborious, have, by practice, become so easy that the bodily organs perform them automatically. Let anyone compare the conscious effort of the child in adding a column of figures and the almost unconscious effort of the trained arithmetician in the same work; or the conscious effort of the school-boy in writing his first copy (when he possesses so little co-ordination of his bodily powers that he moves his tongue and feet at the same time as he moves his pen) with the easy and almost unconscious movement of the trained penman, and he will readily see that progress in education is marked by a diminution of the sphere of conscious effort.

**Our Progress  
towards the  
Unconscious.**

Ribot, in his treatise on memory, points out three conditions of consciousness: 1. A certain mode of action of the nervous system, called by physiologists nervous discharge. All modes of nerve activity do not, as we have seen, awaken consciousness. All psychic acts awaken nerve activity, but the proposition is not reciprocally true. 2. Intensity—which is a condition of a highly variable character. “Our states of consciousness are ever striving to supplant one another, and victory may result, either from superior strength or from weakness of other contest-

**Conditions  
of  
Consciousness.**

ants." 3. A certain measure of duration. "On this point we can reason from definite data. The researches of the last thirty years have determined the time that is required for the different sense perceptions, (hearing, 0.16 to 0.14 sec., touch, 0.21 to 0.18 sec., sight, 0.20 to 0.22 sec., and for the simplest act of discernment, that nearest to reflex action 0.02 to 0.04 sec.). Though the results vary according to the experimenter, the person under experiment, the circumstances and the nature of the psychical acts that are being investigated, so much is at least established, viz., that *every psychical act requires an appreciable duration*, and that the supposed "infinite rapidity of thought" is only a figure of speech.

From this it follows that no nervous action, the duration of which is less than that required by psychic action, can awaken consciousness.

The practical question with everyone who would strengthen his memory and render it more serviceable, the question of special interest to teachers and students, has been well stated by McLellan in his "Applied Psychology," and it is this: *how to get anything into the mind so that it can be got out again when wanted.*

Now a very little introspection will enable every one to discover the fact that the mind possesses certain ideas which it never forgets—ideas that can not only be called up into consciousness

whenever wanted, but are very frequently present—often annoyingly so—when not called. Other ideas which seldom recur except by voluntary effort, are ever available when summoned from the realm of the unconscious. Now, if we examine those ideas that seem to have a perennial existence in our minds—those which are habitually present or which invariably respond to the summons of the will, we shall discover some of the conditions favorable to recollection.

The Practical  
Question  
stated.

Let us take the impression made upon your mind by a fire, which, we will suppose, destroyed your house, imperilled your life and perhaps inflicted severe financial loss upon you. Here, then, is a mental impression which it is impossible for you to forget, one that can be recalled in all its details, one that even now presents itself to your mind with such vivid distinctness that you can see again the devouring flames and hear the roar of crackling conflagration. What are the peculiar circumstances, either in the acquisition or the retention of this mental impression which separates it from ordinary experiences which are so apt to be forgotten? I think it must be admitted that the chief peculiarity of this impression is to be found in this: it was received by the mind when roused to the highest interest, when the attention was naturally centered—we may say absorbed—when the whole nature was excited by those

motives of self-interest that usually exert most power over us. This readily suggests to us the principle that *the degree of interest felt and the degree of attention given when an idea is first received into the mind determines largely the permanency of the idea, and the readiness of its recall to consciousness.*

Again, if we take those conditions of home life, those associated with the names, dispositions, habits and peculiarities of the members of the family in which we live, or those more personal ones connected with our own experience, such as the seat we occupy, the office where we work, the books we daily handle and the whole class of most familiar ideas, and ask ourselves what element these have in common, or why it is that the ideas which represent these objects now so familiar, and yet so novel once to us, are so easily recalled, we shall find a ready answer. These impressions have been again and again repeated by the daily recurrence of the objects which first produced them or have been mentally reviewed times without number. Hence they cannot be forgotten. This suggests to us another principle of prime importance, which is this : that *frequent repetition of an impression by repeated presentation of the object which produced it, or frequent vivid recall of the mental impression without the object, facilitates the voluntary recall of that impression.*

If we examine carefully what takes place when we recall a past impression we shall discover that

our ideas are not separate and distinct, but have a bond of connection or association, are, in fact, so linked together that one necessarily recalls another.

"Lulled in the countless chambers of the brain  
Our thoughts are *linked* by many a hidden chain ;  
Awake but one, and lo ! what myriads rise  
Each stamps his image as the other flies."

This association of ideas which constitutes in a sense our continued mental existence and identity, finds numerous illustrations in our language where words are often so paired that one invariably calls up the other. Strawberries and cream, bread and butter, umbrella and rain, Scotchman and bagpipes, church and sermon, are familiar illustrations of this principle of association. Custom and experience make most of these associations which are common to a people, while some peculiar experience of the individual may permanently associate in his mind and memory two ideas that have no natural bond of association. A person who has, for example, met with a severe assault from robbers at a certain point of the highway, may be ever afterwards unable to dissociate the place and his painful experience, while for others no such associations exist.

In addition, it is possible to make arbitrary associations so that ideas in no way naturally related, may recall each other. This is the underlying principle in nearly all the systems of mne-



monics. The plan pursued is to associate ideas that are unfamiliar with those that are familiar, ideas belonging to one province of memory with those belonging to another province of memory. Relations of time are often combined with relations of space, etc. By this method certain temporary advantages have been obtained, some mental pyrotechnics have been displayed, but these artificial systems have never strengthened the memory and have often, we fear, diverted the attention from those exercises which are calculated to strengthen the recollection. As we shall devote a chapter to an account of these mnemonic systems, their use and abuse, we pass them over for the present.

The principles underlying the association of ideas, as stated by psychologists, will be treated more fully in the chapter on association of ideas. For the present we are content to note the following principle: IDEAS THAT BECOME FIRMLY ASSOCIATED IN OUR MENTAL LIFE, EITHER FROM OUR HABITUAL EXPERIENCE, OR FROM SOME NATURAL RELATIONSHIP, OR FROM ARBITRARY COUPLING BY THE WILL, RECALL EACH OTHER TO CONSCIOUSNESS.

The principles which we have already pointed out in reference to the mental processes involved in memory, are of a general character. We now proceed to refer to some particulars in which individuals vary in regard to their methods and powers of recalling past ideas.



It will be evident to every one on a little reflection, that when we make an effort to recall an idea, we have at the time SOME IMPRESSION OF IT in the mind. It is partially within the realm of consciousness, and our mental effort is directed to a complete resuscitation of the idea—a part of which is already within the mental vision. When an idea is recalled as perfectly as the mind is capable of recalling it, or, to speak from a physiological standpoint, when a modification of the nerve elements is repeated after the lapse of some time, we have in mind what has been denominated a mental image. Strictly speaking this refers only to impressions received originally through the sight. Yet by extension of meaning it applies to the cerebral revival of muscular and tactile sensation—sensations of sound, taste and smell. “The word image,” says G. H. Lewes, “must be understood as designating any recalled feeling of whatever kind which wants something of the signature and energy of feeling, or after-feeling which it recalls.”

Memory  
deals with  
Mental  
Images.

These images appear like faint pictures of objects seen, faint echoes of sound heard, faint repetitions of impressions received through the other senses. THE POWER OF REPRODUCING THESE MENTAL IMAGES OF PAST SENSATIONS IS ONE THAT EXISTS IN VARYING DEGREES IN DIFFERENT INDIVIDUALS AND THAT

VARIES GREATLY IN THE SAME INDIVIDUAL ACCORDING TO THE SENSE THROUGH WHICH THEY WERE OBTAINED.

Some people have naturally wonderful power in recalling vividly past sights and sounds. The

**The Visual-  
izing Power  
increased by  
Exercise.**

artist and poet not only see more than the ordinary individual, but they mentally photograph the scene so that it stands out before the mind in life-like reality, and they are able to paint it in colors or portray it in words because of this wonderful power of visualizing past impressions. Another fact, obvious to all who have tried the effect of daily exercise in the development of any mental process, is this: THE POWER TO REPRODUCE THE MENTAL IMAGES OF PAST IMPRESSIONS IS ONE CAPABLE OF VAST IMPROVEMENT BY REGULAR AND PERSISTENT PRACTICE.

This power varies in the individual according to the source of the impressions. Some remember much more easily the sight images, than the sound images—what they have seen than what they have heard. The reverse is true of others. The quickest way for some to memorize certain facts is to see them upon the printed page or in some pictorial representation. For others, listening to the facts read or told by another, is the easier method. A little examination of one's own powers will suffice to discover whether memory

is stronger in regard to sight or sound, and this should determine to a limited extent, the method of study. Every one should seek to discover wherein his memory is most deficient, and aim to strengthen the memory along the line of this deficiency. How this may be done we shall point out in a subsequent chapter. It is sufficient here to note that REGULAR DAILY PRACTICE IN RECALLING THOSE MENTAL IMAGES WHICH THE MIND NATURALLY HAS LEAST POWER TO RECALL, WILL EFFECT A WONDERFUL INCREASE OF THE MIND'S POWER IN THIS RESPECT.

Let us for example take the case of a man who is always forgetting the names of acquaintances. Let such an one form the habit of spending five minutes each morning in recalling the names of new and old acquaintances. Let him make it a rule whenever he meets an individual to address him promptly by name and whenever he sees an individual, to recall mentally the name and even utter it aloud. By the exercise of a little will power and a little persistence in accustoming the mind to recall names, he will effect a wonderful improvement in his memory of names. Similar lines of exercise in recalling the impressions obtained through other senses may be marked out by the student and pursued with equal benefit.

**Exercise the  
Deficient  
Power.**

But mere recall of the mental images produced

by the senses does not constitute the highest kind of memory and, if unaccompanied by thought and some exercise of the reflective faculties, may bar the road to mental progress. Many illiterate and some foolish people have been known to excel philosophers in this *sensational memory*. The boy at school who learns to recite his tables and, after beginning with  $8 \times 1 = 8$ , can regularly proceed to  $8 \times 12 = 96$ , but could not reverse the process, or, without repeating the table thus far, tell you that  $8 \times 7 = 56$ , or, having been told that eight multiplied by seven equals fifty-six, could not tell you how many times eight could be taken from fifty-six, has been cultivating sensational memory, and such sensational memory as he has thus acquired will only burden his mind.

The facts to be memorized should always be thoroughly understood by the students.

A fact understood, thoroughly mastered, can be laid hold of by the reason, and used in this way the memory has a double hold upon it, viz., the

Sensational, Rational and Imaginative Memory.	recollection of the fact through the sensational memory and the association of that fact with others in mental operations. This may be called "rational" memory as distinguished
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from "sensational," or as some have styled it, "verbal" memory. The highest development of memory, according to some authors has been

styled the "representative" or "imaginative" memory which is capable of "imaging" forth past sensations with almost the same vividness which characterized their entry into the mind.

Now a fact thoroughly understood and brought into such relations to the mind that it can be used by the reason, occupies much the same relation to the mind that food, properly masticated and introduced into the digestive organs, does in relation to the body. Such a fact is assimilated to our mental life as food is changed to blood, muscle and nerve.

To make facts our own in such a way that it will be impossible to forget them it is essential that we first thoroughly understand them, and secondly, that we use them in our reasoning processes on all suitable occasions. Every one is cognizant of the fact that ideas imperfectly grasped by the intellect and facts that lie unused in the mind like so much useless lumber, soon escape us. *Knowledge unused is knowledge soon lost.*

**We must use  
our Ideas to  
Retain them.**

A new method in the study of memory was introduced by a German student, Ebbinghaus, in the university of Berlin, in 1882, since which time experiments of a somewhat similar character have been made in various colleges of the United States. The object was by experiments conducted on a

sufficiently broad scale, under test conditions, to verify certain supposed facts in regard to memory, and to collate a sufficient number of facts for the beginning of an inductive study of memory. Among the special objects of investigation by Ebbinghaus were the following: To discover the comparative time required in memorizing significant and non-significant words; to ascertain how much time would be saved in relearning a given number of syllables by increasing the number of

**Experiments  
in Memoriz-  
ing and the  
Results.**

repetitions at the first attempt; to ascertain whether in memorizing a number of words, the bonds of association extended to other words than those immediately preceding and following a given word, etc. The following were some of the conclusions reached:

1. That ten times more time was required to learn non-significant than significant words. This is a conclusion of great pedagogical value as it shows that YOU VASTLY INCREASE THE CHANCES OF A FACT BEING RETAINED IN THE MIND IF IT IS CLEARLY UNDERSTOOD. THE STUDENT SHOULD LEARN FROM THIS THAT THE TIME SPENT IN ACQUIRING A THOROUGH COMPREHENSION OF A SUBJECT IS MORE THAN GAINED IN MEMORIZING IT.

2. That in memorizing a certain list of syllables there was an average saving of 12.7 seconds for each repetition in the former attempts. For ex-

ample it was found that 86 syllables could be memorized at a first attempt in 1270 seconds, but after 24 repetitions they could be learned the following day in 915 seconds.

3. That learning an original series of syllables perceptibly shortens the time required for learning these syllables in a new order, whether that order be the reverse of the original or made up by omitting 1, 2, 3, or more syllables.

Professor Cattell, of the University of Pennsylvania, made an interesting series of experiments of the same general character, extending over several years. One purpose was to find the relative time required in forming associations with abstract and concrete words. The method adopted was to dictate ten words of each class to a number of persons of about the same age and mental development, and to allow twenty seconds for the formation of associations with each word. ALL THE TESTS SHOWED THAT IT TOOK LONGER TO FORM ASSOCIATIONS WITH ABSTRACT THAN CONCRETE WORDS. Tests were also made upon pupils of different ages, varying from 14 to 18 years, and also upon several classes in a London public school and in a German gymnasium. The results obtained from the trials all seem to point in one direction: A DISTINCT SHORTENING OF THE MENTAL PROCESS ACCOMPANYING GROWTH AND EDUCATION. The boys of the sixth form required less than hal

the time needed by the boys of the third form to make a given number of associations.

Results based on more than 12,000 observations by 516 observers, show that IN CONCRETE WORDS THE FAVORITE ASSOCIATIONS ARE FROM WHOLE TO PART AND NOT FROM PART TO WHOLE. Why trees should suggest leaves, rather than leaves trees to the majority of minds, it may not be easy to explain; but there would seem to be no doubt in respect to the fact. If this indicates a real tendency of mind in forming associations, it would seem to suggest to educators the order in which concrete words should be arranged for easy memorizing, and also that the mind is more disposed to analysis than synthesis.

