PELMANISM

Lesson VII

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LESSON VII

MEMORY AND THE PRINCIPLES OF MENTAL CONNECTION

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LESSON VII

MEMORY AND THE PRINCIPLES OF MENTAL CONNECTION

FOREWORD

Perhaps you are one of the many who complains that you cannot remember, names, dates, facts, faces and other things. As a result of the lesson on "Knowledge and the Senses," you now gather daily a larger amount of material than ever before. How are you to handle this increasing harvest of facts and ideas? This lesson gives you the laws of memory and mental connections. By applying these laws you can utilize your memory powers effectively, and improve your ability to organize ideas.

I—THE UNITY OF THE MIND

In Lesson II, you learned that the *mind is a unity*. For convenience we often refer to the various aspects of the mind such as feeling, thinking and willing. These three aspects of the mind are not distinct separate compartments. These mental traits are all closely interrelated. For example, in Lesson IV, you learned that interest (feeling), attention and use are all essen-

tial if one hopes to develop his senses. Again in Lesson V, you learned *Right Willing* results from *Right Feeling* and *Right Thinking*. Pelmanism, recognizing the unity of the mind has always insisted that the mind should be trained as a whole—an entity. As you proceed in this lesson you will recognize that in earlier lessons you were also learning how to develop good memories.

II—THE FOUR STAGES OF MEMORY

Memory cannot return to you what you have never entrusted to it. *Impression* or *registration* of materials to be remembered is therefore the first stage in developing good memories.

Memory cannot return to you what has not been *retained*. *Retention* is the second factor.

Retention of material is of no value, unless it can be *recalled* or *recollected*. *Recall*, or *recollection* is the third stage of memory.

For some memory material, we need not only the ability to recall, but also the ability to recognize the facts or ideas given back by memory as belonging to our past. *Recognition* is the last of the four stages involved in memory.

III—REGISTRATION—IMPRESSION

Lesson IV, "Knowledge and the Senses," showed you the importance of sensory impressions. To remember everything you experience

would be a distinct disadvantage. To forget is almost as valuable as to remember because if all experiences were retained you would not be able to distinguish the important from the irrelevant ideas.

In short, you must *select* the things you desire to remember. Interest aids you to make the selection. What is your life work? (Review Lesson III.) What is your hobby? What are your life interests? The answers to these and similar questions indicate some of the materials you should select to remember.

Form the habit of attending to the things and ideas that pertain to your main life interests. To attempt to remember everything means to weaken your memory because the habit of scattering interests results in the retention of little or nothing. Your behavior is controlled in part by habits, good and bad. Good habits underlie good memories, bad habits underlie bad memories. To break a bad habit requires the substitution of a good habit. Develop your interests and the habit of selecting things to remember which are related to these interests will grow.

Approach the innumerable experiences which daily assail your senses *with the intention to remember the significant things*. Confidence in your ability to remember is the greater part of the battle. If you are an insurance broker you glance through the newspaper. You note everything related to insurance because your life work

gives you a *mental set* which enables you to grasp this sort of material. Since you do not possess a one-track mind, your hobby, radio, directs your attention to an article which carries the news that an excellent broadcasting station you have never been able to tune in on, has had its wave length and power changed. That evening finds you without conscious effort turning the dials of your set in an attempt to get the station.

As you ride in the street car you often find yourself reading the advertisements. An analysis of the kind of advertisement which attracts your attention will indicate that it appeals to the basic inborn tendencies common to all mankind. The inborn tendencies most often touched are hunger, self-preservation of life, love of adornment, and the sex instinct. Attention due to the appeal of the instincts is called *involuntary attention* because such attention is given without conscious effort. Attention that requires *effort* and *will* is known as *voluntary attention.* One of the chief tasks of the school and of all life is to make voluntary attention approximate in its force involuntary attention. Interest is the drive, the dynamic force that causes effort to desert voluntary attention which in reality then becomes involuntary attention, or what the psychologists call derived primary attention. In school you may have detested geography but now, due to the radio or the epoch-making flights of Charles A. Lindbergh, you look for-

ward to reading about things geographical with joy. Interest has caused attention to be spontaneous and effortless. Such attention insures good registration, which comprises the first stage in memory.

IV—RETENTION AND THE STREAM OF THOUGHT

Retention of material depends upon our mental make-up, the impression, and the way in which we take things into our mind. You have learned how to get good impressions. How are these impressions to be organized?

Ask yourself this question: "Do my continually changing thoughts and feelings follow each other at random?" Presuming you are free to think the matter out quietly, take a sheet of paper and jot down as many as you can remember of the thoughts of the past hour. It is now, say 9 p. m. At 8 p. m. you were sending your insurance money to the Secretary of the Company, and, having posted the letter, you returned to the reading of the book which was put aside for a moment or two in order to remit your premium before the days of grace elapsed. You read for half-an-hour; then a friend called and you discussed politics for ten minutes. After his departure you were reminded that the basement bell did not ring, and you attended to the task of repairing it till nine o'clock.

SEQUENCE IN EVENTS

On analyzing the events of this hour a little closely, you realize that there is a definite sequence: thoughts do not come at random, but proceed by the law of association. While you were reading your book, you came across the word "insurance;" you were reminded of the pressing importance of dispatching your premium before it was too late. Having done this, your interest in the book caused you to return to it, and for half an hour you were following the hero and heroine through their trials and tribulations. Then there was a break. A friend's call and his ardent feelings about certain phases of politics transported you from a world of fiction to a world of fact. You went at the business of criticizing your friend's viewpoint hammer and tongs for ten minutes. He left, perhaps only half convinced; it was only on shaking hands with him at the gate that you remembered the basement bell. You repaired it.

Such is the history of your mental hour. All its thinkings form a link of associations with one inevitable break, that of the friend's visit. Of course you could have avoided this if you had been so disposed. You could, for instance, have seen the word "insurance," and even thought of your insurance policy without acting upon the thought; and you could have refused to see your friend on the plea that you were busy. By avoiding the chances of interruption, you would have

secured greater concentration and obtained a more complete command over the thoughts connected with the book.

THE MIND-WANDERER

But even a mind that wanders thinks according to the laws of association. Let us see how this happens. George Copeland, a young man of twenty-three, is trying to devise some way of spending his evening. His thoughts for about ten minutes are revealed by the following words which flash through his mind: Palace; Charley; Miss Turner; fashions; Wanamaker's; Benson; South America; Patagonians; advertising evils; Greenwich Village.

He began by wondering what was the best seat he could afford at the Palace; and then he wondered if his friend, Charley, could go with him; from Charley he immediately passed to Charley's fiancée, Miss Turner; and from her to fashions, frills and furbelows; then he thought of Wanamaker's which gave rise in his mind to the notion of his own firm. His next thoughts were of the office staff, especially of Benson who had robbed the safe, and skipped away to South America. That reminded him of the Patagonians who were said to be six or seven feet high, and he wondered whether a man's height could be raised, as the advertisement said. Here he paused to meditate on the frauds of ad-

vertising; and on the way beautiful country outlooks were made hideous. He was just thinking he would change his lodgings to a better section of the city than Greenwich Village, when Charley called unexpectedly.

Connected Thinking—The worst mind-wanderer in the world has thoughts which are intimately connected in the way just described, even though in a five minutes' reverie he may begin with a thought about margarine and finish up with a speculation about the planet of Mars. The mischief, however, is often serious. A man who uses his thinking powers in this listless fashion becomes unable to fix his attention on anything for long; his memory develops deplorable weaknesses due to inattention; and, as a consequence, self-confidence decreases in corresponding ratio. No doubt there are times when we should allow the mind to take its own course, or permit the lapse in which we find ourselves. The mind must not be drilled unceasingly; it must on occasion "stand at ease," as in the conversation of a social evening. But when business or study is before us, and we have a program to fill, hour by hour, the more consistently we follow the demands of attention, the better it is for our mental powers generally. In this lesson we shall deal with the well known laws of association under the general heading of the Pelman Principles of Mental Connection.

