

Superheaters are, of course, inapplicable where the gases leave boilers at the low temperature mentioned; and it is satisfactory to find that the two additional boilers proposed to be employed have been found to be unnecessary, so that the cost of these boilers themselves and settings has been saved. Sixty gas fired boilers have also been fitted with rings in the combustion flues at the Barrow Hematite Steel Company's works. This application was made after careful trial to one, and subsequently to six boilers, when it was found that the altered boilers gave distinctly greater evaporative power than the boilers not altered, although all boilers were supplied with the same quantity of gas from the same source; but that source being blast furnaces, the advantage of the application could not be ascertained in figures. Many applications of gas fired boilers have also been made on the Siemens radiation principle in Germany and Italy, with results as satisfactory as those given above. In Germany, where brown coal is used containing a large proportion of non-combustible substances, the figures quoted of course do not apply; but as compared with boilers fired with solid fuel of the same kind, the advantages realized are relatively quite as favorable.—*Industries.*

AN AUTOMATIC INTERMITTENT SIPHON.

As well known, the general solution of the problem of storing water, a vital question for agriculture, is the following: To unite all the sources that are not utilizable, on account of their too feeble discharge, in a reservoir of appropriate dimensions which is emptied one or more times in twenty-four hours through a sluice of dimensions such that the water collected can be entirely distributed over the surface to be irrigated, in a relatively short time. Experience, in fact, has proved that if water is profitably distributed to profusion, it is but slightly so when it flows in a thin stream in a trench of which it wets only the banks.

Instead of having a sluice to be opened at definite intervals, it long ago occurred to some persons to make use of the ordinary siphon. It suffices, in fact, that the latter shall prime itself automatically in order to have a rapid and intermittent emptying of the reservoir. But the conditions necessary for such automatic priming are sometimes difficult to carry out. The source, in fact, must be very regular, and have a pretty large discharge, larger than that of the siphon during the short space of time in which the latter, operating at first as a waste pipe, is upon the point of priming itself. If this critical point is passed, the priming is effected and the reservoir is emptied by reason of the greater velocity that the head of water gives the liquid in the siphon.

But if the source is intermittent, irregular, or diminishes, it may happen that the siphon will no longer perform the functions of anything but a waste pipe. Priming will no longer be able to be effected, and the abrupt emptying of the reservoir will no longer take place.

In certain special cases, this state of things can be remedied by establishing a well of water for the reception of the long branch of the siphon. The overflow is thus reduced and the priming can take place.

This, in reality, is merely a palliative of a result that is so uncertain in all cases that it is usually preferred to empty the reservoir by opening a sluice at stated intervals. Hence an annoying restraint, and a very poor utilization of the water at one's disposal.

In fact, the land owner, farmer, or metayer generally opens the sluice in the morning and evening. Between these two intervals and at night, if the reservoir is full, the water flows out slowly, and irrigates but a small surface.

Different means have been proposed for obtaining an automatic discharge, and especially for preventing the ever possible neglect to maneuver the sluice. At the last agricultural exhibition at Tulle, we had an opportunity of examining a recently devised and very simple system, the great advantage of which is the entire absence of any mechanism whatever subject to get out of order. It is a siphon, but it has been so arranged by Mr. Delavallade that the problem is entirely solved despite all the difficulties that we have enumerated. Its very regular operation is one of the most interesting things to study close by, as we have been able to do. Fig. 3 gives a general view of the apparatus and the manner in which it is arranged in the sluice hole of a reservoir. Thus placed, and supported by two wooden posts, one has no longer to pay any attention to it. Whatever be the irregularities in the discharge of the source, the siphon will never act as a waste pipe, and will prime itself as soon as the desired level of water is reached in the reservoir.

The latter once empty, the siphon will be unprimed, and will reprime itself a few hours later. The instant of unpriming, and consequently the level of the water remaining in the pond, is fully under the control of the farmer. It suffices, in fact, to form a series of apertures, α , in the short branch of the siphon and close them with wooden plugs that are removed according as it is desired that the water shall descend to such or such a level in the reservoir.