Experiments made recently by Professor Johnson, of Brooklyn, were directed to the discovery of the relative power of memory in men and women. The papers of forty-two men and twenty-eight women formed the basis of comparison. Of the words written by the men 40 per cent. were completely forgotten, and 49.8 per cent. correctly recalled; while the women forgot only 29.2 per cent., and correctly remembered 58 per cent., a difference of more than 8 per cent. in favor of the women. A subsequent comparison made under the direction of Professor Jastrow of the pupils of the Milwaukee High School, shows a similar result. The boys remembered only 41.5



of their associations after an interval of three days; while the girls recalled 62.5 per cent. of theirs, a difference of 21 per cent. in favor of the girls.

In the examination of the pupils of the Milwaukee High School, before referred to, it was found that the girls use only 134 different words, while the boys use 208. In the girls' list there are only 91 words that occur but once, while in the boys' list there are 148. THIS SEEMS TO INDICATE LESS INDIVIDUALITY IN THE THOUGHT PROCESS OF WOMEN THAN MEN. Preferences for certain special associations seem also to be suggested; THE MEN FAVORING ASSOCIATIONS BY SOUND AND FROM PART TO WHOLE; WOMEN THOSE FROM WHOLE TO PART AND FROM OBJECT TO QUALITY. So far as a comparison can be made this latter result corresponds with that obtained by professor Cattell in the examination of London school girls and boys.

## CHAPTER VI.

### HOW TO TRAIN AND STRENGTHEN THE MEMORY.

"Surely an art of memory may be made no more destructive to natural memory than spectacles are to eyes."

—THOMAS FULLER.

"The extent of the memory depends: first, on the daily use we make of it; secondly, on the attention with which we consider the objects we would impress upon it, and thirdly, on the order in which we arrange our ideas."—HELVETIUS.

"If any one ask me what is the only and greatest art of memory, I shall say that it is exercise and labor. To learn much by heart, to meditate much, and, if possible, daily, are the most efficacious of all methods. Nothing is so much strengthened by practice or weakened by neglect as memory."—

—QUINTILIAN.

That the memory, like all other powers of the mind, is capable of training and development by rational methods, is a proposition that few will dispute. To what limit it may be extended and strengthened has not been determined, but there can be no doubt that the mass of mankind have faint conception of the great possibilities in the way of the development of memory, that lie before them. Weak memories may be strengthened

and good memories made better in the same way that flabby muscle may be made firm, and strong muscle fibre may be made stronger, viz., by appropriate exercise, regularly followed, under the right conditions, and with intervening periods of rest.

Artificial systems of memory training, that profess by revealing wonderful secrets, and recent discoveries, to fit out the student with a new memory in the course of a few days and teach him the art of "never forgetting," may be classed with the wonderful patent medicines that produce full beards on smooth cheeks in a few weeks. As a means of training the memory and rendering it serviceable in the battle of life, these systems are worse than useless. It may freely be admitted, however, that by means of mnemonics the student can commit to memory more quickly certain classes of subjects.

Before entering upon this very practical and important question of the proper training of the memory, there is a view of the subject I would like to press upon the reader's attention. If memory like all our other powers is capable of vast improvement by proper methods, is it not as much obligatory to train and keep in good working condition this most wonderful faculty, as it is to give proper food and exercise to the body? This ethical view of memory, I am aware, is one

that does not appear to have received much attention. The serene way in which most people speak of the possession of a poor memory shows

**The Ethical  
View of  
Memory.**

that this ethical view of memory training has never occurred to them, or that they must regard memory as an entirely unmanageable factor in their mental life. How startling it would be to hear one of these persons say, I have a poor faculty of speaking the truth, or, I have great difficulty in refraining from theft, and yet a bad memory may be, and often is, a moral defect as well as an intellectual one. Yet how coolly and with what utter absence of any thought of merit or demerit, does your average man declare, "I forget all about it," as though this were an unchallengeable excuse for some neglect.

We have seen in the chapter on the practical value of a good memory, that a man's success in society and in business is largely dependent on a good memory ; while every one knows that the student, the teacher, the minister, the public speaker are dependent in a large measure on an active and retentive memory, for success in their work. If memory, then, is so essential to proper performance of life's duties, how can its neglect be looked upon as other than a sin ?

Is there not good ground for the assertion that "a bad memory is always a defect, frequently a

fault, and sometimes a crime?" The Rev. Augustine S. Carman in a recent article on the ethics of memory, in the *Homiletic Review*, to which we are indebted for some of the thoughts of this paragraph, adduces four striking facts, which indicate the ethical element in memory. They are as follows: 1. Memory is cultivable to an indefinite extent. 2. Attention is a fundamental condition of memory. 3. We remember best what interests us. 4. Our memories are integral parts of ourselves.

As already pointed out the fact that memory is a large element in the proper performance of life's duties, and that it is improvable by training and practice, brings it at once into the realm of ethics.

Again the fact that attention is requisite to good memory and lack of attention the one great source of defective memory, seems to trace memory defects back to volition where we again reach the realm of ethics. The statement, "we remember best what interests us," needs no other confirmation than is found in every man's experience, yet it clearly implies a moral quality in memory, because our likes and dislikes spring not only from inheritance, but from habit, education and choice, which are clearly ethical. Interest is often a dominating element in our memory of persons. We remember some persons

**Memory  
Training is a  
Moral Obligation.**

because they interest us; we forget others because they do not excite our interest. The case of a Southern lady is cited, who testified in court that she could not identify a certain negro "because all negroes looked alike to her." Then the fact that memory becomes a part of ourselves, that the entire record of our past lives is recorded in our natures, seems to indicate that past habits, preferences and education will largely determine not only the class of subjects we remember, but the facility of recollection in every department of our experience. All these considerations urge upon us the cultivation of memory as an important duty to ourselves and others.

As clear and definite ideas of the object to be accomplished, are essential in any undertaking it may be advisable to ask, what should be the end aimed at in memory training? What constitutes a good memory? Memory is for use rather than ornament, for daily help in fighting life's battles, rather than mere exhibition of power in the performance of memory feats.

The question may then assume this form:  
What constitutes a really serviceable memory?

What is a Good Memory?	The answer to this is not difficult. A good memory is one that firmly retains in orderly arrangement what is committed to it, and produces readily its stores at the command of
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the will. He is a good steward who receives what his master commits to him, preserves it in good condition and order and cheerfully and promptly obeys his master's command, when ordered to produce it. The office of memory is to receive, preserve, restore. Many memories are good in one respect and decidedly inferior in others. A man's memory may be retentive, but if his knowledge be not arranged in an orderly manner, his power of recollection may be so slow that for practical purposes his memory is often valueless. In modern life, we crowd into our three score and ten years more experience than seven centuries of life gave to the early patriarch. We have such a multitude of engagements to-day, and business and social life passes with such a rush, that a memory that does not respond AT THE HOUR OR AT THE MOMENT the will makes demands upon it, is practically useless. One great need of everyone to-day is a READY MEMORY, one that requires but a hint to effect an immediate response. The memory that is always an hour behind time, always lagging with a load of after-thoughts, is like the train that arrives a day after the fair. Memory should be like drafts made payable ON DEMAND.

**A Good  
Memory  
retains firmly  
and responds  
freely.**

"Ah," says the merchant, "if I had only re-

membered that item of business with A., and spoken to him when he was in my store this morning, it would have saved me a twenty mile journey and half a day's time."

"Alas," says the minister, "if that illustration had not escaped me just at the moment, how much more interesting and forcible I could have made that part of the sermon?"

"How provoking," cries the woman who has just returned from town, "to think that I attended to all the minor matters and forgot the very things I most needed until I came home."

While most men admit the value of a READY MEMORY some have questioned whether it is really necessary in our day for the memory to have such strong retentive power as men seemed to have possessed in earlier times. Before the age of printing a good share of the knowledge of mankind was preserved in the storehouse of memory. Even to-day very much of the traditional knowledge of many nations is retained in this way, and handed down from generation to generation. But among civilized people, it is argued, where books and papers abound, and where copious works of reference in all departments of human knowledge are available, it is not necessary to develop the retentive powers to the same extent as in earlier times. Doubtless it is neither necessary or advisable to day to make the mind an intellectual



pack-horse, and it is possible to burden the mind with many things for which we might better consult works of reference. Yet after due allowance is made for all this, it will be seen that the demands of modern life are such that every man, to be successful, must carry a vast fund of such information as his calling demands, in his mind; and the readiness with which he can produce these stores will be to some extent, the measure of his success.

Power of  
Retention  
necessary.

A man cannot carry Webster's Unabridged and the Encyclopedia Britannica to the stock exchange, to the counting house or to the drawing room.

Petroleum V. Nasby in one of his letters describes a man who declared he had no need of knowledge because he always kept a nigger to do his reading and writing. It is doubtful, however, if the possession of a vassal could supply the lack of education, and it is equally doubtful if all the classified and published knowledge of to-day can enable a man to dispense with a strong and retentive memory.

Having then settled it that memory is capable of vast improvement by appropriate training, and that it is of the highest importance to possess a strong and active memory, what is the first requisite of rational memory training? We answer without hesitation, A STRONG DETERMINATION,

based on a clear apprehension of the value and importance of a good memory and of the correct methods of improving it, TO PERSIST IN DAILY EXERCISE OF THIS FACULTY UNTIL IT IS BROUGHT TO EFFICIENCY. There is no royal road to the possession of so great a treasure, as there is no short cut for the masses to riches, fame, and power, so the majority of men can only reach the heights of mental excellence by CONTINUED EFFORT BACKED UP BY AN IRON WILL. Let the student then resolve to have a well stored and ready memory. Let him remember, that like all his other powers of body and mind, memory is a talent which will improve by use, or shrivel by neglect. Let him remember what strength has been developed by physical training, what wonderful powers of mind by education, and let him resolve not to be handicapped in the race of life by a treacherous memory.

While there is no royal road to the possession of a retentive and responsive memory, there is an open road to every one who has will power enough to form a firm resolution and patience enough to follow a course of daily exercises.

THE WILL MUST BE CULTIVATED as a part of proper memory training. The memory must be trained to act promptly, and loyally obey every command of the will, and it will be assisted in this if the will is made strong and unbending. As a means of developing this WILL POWER, one prominent teacher recommends the following:

RESOLVE TO RISE EVERY MORNING FOR THREE MONTHS AN HOUR EARLIER THAN USUAL and devote a

The Will  
must be  
Educated.

stated time to some particular work, say, memorizing a few verses, and do it. It is simply impossible to overestimate the amount of knowledge that may be acquired or the degree of mental power that may be reached by a course of daily studies, planned and unfalteringly pursued by an unyielding and victorious will. The majority of men who fail in life, fail for lack of will power. This will power transformed the little Corsican into the great Napoleon who was accustomed to say to men who failed: you have not half enough will power. When told that the Alps stood in the way of his victorious march into Italy, he said, "there shall be no Alps," and the Simplon Pass was the result. "Impossible," he said, "is a word only found in the dictionary of fools."

When the student has once fairly resolved to develop a good memory, the battle is half won.

"The heights which great men reached and kept,  
Were not attained by sudden flight;  
But they, while their companions slept,  
Were toiling upward in the night."

The second step is to find out as far as possible one's own strength and weakness in regard to memory, and in what way the memory works with most ease and wherein it experiences most diffi-

culty. As before pointed out some remember more easily the "sight images" than the "sound images," while the reverse is true of others. One should find out which he most easily recalls, the "images of sight" or the "sound images," not only as a guide to the easiest method of memory, but also that he may cultivate the memory by appropriate exercises along the line of its deficiency.

**Test your  
Memory's  
Strength and  
Weakness.**

To determine whether you remember more easily the sight or sound images, we recommend the following test: get a friend to write down for you three lists of words—say 6 to 8 in each—familiar words of one syllable, each word representing a distinct idea, but having no relation in sense with any of the others. Let these be marked, 1a, 2a, 3a. Let the same person write three other lists of the same words as in the preceding, each one in order different from the corresponding first list, and marked respectively, 1b, 2b, 3b, these lists to be entirely unknown to you until the experiment is made. Now take 1a and read it slowly once only in perfect silence, and then write down as many words of this list as you can from memory on a slip of paper marked 1aa, the same with 2a and 3a, marking answers 2aa and 3aa.

In the second series, get your friend to read to you once clearly, at an ordinary rate, the words of 1b, after which immediately write as many as

you can on a slip of paper marking it 1bb, and so with 2b, and 3b, marking answers 2bb and 3bb. Sum up the correct answers of the first series and also of the second. The list showing the highest percentage of correct answers will show whether the sight or sound images are more easily received by you. But this is by no means the only point to be investigated. *It is necessary to know not only by which of the senses we most readily receive new ideas, but also which furnishes those images upon which the mind has most retentive power.*

The taking in of new ideas is one thing; the storing and retaining them is another. In order to test the retentive power of the mind upon each class of mental images, it will be desirable to repeat the experiment with new word material, and allow an interval, say of an hour, to lapse between the reading and the writing in the case of the first list, and the same between the dictation and the writing in the other. Care must be taken that in the intervals the mind should not be unevenly taxed or distracted.

One result of the experiments, if carefully made, will be, perhaps, to demonstrate the strange fact, that the mind does not always retain best those images which it most readily receives. Apprehension and retention may differ in regard to their favorite senses. Many persons receive most readily one way and remember best in another.

Very often for example, a person may receive best by sight and retain best by sound.

In these experiments, *the nature of the mistakes* made in writing will be an indication worthy of note. Those who write from memory of sounds will as a rule, make mistakes suggested by similarity of sounds. Those who, on the other hand, remember by pictures of thought, will in their errors substitute words that bear a general resemblance in their caligraphy to the original lists. In

**Memory  
Training  
must be adapt-  
ed to the  
Individual.**

this way it will not be difficult for any student to gain a very useful insight into his individual way of taking in and storing ideas.

This knowledge of one's strength and weakness in regard to memory, is an essential element in memory training. It must be taken into account, if the highest success is to be obtained. It is for this very reason that so many find the arbitrary and unnatural associations of the mnemonic systems of to-day so valueless, because they do not take into account the essential differences between memory that depends chiefly on sound images and memory that depends chiefly on sight images. If arbitrary associations for mnemonic purposes are ever justifiable and advisable, they must be adapted to the individual, and should be in most cases constructed by himself.