CONNECTED AND UNCONNECTED FACTS AND IDEAS

If you take a random list of words you find it rather difficult to recall them, because they are not so grouped as to be an organic whole. Here is such a list: *dome, a, glass, many, of, white, eternity, life, stains, radiance, of, colored, the, like.* As a mere list of words it seems to convey no meaning—but when Shelley used them he arranged them thus:

> Life, like a dome of many-colored glass,
> Stains the white radiance of Eternity.[1]

What a difference!

The introduction of method by means of grammatical arrangement, and the infusion of exalted feeling, turns an apparently meaningless group of words into poetry of the highest order. We shall proceed, first of all, to point the intellectual moral. There may be in your mind much that is excellent in itself, but it fails to find expression because the material is not arranged. Facts and ideas are scattered round in barren isolation which should be gathered into fertile groups.

Now the object of this lesson is to provide a method whereby you will be able not only to think in a concentrated manner, thus avoiding the waste of mind-wandering, but to reap the harvest of your mental efforts. Such a result is

[1] Adonais.

worth working for, and if you are at all keen about it you will easily master the elementary technique of subsequent pages.

Read the following fifteen words, once only, and see how many you can write down in the order given.

Town
Camera
Cat
Island
Window
Fur
Photographer
Warm
Lens
Continent
Glass
Man
Africa
House
Animal

In all probability your efforts will not be a conspicuous success. Let us arrange them, however, in a connected order; then, after reading through the list, once only, try to write them down from memory.

Town
House
Window
Glass
Lens
Camera
Photographer
Man
Animal
Cat
Fur
Warm
Africa
Continent
Island

This time your success will astonish you. Each idea in the rearranged series of fifteen words has an obvious association with the idea

immediately preceding it, and with the idea immediately following it. The first list shows the difficulty of remembering unconnected ideas; the second list exhibits the ease of recollection when a natural association exists. Our object, however, is not merely to increase memory power, but to assist you in the development of a logical and creative mind. It will be a great advantage, no doubt, to arrange groups of data in such a related manner as to be able to recall them with ease; and we shall show you how this is done. But it will be a still greater advantage to be able to focus your attention on the true relationships of a subject, and to arrive at your own conclusions, unaided.

ORDER AND CLASSIFICATION

The superiority of the second list of words lies in its *order*. The first list was a "higgledy-piggledy" affair. In the second, we arranged the words according to the principles of mental connection, and the haphazard element gave place to system.

There is another sphere in which order is the secret, and that is the sphere of *classification*. We are all classifiers, whether we know it or not. The boy who brings the newspapers round every morning is a classifier, but he never calls himself by that name; and if he were to ask the boy from a competing news-agent's, whether he, too, had "classified" his customers, the sec-

ond boy would probably misunderstand. *Both* boys are classifiers: they do not grab an armful of papers, then begin to deliver them, going here, there, and everywhere, often visiting some streets three times. Like the postman, they classify their addresses, and organize the whole journey so as to deliver the newspapers without going over the same ground twice. Similarly the boy at the railway bookstall is a classifier; he arranges his magazines and papers in a manner that not only appeals to the customer's eye, but enables him to find at once whatever is required by a purchaser.

Examples of Classification—Classification, as a word, is usually associated with the study of science, or of logic, but, as may be seen from the illustrations just given, it is a method employed by all who have to deal with masses of articles. Without classification the work of distributing goods would be endless. It is a method used by the librarian. How else could he find the books that are wanted? Whichever way we turn we find this work of classification going on; and where it is not carried out efficiently there is confusion and failure.

Here is a mechanic who uses a number of drills, which are kept in a box at his side. When he changes a drill, he has to turn over perhaps ten or twelve before he fingers the right one, thus wasting time and movement. Someone suggests that the drills should be classified,

marked, and stuck in a "drill plate" in the order of size. This is done, and the gain in speed and accuracy is considerable, for the mechanic sees the drills standing up like a set of organ pipes, and reaches for the size he wants without touching the others. Classification in the workshop is just as necessary as it is in the laboratory of the scientist.

ON ARRANGING EXPERIENCES

Now, in order to bring the matter home to you, we are about to ask a personal question. "Have you learned to classify the facts you deal with every day, usually described as 'experience'?" Do you arrange, according to a plan, all the new things you learn, or do you accumulate them in a general heap? For instance, if you pick up a popular paper and read that a certain burglar wrote a book while serving a sentence, do you simply say "He must have been a unique burglar" and then forget the matter, or do you immediately place the fact in its proper association with other books, some of them famous, which have been written in prison? If you *do*, then your powers work on the principles of mental connection, you classify your knowledge as it comes to you. If you do *not*, you will find that you forget half of what you read, because its associations are weak. You will also experience more difficulty in learning, and new ideas will be slow in coming.

Untidy Minds—Such are the evils of having a disorderly mind, in which impressions, ideas, convictions, fancies, and all the phenomena of consciousness are so poorly arranged that one never knows where to find anything when he wants it. Classification is the introduction of order into the mental life: it makes a place for everything and puts everything in its place. "But how do we classify experience?" demands a reader. "Take the events of an average day and tell me what I ought to do." Let us try to show you how it is done.

In the first place, don't make a tremendous business of it. It is really quite a simple affair and not one to worry about. If the mind could not do its own classifying to some extent, rational life would be greatly impeded. But the principles of mental connection, fortunately, work unconsciously. Life would not be worth living if, immediately you got out of bed in the morning you had to begin solemnly to classify the toilet soap, then the towel, then the breakfast, and so on throughout the livelong day. There is a time to classify these things, and it is done unconsciously by repeated use. Begin with the morning paper; not consciously, with the teeth set, but with an alert mind, and when you have found an interesting item about the coming elections, or a paragraph on the chemistry of soils, or discovered one about a clue to a

missing Raphael, connect it with any previous item you have met with on the same subject, deliberately exploring your consciousness for possible associations by way of similarity or contrast. You may have no other chance during the day of exercising your mind in this way; but if you *form the habit* you will classify ideas and information unconsciously and without effort.

UNIFYING KNOWLEDGE

At first, success may not be marked, but you will have received a vivid impression of the item that interested you, and when, some mornings later, you read a paragraph about some candidate, the building of a new Agricultural College, or the latest purchase of a Raphael, your recall of the previous impressions will be instantaneous, and you will thus have classified and unified your knowledge.

Judgment—As your knowledge increases there will come to you the power of *judgment*; that is, opinions of more or less weight will be formed. You cannot classify two items of knowledge about mineral oil without comparing or contrasting them; and out of this process you evolve a conclusion, tentative, it may be, but a conclusion at any rate. If an item in the papers about Baku oil contains the information that a vast new territory was to be opened up, and an item about Roumania hints that the wells have practically been exhausted, you could

not very well link the two items together without drawing an inference as to the probable rise in Baku shares, and, perhaps, in the price of lamp oil. The listless absorber of newspaper print might fail, through force of habit, to register a connection, but not *you.*

Importance of Standards—The value of your judgments or opinions is determined by the extent of your acquaintance with the best *standards.* A popular illustration may be found in the awarding of prizes at a dog show. If you were suddenly called upon to act as a judge, owing to the absence of an expert of canines, what would be expected of you? First, your classification would have to be accurate. If an owner brought up a basset hound and you classed it as a dachshund, you would, to say the least, be discredited in the eyes of your fellow judges. To them it would be almost as criminal as if you had mistaken a bloodhound for a pomeranian. Next, he must have an intimate acquaintance with the best representatives of each class; he must have good *standards.* A knowledge of these standards comes to him from classified experience and from the close study of types. The dictionary defines the word standard as "a measure of quantity, quality, or value established by law or general consent." We should prefer to say that it is established by the scientific method, of which more anon.

CLASSIFICATION AND KNOWLEDGE

It should be clearly understood that these mental processes which we have tried to explain by using familiar topics are precisely the same as those used in all the higher branches of knowledge. A classification of dogs is just as legitimate as a classification of stars, of rocks, of the fine arts, or of human emotions; without such classifications the acquisition of knowledge would be a matter of supreme difficulty.