As shown in the sections in Figs. 1 and 2, the apparatus is constructed in two different forms, but the principle of both is absolutely the same.

The bell siphon (Fig. 1) consists of a tube, which is inserted in the sluice hole and is provided at its upper part with a circular water reservoir (A). A movable bell, provided with an internal circular diaphragm (B), covers the whole and rests upon the tube. It is provided with two small external reservoirs (R, R') connected by a tube (S). The lower reservoir, R, communicates with the interior of the bell, through small apertures.

Two bent tubes, T, T', put the reservoir, R, in communication with the two chambers, α , β , formed in the bell by the diaphragm, B. A third tube, S, below the two others, starts from the reservoir, R, traverses the bell, and hangs vertically in the interior of the central tube fixed in the sluice.

Fig. 2 represents the second form of the apparatus. It is an ordinary doubly revolving siphon. The general arrangements are the same as those that we have just described. It is to be remarked that the part, A, of the bent siphon will always remain full of water, like the reservoir, A, in the bell siphon.

Let us suppose that the pond has just been emptied; the unprimed siphon will be entirely empty, except in the parts, A. The water gradually rises in the reser-

voir, and consequently in the short branch of the siphon, in the reservoir, R, through the intermediate of the reservoir, R', and in the three tubes, T, T', S. In measure as the water rises, the air is driven forward until the moment that the siphon is about to operate as a waste pipe. It thus takes a certain pressure in the chamber, α (tube, T), on account of the presence of water in the internal reservoir, A. In the chamber, β , on the contrary, it remains at the pressure of the atmosphere, since the long branch of the siphon

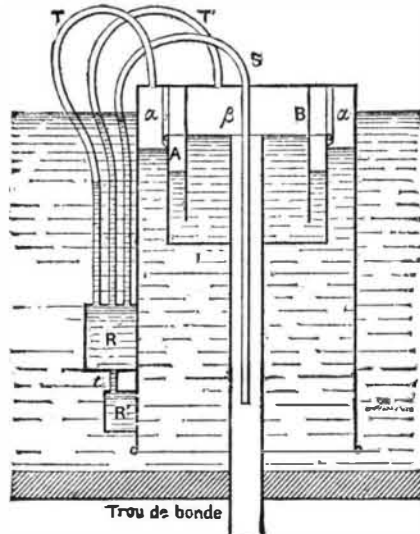


FIG. 1.

opens in the free air. It is starting from this moment that the automatic priming of an ordinary siphon may take place, if the requisite conditions of discharge be present, the air confined in the upper parts being carried along by the first jet of the liquid. If such conditions are not fulfilled, there always remains in the upper part of the siphon or of the bell some air that must be got rid of, or the pressure of which it will suffice to diminish sufficiently to produce

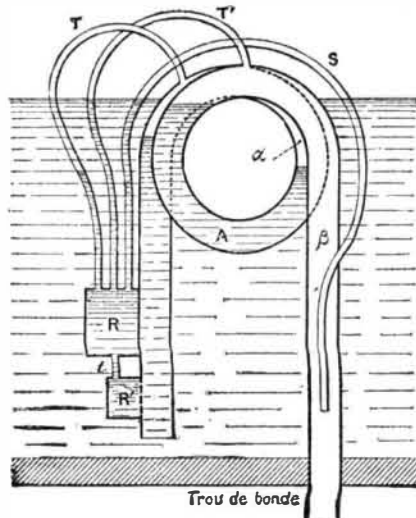


FIG. 2.

an abrupt ascending motion of the internal liquid column, and consequently a priming.