The next step in improving the memory is most

*careful attention to the method of receiving ideas.* The "taking in" process, as already pointed out, has very much to do with the "keeping" process and the "getting out" process in regard to ideas.

In our opening chapters we laid down four great principles of true memory training, viz., *careful observation, thorough comprehension, methodical arrangement and frequent reproduction.* The first three refer particularly to the "taking in" process, and may be regarded as preparatory and as aids to recollection, while the last has reference particularly to the daily and appropriate discipline which alone will strengthen the memory. As we shall have much to say on the subject of careful observation in a subsequent chapter on "Attention," we pass it over here with brief reference. It is now generally agreed that most of the errors that prevail in the world spring not so much from illogical reasoning as from *inaccurate observation.* And it may be stated, with little fear of contradiction, that *imperfect comprehension of a subject is ever the chief difficulty in memorizing it.* In the series of experiments conducted recently in the university of Berlin, as we have seen, the fact was demonstrated that our chances of remembering anything are increased ten-fold by thorough comprehension. It may be thought that these facts bear more directly on the subject of easy apprehension and ready recall of par-

Fundamental  
Principles  
Re-stated.

ticular ideas than upon the subject of the general development of memory. Yet it will be admitted on reflection, that they have much to do also with the improvement of the memory faculty because the habits of careful observation, thorough comprehension and methodical arrangement of ideas having once been formed, the reproductive power of the mind will doubtless be increasingly exercised and the whole faculty strengthened.

The student should next select for daily practice in memorizing and reviewing such exercises as may be adapted to his needs and the special object he has in view. Two or three qualities may be pointed out which should always characterize these memory tasks. In the first place they should be *brief* and *easy* rather than long and difficult. The mind develops strength, not so much by occasional and severe effort as by easy and regular exercise. Not many years since it was considered essential in physical training to use the heaviest dumb-bells and weights, and violent straining of the muscles was supposed to increase the strength. To-day heavy weights are generally discarded, and reliance is placed rather on natural and unrestrained movements of the various parts of the body, pursued with regularity and under right conditions. So in training any mental faculty, it is not the severity of the effort so much as its suitability

The proper  
Kind of  
Memory  
Exercises.



and regularity that promotes intellectual vigor.

Another quality of these memory tasks should be simplicity. Every selection of prose or poetry should be one capable of easy and thorough comprehension. As we have seen, a subject thoroughly understood is not only more easily memorized than one not fully comprehended, but the chances are decidedly in favor of its being the better retained.

The selection should be capable of easy and natural division, so that the mind may master it by easy steps rather than *per saltum*. It should be chosen for its beauty, sublimity or utility, since it is as easy to memorize such selections as mere word-jingles and the mind and heart are alike better for communing with the "thoughts that breathe" in "words that burn."

All of these qualities, it seems to me, are found in much of the literature of the Bible. The division into chapters and verses, while sometimes arbitrary, is, on the whole, suited to the thought, while the simplicity, beauty and utility of much of the Bible history, the Book of Job, the Psalms, Proverbs, parts of the Prophets, the Gospels and most of the Pauline Epistles, will be readily admitted by all. In addition, our literature contains abundance of works, both prose and poetic, from which selections can readily be made adapted to the age,

The  
Scriptures  
Adapted to  
Memory  
Training.

comprehension and need of the student and well-fitted, not only for memory culture, but for elevating the taste and enriching the intelligence. Let us suppose our student to have made his selection—say the Book of Luke or a poem from one of our standard English authors. The next step is a carefully prepared plan of daily memorizing and review. The morning, if at all

**Daily  
Memorizing  
and daily  
Reviewing  
from  
Memory.**

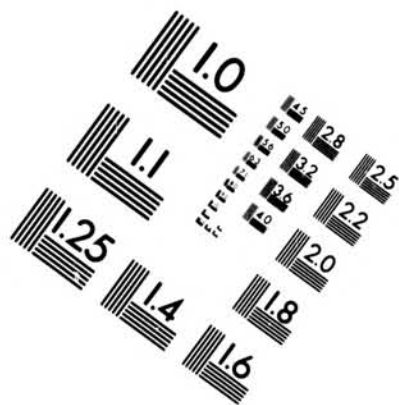
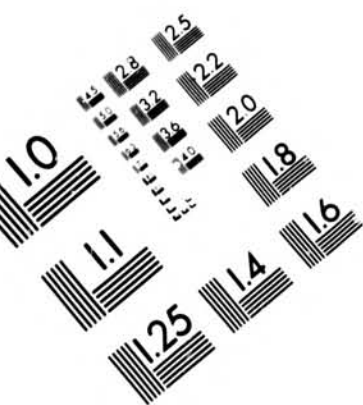
practicable, should be chosen as the time for memory drill, and with this chosen hour no other engagement should be allowed to interfere. The work—and here is the kernel of the whole matter—consists in *daily memorizing a limited amount of new matter and daily reviewing entirely from memory the parts already memorized*. Let us suppose that Luke has been chosen and the limit of daily memorizing fixed at five verses. This, for some who possess little time or ability, would be too much, and in some cases would be quite sufficient. The ability to memorize will develop steadily if the practice be regular, and in a few weeks the student will commit ten verses as quickly and as easily as he at first committed five verses. This may suggest to many the desirability of increasing the number of verses to be committed daily. It must be borne in mind, however, that as the work of committing grows easier, the work of reviewing will grow a little more difficult every day, because the

amount to be reviewed increases daily, and as the first lessons recede from the present hour it will naturally be a little more difficult to recall them.

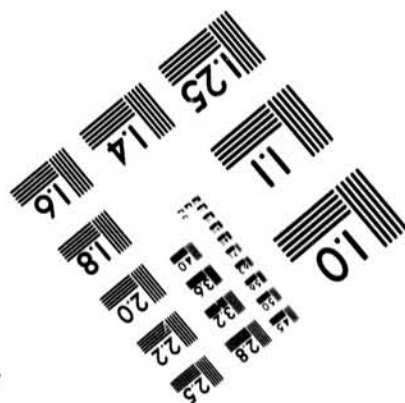
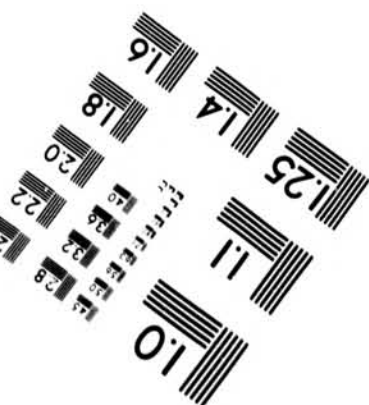
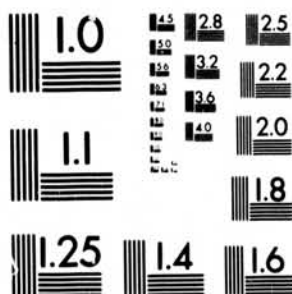
Of the two exercises, that of committing and that of reviewing, while both may be regarded as highly important, if either must be, for lack of time or other cause, omitted, the reviewing from memory should not be left out. It is doubtful if any other mental exercise will so surely and speedily invigorate the memory as this act of reviewing.

With five verses committed daily, Luke's gospel could be memorized in less than seven months, and the letter to the Hebrews in less than two months. Aside from the advantages to be derived by the memory, daily mental exercises similar to the above have so much to recommend them in the general increase of knowledge and growth of intellectuality, as well as in the addition to one's sources of enjoyment, that it is quite wonderful multitudes do not put them into faithful practice.

In addition to these exercises suggested, which are suitable to every one, the student may do well to devise a series of tasks to overcome any special deficiencies or weaknesses he may have discovered in his own case. Let us suppose, for example, he finds it very difficult to recall names. He should FORM THE HABIT OF RECALLING NAMES and devote some attention to this daily until his



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memory executes faithfully and readily every suggestion of the will. He should accustom himself

**Specialized  
Memory  
Exercises.**

to ADDRESS PEOPLE INVARIABLY BY NAME, to call up in thought, and better still, utter in speech, the names of people he may see. Names that are especially difficult to remember should be frequently recalled. Names of this character may often, with great advantage, be written, and the eye accustomed to the form, the ear to the sound, until at the faintest suggestion the memory reproduces the mental image. Or, if he find it difficult to remember faces let him make a study of faces putting thought and will power into the study. Let him note the peculiarities of each face, the striking feature of each individual he would remember and let him frequently recall these as VIVIDLY AS POSSIBLE to his consciousness. Two things that will help him most in overcoming this memory defect are, first, a feeling of interest in the person whose face he would remember and frequent practice of the vivid recall of the mental image. Memory power will grow in the direction of the exercises taken and the student who faithfully practices every day the appropriate exercises will soon perceive an increase of ability to recall those mental images that were once so difficult to recollect.

In addition to these suggestions there are certain habits which students should form which

would have an excellent effect on the general memory. For example, a mental *review each evening of the work and engagements of the day*—the persons met, (names and faces may be recalled) the business done, the conversations held, the details of the work, one's failures and omissions as well as transgressions, may all be recalled, not only with profit to the memory but also with advantage to the morals.

As the memory grows in ability to recall fully and minutely the work of the day, it may be given a wider range, and a half-hour devoted on Saturday evening to the review of the week, will prove an excellent tonic to the memory.

There is another practice to be highly commended for its beneficial effect on the memory, viz.: that of giving in conversation a full account of our experiences—the more of detail the better—such as a description of a trip to England, impressions of the World's Fair, an account of a concert, recalling and criticizing the various numbers, or an outline of the minister's sermon or a popular lecture with the line of argument pursued and the illustrations given. This practice, requiring as it does the exercise of attention and interest on our part during the reception of the ideas, cannot but exercise a most excellent effect on the recollective powers.

Invigorating  
Practices for  
the Memory.

Akin to this, and of even greater advantage because it suggests methodical accurate expression, is the practice of *writing out from memory an account of some of our experiences*. Let the student for example, write out each Monday in a book kept for the purposes an outline of the Sunday evening sermon, giving as faithful and accurate an account as possible in three to five hundred words of the line of argument pursued and the points made. It is doubtful if any more invigorating exercise for the memory can be devised than the above.

Recently the writer heard of a recreation for young people, which is to be highly commended. The company assembled in a drawing room are led out in order past a table upon which is placed a great variety of miscellaneous articles. Each one is supposed to make in leisurely passing the table a mental inventory of the articles upon it, and upon returning to the drawing-room to write out on a slip prepared for the purpose, as full a list of the articles as possible. The person who has written the largest number of articles, has, of course, won the game. This recreation it would seem should afford much amusement as well as profit.



## SUMMARY OF RULES FOR STRENGTHENING THE MEMORY.

We may now summarize some of our conclusions reached in former pages on the subject of strengthening the memory:

1. Seek and preserve vigorous health as a fundamental condition of a good memory.
2. Train the senses to a careful observation and accurate discrimination.
3. Deepen and intensify your first impressions of what you would memorize, (a) by concentrating the thought upon it, (b) by exercising the will power in regard to it, (c) by allowing the object or thought to remain for a sufficient length of time before the mental vision.
4. Test your memory to determine whether you commit more easily by sight or sound, also to find which you retain more firmly, the images of sight or the sound images.
5. Select for memorizing purposes some book of the Bible or some poem of English literature, and assign yourself a limited number of verses for daily memorizing at a selected hour of the morning.
6. Preserve the period religiously for the two-fold purpose of committing the daily portions (3

to 5 verses), and reviewing the lessons previously committed.

7. In committing to memory and in reviewing, use those senses by which you have found the mind works most effectively in these processes.

8. Make it a rule to thoroughly comprehend every idea or fact you would commit to memory.

9. Do not burden memory with useless tasks, or with too much at a time, depending for growth and enlargement on the regularity and suitability of the exercise, rather than its difficulty.

10. Do not attempt to force the memory to recall an idea. If memory can recall an idea at all, it can generally do so easily. Many a person has entirely lost an idea, which he might have recalled by easy suggestion to his memory, by "cudgeling" his brains for it.

11. Repeatedly recall the mental images to consciousness, and make them as vivid as possible. Catch the dim pictures, and hold them in the mind's vision until they become clearer. Visualize these mental pictures, and make them so distinct that those senses through which they were received shall be called into a measure of activity again.

12. Trust your memory: do not treat it with suspicion. The unconscious powers of the mind work largely upon suggestion and a suggestion

of memory failure to one's self is often a procuring cause of failure.

13. Form the habit of mentally recalling in detail every evening your experiences during the day.

14. Form the habit of relating to your friends as fully as possible and in order the incidents of your travels, accounts of concerts, lectures and entertainments attended.

15. Form the habit of writing out weekly from memory a summary of the minister's sermon, taking care to include the argument and main points.

16. Form exercises for yourself in overcoming your special memory difficulties, practising the recall of those classes of ideas over which the mind seems to have least control. If your memory of names, faces or dates should be defective, assign a period every morning to exercising the memory along these lines.

## CHAPTER VII.

### ATTENTION.

"It is well known that impressions fail to produce consciousness when the mind is strongly pre-engaged. In the heat of a battle wounds are for a time unfelt."

—PROF. BAIN.

The attention considered in its entire function as the apperceptive agent of our mental life, is the one essential mental condition of memory."—BALDWIN.

"It constitutes the better half of all intellectual power."

—SIR W. HAMILTON.

The art of memory is the art of attention, said Dr. Johnston, and with general unanimity the psychologists of our day endorse this high testimony to the value and importance of attention in fixing and retaining new ideas. Most lapses of memory are to be traced to a failure of attention.

Sir Wm. Hamilton defines it as an act of concentration, which is as necessary to consciousness as a certain contraction of the pupil is requisite to every exercise of vision. Attention is to the eye of the mind what the microscope or telescope is to the bodily eye.

Attention is the will directing the intellect into some particular channel and keeping it there. To cultivate attention the will must be cultivated.

Attention then implies a limiting of the mental vision, a withdrawal of consciousness from all save the object under consideration and a corresponding increase of mental activity upon the one subject. If this view is correct, it must be evident to all that the power of attention or concentration means an increase of mental ability in the apprehension of difficult ideas, as well as a corresponding increase of retentive power. This evidently is the view taken by many writers who consider genius but the power of giving undivided and persistent attention to a subject. The power of attention is the measure of the mind's greatness, and on the other hand it has been found that the progress of mental disease is marked by diminishing power of attention. Says J. Luys: "In all forms of mental disease, the faculty of attention becomes gradually weaker, and presents, according to the intensity of the morbid disease, different and fatally progressive modifications."