If, for instance, you had to arrange all flowering plants into classes, the better to know them, an amateur would need half a lifetime to deal with only one genus; whereas you find that botanists have done this work already, thus simplifying your labors, and enabling you to identify at once flowers which you have not seen before. Moreover, you can remember details more easily when knowledge concerning them is organized; and new conceptions arise in the mind with greater readiness. Fortunately, the important spheres of life and thought have already received a provisional classification, and it remains for us to make use of this fact for the advancement of our own intellectual interests, by mastering such classifications as we need and by studying individual cases. This brings us to *Definition.*

THE NEED OF DEFINITION

Definition, broadly considered, has to do with what a thing *is*. Even when we have a classification before us, it is not always easy to arrive at a definition, on account of obscurities which are continually arising. Here is a case in point. Some years ago a woman in New York applied to the courts for an annulment of marriage, declaring that when she was married, her husband had kept from her the fact that he was not white. To some people this sounds like an absurdity. They cannot believe that a woman could possibly have failed to recognize a colored man. "Impossible" is their verdict. There are white men, brown men, black men, yellow men, and "variegated": this makes up the classification.

No doubt, but cases arise in which it is not easy to say to which of many classes an individual distinctly is assigned. The woman referred to called in experts, who, after examining her husband, found certain conformations and colors of the finger nails, among other peculiarities which, despite the apparent whiteness of the skin, proclaimed the man an immediate descendant of negro or semi-negro ancestors. The wife won her case. Hence the saying that *classification* deals with *groups*, and *definition* with *individuals*. They represent two sides of one thought process. Moreover, a group may sometimes figure as an individual in reference to a

larger group, both in the ordinary affairs of life and also in natural science. Indeed, the substance of what scientific research has revealed of the multiplicity of forms of animal and vegetable life may be represented by a geneological tree.

MARKS OF THE TRAINED MIND

Two marks of a trained mind are (a) its ability to classify experience and to deal with individual instances, and (b) its knowledge of the best standards. The reader is, therefore, urged to introduce more *order* into his thought-life. The process itself is often greatly illuminating; the sudden confrontation of one experience with a like experience, happening in different circumstances, may result in a flash of insight carrying the mind altogether beyond the limits of the classification itself.

It must not be forgotten that all our ordered schemes of knowledge are tentative arrangements; they stand for the best we know, but they are not final. Thus, in the early nineteenth century literary criticism had its own rules for evaluating prose and poetry, and when a famous reviewer applied them to Wordsworth's poems the verdict was uttered in the now famous words, "This will never do." Eventually, it was the rules of literary criticism which would not do, and they were scrapped. The classification was wrong, hence the standard of values could not possibly be true ones.

It was a wiser world that welcomed Kipling, whose works did not fit the prevalent classification. Speaking of him, in conjunction with Loti, Mr. Edmund Gosse says: "The old rhetorical manner of criticism was not meant for the discussion of such writers as these."[1]

So while you classify your experience, always remember that experience transcends classification. You cannot put life into a scheme; the unknown "x" confronts us everywhere. Be prepared to modify your classification as you gain knowledge of new standards.

Look for the Excellent—Standards are constantly changing. New social standards, money standards, standards of education and morality are ever slowly evolving; consequently we are not surprised when we see differences asserting themselves. The real question for us, however, is: "What is the standard *now?*" We do not mean in any one thing, but in everything with which we are concerned. The one safe rule is to know that standard which stands for *excellence.*

For instance, a student wishes to begin the study of Profit Sharing, considered as a payment from the capitalist to the workman. Some writers think this is economically sound; others deny it. Few students begin their inquiries in any other way but by purchasing an elementary, and perhaps one-sided discussion of the subject. He would be much better advised if he went di-

[1] Question at Issue, p. 258.

rect to a standard authority; or, to the best writer on one side, then to the best on the other side. In that way one can easily classify the writers of lesser calibre and appraise their arguments.

V—THE PELMAN PRINCIPLES OF OF MENTAL CONNECTION

We now turn to an analysis of the principles of connection which enabled you to remember the *Town-Island* series, appearing on page 14. Perhaps, as you first studied this list of words, you were not conscious of the laws of association which made possible their retention and recall. A study of these laws will give you the *idea* of classifying and the *idea*, actuated by interest will give rise to the *habit* of classifying.

THE PRIMARY LAWS OF ASSOCIATION

The stimulus *infant* may elicit the response *baby*. This illustrates *association by similarity*.

The word *bad* may call to mind the word *good*. This *illustrates association by contrast*. The word *door* may cause you to think *knob*. The word *lightning* may cause you to think *thunder*. The last two examples illustrate *association by contiguity* (the state of being in close union or contact). *Door* and *knob* are *contiguous in space*. *Lightning* and *thunder* are *contiguous in time*.

The Personal Element—In going through

any list of connected words you will sometimes find that a personal association is stronger than any other. When this is the case you should use the personal association. You may also find that two words are capable of being grouped under two or more of the principles of connection. This fact arises from the complexity of experience, which offers us opportunities of taking different points of view. *Cane* and *pain* are obviously connected by similarity of sound; but there might also be a connection in the mind of a rheumatic person who used a cane to relieve the pain of walking. Who is to say which of these connections takes precedence? For our purposes the main thing is to perceive possible connections and to use them to improve memory and thought.

Under certain conditions *night* may suggest *sadness* or *solitude*; under entirely different conditions *night* may suggest *love* or *happiness*. Neither *similarity* nor *contrast* nor *contiguity* resides as a quality in objects or words as they exist; rather they reside in objects or words as these objects or words exist for the *person who perceives them*. Briefly, the *attitude* or *purpose* of the person who makes the association is the essential criterion.

THE LAWS OF ASSOCIATION ILLUSTRATED

Because of the findings just described, most

psychologists place mental connections under three main headings:

1. *Association by similarity.*
   (a) *in meaning,*
   (b) *in sound.*
2. *Association by contrast.*
3. *Association by contiguity.*
   (a) *in space,*
   (b) *in time.*

We shall discuss these principles in detail but not for the purpose of requesting you to learn the numerous sub-divisions. The outline, we hope, will make clear the important principles underlying the three laws: similarity, contrast, and contiguity.

(1) *Association by similarity.* The first principle is so named because the connection is due to the tendency of the mind to note similarities. The sub-divisions of the principle of similarity are:

(a) *Synonymy.* In this case the two words represent the same idea and have almost the same meaning; one word can be used in place of the other without any great alteration in the sense. For example, ghost and apparition are synonymous. So are *poor* and *indigent; frequently, often; work, labor; empty, vacant; tired, weary; question, query; obtain, procure.*

(b) *General and Particular.* The word "General" in this sense means class, or kind of thing, but it is always a class or kind which includes several distinguishing subdivisions known as "Particular." For example: *Animal* would be General, and *dog, cat,* or *elephant* would be Particular. *Flower* and *daisy* is another example, *flower* being the General, and *daisy* being the Particular. *Dog* and *terrier* are General and Particular; so are *city, New York; tree, oak; fish, cod; author, Shakespeare; school, high-school; move, run; color, green.*

(c) *Common Denominator.* This classification is applicable where the two ideas are of the same sort or kind and can both be included under a wider or more general kind known as "General," the two ideas existing subordinately, or side by side, within the same general class. Compare the following examples of the Common Denominator with the examples already given of General and Particular. *Oak* and *elm* are Common Denominator, for they are both trees. *Red* and *blue* are Common Denominator, for they are both colors. Other examples are *London, Paris* (both capitals); *dog, cat* (both domestic animals); *walk, run* (both being sorts of movement); *Sunday, Monday*

(both days of the week); *terrier, poodle* (both dogs); *New York, Halifax* (both ports); *cod, herring; Shakespeare, Milton; man, woman; colonel, captain; crayon, pen; coat, hat; boot, stocking.*