Such is the principle to be applied, and the way it is done is as follows. In consequence of the presence of a certain volume of compressed air in the internal chamber, α , the velocity of the siphon's flow as a waste pipe is infinitely small, and increases proportionally much more slowly than under ordinary circumstances with the external level of the liquid. It results from

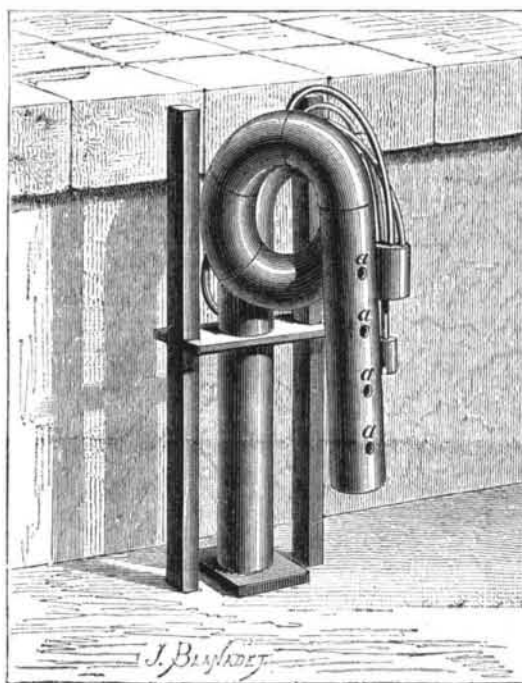


FIG. 3.—INTERMITTENT SIPHON.

this, that whatever be the discharge of the source, the tube, S, placed beneath T and T', will be very quickly immersed.

In reality, this tube is merely an auxiliary siphon whose diameter is small enough to allow its priming to be always certain. It will therefore empty the reservoir, R, almost instantaneously. As, on another hand, the latter can fill itself but slowly, on account of the

small diameter of the tube, t , there will occur, in order to fill the vacuum formed, an abrupt draught and a putting in equilibrium (through the tubes, T and T') of the air occupying the internal chambers, α and β . At this very moment, the jet of water issuing from the auxiliary siphon in the central tube, or the long branch of the siphon, causes a suction in the chamber, β , and establishes in the whole (α , β) a pressure sensibly less than that of the atmosphere. From this complete rupture of equilibrium between the internal liquid and gaseous strata of the siphon results a sort of ram stroke that effects an automatic priming. From the very beginning, the remaining air is carried along by the liquid, with a considerable velocity, dependent upon the height of the water in the pond, which latter rapidly empties until the apparatus is unprimed.

The system, with a few slight modifications of detail, is applicable as follows: 1, to the flushing chambers in the sewers of large cities; 2, to the submersion of meadows, and in general to all the problems of irrigation; 3, to the automatic emptying and renewing of the water in garden fountains and in ponds especially set apart for pisciculture; 4, and, finally, to the draining of quarries, mine holes, etc., without machines, provided there be a low point for the flow.—*La Nature.*

CAREY LEA'S PHOTOCHLORIDE OF SILVER.*

By WILLIAM LANE, Jr.