Attention is  
the Measure of  
Mental  
Power.

There are several ways, therefore, in which attention both directly and indirectly assists memory. In the first place, by increasing the mind's power, it leads to speedy comprehension of the matter before the mind. It gets the idea more quickly and more forcibly into the mind. Then by arousing the mind's activity in regard to the

**How Attention helps Memory.**

particular idea it causes it to make a deeper impression. In the third place attention and will-power grow proportionately by exercise, and whatever increases will-power, as we have seen, increases the powers of recollection.

The habit of attention is therefore one of the most important and valuable of all our mental habits.

W. A. Butler well declares: "The habit of attending exclusively to the matter in hand is the most important intellectual habit I know of. It is commonly said that genius cannot be infused by education; yet this power of concentrated attention, which belongs as a part of his gift to every great discoverer, is unquestionably capable of almost indefinite augmentation by resolute practice."

One of the most important questions for the student who would improve his memory, is, therefore, how can I improve my powers of attention?

The answer is by PRACTISING RESOLUTELY THE ART OF ATTENTION by which we mean nothing more or less than FORMING THE HABIT OF GIVING UNDIVIDED ATTENTION TO THE MATTER IN HAND, FORCING, IF NEED BE, THE MIND TO GIVE PROLONGED ATTENTION TO ANY PROBLEM IT

**Attention may be Educated.**

UNDERTAKES, and resolutely fighting against all mental inclination to mind wandering.

Mental weakness and lack of ability to concentrate attention is largely a matter of bad habit. The fixing of the attention is a matter of the will. The natural indolence of humanity leads the majority of men to yield to the ever changing sensations of their surroundings, or to the pastime of beholding that endless panorama of mental images that float through the mind as clouds over the horizon. The habit of yielding up the consciousness to one's surroundings, or to some train of thought, or to the pleasure of fantasy, is a habit, that, once formed, is very difficult to conquer.

Attention must be cultivated as a servant of the will. This is the most serviceable kind of attention because, as we have seen, a man's power of understanding, his power of receiving deep impressions and of retaining them, depends on his power of attention, and so valuable an instrument of mental life should evidently be subject to the will. If we cannot command attention, and enforce the command, we are much like ships without a rudder, and must drift with the strongest tide.

Another essential point in the cultivation of the attention is the formation of mental judgments in regard to every object we observe. It has been

said that observation is not perfect without a judgment. There is a kind of cursory and superficial observation that most people indulge in, which could not express itself in judgments except those of a very trivial character. How few people are able to make statements of new thought as the result of their ordinary observation! Having eyes they see not, having ears they hear not

Observation  
should be  
formed into  
expressed  
Judgments.

anything that is new or instructive because their observation is superficial, and the mind not being accustomed or required to express itself in judgment, has not observed anything new, that is, has learned nothing. Let two men pass through the streets of their own city at the same hour, one of whom has formed the habit of close observation, the other allowing his thoughts to wander at their will and his attention to be diverted by every tempting attraction. Question them both at the end of an hour's walk, and the one man can tell you whom he met, whether they were on foot or in carriage, how they were dressed, the state of the streets, etc., etc. The other could not swear whether or not he met Mr. A., has no recollection of Mr. B., may possibly have seen C., but really knows little or nothing as the result of his walk.

The story is told of some men searching for a camel in the desert. They met a very observing



man who asked them if they had not lost a camel, whether he was not blind of one eye, lame of one foot, if he had not lost a tooth, etc., etc. On answering affirmatively all these questions, they asked him if he would not kindly direct them to their camel since he evidently knew all about him. "I have not seen your camel nor heard of him before," was the reply. He had noticed the footprints of the camel, and that the prints on one side were a little heavier than on the other, hence concluded he was lame; that he had cropped the grass on one side of the road, hence concluded he was blind; that he had left a small tuft of grass in the centre of his bite, hence concluded he had lost a tooth.

Now, evidently, the man who reached so many and such accurate conclusions from his observations had formed the mental habit of putting his observations into judgments—a most invaluable practice. We must FORM THE HABIT OF PUTTING OUR OBSERVATIONS INTO SENTENCES, and thinking in the form of judgments. One reason why the practice of writing out, or relating our experiences in conversation, warmly recommended in a preceding chapter, is so valuable is because it necessitates such habits of observation as can be expressed in judgments.

The pupils of a certain school had for scores of times passed seven shade trees in the front yard.

Yet only about 15 out of over 100 could tell the number of trees. Their observation had not been expressed in such judgments as these: there are seven shade trees in the front yard; five of them are maples and two elms; the maples are larger than the elms; the maples stand near the gate, etc.

Two ladies go out shopping in a strange city. One, after an hour's walk, is completely lost. The other has her "bearings" and can easily find her way, because all through the walk she was noticing the crossings and blocks and forming judgments like these: there is a drug store at the corner where our hotel street crosses main street; we leave main street and turn south at the post office; we turn west four blocks; we turn north again and reach main street at the public library, etc., etc. THE HABIT OF FORMING OUR OBSERVATIONS INTO JUDGMENTS AND, IF POSSIBLE, GIVING EXPRESSION TO THEM IN LANGUAGE AT THE TIME, IS A GREAT AID TO ATTENTION AND MEMORY.

Very few persons are capable of the highest degree of attention—that deep abstraction that almost invariably characterizes philosophers and the world's greatest thinkers.

Attention in great minds reaches a degree of concentration which we may well call absorption. The world is shut out and the object under consideration is shut in, and the whole mental activ-

ity is directed to the one thing. This is the highest exhibition of mentality. It is this which measures generally the mind's power in mastering new ideas and not only retaining, but using also, with the greatest efficiency the ideas that have been attained. This is the criterion if not the very essence of genius. Newton, Descartes, Helvetius, Bacon and Cuvier, all held that genius was simply this power of superior attention. It is said of Scaliger, who, as we have seen, possessed a remarkable memory, that he was studying in Paris on the fatal day of St. Bartholomew, and although he was a Protestant he was overlooked in some way and escaped. At that time he was studying Homer, and so concentrated was his attention on that immortal epic that, although carnage ran wild in the street beneath his window, he knew nothing of the event until the following day.

It is related of Socrates that while serving in the army and on the line of march, he became interested in some subject that presented itself to his mind. He stopped on the highway, and with his eyes directed to the ground, stood thinking for a day and a night, oblivious to the fact that the army had passed on and that he had not eaten or slept.

Genius is concentrated and prolonged Attention.

Nelson is said to have often forgotten his meals

through the same habit of absorption, and so interested did he become in certain studies that he would be unable to say at night whether he had dined or not. Similar stories are told of the great Wizard of Menlo Park, and doubtless if the truth were known nearly every man who has enriched the world by his discoveries or his thought has possessed in a high degree this ability to concentrate thought, and keep it concentrated upon a single subject.

The student need hardly be told, after the discussion of the preceding chapters, that this is a matter of will-power, of education, of habit. The lesson is obvious to all who would possess depth of thought and mental power: FORM THE HABIT OF SHUTTING OUT THE WORLD, AND OF CONCENTRATING MENTAL ACTIVITY AND OF KEEPING IT CONCENTRATED ON THE SUBJECT BEFORE THE MIND

## CHAPTER VIII.

### ARRANGEMENT AND ASSOCIATION OF IDEAS

"Rational or philosophical association is when a fact or statement on which the attention is fixed is associated with some fact previously known, to which it has a relation, or with some subject which it is calculated to illustrate."—DR. CARPENTER.

"The most fundamental law which regulates psychological phenomena is the law of association. In its comprehensive character it is comparable to the law of attraction in the physical world."—THE RIBOT.

"The habit of correct association is one of the principal means of improving the memory, particularly that kind of memory which is an essential quality to an educated mind—namely, that which is founded, not upon incidental connections, but on true and important relations."—DR. ABERCROMBIE.

An orderly arrangement of knowledge, in which ideas are associated by real relations rather than artificial connections, is one of the greatest aids to recollection. The right method of receiving ideas must be followed by the right method of arranging and storing them if we would have them at ready command when wanted. We must first impress, then arrange and associate our ideas. This orderly arrangement facilitates the storing process and also the recalling process, and economizes mental energy in both. Most of my readers have

**Arrangement  
Economizes  
Mental energy  
and helps  
Memory.**

visited, at some period of their lives, a country store where a general assortment of goods is kept and where, in many cases, an orderly arrangement has not been made of the various commodities. A customer comes in and asks for flannel, cotton, a pair of small shoes, and a paper of pins. In some cases a general search is necessary before the articles can be found, and in others, after considerable search, the dealer assures his customer he has the article, but "he cannot just lay his hand upon it." Now, a man might as well be without goods as to have them in such disorder that he "cannot lay his hands upon them" when wanted. It is precisely this lack of orderly arrangement of ideas that prevents many a man from conceiving the right thought, uttering the right word or doing the right act at the proper moment. He must search through a mass of ideas lacking arrangement and coherence for the particular idea wanted at the moment, and must often search in vain. What is the practical difference between a mind devoid of certain ideas and a mind possessing these ideas in such inextricable confusion with other ideas that they cannot be recalled when wanted?

Again, it is a well-known fact that the memory will carry in orderly arrangement a number of facts that could not be memorized without the arrangement. In Quick's pamphlet on "How to Train the Memory," the following story is told,

illustrating the power of arrangement in assisting memory. The story is taken, though not verbatim, from Tate's "Philosophy of Education":—

"Betty," said a farmer's wife to her servant, "you must go to town for some things. You have such a bad memory that you always forget something, but see if you can remember them all this time." "I'm very sorry, ma'am," says Betty, "that I have such a bad memory, but it's not my fault; I wish I had a better one." "Now mind," said her mistress, "listen carefully to what I tell you. I want suet and currants for the pudding."

"Yes, ma'am, suet and currants." **Arrangement.**

"Then I want leeks and barley for the broth; don't forget them." "No, ma'am, leeks and barley; I shan't forget." "Then I want a shoulder of mutton, a pound of tea, a pound of coffee, and six pounds of sugar. And as you go by the dressmaker's tell her she must bring out calico for the lining, some black thread and a piece of narrow tape." "Yes, ma'am," says Betty, preparing to depart. "Oh, at the grocer's, get a jar of black currant jam," adds the mistress. The farmer, who has been quietly listening to this conversation, calls Betty back when she has started, and asks her what she is going to do in the town. "Well, sir, I'm going to get tea, sugar, a shoulder of mutton, coffee, coffee—let me see, there's something else." "That won't

do," said the farmer; "you must arrange the things, as the parson does his sermon, under different heads, or you won't remember them. Now you have three things to think of—breakfast, dinner, and the dressmaker." "Yes, sir." "What are you going to get for breakfast?" "Tea and coffee, and sugar and jam," says Betty. "Where do you get these things!" "At the grocer's." "Very well. Now what will be the things put on the table at dinner?" There'll be broth, meat and pudding." "Now what have you to get for each of these?" "For the broth I have to get leeks and barley, for the meat I have to get a shoulder of mutton, and for the pudding I must get suet and currants." "Very good. Where will you get these things?" "I must get the leeks at the gardener's, the mutton and suet at the butcher's, and the barley and currants at the grocer's." "But you had something else to get at the grocer's." "Yes, sir, the things for breakfast—tea, coffee, sugar and jam." "Very well. Then at the grocer's you have four things to get for breakfast and two for dinner. When you go to the grocer's, think of one part of his counter as your breakfast table and another part as your dinner table, and go over the things wanted for breakfast and the things wanted for dinner. Then you will remember the four things for breakfast and the two things for dinner. Then you will

**Classified Ideas  
are easily  
recalled.**



have two other places to go to for the dinner. What are they?" "The gardener's for leeks, and the butcher's for meat and suet." "Very well. That is three of the four places. What is the fourth?" "The dressmaker's, to tell her to bring out calico, thread, and tape for the dress." "Now," said her master, "I think you can tell me everything you are going for." "Yes," said Betty; "I'm going to the grocer's, the butcher's and the gardener's. At the grocer's I'm going to get tea, coffee, sugar and jam for breakfast, and barley and currants for dinner. But then I shall not have all the things for dinner, so I must go to the butcher's for a shoulder of mutton and suet, and for leeks to the gardener's. Then I must call at the dressmaker's to tell her to bring lining, tape and thread for the dress." Off goes Betty and does everything she has to do. "Never tell us again," said her master, "that you can't help having a bad memory."

The preceding story illustrates very forcibly the comparative ease with which the memory can retain a number of miscellaneous objects when these are properly classified, and associated with familiar thoughts. It is a question of the comparative ease of carrying a dozen different articles in the hands or of carrying them in three or four pockets. Arrange-

{New Ideas  
linked with  
old ones are  
easily remem-  
bered.

ment of ideas cannot, it is true, make a good memory, but it can use even a poor memory to the very best advantage.

In addition to such arrangement and classification of ideas as we arbitrarily make for our own convenience in storing and reproducing them, it has been observed from the earliest times that ideas have a distinct tendency to group themselves according to certain great laws. These have been given different names by different writers, but may easily be summarized under a few leading principles, if, indeed, they are not more properly combined into one.

Aristotle reduced the laws of association to three: contiguity in time and space, resemblance and contrariety. He even seems to have thought they might all be included under the one law of coexistence.

Sir Wm. Hamilton declares that "Aristotle implicitly, St. Augustine, explicitly—what has never been observed—reduces association to a single canon, viz., THOUGHTS WHICH HAVE ONCE

COEXISTED IN THE MIND ARE AFTERWARDS ASSOCIATED. This law, which I would call the law of Redintegration, was afterwards enounced by Malebranche, Wolf and Bilfinger, but without any reference to St. Au-

The Laws  
which govern  
Association.

gustine. Hartley and Condillac both refer all in-

tellectual operations to the associations of ideas and represent that association as reducible to a single law, that IDEAS THAT ENTERED THE MIND AT THE SAME TIME ACQUIRE A TENDENCY TO CALL UP EACH OTHER, WHICH IS IN DIRECT PROPORTION TO THE FREQUENCY OF THEIR HAVING ENTERED TOGETHER." He puts the law in this form: those thoughts suggest each other which have previously constituted parts of the same entire or total act of cognition. W. W. White, in his system of memory training, states the relations between ideas under the following four laws: 1. Logical Connection (cause and effect; means and end; whole and part; abstract and concrete). 2. Co-existence (in time; in space; in experience; in history). 3. Resemblance (in sound; in form; in meaning; in use). 4. Contrast (in sound; in form; in meaning; in use).