(d) *Whole and Part.* This sub-division is very easy to understand, for it includes all those cases in which one of the ideas is a part of the other. *Horse* and *head* would be an instance of Whole and Part, *horse* being the Whole and *head* the Part. Other examples are: *man, arm; lion, mane; forest, tree; year, month; book, leaves; loaf, crust; Canada, Ontario; atmosphere, oxygen.*

(e) *Object and Attribute.* Here one of the two words will be found to denote a person or thing, while the other expresses some characteristic quality, or attribute, or action peculiar to that thing. We divide this section into three: (a) Object and Attribute; (b) Object and Function; (c) Object and Accessory. For example, under the first (a) we include *snow* and *white; ice* and *cold; lead* and *heavy; desert* and *dry; night* and *dark.* Under the second, (b) we include *fish* and *swim; bird* and *sing; man* and *walk; scales and weigh.* Under the third, (c) we include *mother* and *good; heat* and *oppressive; laziness* and *failure.* Notice

here that although *table, wood,* is an example of Whole and Part, yet *table, wooden,* is an example of Object and Attribute, for *wooden* is an adjective. *Table, wooden table,* would be an example of General and Particular, *table* here being General, while *wooden table* would describe for us the particular kind or species of *table.*

(f) *Cause and Effect.* The application of this classification is simple. It is used when one of two ideas follows as the effect or result of the other. An illustration is seen in *labor* and *weariness,* in which *labor* is the cause and *weariness* the effect. Another example would be *printing-press, book,* the printing-press being the cause and the *book* the result. The following are additional examples: *Illness, fretful; wealth, comfort; cloud, rain; cigar, smoke; clouds, gloom.*

(g) *Complement.* This Principle of Inherent Connection seldom is used. It occurs in cases in which one idea demands the existence of a second and correlative idea in order to complete the thought suggested, as *parent, child; teacher, pupil; shepherd, flock; lecturer, audience.*

(h) *Sound Similarity.* This subdivision differs from the others in that the connection occurs between two words whenever

one word, or a part of one word, sounds very much like the other word, or like a part of the other word. For instance, the sounds *knight* and *night* are perfectly similar. *Bird* and *Burden* is another good example of this law. Notice that in Similarity of Sound the similarity should occur either in the whole word, or else in the accented syllables. The following are examples: *Pick-axe, axiom; bright, bride; son, sun; brother, another; ocean, notion; tent, attentive; flock, flog; stock, stocking; feet, feed; great, grade; tie, tile; ape, April; fool, tool.*

The second of the Three Principles of Mental Connection is the *Principle of Contrast.* In this case the connection is not one of mere difference. It is not sufficient that the two ideas be unlike one another. In order to be classed under Opposition or Contrast they must be absolutely contrary to one another. For example, *wood* and *iron* must not be classified under opposition, since though they are unlike one another, they are not the exact opposite of one another. *Hard* and *soft* are examples of contrariety because they represent extreme opposites. *North* and *South* would be a case of Opposition, and so would *East* and *West*, but *North* and *West* would not be opposition, nor would *South* and *West*. The following are examples of Opposition: *light, dark; day,*

night; strong, weak; well, ill; war, peace; short, long; friend, enemy; thick, thin; idle, industrious; giant, dwarf.

The Third Principle of Mental Connection is the *Principle of Contiguity*. In this case the connection does not arise out of any similarity between the two ideas themselves, but is due to the fact that the two ideas happen to have been presented to the mind under circumstances likely to bind them together, so that the thought of one recalls the thought of the other. *Wellington* and *Waterloo* are examples of Contiguity, for, although there is no similarity between the two, one can scarcely think of *Wellington* without thinking also of the Battle of *Waterloo*. Again, *room*, and *chair* would be an example of Contiguity; the two objects are in no way related save that they usually exist together in time and space. One never thinks of *chair* without bringing to mind the thought of *room*. Other examples are: *water, can; watch, pocket; city, traffic; holiday, country; lightning, thunder.*

Connections by Contiguity are often purely personal in their character, and depend upon the special knowledge or experience of the individual. To a man who kept a tame monkey in his garden the example "*garden, monkey*" might be a strong instance of Contiguity, though to the majority of persons the connection would be unnoticeable.

The three Principles of Mental Connection—

similarity, *contrast*, *contiguity*,—are of greatest importance and should be mastered thoroughly. The subdivisions are given to enable you to learn through many illustrations the three main principles.

THE APPLICATION OF ANALYSIS

Let us now proceed to examine the application of these Three Principles of Mental Connection to the list of fifteen words as re-arranged on page 14. (See below). It was by means of a subconscious recognition of these Laws that you were enabled to remember the list so readily. The conscious and deliberate analysis of the connections would have made the task still more easy and the recall more nearly permanent. In the following example you should reason out carefully for yourself each connection:

Whole and Part	Town, House	Whole and Part
	House, Window	
Attribute and Object	Glass, Lens	Whole and Part
Contiguity	Camera, Photographer	Whole and Part
General and Particular	Man, Animal	General and Particular
Whole and Part	Cat, Fur	General and Particular
Object and Accessory	Warm, Africa	Object and Attribute
Common Denominator	Continent, Island	General and Particular

Now, without reading this series of words again, endeavor to write this list backward, be-

ginning with the word "island" and working back to the word "town." This also you will probably achieve without hesitation.

The Repetition of a "Series"—When repeating any similar series of connected words, say the *words* of the series alone, and do not repeat or trouble to think about the classification. The classification enables you to learn the series in the first instance, so that afterward you can repeat the series itself without recalling the classification. At first never attempt to learn a series of connected words merely by several repetitions of the words, but always by classifying in accordance with the connecting laws. In time you will be able to remember a list of words without consciously making the analysis. Perhaps you can do this now.

The Translation of "Series"—If you know a foreign language, you will find that you can translate the "Town" Series into that language and repeat it forward and backward as easily as in your native tongue. Such an exercise is of great value to all who are studying foreign languages. A series which contains examples of similarity of sound should not be translated unless an equally striking similarity of sound exists between the two words after translation. If you study the following series of one hundred words carefully, taking about a dozen words at a time and analyzing the connections as you did in the "Town" series, you will find that you can im-

mediately repeat the whole series from memory, forward or backward. Like the words "Town" to "Island," the Series from "Island" to "Deep" may be translated into any language.

Continuation of the "Town" Series:

Island	Strong	Needle	Coal	Sting
Water	Steel	Sew	Mine	Bee
Drink	Battleship	Garment	Quarry	Queen
Eat	Gun	Coat	Stone	King
Breakfast	Shell	Sleeve	Monument	Crown
Morning	Explosion	Arm	Great	Gold
Night	Wound	Hand	Small	Money
Sleep	Surgeon	Finger	Child	Wealth
Bed	Physician	Ring	Girl	Luxury
Soft	Medicine	Marriage	Pinafore	Motor Car
Hard	Quinine	Church	Apron	Wheels
Diamond	Bitter	Organ	Dainty	Round
Sapphire	Sweet	Music	Delicate	Earth
Blue	Pleasant	Song	Fragile	Sun
Green	Holiday	Words	Care	Sun Dial
Leaf	Voyage	Book	Careless	Clock
Plant	Ship	Author	Lazy	Time
Garden	Sail	Pen	Punish	Space
Bird	Canvas	Ink	Whip	Wide
Eagle	Cotton[1]	Black	Birch	Deep.

Mind-Wandering—It is obvious that there is practically no limit to the number of words that might be committed to memory in this way, because the mind is never troubled with more than two ideas at a time. If the student cares to con-

[1] Before translating, place "thread" between cotton and needle.

struct a series of his own, he will find that, if the ideas come within the laws of connection when taken two at a time, and if he carefully compares each pair before proceeding to the next pair, he can remember a series of a thousand words as easily as he remembers a series of twenty.

When constructing a series you should take care that each word you add has a more intimate connection with the word immediately preceding it than with any word a few steps earlier in the series. Thus, in the "Island" series, it would be unwise to write "Island, water, drink, liquid" for although there is a connection between "liquid" and "drink" there is a still closer and more obvious connection between "liquid" and "water." If you were to write "water, drink, liquid," it would suggest that when you wrote the word "liquid" you had failed to drive out from your mind the idea of "water." Your attention was centered more strongly on "water" than on "drink."