THE alchemists of old had their philosopher's stone and elixir of life, and many, indeed, were the attempts made by those early pioneers of chemical science to wrest from nature what they considered would be of untold benefit to mankind. I take it, gentlemen, that if anything in our art is or can be considered as analogous to the philosopher's stone of the alchemist, we will find it in that branch of photography which has received the name of heliochromy. Photography in natural colors would indeed be a grand achievement, but the question is, Are we any nearer its accomplishment than we were in 1848, when Becquerel laid before the French Academy of Science his silver plate imprinted with the colors of the spectrum? I think, gentlemen, the position of affairs at the moment is this: If silver chloride is to be the medium by which a transcript of the colors as we see them in nature is to be arrived at, we should very soon now be able to say definitely whether the thing be a possibility or not. As you are aware, there have been many workers in this field. It will be sufficient to recall to you the names of Niepce de St. Victor and of Poitevin, of Herschel, Hunt, and Abney. Becquerel's work we have already alluded to. One would have thought that by this time all the changes that were possible had been rung, as far as production of color from silver chloride was concerned, but that such is not the case is remarkably evident from the contribution to photographic science that has lately been made by Carey Lea. In the May, 1887, number of the *Amer. Journal of Science*, the first of a series of papers made its appearance, having for its title, "On Red and Purple Chloride, Bromide, and Iodide of Silver—on Heliochromy, and on the Latent Photographic Image," and it is some of the facts brought forward by the American experimentalist, not only in the May, but also in the June number of the *American Journal of Science*, that we purpose laying before the members of the convention this evening. Carey Lea's memoirs are so full of suggestive material, that in a communication such as the present, one or two points only can be touched upon. Those interested in the chemistry of photography will recognize at once the importance of the researches that have here been carried out. The whole contribution is remarkable for its originality, and it takes its place at once in the first rank of the many classical researches which from time to time have enriched photographic science. Carey Lea's views regarding the latent image may, or may not, be ultimately accepted by those competent to form an opinion; but the fact remains that his experiments will form the starting point for further investigations. It is no small matter for the experimentalist to be able to produce in the laboratory, and in quantity, that colored form of silver chloride which hitherto has only been obtained, and that in what might be termed infinitesimal quantity, on the surface of silver chloride by the agency of light. To the colored substance thus produced, Carey Lea has given the name of photochloride, and specimens I beg herewith to put forward for your inspection. It is worthy of notice that this photochloride can be obtained by a great number of methods. For these we must refer those interested to the original paper. It will be sufficient for the present to indicate that particular process by which the specimens now before you have been obtained. Freshly precipitated silver chloride, after washing, was dissolved in ammonia, and to this a solution of ferrous sulphate was added, producing an intensely black precipitate. Dilute sulphuric was afterward added till a slightly acid reaction was manifest. Thereafter the precipitate was well washed by decantation, and boiled with dilute nitric acid; washing was again resorted to, and the product treated with hydrochloric acid dilute, boiled, and finally washed. I show specimens of the substance both in the moist and dry state. I have also prepared the corresponding photo-salts obtained from the bromide and iodide of silver, thinking that they would not be without interest, and here are the specimens of photoiodide and photobromide in question. Their mode of preparation is somewhat similar to the method employed in the case of photochloride, but here, again, we must refer members for particulars to the original communication reproduced in our own two leading photographic journals.

To come back to the consideration of the photochloride, the question naturally arises, What is it? Its discoverer describes it as a combination of silver chloride with its own subsalt; but one extraordinary thing connected with it is that no two specimens, although to all intents and purposes prepared in the same way, show the same percentage of subchloride to that of the normal chloride. The amount of the former substance, combined with the latter, seems to vary from half per cent. to something like nine per cent. To quote Carey Lea's own words: "Even when silver chloride, bromide, or iodide contains as little as one-half of one per cent. of subsalt combined, its properties are greatly changed. It has a strong coloration, and its behavior to light is

* A communication to the Photographic Convention.

altered. Even a much less quantity, one inappreciable to analysis, is capable of affecting both the color and the behavior to light.

It seems to me that much experimental work will have to be done before a clue to these variations will be satisfactorily obtained. To enumerate all the reactions of this phenomenal compound would simply weary you; one striking characteristic may perhaps be alluded to, and that is its being able to resist for a considerably lengthened period the action of boiling aqua regia. Referring to the colors assumed by this Protean substance, Carey Lea specifies that it "shows all the warm shades from black to white through the following gradations: white, pale flesh color, pale pink, rose color, copper color, red purple, dark chocolate, black."

Another point will require elucidation before the complete identity of the chloride, colored by the agency of light, and the photochloride produced in the laboratory, be established, and that is, is oxygen present in the latter substance? Carey Lea says nothing in his memoir that would indicate the presence of oxygen. Dr. Hodgkinson's experiments demonstrate what other experimentalists previously had inferred, that in colored chloride produced by light, oxygen is invariably present. I feel sure we will not have long to wait before an answer will be given to the question here raised.