Loisette makes three laws of Recollective Analysis: 1. Inclusion (ship, rudder; dough, soft). 2. Exclusion (riches, poverty; hot, cold). 3. Concurrence (Daniel, lion; grandmother, knitting).

Kay in his work on memory, makes two laws of association: contiguity and similarity, and Th. Ribot declares: the two principal facts which serve as the basis of association are resemblance and contiguity.

One of the most familiar illustrations of this

principle is found in the letters of the alphabet, each letter to the last recalling the one following and rendering it so easy to repeat them in the order in which they were so often repeated when being learned. If one contrasts this easy repetition in the regular order with the difficulty of repeating them in an inverse order, he will learn the strength of association. This association between the letters would come under the general law of COEXISTENCE of Aristotle, under the law of CONTIGUITY of Ribot, and under Loissette's law of CONCURRENCE.

The strength of association between ideas may be seen in the ease with which one can commit a list of words made up on the plan of natural suggestion, as contrasted with the difficulty there is in committing a list of words having no logical or artificially-formed association. It is a favorite practice with memory teachers to form such associations of words on the principle of natural suggestion and reading them once to the class—so strong is the natural association—they can generally be repeated by the class in direct or inverse order.

**Illustration  
of Natural  
Associations.**

Here is a list used sometimes by the writer upon the platform, illustrating associations, mostly logical, already existing in most minds: Pointer, tree, axe, steel, ore, mine, explosion,

suffering, physician, medical college, hazing, bloodshed, prosecution, court, judge, sentence, prisoner, prison, escape, pursuit, policeman, uniform, tailor, shop, builder, tools, store, merchant, ledger, debtor, payment, bank, vault. Here pointer suggests the tree out of which it was made; tree suggests the axe by which it was cut; axe suggests steel out of which it was made, etc., etc.

The logical connection of ideas represented by these words is so apparent that one careful reading will ordinarily be sufficient to fix them in the memory. On the contrary, see how many repetitions would be necessary to fix thirty-three words not representing associated ideas. Or, note the difficulty in committing to memory a story arranged without natural sequence of ideas.

The following illustration is given in Upham's *Mental Philosophy*: A person was one day boasting in the presence of Foote, the comedian, of the wonderful facility with which he could commit anything to memory, when the modern Aristophanes said he would write down a dozen lines in prose, which he could not commit to memory in as many minutes. The man of great memory accepted the challenge; a wager was laid, and Foote produced the following: "So she went into the garden to cut a cabbage leaf to make an apple pie, and at the same time a great she bear com-

ing up the street, pops its head into the shop. What! no soap. So he died and she very imprudently married the barber; and there were present the Picininunes and the Joblillies and the Garyules, and the great Panjandrum himself, with the little round button at the top; and they all fell to playing catch as catch can, till the gunpowder ran out of the heels of their boots." The story adds that Foote won the wager. It must be evident that statements like the preceding, lacking any logical connection must defy the strongest memory.

The student should FORM THE HABIT IN STORING IDEAS FOR FUTURE USE OF USING ASSOCIATIONS WHICH ALREADY EXIST IN THE MIND, OR SPRING OUT OF THE SURROUNDING CIRCUMSTANCES. It is much easier to use bridges which we find already prepared than to make them for ourselves.

In fixing new ideas such as names, faces, historical facts, we can generally find some natural association which will aid the memory. A new name and face are presented to the mind and you wish to fix them in the memory. Associate the name and person if you can with some well-known person of the same name. Or, link the name to the person by the place where you first met him, or by some attend-

Use the Associations of Time, Place and Circumstance.

ant circumstance, or by his business or by some striking peculiarity of the individual. For example, a Mr. Sherman may by some apparent contrast or similarity suggest the general of that name.

You met Mr. Rice at the table; Miss Bright has perchance a very bright mind; Mr. Farmer, notwithstanding his name, is a merchant; Mr. Day whom you met at night is very sunny; Mr. Young is no longer young; Mr. Beard has no beard; Mr. Fox, quite appropriately, has red hair.

It may be thought that some of the associations suggested above are not based on natural principles, and are arbitrary and fanciful rather than real relationships. But for the purpose of the retention of an idea, some of these associations suggested by similarity or contrast in the sound or meaning of names, by appearance, or by some attendant circumstance, will be found very efficient helps to the memory. If the reader will examine the ideas that are retained most firmly by his mind, he will discover that many of them have been fixed and held in memory by some chance association in his experience with other ideas with which they have no natural relationship. It often happens, therefore, that two ideas may become indissolubly joined in the mind of an indivi-

**Many Ideas  
are retained by  
chance Asso-  
ciations.**

dual on account of some peculiar experience, that have no association and hence no power to suggest each other in the minds of others. This fact suggests that students can generally devise for themselves the best method of fixing and retaining a particular idea in the mind. As illustrating the power of chance associations in retaining and mutually suggesting two ideas, the following story is told of a gentleman who was in the habit of amusing himself by experimenting upon this power of association of ideas. On one occasion he drove out into the country, with his servant seated behind him. Upon coming to a bridge, where the scenery was particularly grand and striking, he turned suddenly round and asked, "Do you like eggs?" "Yes, sir," replied the man. The gentleman drove on, and nothing more was said. That day twelve month the gentleman drove out again, and with the same footman seated behind him. Upon arriving at the bridge, he turned abruptly round, as before, and asked, "How do you like them?" "Poached, sir," was the immediate answer. There was no natural relation, it may be said, between the drive over that bridge and poached eggs, yet the one suggested the other.

But while associations of this nature may enable us to fix and recall particular ideas, they are not to be relied upon as affording much strength



to the general memory. Certain principles of association should be regularly followed in arranging new ideas. We should form the habit of classifying and linking our ideas so that all those which relate to one subject should readily recall each other.

We should, wherever possible, link our ideas together as CAUSE AND EFFECT, MEANS AND END, WHOLE AND PART. We should trace events back to general principles, and arrange results into classes in common relation to each other and to a common cause.

**Link Ideas  
together in  
Logical  
Connection.**

Events relating to a common subject should be grouped about that as a centre and always recalled together. The relation of these ideas to each other, and to the common subject should be sought out so that the mind may readily grasp them AS PARTS OF ONE WHOLE. When the mind has fully comprehended the logical relation of two ideas it is almost impossible to recall one without recalling the other.

Another principle that should be pursued in storing and arranging our ideas is the linking of the unknown with the known. Unite some new idea of Napoleon Bonaparte with your previously acquired knowledge of that great leader. Link your latest ideas on Home Rule with those acquired years ago by some mental tie, and

**Link the  
Unknown to  
the Known.**

## RECALL THEM AND USE THEM TOGETHER.

In short, we must use care and give attention to the placing of our ideas as well as to their acquisition. We must make a place or rather a relation for our new ideas in our mental storehouse, and accustom the mind to an orderly storing and an orderly recalling of ideas. The more relations we can establish between our new ideas and old ones, between the known and the unknown, the easier will be their recall to consciousness. Dr. Abercrombie declares: "the resemblance of isolated facts does not depend merely on the degree of attention directed to them, but also on the existence in the mind of subjects of thought, with which the new fact may be associated," and Dr. James Beattie asserts: "the more relations or likenesses that we find, or can establish between objects, the more easily will the view of one lead to the recall of the rest."

Where no logical connection between ideas exists and no association of time, place or circumstance can be found to unite them, and it is necessary to use them together, they may be united by purely artificial ties, which fact leads us to discuss the subject of mnemonics.

## CHAPTER IX.

### MNEMONIC SYSTEMS.

"The artificial memory proposes to substitute for the natural and necessary relations under which all objects must present and arrange themselves an entirely new set of arrangements that are purely arbitrary and mechanical, which excite little or no other interest than that they are to aid us in remembering. It follows that if the mind tasks itself to the special effort of considering objects under these artificial relations, it will give less attention to those which have a direct and legitimate interest for itself."

—DR. N. PORTER.

For over two thousand years mnemonic systems, based on more or less artificial relationships, have been devised and published to the world. Simonides, a Greek poet, B.C. 470, is considered the pioneer inventor of mnemotechnics. The circumstances which led to the formation of his system are related by Cicero, and are as follows: Simonides, being at a banquet, recited a poem in honor of Scopas, a victor in wrestling at the Olympic games, who gave the entertainment. Immediately afterwards Simonides was told that two young men on white horses wished to speak with him. He had scarcely got out of the house

when the room in which the guests were assembled fell down. All the persons in it were killed, and their bodies were so mangled that they could not be distinguished from one another. It happened, however, that Simonides had observed the place each person had occupied, and by looking at the places was enabled to identify their bodies.

**The Origin  
of Mnemonic  
Systems.**

This led Simonides to the belief that nothing could better assist the memory than to retain in the mind certain fixed places, in which, by the aid of the imagination, were located the images of living creatures, or any other objects which might easily be revived in the memory. He afterwards reduced this method to a system and taught it, and Quintilian, Cicero and others professed to have received aid in memorizing from it. This so-called principle of locality is an important feature in all mnemonic systems. It is based on the principle of classification of ideas, and their association with different localities with which the mind has become familiarized. It is supposed that our expressions, "in the first place," "in the second place," etc., originated in the general application which men are wont to make of this principle of locality in arranging their ideas.

"The Greek and Roman system of mnemonics was founded on the use of mental places and

signs or pictures. The thing to be remembered was localized in the imagination, and associated with a symbol which concretely represented what it was desired to retain in the memory, special care being taken that the symbols should be as vivid, pleasing and impressible as possible. The most usual method was to choose a large house, of which the apartments, walls, windows, statues, furniture, etc., were severally associated with certain names, phrases, events, or ideas, by means of symbolic pictures; and to recall these it was only necessary to search over the apartments of the house, till the particular place was discovered, where they had been deposited by the imagination. As the things to be remembered increased, new houses could be built, each set apart to a certain class of ideas or events; and these houses were again constructed into a mnemonic town. In accordance with this system, if it were required to fix an historic date in the memory, it was localized in an imaginary town, divided into a certain number of districts, each with ten houses, each house with ten rooms and each room with one hundred quadrates or memory places, partly on the floor, partly on the four walls and partly on the roof. Thus, if it were desirable to fix in the memory the date of the invention of printing (1436) an imaginary book or some other symbol of printing would be placed in the thirty-sixth

quadrate or memory place of the fourth room of the first house of the historic district of the town. The success of the method depended largely on the power of the imagination to give the different houses, etc., characteristic varieties of aspect."—*Encyclopædia Britannica*.

While it can scarcely be said that mnemonic systems existed among the Jews, there can be no doubt whatever, that mnemonics or artificial methods of strengthening the memory were quite generally practised.

After the Israelites had passed over Jordan, twelve men, one from each tribe, were commanded to take out of the bed of the river Jordan twelve stones, and carry them over the river and leave them in their lodging place, for a memorial unto the children of Israel for ever.—JOSH. IV: 1-24.

The names of the children of Israel were graven on two onyx stones, six on each, and placed upon the ephod, and Aaron bore these stones upon his shoulders for a memorial before the Lord.—Ex. XXVIII : 9-12.

It was customary among the Jews to form mnemonic words out of the first syllables of related words to hold them more easily in memory, thus, Rambam for Rabbi Moses Ben Maimon.

Some of the facts mentioned in the following historic outline of mnemonic systems are summar-

ized from an excellent little work on the Improvement of the Memory by the Rev. W. Bacon. After the overthrow of the Roman Empire mnemonic art disappeared for a time from public view, hiding in the monasteries to reappear in the thirteenth century as "Lulle's Art," and was so named, because brought again into prominence by Raimond Lulle. About this time, Roger Bacon, an English monk, wrote a treatise on the art of memory, and others followed, some of whom recommended plasters, ointment and drugs to prevent the decay of memory, while doctors of another school prescribed roasted fowl, small birds, young hares and other delicacies for dinner. Schenkel in the sixteenth century travelled through France, Germany and neighboring countries, teaching a system of mnemonics which closely resembled the pictorial method of the ancients. His system was denounced as a work of the Devil, he was branded as a sorcerer, and came near to death through the inquisition. In the seventeenth century one Winkelmann propounded as a most fertile secret, a new idea, which was an advance upon what had previously been done. The new feature he introduced in mnemonics, was the substitution of the letters of the alphabet for figures in the remembrance of dates, numbers, etc. Dr. Grey, in

Historic  
Outline of  
Mnemonic  
Systems.

1730, extended his system in *Memoria Technica*, giving, however, very arbitrary combinations. Gregor Von Feinagle, a monk of Baden, modified the system of Dr. Grey, adopting the principle of substituting letters for figures and also the principle of locality, dividing a room into squares and placing an imaginary object in each square. In 1811 he came to England, and was admitted to lecture at the Royal Institution, and soon after published *THE NEW ART OF MEMORY*. Other works followed: Aime Paris in France; Carl Otto Reventlaw and Dr. Hermann Rothe in Germany; Fauvel Gourand and Lorenzo Johnson in America; Major Beniowski, Dr. Pick and others in England; and Loissette, W. W. White and others in the United States.

Nearly every one practises some mnemonic devices for assisting the memory in special emergencies. The husband puts a memorandum on the face of his watch, his wife puts her's on the looking glass, or changes her ring to another finger, or displaces some article of furniture, while the daughter ties a string about her finger, or puts a knot in her handkerchief, to recall some idea that would otherwise escape them.

When art turns to artificialness, that which was intended as a mnemonic help often becomes a hindrance. At best a mnemonic system is a crutch for the lame, but so complicated and re-



finer have some of these modern systems become, that in place of serving as a crutch for the arms and feet, they become additional burdens for the back. It has been truly said of some of these artificial methods of memorizing that it is more work to learn the system than to commit the lesson to be taught without the system. Yet, what has been lacking in real merit has been supplied in extravagant claims and loud advertising. As an illustration of the high claims advanced for some of the early mnemonic systems, we quote from an advertisement of "Schenkel's Gazophylodium Artis Memoriae," by one Sommer, who was authorized to teach Schenkel's system: "A lawyer, with the assistance of my mnemonics, may impress his causes so strongly on his mind that he may know how to answer each client in any order and at any hour with the same precision as if he had just perused his brief. And in pleading he will not only have all the evidence and reasoning of his own party at his finger ends, but all the grounds and refutations of his antagonist also. Let a man go into a library and read one book after another, yet he shall be able to *write down every sentence of what he has read many days after at home.* The proficient in this science can dictate matters of the most opposite nature to ten or thirty writers alternately," and much more, all equally extravagant.