VI—USEFUL APPLICATIONS OF ASSOCIATION

Suppose that you have to learn the thirty-six exceptions to the rule that in Latin all nouns of the third declension ending in *is* are feminine. Many a schoolboy has labored hard and long over these thirty-six words, only to forget them again, and never to be sure that he knew all of them.

Let us arrange these thirty-six exceptions in pairs so that we shall have to pay attention to only two of them at a time. The connection may not be so obvious as in the first series, but a little thought will discover it. Here is the list:

(English)	(Latin)	(English)	(Latin)
Mullet	Mugilis	Bundle	Fascis
Fish	Piscis	Club	Fustis
River	Amnis	Lever	Vectis
Canal	Canalis	Axle-tree	Axis
Ditch	Scrobis	Ploughshare	Vomis
Worm	Vermis	Sword	Ensis
Dust	Pulvis	Nail	Unguis
Path	Callis	Blood	Sanguis
Hillock	Collis	Snake	Anguis
Stone	Lapis	Dormouse	Glis
Fire	Ignis	Net	Cassis
Firebrand	Torris	Hair	Crinis
Bellows	Follis	Rope	Funis
Ashes	Cinis	Collar	Torquis
Fine Flour	Pollis	Circle	Orbis
Bread	Panis	Month	Mensis
Cucumber	Cucumis	End	Finis
Cabbage	Caulis	Doorpost	Postis

Now, a peculiarity about a list of words learnt in this manner is that it is not necessary to repeat the whole list to discover whether any particular word is in it or not, because, if the word is in the series, it will immediately recall the word with which it was associated. If it is not, it will recall nothing. You do not need to repeat the "Town"

series of words to tell us that "cat" was in it, and that "annex" was not; nor the second series to tell us whether or not ensis, piscis, finis or cassis are exceptions. Whether you learn the series in English or Latin makes no difference, provided you know the exact meaning of the Latin words.

Clues to Over Three Thousand French Words —More than three thousand words with the following twenty-two endings are spelled the same in French as in English.

able.	Abomin*able.*
ace.	Disgr*áce.*
cle.	Obsta*cle.*
ade.	Barrica*de.*
al.	Illé*gal.*
ance.	Résist*ance.*
ant.	Const*ant*
ence.	Pati*ence.*
ent.	Impati*ent.*
ge.	Ra*ge.*
ible.	Répréhens*ible.*
ice.	Avar*ice.*
ite.	Pet*ité.*
ct.	Stri*ct.*
ine.	Discipl*ine.*
ion.	L*égion.*
tude.	Multi*tude.*
gue.	Démago*gue.*
ule.	Ridic*ule.*
ure.	Caricat*ure.*
ile.	Host*ile.*
et.	Pamphl*et.*

La brochure is French for an ordinary pamphlet: *le pamphlet* for a hostile pamphlet only.

It will be observed that these twenty-two specimen words, forming the "Abominable" series, selected from the larger list of three thousand odd, are joined together by the Principles of Mental Connection.

How this principle of comparing and classifying ideas may be applied easily and interestingly to the infinitely various problems of memory will be shown as the lessons proceed. Some applications will be immediately obvious, such as in speaking without notes. What are notes for but to remind you of that which comes next? The minister, the lawyer, or the lecturer, does not jump from the idea with which he starts to something totally foreign to his subject. His line of thought and argument, with appropriate illustration, is planned out beforehand and divided into headings. If these divisions follow one another logically, he has only to write them down and *compare them two at a time*, classifying the connection, to remember each of them in its exact order, regardless of their number. If you are a public speaker, try it. If you do not know what comes next in your discourse, the arrangement of your topics is probably inept.

VII—RECALL

In discussing impression and registration of material, of necessity we have to touch upon re-

call—the third stage in memory. The greater the number of logical associations formed when material is first learned, the greater the number of contacts and clues we possess to recall or recollect that material. When attempting to recall something, seek these contacts and clues with persistence and confidence. If you desire the name of an author, think of the title of a book he has written; recall the main ideas in the book; where and when you read the book, etc. If you find yourself still unable to give the author's name, slowly recite the alphabet—*a, b, c, d, e, f*—Faraday comes to you immediately.

THE RECOLLECTION OF ISOLATED FACTS

The subconscious action of Association may sometimes be employed effectually in the effort to recall an isolated fact, the remembrance of which cannot be awakened easily by any other means. The method is to return to the surroundings in which you last were aware of the fact you wish to remember. For example, if you have mislaid a bunch of keys, you may remember where you placed them if you go back to the place where you know you last used them. If you have "forgotten" the funny story told you by a friend, it may recur to you if you think of what preceded it. The reproduction of some of the component elements in a situation tends to revive in the mind the impressions made by

other component elements which may not be actually reproduced without such stimulus. It is, of course, impossible to classify these purely arbitrary associations, depending as they do chiefly upon propinquity of time and place.

AN ACTRESS ON MEMORY

In this connection, it is interesting to record what Mrs. Kendall, the celebrated actress, has to say about the way in which actors and actresses remember their speeches. She says:

"The memory can be cultivated, like any other faculty, up to a certain pitch. Practice works wonders. If you have not played a part for years, the re-reading of it three or four times only will bring it back to you. There is much opportunity on the stage to help our memory. We have what is called the 'business' of the scene. The fact that you have to do certain things brings a certain line back to your memory. Often when you enter your house, and sit at the same place and at the same table, the memory of the past returns, 'C'est la même chose sur la scene.' A little bit of 'business' brings back a speech; the remembrance of a speech brings back a bit of 'business:' the one helps the other. Still, though an exceptional memory is not absolutely necessary, it is an enormous help.

"The most extraordinary instance of memory that I personally remember was that of old Mr. Buckstone, who used to come upon the stage at

rehearsals, reading his part and not knowing a word; but he would come on at night, and the clothes, and the situation, and the whole thing, brought the words back to him. I am speaking of the repetition of an old part. The fact of putting on the clothes, and dressing for the part, and speaking about it for a little, brought it back."

VIII—SO-CALLED "SYSTEMS OF MNEMONICS"

Various systems of Mnemonics are founded upon arbitrary associations of locality. In some of these, the pupil is directed to rule a square sheet of paper into nine or sixteen squares, and to imagine that he sees in each square a word or picture indicative of the fact to be remembered. It would be appalling to contemplate the chaotic state of a mind subjected to such a tax through several weeks of diligent study. A somewhat similar system instructs the pupil to locate and picture in imagination all the facts he wants to remember, as being present in some room familiar to him. There would be obvious impediments in the way of applying this method to the memorization of a list of the Presidents of the United States, or the mountains of Europe, or the Emperors of Rome.

LEGITIMATE USE OF ARTIFICIAL AIDS

But although the systems just mentioned are not in accord with the laws of psychology, it

must not be assumed that every artificial aid to memory is to be condemned as worthless. Thousands of students of physics have remembered the order of the colors in the spectrum by the artificial word "Vibgyor," in which V stands for violet, I for indigo, B for blue, G for green, Y for yellow, O for orange, and R for red. Again, the letters p,a,d, forming the word "pad" give the initials of the membranes of the brain from within outward: p—pia; a—arachnoid; d—dura.

The cutaneous nerves crossing the region of the Iliac crest may be remembered by the word "slide," in which s—sacral nerves; l—lumbar nerves; i—ilio-gastric; d—dorsal, and e—external cutaneous.

Pike's Peak is 14, 147 feet high. This number can easily be remembered because it consists of two 14's and a half of 14. Telephone numbers can often be remembered by the application of the same principle. Take the telephone number 114. If one were born on the 4th day of the 11th month, 114 can easily be remembered. There are undoubtedly hundreds of similar applications of these principles.

A school pupil studying history may use the following device:

L—Lexington, battle of, 1775.
I—Independence, Declaration of, 1776.
B—Burgoyne's campaign, 1777.
E—Evacuation of Philadelphia, 1778.

R—Richard, Bonhomme, Paul Jones, 1779.
T—Treason of Arnold, 1780.
Y—Yorktown's capture, 1781.
Thus the word *liberty* and date 1775 serve as the bases for the associations.

Rhyme as an Adventitious Aid to Memory—Verse is usually memorized with greater rapidity than prose, and this is largely due to associations of rhyme and rhythm. For this reason verse may occasionally prove to be a short cut to the recollection of certain facts. Probably most of us owe our recollection of the number of days in each month to the old rhyme: "Thirty days hath September."

It cannot be too strongly insisted upon that such expedients as those illustrated in the last paragraphs should be considered merely as *aids* and not in any way as a substitute for a true psychological development of the memory, such as that embodied in the Pelman System.

RECOLLECTION IN THINGS THEMSELVES

It is in the little things of life that the ability to remember without a note-book is the most useful. Two men at the club look very much alike. One is named Weissmann and the other Gardner. Weissmann wears glasses, and you select that peculiarity to distinguish the two men because there are two s's in "Weissmann" and also in "eyeglass."

Two foreign words confuse you, and you can never recollect which is which. Let us suppose that they are the German words "unten" and "unter," one of which is an adverb, while the other is a preposition. The only difference between the words themselves is in the final letters, "n" and "r." Compare the alphabetical order of these final letters with the alphabetical order of the initials of the words "adverb" and "preposition," and the agreement is at once apparent. In this case it is not the meaning of the words that you wish to fix, but their use.

In an examination in geography, a little girl could never remember which mountain chain had the broader plateau, the Rockies or the Andes. When it was pointed out to her that there was an "n" in "Andes" and in "narrow," and none in "Rockies" the idea became fixed.

The "Oxford" color is dark blue and the "Cambridge" is light blue. There is an "i" and also a "g" in "Cambridge" and in "light"; there is neither in "Oxford" and in "dark."

To remember the difference between the complement and the supplement of an angle in geometry: the "complement" is what remains after subtracting from "one" right angle; the "supplement" is what remains after subtracting from "two" right angles. Observe that there is only one "p" in "complement," and that there are two in "supplement," which agrees with the number of right angles in each term.

IX—RECOGNITION

Recognition, the last stage in memory, implies that we react toward an object of past experience with a feeling of familiarity which could not occur the first time the object was experienced. *Recognition* does not depend entirely upon *recall* because the baby appears to *recognize* before he gives evidence of *recall*. Furthermore we are all aware of the fact that we *recognize* the meaning of words which we would be unable to *recall* for use in our speaking vocabulary.

Recognition probably does not depend upon *recall* but it does rest upon association, the same basis upon which *recall* is built. If necessity demands *recall* instead of mere *recognition*, then one should deepen and enrich the associations so that recall is possible. From this viewpoint *recognition* is the step in memory which precedes the more developed step—*recall*. However, the mere ability to recognize is frequently adequate for the need at hand. The person alone concerned can make the decision as to whether or not the ability to recognize is the only trait desired.

X—DON'TS

1. Don't allow your resolutions to crumble; just continue in the spirit with which you began the Course.
2. Don't complain that you are a "born mind-wanderer." You may be, but conquer the habit by discipline. Hundreds have succeeded before you.
3. Don't skim this Lesson. Go over it until you *know* it.
4. Don't fail to test your knowledge by self-questioning.
5. Don't be satisfied with a *half*-knowledge of anything. Be thorough.
6. Don't forget that the formal exercises we prescribe, will, if practiced, enable you to do unconsciously what was, at first, a conscious effort.

XI—THIS DO

1. In all mental training, effort should be carried out in a rational manner. Therefore, however diligently you work at mental connection see to it that your mind has its periods of "play."
2. Decide what classifications you need in (a) your calling, and (b) for your private studies.
3. Begin to use the principles of mental connection as an aid in the evolving of new ideas.
4. Make it a matter of conscience, of *pride*, if you will, to work for certain prescribed periods of time without allowing your mind to wander.
5. Remember that mental training involves *moral* training. The virtue of perseverance is really the power of concentration in one of its many forms of expression.

XII—MENTAL EXERCISES

EXERCISE XXII

There are no doubt several subjects of the greatest importance to you personally, either because you are deeply interested in them or because they concern your calling. Thus, for a paper manufacturer, any new item connected with glazing or water marks would instantly attract attention. A paragraph about a cutting machine might not attract the same notice; and one about a new fibre might be read without more than a passing wonder. Nevertheless, both of these items may, ultimately, be of real importance to the paper-maker. The cutting machine may be more efficient for paper than the knives he is using, and the fibre may become an ingredient in a new sort of paper.

This means that no sort of "cutter," and no kind of fibre, can be matters of indifference to the paper-maker; but the only way in which he can contribute to progressive movements is to classify all cutting machines and all materials that are likely to come into line with his purposes. If he fails in this respect it will be because the information in his mind, gathered from all sources, is unorganized; its possibilities can be appreciated only according as it is classified.

Now, put yourself in the place of the paper manufacturer. Instead of the items which concern but which may escape him, discover those

which concern *you.* They are probably there in your consciousness, awaiting proper organization. As yet, the work of classifying and evaluating is incomplete. You are, therefore, losing a certain number of ideas which might be of great service. The man who is mentally alive does *not* lose them; he becomes the leader among his fellows.

"But," you ask, "how am I to begin? Your advice sounds good, and yet I don't know how to make a start." We shall tell you by suggesting a series of questions.

(a) What is the object of your calling?
(b) How does it differ from closely allied callings?
(c) When did new and advantageous methods appear, and who invented them?
(d) In what other occupations are processes used similar to yours? Can you learn anything from them?
(e) Have you unified all the knowledge you have obtained about your calling?

To answer these questions properly is not a simple matter, get pen and paper and do the thing thoroughly. It is an excellent exercise in itself, and it has other values of importance. Let not the student object that as an exercise it deals with trade and commerce, not with studies. Substitute the word *studies* for *calling* and the ques-

tions are equally apposite. The exercise is not one that can be worked in an hour; it is rather a continuous process extending over a period, until memory has yielded up all its material, and the judgment has assessed its value. It applies to the employee as well as the employer, if the employee makes the employer's affairs his own concern.

EXERCISE XXIII

To repeat from memory a series of connected words which you have drawn up for yourself is not as good an exercise as to repeat a list which has been drawn up by someone else. The reason is obvious. In your own list the connections have been strengthened by the effort of imagination; in the other list, it is necessary to perceive the connectives of another mind. Use the "town" series and its continuation.

EXERCISE XXIV

At some time or other, everybody is called upon to make a speech. It may be a great occasion with an audience of thousands, or a small occasion like a presentation occupying a few minutes. In any case a certain order of ideas must be observed, and to remember this order is important. Here the principles of connection are a real help. Suppose you have to take part in a debate on "Is a lawyer justified in defending a prisoner of whose guilt he is cognizant?" The affirmative speaker has resumed his seat, and you

now stand up to argue the following points, which you wish to argue from memory.

(a) It *degrades Justice* into a competition of skill between two lawyers both of whom believe in the prisoner's guilt.

(b) It *defeats Justice* by clever but insincere pleading.

(c) The *lawyer* becomes an *accomplice* of the *prisoner* when he deliberately frustrates the intention of the Law he ought to uphold.

(d) The lawyer who acts a lie cannot retain his *self-respect.*

The main ideas of these four divisions can be "keyed" together in the following way: *Degrades, defeats, accomplice, self-respect.*

Some students being good visualizers, they do not find it necessary to do more than to study the outline closely; they *see* the points mentally when speaking. Others can "see" nothing, and need a word series to fall back upon in case of momentary forgetfulness. In any event the exercise of forming such a series is good from every point of view: concentration, analysis, classification, and logical sequence.

EXERCISE XXV

Fill in the blanks of the following story. Each blank stands for one word. In some cases the first and last letter of a word are given.