Extravagant  
Claims in  
regard to  
Mnemonics.

A much-advertised system of the present day, professes to be "the only system that really rests on nature," to be "wholly unlike mnemonics in conception, process, development and results," to use none of the "keys," "pegs," "links" of "mnemonics," to be based on "original investigations," and the "discovery" of the "laws of "natural memory," and to cure by the reading of a small book, "the worst case of mind-wandering," which is guaranteed a "perfect cure for discontinuity," and then (best of all) "the system is no longer required." Yet the whole system is based on the laws of association of ideas, to which new names are appended, and on artificial connections between ideas not logically related, and among the first requirements of the student is "to give an hour or two every morning" to the study of the system *for a month*, and to commit to memory several lists of words, ranging in number from 60 to 150—all as a part of the "instantaneous art of never forgetting!" The peculiarity of these lists lies in the fact that after committing, say 150 words, *most of which you do not need*, you have learned *20 or 25 words you do need*, and which you can recall, *if you have time*, and if you are able to keep in mind the whole list perfectly. The following humorous story is such a clever hit at these artificial systems that we consider it worthy of insertion here:—

A MEMORY LESSON.—SOME OF THE BEAUTIES OF A  
SCIENTIFIC MODERN SYSTEM.

(*Luke Sharp, in Detroit Free Press.*)

I was sitting in my room in the *Free Press* building the other day, working hard, with my feet on the desk, when the doorway darkened and I looked up. There stood, with a hand on each of the door-posts, a most disreputable-looking specimen of a man. I sized him up instantly as a drunkard, and made up my mind he wanted to work me for twenty-five cents.

In this I was wrong, and it shows how a person should be slow in coming to an opinion about an unknown fellow-creature. He wanted only ten cents.

"Say, mister," he said, "you don't happen to have ten cents you could spare?"

"You have struck it the first time. I don't."

"Say, mister, I haven't had anything to eat for twenty-four hours."

"Then why in the old Harry don't you go and have dinner? They set up some good meals in the first-class hotels in this town."

"Ah! do they? Now commercial travellers have told me that they can't get a decent meal in the city. I'll halve the difference with you. Make it five cents, boss."

"I can't keep myself in lager and so don't intend to try to supply with beer any tramp that comes along."

The fellow coolly came in and sat down.

"I see you are mistaken in my character. I have never tasted a drop of liquor in my life. I was at one time in one of the best wholesale houses in this town, but was ruined by my desire for improvement. I was often warned that I was taking the wrong course; but, alas! I did not see my error until it was too late. Most of my comrades used to take a glass of beer now and then, and

go to the base-ball games, and be out nights, but I stuck to study, and you see what I am."

I was a little bewildered at this. It seemed to be reversing the preconceived ideas I had on the subject, and I weakly allowed the fellow to proceed.

"Yes, I am now an awful example of the terrible folly of taking a wrong course. My beer-drinking companions are pointed to as model citizens, while I am practically a tramp."

"How did it happen?"

"Well, the finishing stroke was the memory lessons. I had naturally a good memory, and my firm told me that if I learned to speak French they would send me to Paris as their agent there. I pitched into French, and was advised to take memory lessons, as that was a great help in acquiring a language."

"And was it?"

"In a way—yes. You know how they strengthen the memory, I suppose?"

"No. Never heard it could be done."

"Well, the first thing they do they make you swear an awful oath you will never divulge any of the methods, and then you will have to sign a bond to that effect, with a heavy penalty attached."

"Then if I were you I would not tell anything about it. I don't care to know."

"Oh, that's all right. I can plead I have forgotten all about the oath. That is one of the benefits of the memory system. You can forget anything so easily. Yes, sir. Now if you were to lend me five dollars I would very likely forget all about it before to-morrow."

"You astonish me."

"It's quite true. In that way the system is very valuable. Now to show you how the thing works. My girl's name——"

"Oh, you have a girl, then?"

"Had, my dear fellow; had."

"Excuse me, if I have brought up sad recollections."

"It don't matter in the least, I assure you. You see I can forget it right away."

"Well, about the system?"

"Oh, yes; I had forgotten. What were we talking about?"

"You said your girl's name was——"

"Exactly. My girl's name was——"

Here his brow wrinkled up and he said to himself audibly:

"Girl—dress—dressmaker—thread—spool—cotton—cotton-mill—spinner—bobbin—bob—Robert—Robert—Roberta. That's it. Her name was Roberta.—nice girl, too."

"What was her last name?"

"Her last name? Let me see." Here he fell into the same sort of an audible brown study and murmured: Roberta—Robert—Bob—bobbin—cotton—factory—mill—mills. That's it again. Mills is the name—Miss Mills. Let's see; what did I say her first name was? Girl—dress—dressmaker——"

"Never mind going over that again. You said her name was Roberta."

"That's it. Roberts—Ro——"

"Mills?"

"You're right, Roberta Mills; awfully nice girl, too. She lives in Windsor. Know her?"

"No, I don't."

"Well, she's lost to me forever. I don't know that it matters now. I have rarely the money to pay the ferry fare, and if I had it I might wish to spend it otherwise."

"I don't doubt it. How did the separation come about?"

"Memory system did it. I suppose you understand the system now?"

"I can't say that I do."

"Well, you see, you corral any word you want to remember."

"I have heard of coralling an animal, but——"

"Same thing, my boy, same thing. You get a word up in a corner, so that it can't escape you. That is where the system comes in so good in learning French. Now, for instance, supposing you want the French for water. You corral the two words together. Water makes you think of whiskey, doesn't it?"

"Natural combination."

"Of course it does. Now whiskey makes you think of drunk. A man who is addicted to drink naturally neglects his business and runs in debt."

"Quite correct."

"Then drunk recalls debt, see? Well, a man who is in debt owes everybody, doesn't he."

"If they are foolish enough to trust him—yes."

"Very well, then, there you have it. Water—whiskey—drunk—debt—owe—eau, the French for water. Easy as rolling off a log. Now to put the system to every-day use, supposing your wife gave you a letter to post."

"You may as well suppose something probable while you're at it. She wouldn't do it. She knows I'd forget it."

Well, I'm just supposing a case. You remember that you have forgotten what your wife told you to do. You say wife—that reminds you of expense—expense recalls cash—cash means money—time is money. So you think of time, which makes you think of a slugging match——"

"What's that?"

"Why a fight where they call 'time.' The match suggests betting. There you are at 'bet.' Betting is against the law, so you have 'law.' But betting is only against the letter of the law, the statute is not enforced, so you have 'letter' and then you go and post it."

"Wonderful. Still, it seems to me that it would be easier to remember the letter itself than go through all that."

"So it would if you were not a victim of this system; but once that gets a hold on you, you can't remember anything unless you corral the words. That's how I came to lose my situation."

"Oh! How did that happen?"

"Well, a man by the name of—of—" here he muttered a lot of words to himself, and then brightening up, said, "Smith—by the name of Smith, telephoned me to tell my boss as soon as he came in, to call him up. There is the telephone. That suggested 'ring'; ring naturally brought to mind 'alderman'—"

"How is that? I don't see that."

"Why the aldermen always form rings and the fellow who wants to get anything has to pay the ring."

"You don't tell me?"

"Fact. Well, ring shows that a man is a fool who expects things to be otherwise; fool suggests idiot; idiot suggests asylum; asylum, prison; a prison is a workshop; a workshop must have a blacksmith shop; such a shop must have a smith, and there you are. Well, when the boss came in, I went up to him working on the corral, and said: 'Ring—alderman—fool—idiot'—but before I got to 'prison' I was kicked into the street."

"That was unfortunate. Why didn't you go back and explain?"

"I have often started out to do so, but I always forgot it before I could get there."

"And I suppose that because you lost your situation you lost your girl."

"Oh, no. I had forgotten about that. Glad you reminded me. No, that was a case of a good corral going wrong. It sometimes does that. I went over to see her,

and was working the corral for all it was worth. When I got there I ran on in this way: 'Girl—dress—dressmaker—sewing—thread—needle—pins—pinafore—Josephine.'

"I don't see how you get that last word."

"Why Josephine is the principal character in 'Pinafore, you know. Well, when I met her I said, 'Hello, Josephine,' and she thought I was thinking of another girl, and then it was all day with me. You see I should have gone on 'spools' from 'thread,' and instead of that I went on 'needles,' and then, of course, when a man gets on needles you can't tell at which girl you will bring up."

"Well, I am sorry for you. I have been very much interested in your case. I never knew there was any memory system in existence. Here is half a dollar for your trouble."

"I am very much obliged to you, I assure you. Won't you come out and have something?"

"No thank you, I never drink."

"Oh, that's so. Neither do I. I had forgotten. You see I forget everything."

"That's all right; good-by."

I noticed on looking out of the window that he didn't forget to go into the saloon on the corner.

As aids to remembering the English Sovereigns the following is prescribed in one of these systems: "beeswax, a mad dog, gin, a tipsy woman, hot oatmeal, mud, garlic, hair dye, the white of egg, hemlock, and a dead baby," reminding one of

"Eye of newt and toe of frog,  
Cool it with a baboon's blood;  
Then the charm is firm and good."

—MACBETH,

**Illustrations  
of Mnemonic  
Systems.**



The signs of the Zodiac, we are told, may be committed easily by the following table:—

Zodiac-zoon (Greek for animal)—animal—ram

ARIES—arise—get up—toss up—“bull”—

TAURUS—tore us—four of us—two of us—twins

GEMINI—gem—diamond—carbon—charcoal—  
charcoal tin—tin can—

CANCER—disease—diseased—feeble—strong—  
“strong as a lion”—

LEO—lion—lioness—female—

VIRGO—virgin—maid—weighed—scales—

LIBRA—liber—liberate—capture—cobweb—  
spider—

SCORPIO—reptile—rattle-snake—snakewood—  
bow—arrow—sagitta—

SAGITTARIUS—bowman—sportsman—game—  
goat—

CAPRICORNUS—capsize—fall overboard—wet-  
ting—water—aqua—

AQUARIUS—aquarium—fishpond—

PISCES—fishes—sheephead—lamb—ram.

In short, the absurdity of these systems consists in the assumption that if you want to remember A and E in connection it will be more easily done if you insert B, C, D, as links between them. These systems teach students to *remem-*

*ber one thing by remembering several other things,* and Mr. Hamerton, in his *Intellectual Life* declares: "They are generally founded upon the association of ideas; but the sort of association which they have recourse to is unnatural, and produces precisely the sort of disorder which would be produced in dress if a man were insane enough to tie, let us say, a frying-pan to one of his coat tails, and a child's kite to the other."

These systems have, undoubtedly in many cases, helped to strengthen memory by the very exercises in memorizing they have prescribed, for all exercise tends to strengthen the memory. Yet how much of the benefit is to be attributed to the SYSTEMS and how much to the EXERCISE OF MEMORY in learning the systems, the intelligent reader must decide.

James P. Downs, in his valuable little work entitled "Memory and Thought," illustrates this incidental advantage as follows:—

It is related that, once upon a time, an ignorant Indian consulted the big medicine man of his tribe for the cure of a weak arm. The sorcerer handed the patient a small rod, and directed that it be waved in certain directions one hundred times morning and night for a lengthy period, great care being taken at the same time to repeat A CERTAIN MAGICAL INCANTATION OF GREAT WON-

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DER-WORKING POWER, which MAGICAL INCANTATION would certainly soon effect great results.

How much of the benefit to be derived would be due to the exercise so emphatically insisted upon, and what proportion of the benefit would be due to the magical incantation, is quite obvious.

## CHAPTER X.

### HOW THE MEMORY IS WEAKENED.

"It is no use gathering treasures if we cannot store them; it is equally useless to learn what we cannot retain in the memory.—PROF. BLAIKIE.

"There is neither knowledge, nor arts, nor sciences without memory; nor can there be an improvement of mankind in virtue, or morals, or the practice of religion, without the assistance and influence of this power."—DR. WATTS.

"Get wisdom, get understanding. Forget it not."—PROV. IV., 15.

The reader will readily infer from the preceding discussions upon strengthening the memory that certain conditions and habits, bodily and mental, must injure it. If, for example, health is a fundamental condition of memory, it must be clear to all that disease prevents the highest exhibition of the recollective powers. If good, rich, arterial blood and normal circulation help memory, it is quite evident that the blood imperfectly oxygenized and running in sluggish current to the brain, will hinder its fullest development. Generally speaking, it may be said that whatever promotes health assists memory, and whatever tends to weakness or ill health retards it. Without doubt bad ventilation, lack of exercise in the open air, care, worry, grief, overwork and vice, all tend,

directly and indirectly, to weaken the powers of memory. If exercise under right conditions is the great factor in memory culture then neglect of exercise or exercise under wrong conditions, must be injurious to memory. Will power has been set forth as of prime importance in memory training. Then a weak and vascillating will must be a great obstacle to memory growth and development.

Thorough comprehension of an idea to be memorized has been dwelt upon as highly essential to its retention in the mind; imperfect mastery of a new idea must then assist its speedy obliteration. The association of ideas in logical relationship has been urged as favorable to their retention and easy recall; the habit of receiving ideas without attention to their order and arrangement must prevent the highest results of memory.

We wish under this heading, however, to point out in addition certain things which tend to weaken the power of memory in most minds. And, first, we would allude to *the vast multitude of ideas received in which the person has but a passing interest and which he makes no effort to retain*. It must be evident to all that the mental habit of receiving and dismissing with little interest a multitude of ideas daily must tend to weaken the general memory.

Our modern life with its constant intercourse in the home, shop and school, its rush of traffic and

engagement, its multiplying books and papers, pours so vast a flood of new ideas into the mind that it would seem impossible to impress them deeply, arrange them in order, and retain them. Let anyone at night review his mental experiences of the day and he must at once concur with us that, especially in conversation and in reading, he has received a multitude of ideas in which he felt but little interest, and over which he has but little power of retention. This habit is one very easy to form and very injurious to memory.