"The sergeant had been through many (1) battles, in the last encounter half of his jaw had been blown (2) away. When in the hospital, he bore his sufferings patiently (3), until the time when he began to be well it was (4) forbidden for his relations to visit (5) him. Then he was nervous. He was especially nervous about him (6). wife's seeing his fractured jaw (7) and therefore (8) the nurse pitifully to give him warning (9) of the approaching visit, so that he might prepare (10) himself for the ordeal. 'I'm a coward,' he lamented. When his wife came, he prepared (11) himself for the ordeal. She was wonderfully brave. Just for a moment she shuddered, then embraced (12) him."

XIII—HEALTH EXERCISES

SEVENTH LESSON

It is merely the instinct of self preservation that causes one to put aside a little sum of money during his youth in order to make the declining years easier. It should also be to one's advantage to conserve or build in a physical sense for those days. It has been said that Americans are too energetic in their games and contests, but this can only be said of those who indulge in specialized activities in which competition is very keen. Insurance companies inform us that the average span of life has increased from thirty-three years to fifty-three in the last twenty years. This refutes an over-specialization that is harmful. It would also indicate that there has been a very sensible attitude toward rational exercise. That there is a far more universal tendency to take exercise in some form is self evident. Golf, tennis, dancing, hiking, and bathing are all being indulged in now by more people than twenty years ago. The danger lies, not in overexercise as much as in the fact that middle age will find people adopting only seasonal sports and remaining idle in out-of-season time. In order to keep one's muscle tone in its proper condition, simple enjoyable home exercises should be taken regularly every day.

WEIGHT LIFTING

Inasmuch as stretching is our watch word we begin as usual with some form of exercise that serves that purpose. Use your favorite in-bed exercise first; then, as soon as you get up, Stand Straight for a few seconds. In this position gradually raise the arms sideward and upward over the head, have the palms of the hands up and be sure that the chest is high and the hands are kept pretty well back of the shoulders. Now imagine that you have a weight in each hand and continue to raise them until they are straight over the head, the palms up and the hands facing the sides (Fig. 66). Now the weight grows heavier and you find that it pulls your arms down to your sides again. Make an effort to resist this downward movement, but at the same time allow the arms to return to the original starting position. Always remember to keep the hands well back of a line drawn through the shoulders. If you care to rise on the toes as the arms go up it will bring into play the lower muscles also. Ten to fifteen times is enough to start with.


66


67


68

WARMING UP

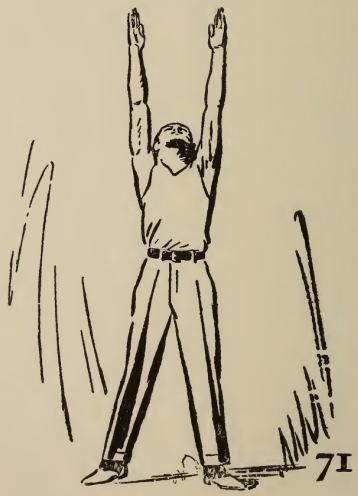
Stand erect and raise your arms forward to the height of the shoulders; the hands are the width of the shoulders and palms are facing down. Shoulders are square, the head up and chest high (Fig. 67). Swing the arms sideward keeping them slightly higher than the shoulders; as the arms move turn the palms up. When your hands are at the side the palms are up and there is a noticeable feeling of strain on the upper back muscles. As you swing the arms sideward, raise the heels from the floor slightly and bend the knees just a little (Fig. 68). Now swing the arms back to the starting position, turn the palms down, lower the heels and straighten the knees. This is a very rapid, active movement and should be taken about twenty times in ten seconds. Forty times will be enough.

HYGIENE EXERCISE—STARTING POSITION

When you take up the Hygienic Exercise the starting position is given first and then the actual work is given to counts for simplicity. Stand with the feet eighteen inches apart, chest high, head up, and place the finger-tips alongside of the shoulder muscle on each side, elbows down and close to the sides of the body (Fig. 69). This position will be used once again in another lesson.


69


70


71

HYGIENE EXERCISE—Continued

Counts are 1. . . . 2. . . . 3. . . . 4.

Count 1—Begin by bending forward. The hands at the same time are extended downward so that the finger tips touch the floor (Fig. 70). Make the effort to touch the floor without bending the knees.

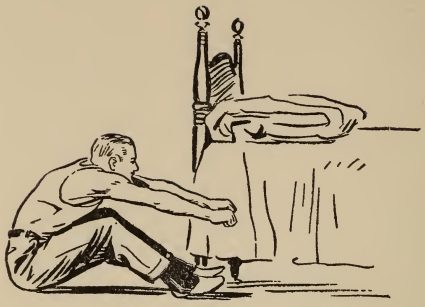
Count 2—Raise the body to the erect position and bring the finger tips to the shoulders again (Fig. 69). When doing the arm work raise the elbows as high as the head, the body being erect. Then with plenty of force lower the elbows to the sides and place the finger tips to the side of the shoulder. You are now in the starting position.

Count 3—Extend the arms straight upward over the head, fingers extended as if touching the ceiling. Look up as you stretch the arms up (Fig. 71). This movement is also a rapid forceful one.

Count 4—With a vigorous snap return the arms to the side of the shoulders. This exercise is not jerky but should be taken with plenty of action and to a rather fast regular count. Ten times will be plenty to start with.

ROWING

The imitative exercise for this lesson is best taken while sitting on the floor. It may seem somewhat difficult at first but should be repeated for a few mornings until the whole movement



72



73

ROWING—Continued

becomes rhythmic and easy. If you have ever rowed a boat, this description will be unnecessary. Just sit on the floor, or the bed if you wish, and go through the motions of rowing. However, for those who are not acquainted with the action of rowing, the thing to do is to sit down on the floor. Stretch your legs out in front of you with your feet together, body erect, and hands held out in front of you as if reaching for your feet. Imagine that you have an oar in your hands. Now stretch forward as far as you can go; you are reaching for the water (Fig. 72). Now suddenly snap your hands upward to about the level of the chest just as if you were catching the oar in the water; then with the hands, wrists and arms in a straight line gradually lean back as far as you can go without putting too much strain on your abdomen: imagine that you are pulling your oar through the water. When you are pretty well back, stop the body motion and begin to pull the hands up to the chest (Fig. 73). When they are almost touching the chest, suddenly snapping the back of the hands upward and scooping the wrists downward along the abdomen, extend them toward the feet and let the body rise to its starting position. During the entire movement the back should be straight and the shoulders well back. Repeat five or six times at first.

SUGGESTION

There is no safe and sane cure for obesity. Drugs, even under the care of a physician, are questionable. Cure-alls are positively dangerous. Diet is somewhat risky unless properly prescribed. Exercise is only of value in preventing the accumulation of fat. It is of some help in reduction but a combination of diet and exercise will be the safest method of prevention. Consult your family physician for the proper form of diet, and then, using your exercises as prescribed there will be no question as to the safety of your methods. An ounce of prevention is worth a pound of cure, or better still, a sheaf of doctor's bills.

Reference:

STAND STRAIGHT. DOOR EDGE.
ROLLING.
TWISTING.
CHOP WOOD.
HORN PIPE.

XIV—APPENDIX

CARD MEMORY (1)

This exercise should not be regarded as an integral part of the lesson. It is given here only for the use of those who are interested in this popular pastime. Those who are not interested in cards may omit it.

There are many things that one wishes to remember for only a short time, but which must be recalled with great accuracy. The ability to do this depends on two things; trained observation, and the power of undivided attention for the time being. You must see things exactly as they are and you must not allow yourself to think about anything else. Artificial aids to the memory are not of the slightest use. The memory you have is strong enough for all purposes. All it needs is a little training.

There are many instances in which the ability to retain facts for a temporary period is particularly useful, and in which the want of it is keenly felt by those who do not understand its secret. An excellent illustration of this type of memory and one which will doubtless appeal to a large class of people, is what is called "card memory," which refers to the ability to remember the cards played in a game. One constantly hears the remark: "I have no memory for cards," or; "I never can remember what is out." There should be no difficulty about this. The trouble is that

these people do not know how to go about correcting their deficiency.

Let us suppose that the game is bridge, or auction, and you wish to improve your "card memory." Do not wait until you are engaged in an actual game, because other things will then distract your attention. This attention, based on interest, is one of the things absolutely essential to success, but it must be cultivated under favorable circumstances, until such time as it becomes a pleasure, rather than a task. Bridge players learn the conventional bids, the proper leads, and all such things, in private lessons, before they venture to cut into a rubber with strangers. Card memory should be acquired in the same way; but you do not need a teacher; you can train yourself.

Let us see how we can apply the mind to this problem of remembering cards, so that it shall act in accordance with the principles already laid down for the recollection of other things. The technique of card memory is not different from that of any other memory. All depends on the proper exercise of comparative faculty, upon the ability to see difference and agreement, and upon the ability to classify.

Take a pack of cards, shuffle thoroughly, and deal out two hands of thirteen each. Sort one of them into suits, and lay it face up on the table to represent the dummy. Now sort the other

thirteen into suits and hold them in your hand as though you were the declarer.

Count up the number of cards in each suit, one suit at a time, in order to see of which suit you have the greatest number. Let us suppose there are two hearts in the dummy and three in your hand. That would make five hearts. Four clubs in dummy and two in your hand. That would make it six clubs. Four diamonds in dummy and three in your hand. That would make seven diamonds. Three spades in dummy and five in your hand. You would have eight spades.

Now turn all dummy's cards face downward, and see whether you can recollect how many there were of each suit in the combined hands, regarding your own as a guide. Then turn your own cards face down, and see if you can recall the manner in which each suit was divided between the two hands.

Pay more attention to the manner in which the suits are divided: the number in the dummy and the number you held. Unless you do this, your memory will be often at fault, because there has been no comparison. Practice in this way for a few minutes every day, for at least a week, or until you find yourself expert enough to recall the number of each suit in each hand after you have looked at them only once.

When you can do this first exercise with ease, shuffle and deal two hands as before; but instead

of counting the suits, see what honors you have, and compare them with the honors that are out against you in each suit. Suppose dummy's hearts are ace and small; yours king, ten and small. Observe that the queen and jack are against you in hearts. They are in the hands of your opponents. Again; dummy has the jack of clubs; you have no honor, so that ace, king, queen and ten are against you in clubs. Dummy has nothing in diamonds; you have king, ten; so that ace, queen, jack are against you. Dummy has king, jack of spades; you have ace and little ones; so that now only queen, ten are against you in spades.

Now turn down dummy's cards and see whether you can recall the honors it held in the various suits, comparing with your own cards as a guide. Then turn down your own hand also, and see whether you can name all the honors in the two hands combined, and how they were divided. Never forget this element of the division, both in the observation of the hands and in your recollection of them, because that is the comparison, and it is the comparison that fixes the attention and makes the impression which is so easy to recall.

After training with these two types of memory exercise for a little while, until you gain some confidence, you should be ready to try the combination of the two. Make a careful comparison of dummy's cards with your own. Now

you should be able to turn down dummy's cards and recall both the number of each suit and the honors in it. You can then try turning down your own cards and recalling the whole hand. Having become fairly proficient in this, try the comparison, and then turn down both hands simultaneously, noting how much of the distribution of suits and honors you can recall.

CARD MEMORY (2)

The next exercise consists in analyzing the hand, with a view to understanding its possibilities. Shuffle and deal two hands of thirteen cards each, sort them, and place dummy's face up before you, holding the other thirteen in your hand. Suppose the declaration is "no trumps." It does not matter whether that is the right declaration or not, because that has nothing to do with training the memory.

Now count up the *tricks that are certain* in the combined hands, and then look for those that are possible.

Let us suppose that dummy has king and two small clubs and you have ace and one small club. It is manifestly impossible for you to make more than two tricks in that suit, no matter how you manage it. Dummy has three spades to the queen and you have three to the jack. You cannot be sure of a spade trick by any manner of play: but if the adversaries lead that suit, no matter how or when, you must make either

queen or jack. Dummy has four small hearts; you hold ace and one heart. There is nothing in that suit but one sure trick. Dummy has jack, ten, small in diamonds, while you hold six to the ace, queen. In that suit it is *possible* to make six tricks, if the king is on your right, by leading the high diamonds from the hand that is short in that suit, after getting in with the club king.

Now turn dummy's cards down and see if you can recollect these possibilities. After you have tried the experiment a number of times, turn down your own cards, as well as dummy's, and see if you cannot recollect the possibilities of the combined hands, and how they should be played.

You should soon be able to go over the whole ground after one good look at the two hands, noting the distribution of the suits, the division of the honors, and the sure and the possible tricks.

After a little practice of this kind every day, if you are really interested in cards, you will be astonished at the improvement in your "card memory." When you sit down for the actual play at the card table, be sure to put your newly acquired powers to the test. Take your time. All good players study the combined hands carefully before they play to the first trick. Do the same every time you get the declaration and play the dummy. This *comparison* of the two hands is the whole secret, because it demands close and

accurate observation, combined with attention, which is the secret of all memory.

After the hand is over, while the cards are dealing for the next hand, see if you cannot recollect the salient points in the hand you have just played. If you forget any particular suit, ask your partner what he had in dummy, and observe how you will instantly recall what you had yourself.

When you are playing against the declaration, train yourself to remember dummy's cards and to compare the cards your partner leads or plays with what you see between your own hand and dummy. A simple example: At no-trump, your partner leads the deuce of hearts, showing only four in suit. Dummy has three hearts and you have two. Then the declarer must hold four.

As you begin to feel more and more confidence in your "card memory," you will try your skill on such inferences as depend entirely on memory. Begin with the hands in which an opponent starts with a trump declaration, and say to yourself, "He has five of that suit at least." Count the dummy's trumps and your own, add five to the sum, and you will see that there is a limit to the number your partner can hold. If this limit is one, do not expect him to trump a suit twice. If it is two, and trumps have been led twice, do not expect him to trump at all.

By watching the suits in which one player fails, you can place the residue in the hand of the other, if it is not in dummy or your own cards. Note the number, and towards the end of almost every hand you will be able to recall the fact and say to yourself, for instance, "If the declarer has two clubs left and no spades, and the hearts are all gone, the rest of his hand is diamonds, and he must have three of them."

Begin with the trump suit, if there is one. If not, begin with the suit you open, or the one with which your partner leads, and try to remember every card in it, and by whom played. Then add to your practice a memory of the suit the declarer starts with, and finally you will begin to observe all the suits.

There is no great difficulty about it: it all depends on whether you are able to compare what you actually know of the cards laid on the table by dummy or played to the tricks with what you do not know; or infer which is the remainder of the suit still to come. It is beside the mark to say that you have a good memory for some things, but not for cards. Your memory is alike for all things in proportion as you become interested in them, and train your memory in the right way.

SPECIAL INSTRUCTIONS AS TO PROGRESS SHEETS AND TEXT BOOKS

1. Write your name and address legibly on every Progress Sheet.
2. Your number should appear on all your communications, otherwise much unnecessary labor devolves on the staff.
3. Do not think that your answer must be confined always to the space beneath the question; use additional sheets when you desire.
4. The Text-Books should be kept by the student for future reference. Remember you will want to use these attractive and durably bound books for years to come. They will be a library of practical value for you.
5. From seven to ten days are usually sufficient for the mastery of a Text-Book and the completion of the Progress Sheet, but it is possible to do these things in a briefer period. Everything depends on the student's leisure. There is no fixed time for the return of Progress Sheets.

PELMAN LESSON VIII

Lesson VIII, on Concentration, carries you another step further in the acquisition of mental power. About fifty-six per cent. of university students, according to a recent survey, mentioned "lack of concentration" as a difficulty in studying. The study of the next lesson will enable you to develop the ability to concentrate.

Section P. 26

How to unify knowledge?

P. 49 (2)

If subconscious mind knows everything