In this connection we may mention especially the reading of daily papers as having a tendency to encourage the habit of mental carelessness and indifference which is generally fatal to the highest powers of memory. So much of the contents of the paper are of only passing interest, so much is of an incidental or trifling character, that it becomes a fair question with the student, not only what parts of the daily bill of fare provided by the press he should read, but also how much time the student who would have a good memory should devote to his "daily." But the fault is not with the paper chiefly, but rather with the lack of good judgment on the part of the reader. If every reader would make a proper selection—and he can generally find articles of interest and permanent value in every issue—and read these articles with

**The Daily  
Paper often  
Injures but  
may be made  
to promote  
Memory.**

attention and form the habit of relating the substance of these to others and of utilizing the information gained, the daily paper might be made of high intellectual value and a factor in memory training, rather than, as it is now with many, a mental dissipation.

Another thing that has a very damaging effect on memory is *learning by rote where there is not perfect comprehension of the matter committed*. Sensational memory—mere retention of impressions made on the eye or ear or other senses—is injurious to true memory in many ways. In the first place its tendency is to deceive both student and teacher as to the amount of knowledge actually received, and this lack of definite knowledge on the part of student and teacher, as to the facts already comprehended by the student, is one of the greatest obstacles to future progress.

Children learn to repeat the letters by sensational memory so that each one recalls the next, and both teacher and pupil believe that the letters have really been committed, whereas in many cases only the associated sounds have been learned. So with the multiplication and other tables.

Another direct evil of the rote system where the intellectual does not accompany the sensational memory, is that the intelligence not being called into play, nor the relation between the associated ideas understood, the mind is burdened by

unmeaning sensations. As we have seen in a preceding chapter, carefully conducted experiments show that it is ten-fold easier to learn significant than non-significant words. What a waste of mental energy there must be in committing tables, rules, selections, etc., which are imperfectly understood!

**The Rote  
System often  
leads to Mind  
Wandering.**

Another evil of the rote system where the intelligence is not called into play and full comprehension of the subject secured, is that the mind being free wanders, and the habit of mind-wandering is engendered. This is one of the worst possible habits for the student. It limits the power of comprehension, prevents deep impression, and is fatal to memory. Nothing but an iron will and persevering practice in fixing and holding the attention will overcome it.

Another source of weakness is the habit many persons form of *discounting their own memory*. They invariably treat it with suspicion, speak of it as poor, wretched, worthless. "I expect I will forget everything I want to say," says the young man who is to make a public speech, and his expectations are nearly realized, but he has not the faintest suspicion that his expectation caused his lapse of memory. "I believe I shall forget my recitation," says the school-girl, and so she does, without suspecting that her mental attitude toward her memory caused its failure. Yet



in multitudes of cases the lapse of memory is attributable largely to the suspicion and distrust with which the memory is regarded. While memory is but the revival of a past mental impression, we should treat it as we do our friends with confidence, ALWAYS TRUST IT AND NEVER EXPECT FAILURE. "Learn to trust the memory," says Kay, "and in order to trust it strive to make it worthy to be trusted." Sir Phillip Warwick says of Lord Stratford: "His memory was great, and he made it greater by confiding in it." "Spoil not thy memory," says Thomas Fuller, "with thine own jealousy, or make it bad by suspecting it. How canst thou find that true which thou will not trust?"

As pointed out in the preceding chapter MOST OF OUR MENTAL OPERATIONS ARE UNCONSCIOUS OPERATIONS AND THE UNCONSCIOUS POWERS OF THE MIND ACT LARGELY ON SUGGESTION. There can be, therefore, no more serious blunder on the part of the student than *the suggestion of failure to his own memory* by treating it as unworthy of trust.

Another cause of weak memory is undue indulgence of the emotional nature. Excessive grief or melancholy, by disturbing the equipose of soul, is unfavorable to the highest intellectual operations. It seems to have a specially deleterious effect on the memory. If memory has its seat not only in the

Over Indulgence of the Emotions Hinders Recollection.

brain but also in all those parts where the original sensation was made, then it follows that whatever prevents the mind from acting upon the same parts as were concerned in the original impression, is detrimental to memory. "Passion and emotion," it is said, "are of a diffusive nature and prevent brain action along limited tracts. Hence the apparent antagonism between our feeling and our intellect, the one acting, as it were, in direct opposition to the other." We must dismiss passion if we would have unimpeded action of the intellectual powers. Bain declares: "Emotion spurns nice distinctions and incapacitates the mind for feeling them."

Another source of injury to the memory is undoubtedly the *overtasking of its powers* either by forcing it to receive and retain too large a number of ideas at a time, or by prolonging its operations unduly and not allowing it sufficient alternations of rest. The power of the mind, both in comprehending and impressing ideas at any particular time, is limited, and if more ideas are received than are fully comprehended and deeply impressed, the mind is in much the same condition as the digestive organs that have been overloaded. Mental dyspepsia is a very common disease, and like bodily complaints, is to be cured by dieting. The overtaking of the mind—especially when the body is fatigued—is fatal to the powers of recollection.

## CHAPTER XI.

### MEMORY TRAINING IN SCHOOLS AND COLLEGES.

"Education is the great means by which the memory is made either good or bad. Nothing can do more for its improvement than a rightly conducted system of education, and nothing can do more to injure it than one wrongly conducted."

"We may say of memory what the authors of the Port Royal Logic say of reason: we employ it merely as an instrument of acquiring the sciences, whereas we ought to avail ourselves of the sciences as an instrument for perfecting the memory."—DAVID KAY, F.R.G.S.

If the memory is to be trained with a view to strengthening it and rendering its operations more efficient, all will agree that youth is the time when it can best be done, and the schools and colleges, the proper places. The school and college should regard this perfecting of the powers of memory as one of the great objects of their work, and school methods should be adapted to this end. In place of this, however, it must be confessed, that in very few schools is there any direct effort to effect this purpose. Memory is cultivated but it is often sensational rather than intellectual, and the important subjects of careful observation, thorough comprehension, methodical arrangement and frequent repetition, do not receive the attention they merit at the hands of teachers and students.

To begin with, it has always appeared to the writer that one mistake of the public schools is the overtaxing of the memory of young children. Let us take a child just learning the alphabet. This, coming as the child's first lesson should surely be the simplest and easiest, yet, as Kay points out, we have three distinct tasks in one, *all generally laid at one time upon the child*. First, there is the form of each letter to be apprehended by the eye and distinguished from all the others, then there is the sound to be caught and retained by the ear and distinguished from all the others, and the pronounciation of each letter to be learned and likewise to be distinguished from the rest. Is it any wonder that the young child is bewildered by the diverse calls made at the same time upon the attention? How can the feeble mind of a child give attention to a new form, a new sound, and a new effort of speech, at the same moment? Let the child's ear first be thoroughly accustomed to the sounds of the letters arranged according to sounds. Then he should be taught to repeat these sounds, and afterwards, in due order, should be taught the forms which represent these sounds.

That the tasks assigned in the majority of public schools to children between eight and twelve years of age, are excessive in number and rather above the comprehension of the average child, there can be little doubt. The mind grows more

rapidly and develops more surely by the aid of a *few simple tasks thoroughly mastered and frequently reviewed*, than by a larger number of heavier tasks less perfectly understood and less frequently reviewed. Very few adults, even if we select the best educated, are capable of thoroughly mastering and memorizing ten isolated facts per day for a hundred days and of recalling them at the end of that time. Yet it is not an uncommon thing for a girl of ten years to have over half a dozen different studies and a dozen or more facts in each to commit daily, and this, too, in addition to writing and the working of various problems. A more limited curriculum, with more time for thorough comprehension and more frequent review, would produce better results.

**Overtaxing  
the Child's  
Memory.**

This, then, is our first suggestion as to memory training in schools: *Less work in quantity, better in quality.*

The public schools should pursue *systematic efforts for training children to habits of accurate observation*. Object lessons should be introduced daily, and the children so catechized as to develop their sense perceptions and powers of discrimination.

The habit of appealing to the memory of the children as to actual occurrences is an excellent method of memory training. It is one thing for a student to memorize a table, a page of history or

a selection; it is quite another to give a plain, full account of what took place at school yesterday. To accomplish the first, sensational memory may be sufficient; to perform the second requires observation, memory and exercise in composition. In a school where this was practised the following dialogue took place:

Teacher.—What can you tell us about last Thursday? What was the weather?

Pupil.—It rained in the morning.

“What was the weather in the afternoon?”

“The sun shone.”

“Were all the scholars present?” “Mary Brown and John Wood were absent.”

“Any other occurrence?” “Inspector Blank visited us.”

“What proposition did he make?” “He proposed to change our drawing books.”

“What did he say?”

The scholars were eager to rehearse his remarks. Thus the exercise proceeded, and questions were answered that would give a deep sense of gratification to many an older scholar in this age, could his memory serve him as accurately. It was remarkable how much these children could remember, and the interest they manifested was a pleasure to behold. *It was training that had accomplished the result.*

The teacher should not make large demands up-

on the memory of the scholars at first, but will observe that larger demands are met with little difficulty as the exercises proceed. The chief benefit from exercises similar to the above is the cultivation of the habit of observation, yet the effect directly on the memory is considerable. Each narration of the experiences of a day furnishes probably as great a tax on the memory as a page of history, yet this narration is given gladly, and with little conscious effort when once the habit is formed. From an article on strengthening the memory by Ella M. Powers in the *Journal of Education*, we extract the following suggestion:

Memory devices are productive of good results. If the children have learned many quotations, let the teacher read them and require the scholars to tell who wrote each; or number the quotations and ask the scholars to write the author's name upon a slip of paper. The one who gives the most correct answers may be presented with one of the illustrated poems in booklet form that can be brought for five or ten cents. Another device is to let the school choose sides. Then the titles of books are mentioned by the teacher, and the scholar is required to name the authors. Upon failing, he seats himself, and the sides increase and diminish according to the law of the old spelling match, which never loses its charm.

How School  
Children may  
be taught to  
Observe.



Let there be a sobriquet match, the teacher giving the sobriquet, and the scholar the real name, as:

The Grand Monarch - - Louis XIV.  
 The Plumed Knight - - James G. Blaine.  
 Tippecanoe - - - - Wm. H. Harrison.  
 Father of English Poetry Chaucer.  
 Grand Old Man - - - Wm. E. Gladstone.

The list can be extended indefinitely. This need not be confined to the names of persons. Take the rivers of the world, the states in our country, the cities of the world. All these will demand their share of interest and rivalry.

A list of celebrated persons may be prepared by the teacher, and when the sides are chosen, she calls the first name, and the scholar is expected to tell for what he or she was noted, as,

Robert Fulton - - Inventor of the steamboat.  
 Charles Dickens - - English novelist.  
 Henry Ward Beecher Preacher and orator.  
 Mozart - - - - Musical composer.

This gives great variety, and corresponding interest is manifested.

Again, the technical terms commonly used in commerce, law, mining, printing, medicine, mechanics, science, and music, may all be given in the same manner, and the results will be gratifying to the teacher who will make out her list.

The efforts of the teacher should be directed to



securing, on the part of every pupil, a *thorough comprehension of each point and each detail of the lesson*. The motto of all true educational work must be *non multa sed multum*—not many things but much. It is not sufficient to have received a correct answer. Sensational memory may furnish an answer verbally correct, and the pupil may neither understand the question or comprehend the answer he has given. It is not sufficient that a problem be correctly worked and the right answer obtained; the pupil should understand the reason for every step. How often is the teacher, who imagines his pupils comprehend a principle, startled to find, on turning the question into another form, that the vital point has not been understood at all! No lesson should be passed until its facts and principles are mastered and a thorough comprehension of it in all aspects secured.

See that Pupils  
understand  
every Detail.

I am aware that this is a most difficult work in the public schools where the crowded curriculum, the rivalry of competing teachers, each endeavoring to pass the largest number of pupils, and the silly ambition of parents to crowd their children forward, render the work of the conscientious teacher most perplexing. Until we have fewer subjects, more appreciation of true education and less desire for rapid promotion, and less overtaxing and over-urging of the children by parents

and teachers, we need hardly expect the best results.

To many it may seem an unwarrantable assertion that there is *very little proper exercise of the memory under right conditions in the average school and college*, yet such is the case. Books and notes are often depended upon to supply the place of memory. The student instead of giving his memory a daily task and thoroughly committing this at the time, and daily reviewing portions of his past lessons, contents himself with such an understanding of his lessons, as will satisfy the teacher at the recitation hour, leaving the work of memorizing for the week before examination. The result of neglecting to develop the memory by daily exercise in committing and reviewing, is weakness and incapacity, and the attempt to gorge the weakened memory in a few days with the food of a term can only result in injury.

A point of great importance in memory training at school is the *regularity and frequency of reviewing*. Not only is this essential to the progress of the pupils, it is a most valuable method of invigorating the memory. Not only should weekly reviews be held, a certain portion of every recitation hour can very properly be devoted to a review of the lesson of the preceding day. The apt teacher who recognizes that his work is to *train* not merely to *tell*, and who knows the importance of memory training will not lack for materials or

methods. One suggestion is, however, added here. Let the pupils be asked to write at a given hour every Monday a short synopsis, say a score of sentences, of the Sunday evening sermon, and let this be done without notes or other assistance as a pure exercise of memory.

A writer in *Education*, Walter Vaughan, of Montreal, in an able article on "Memory Training in Schools," after pointing out that memory comprises three components: reception, retention, and reproduction; and localization or recollection, argues that the latter should receive special attention in schools. After condemning the rote system he proceeds to discuss the best

methods of training the faculty of localization and recollection. He quotes Hering to show that a muscle grows the stronger the oftener

**Train  
Memory as  
as you train  
the Athlete.**

it works, and that "increased power of organs accompanies an increased activity with sufficient intervals of repose," and then argues that the functions of memory must be trained in a manner similar in all respects to that employed in strengthening and developing the muscles of the well-trained, all-round athlete. As the athlete receives sufficient food and no more, so the memory ought to be regularly stored, not overloaded, with its appropriate food. As the trainer first exercises the athlete's muscles very gently, insisting upon intervals of rest, so must the localizing

faculty be exercised at first very gently—coaxed, not forced—the intervals being spent in mental repose. As the exercises of the athlete are gradually increased in violence of motion and length of duration, so should be the exercises of memory. The athlete must avoid overstraining of the muscles and irregularity in exercise and must seek to build up, not one set of muscles, but the whole physical frame; so there should be no overstraining of the memory, no irregularity in its exercise, and it can be fully developed only as the whole intellectual nature is cultured.

With regard to the practical carrying out of his suggestions, Mr. Vaughan believes that "each school should be provided with a memory master, whose duty should be to train the memories of all the scholars."

This would be done in classes and the duties of the memory master would be: "To exercise the recollection of the members of each class once, twice, thrice, as often as possible, in every week, the exercise occupying from fifteen minutes to an hour in duration; to embrace in his exercise not only the instruction the class has immediately before received, but all knowledge which the members of the class have at any time acquired, or are supposed to have acquired, from the lessons and instructions they have received; the master, for example, questioning one scholar, one moment upon a problem of Euclid studied two years be-

fore; another scholar the next moment, upon the construction of a line or verse of a Latin author studied six months earlier; a third upon some historical event discussed a week ago; and so on, constantly changing his subject and dodging about the class, paying particular attention to coaxing and encouraging the members who display the least power of recollection. As a corollary of this, the scholar must not know the ground to be covered in any exercise, or have any inkling beforehand of the questions to be asked.

While the proposal of Mr. Vaughan will seem unpracticable to many, who can say that the importance of the work would not justify the expense and effort involved? Until, however, the public learn to place a higher value on memory training, and are willing to bear the extra expense of memory trainers, let all teachers perform kindred duties and see that their students are given guidance and help in developing this most wonderful faculty.

## CHAPTER XII.

### MNEMONIC DEVICES AND HINTS ON MEMORIZING.

"Sound is the leading element in language, both spoken and written. We hear the words even when we see them, but we do not see them when we hear them. The visible symbols are accessory and subordinate."—  
G. H. LEWES.

"By far the shortest way to learn to read a language is to begin by speaking it. The colloquial tongue is the basis of the literary tongue."—P. G. HAMMERTON.

While mnemonic systems cannot, except in a very incidental way, strengthen memory, and very often by inducing unnatural associations have proved decidedly injurious, it must be confessed that certain mnemonic devices do facilitate the acquisition of subjects difficult to memorize. The student may find in some of the following mnemonic words and phrases help in the speedy memorizing of ideas which possess little natural relationship. How far these and similar devices are to be utilized, each student must decide for himself, and in accordance with the special object he has in view. If he wishes to develop his powers of memory he will set about cultivating by daily exercises his powers of observation, his sense perceptions, his attention, and by daily

memorizing and daily review under right conditions he will largely increase his power of recollection. If, however, he should find it necessary or convenient to memorize a list of words lacking all logical connection, or a long row of figures, he may find it convenient to use some of the simpler of the mnemonic devices. For example, most people who desire to commit the seven prismatic colors—violet, indigo, blue, green, yellow, orange, red—will do so more easily by memorizing the one word *Vibgyor*, composed of the first letters of the seven, than by the old method of repetition. It is true, rational memory training would seek to find a reason for the order of these prismatic colors, and knowing the reason, would have such a mental grasp upon them that the mind could not readily lose them. But for the majority of persons no such plan is possible even if the philosophy of the prismatic colors were known and available to the literati.

*The Prismatic  
Colors.*

In like manner, the names of that notorious ministry formed in 1667, in the reign of Charles II, on the dismissal of Clarendon, are best recalled by the mnemonic word *Cabal*, which gives the first letter of the names of its chief members:—Clifford, Ashley, Buckingham, Arlington, Lauderdale. As pointed out before, the Hebrews were accustomed to form mnemonic words by combining the first letters of several words it was found advis-

able to memorize, and this custom has thus weathered the storms of many centuries.

In a somewhat similar way the names of the "Minor Prophets" have been learned by the multitudes through mnemonic words, made up by combining the first two letters of each name. Thus, Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakuk, Zephaniah, Haggai, Zechariah, Malachi, = Hojoam—Objomina—Haze hazema.

**The Minor  
Prophets.**

Again, we read in Galatians V, 22-23, (Revised Version) that "the fruit of the spirit is love, peace, longsuffering, kindness, goodness, faithfulness, meekness, temperance." Here we observe the first letters of the nine kinds of fruit are l, j, p, l, k, g, f, m, t; and on these has been constructed the following: *large apple and keg of meat*. The vowels throughout and the word "and" are non-significant, and the "rg" in large is sounded as j. Another method of associating these fruits of the spirit is by introducing intermediate words suggested by sound or sense, by a process known as "bridging." By way of illustrating we give an application of this process to the above table, leaving the reader to decide upon its utility. It is taken from W. W. White's memory training lessons:—*Love*—dove—*joy*—boy—piece of pie—*peace*—piece-meal—long drawn out—*longsuffering*



—suffering humanity—mankind—*kindness*—mind  
 —spirit—God—*goodness*—food—apple-tree—leaf—belief—faith—*faith-*  
*fulness*—faithless—Israel—Moses—

**The Fruit of  
the Spirit.**

*meekness*—reek—soaking mass—whiskey sot—*temperance*. Whether the above is easier to commit than the simple nine words is a question the student should decide for himself. But this by no means is the only question, the main one being by which method one will best retain and can most readily recall. A much better way of committing these would be for the student to search out some apparent or real connection between the various fruits enumerated, or if he must introduce intermediate ideas, do his own work of “bridging.”

Students beginning music may readily learn the names of the notes on the five lines of the staff—E, G, B, D, F—by the mnemonic sentence:—**Every Good Boy Deserves Favor**, and the notes in the four spaces by the word **FACE**.

A knowledge of the different Keys, with their Sharps or Flats, may be obtained from the following rhymes, which we find in Middleton's Memory Systems, new and old:—

*A-MAJOR* key *three sharps* will tell;  
 The *MINOR-A* is *natural*;  
 And *A-flat-MAJOR* all will say,  
 With *four flats* ever we must play.

With MAJOR-*B* *five sharps* are sent;  
*B*-MINOR is with *two* content;  
 To *B-flat*-MAJOR *two flats* place;  
 With *B-flat*-MINOR *five flats* trace.  
 To prove our maxim plain and true  
*C*-MAJOR key we *natural* view;  
 On MINOR-*C* *three flats* attend;  
 And *C-sharp*-MINOR *four* befriend.  
 The MAJOR-*D* *two sharps* doth crave;  
 The MINOR-*D* *one flat* must have;  
 With *D-flat* MAJOR *five* are told;  
 With *D-sharp*-MINOR *six* behold.  
 With MAJOR-*E* *four sharps* we'll own;  
 The MINOR-*E* has only *one*;  
 To *E-flat*-MAJOR *three flats* fix;  
 As *E-flat*-MINOR must have *six*.  
*F*-MAJOR key has *one* poor *flat*;  
 The MINOR-*F* has *four* times that;  
 For *F-sharp*-MAJOR *six sharps* score;  
 To *F-sharp*-MINOR *three*,—no more.  
*G*-MAJOR key with *one sharp* make;  
*G*-MINOR-key *two flats* will take;  
 To *G-sharp*-MINOR *five sharps* name;  
 And *G-flat*-MAJOR *six flats* claim.

To learn the piano keys the following is helpful:

"All the *G* and *A* keys  
 Are between the black *threes*;  
 And 'tween the *twos* are all the *D*'s;  
 Then on the *right* side of the *threes*  
 Will be found the *B*'s and *C*'s;  
 But on the *left* side of the *threes*  
 Are all the *F*'s and all the *E*'s."

Multitudes of boys and girls have learned the

number of days in each month by the following simple rhymes:

"Thirty days hath September,  
April, June and November;  
All the rest have thirty-one,  
Excepting February, which alone  
Has four and twenty-four,  
And each fourth year has one day more."

#### I.—THE STUDY OF LANGUAGES.

The philosophical method of learning a spoken language is indicated by the way children learn to speak their mother tongue. Languages are easily and naturally learned by imitation. We first hear, then learn to speak, and in many cases comprehend fully at a later stage of the process. At the age of six years a child will learn all the common words of a language in less than a year if he hears it continually spoken. It is true there is a flexibility in the organs of articulation and a readiness in remembering new words in children which gradually decays as years advance. Still numberless experiments have shown that adults, by accustoming themselves to the sound of a new language, *e. g.*, by taking up residence among those who speak the language, can in the course of a few months, learn to speak it readily, and thus learned, the written language can easily be mastered. The order then in language study seems to be: an

Leading  
Principles in  
the Study of  
Languages.

education of the ear to distinguish the sounds of the language, next an education of the organs of articulation to reproduce the sounds committed with more or less comprehension of their meaning, and then a knowledge of the written language in its forms and structure.

As Ascham observes, he who learns a language through the grammar, "learns first an evil choice of words, then a wrong placing of words, and lastly, an ill framing of sentences, with a perverse judgment, both of words and sentences." A person who wishes to acquire a practical knowledge of French or German should if possible reside for a few months among people who speak only the language desired. If this is impracticable, the second choice should be a native teacher, or one who is capable of teaching the language by the conversational method.

The most advanced teachers now pursue the inductive method and begin with a selection of the language to be studied, and by analysis, comparison of forms, etc., they teach the pupils to discover for themselves the rules of grammar and the idiomatic structure.

While the natural order of language study does not require a knowledge of grammar at the beginning it must be admitted that no language is fully learned until its grammatical principles are mastered, and this involves, soon or late, a memorizing of rules and of a vast deal of minutiae.

The ease or difficulty of acquiring these rules and details will depend very largely on the way in which they are arranged, and on the number of natural associations that may be discovered between them. Certain subjects in each language present special difficulties and the ingenuity of masters has been taxed to discover some way of lightening the burden of memorizing. In the following paragraphs we are indebted for some of the suggestions offered to a little work, by the Rev. J. H. Bacon, on "The Improvement of the Memory."

#### II.—LATIN.

Several Latin words may easily be committed and easily retained from their English equivalents by attention to the following facts:—

1. Most English words ending in *nce* or *ncy* are translated into Latin by changing *ce* or *cy* into *tia*; as Eng., *patience*, *clemency*; Latin, *patientia*, *clementia*.
2. English words ending in *ion* become Latin by omitting the final letter; as Eng., *religion*, *opinion*; Latin, *religio*, *opinio*.
3. Words ending in *ty* in English are changed in ending to *tas*; Eng., *liberty*; Latin, *libertas*.
4. English words ending in *ude* become Latin by changing the *e* into *o*; as Eng., *fortitude*, *magnitude*; Latin, *fortitudo*, *magnitudo*.
5. Most adjectives of two or more syllables that end in *d* become Latin by the addition of *us*; as Eng., *rapid*, *putrid*; Latin, *rapidus*, *putridus*.
6. English words having in their endings *r*, *t*, or *n*, between two vowels, are translated into Latin by changing

the last vowel into *us*; as Eng., *pure, mute, obscene*; Latin, *purus, mutus, obscenus*.

7. Most English words of two or more syllables ending in *nt* become Latin by changing the *t* into *s*; as Eng., *vigilant, latent*; Latin, *vigilans, latens*.

8. Many English words ending in *al* become Latin by adding *is*; as Eng., *mortal, liberal*; Latin, *mortalis, liberalis*.

#### GENDER OF LATIN NOUNS.

The grammatical gender of Latin nouns depends either on their signification or on declension and termination.

According to signification the following are general rules of gender:—Names of *males, rivers, winds* and *months* are masculine. Names of *females, countries, towns, islands, trees, plants, ships, poems* and *gems* are feminine.

According to termination and declension the following rules may be noted:---

##### *First Declension.*

All nouns which end in *a* and *e*, are feminine as all agree; while those that end with *es* and *as*, among the masculine we class.

##### *Second Declension.*

In *um* and *on* the neuters end, as all may clearly comprehend; nouns masculine without mistake must *er, ir, us* or *os* e'er take.

##### *Third Declension.*

"How *error* rose is not quite plain," which brings the masculine in again. In *x, is, as, ys* between, the feminine list is plainly seen.

But two additions must be heeded:  
*s* by a consonant preceded,  
*es* in Genitive *not increasing*.  
 Let these be conned with care unceasing.  
*C-l-e-a-n t-ar* with *e, y, us* and *ur*  
 Make up the list we call neuter.

#### *Fourth Declension.*

Nouns of the fourth that end in *u*, we neuter call and  
 they are few;  
 While those that we call masculine have *us* for their  
 constant sign.

#### *Fifth Declension.*

The fifth is easy all confess; its feminine ends in *es*.

### III. —FRENCH.

The following facts will be found helpful to  
 students beginning the study of French:---

1. Nouns and adjectives in *ble, ion, ent, ge, ce, ne* and *de* are generally the same in French and English.
2. English words ending in *fy* become French by changing *fy* into *fier*; as Eng., *glorify*; French, *glorifier*.
3. Most English words ending in *ish* become French by changing *sh* into *r*; Eng., *abolish*; French, *abolir*.
4. Most verbs ending in *s* or *t* between two vowels become French by adding *r* to the English; as English, *use*; French, *user*.
5. English words ending in *cy* or *ty* become French by changing these terminations into *ce* and *te* respectively; as Eng., *clemency, beauty*; French, *clemence, beaute*. Other nouns ending in *y* change *y* into *ie*; as English, *fury*; French, *furie*.
6. Words ending in *ary* or *ory* become French by changing these terminations into *aire* or *oire* as Eng., *military, victory*; French, *militaire, victoire*.
7. Words ending in *our* or *or* become French by chang-

ing these terminations into *eur*; as Eng., *odour*, *doctor*; French, *odeur*, *docteur*.

8. Words ending in *ous* change this to *eur* in French; as English, *vigorous*; French, *vigoureux*.

Gender presents one of the chief difficulties in mastering French. The following facts will help the student in overcoming this "laborious task."

1. Nouns ending in a consonant are masculine, but those which terminate in *x*, *eur*, *ion*, *son* preceded by a vowel, are feminine.

This rule includes nearly 5,000 words and the following are the chief exceptions, which are feminine:---

*Clef, cour, nef, tour, vis, cuiller, dent, chair, faim, soif, boisson, chanson, moisson, cuisson, facon, part, dot, main, lecon, fois, nuit, souris, foret, mer, rancon, hart, mort, fin.*

2. Nouns ending in *a*, *e*, *i*, *o*, *u*, are masculine, but the endings *te* and *tie* are mostly feminine.

This rule includes over 1,000 words, and the following are the chief exceptions, which are feminine:---

*Midi, eau, peau, glu, fourmi, tribu, foi, loi, merci, vertu.*

3. Nouns ending in *age*, *ege*, *uge*, *aire*, *oire*, *le*, *aume*, *eme*, *ome*, *sme* and *iste* are masculine.

This rule has upwards of 1,000 words and has few exceptions.





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