I think it would be doing Carey Lea great injustice were I not to allude to a discovery he has made, and which is embodied in his memoir, viz., that he is able so to affect a film containing a silver haloid by application of a chemical reagent, that he can produce a result equivalent to the latent image formed by the agency of light. The body which gives this result in the most pronounced manner is sodium hypophosphite. It virtually, according to Carey Lea, converts the haloid into a photo. compound, producing no visible change; but when a developing agent is applied, the action is rendered manifest.

At the conclusion of the article which appeared in the May number of the American journal already referred to, we find Carey Lea making use of the following language: "I am persuaded that in the reactions which have been here described lies the future of heliography, and that in some form or other this beautiful red chloride is destined to lead eventually to the reproduction of natural colors." Now, gentlemen, does this language seem too extravagant? For my own part, I do not think so. The impossibilities of one age become the veriest possibilities of the next. I do not think that even were we able to depict the colors of nature on the photographic tablet, that accomplishment would transcend in value the fact that we are able now, in the merest fraction of a second, to record the most rapidly moving object that can be presented to our cameras. At the commencement of my paper I drew, as it were, a parallel between the alchemist of the past and the photographer of the present. Permit me to continue it; and should it ultimately be found that a research such as Carey Lea's does not lead up to the philosopher's stone of the photographer, does not render possible the reproduction of the colors of nature, still the work he has done will be of lasting value to those interested in the chemistry of the silver haloids. Brewster, many years ago, in his letters on "Natural Magic," wrote as follows, and I think that what he then said regarding alchemy will show that what after all may turn out to be a dream is not without its beneficial result: "Though the philosopher's stone has not been found, chemistry has derived rich accessions from its search; though the general solvent has not been obtained, yet the diamond and the gems have surrendered to science their adamant strength; and though the elixir of life has never been distilled, yet other substances have soothed the ills that flesh is heir to," and prolonged in no slight degree the average term of our existence."—*Photo. News.*

METHODS OF TEACHING AND LEARNING MODERN LANGUAGES.

By Professor CHARLES F. KROGH, of the Stevens Institute of Technology.

THE purpose of the present article is to describe various methods of teaching and learning modern languages. The writer has had ample opportunities for testing these methods during the last twenty years by actual experiment in the class room, and therefore speaks from experience.

An examination of methods will be useful, because modern languages are studied by children and adults for a variety of purposes, as for example:

1. As an accomplishment.
2. Because other schools offer them, and with no special ulterior object, or with a vague idea of some intellectual benefit.
3. To serve the purpose of a summer trip abroad.
4. As a means of improvement in the use of the vernacular.
5. For general culture obtainable by reading foreign literature.
6. For philological research or amusement.
7. For acquiring the ability to consult foreign scientific and technical publications.
8. For business correspondence.
9. Because business, family or friendly relations bring with them personal intercourse with foreigners.
10. To teach them to others.

It is evident at once, then, that no one method can be the best in all cases.

The great multitude of instruction books upon our shelves may be reduced to very few general modes of procedure that deserve the name of systems or methods.

THE SCHOLASTIC METHOD.

When Latin ceased to be a living tongue, some school-master, whose name has not come down to us, conceived the unlucky idea that the proper way to learn Latin was by studying those excellent books of reference, the grammar and the dictionary. In proportion as boys learned less and less Latin, more and more importance was attached to the study of grammar. Parents of an inquiring turn of mind, who wished to know the reason why their sons could not read Latin very fluently after four to six years of instruction, were consoled or silenced with the plea that the boys were receiving valuable mental discipline!

The same method naturally came to be applied to modern tongues; for it required a minimum of talent

and exertion on the part of the teacher. In due time, clear-headed men protested against such a process. Among others, Locke in England and D'Alembert in France proposed a different way. Says Locke, for example: "If you cannot get a man to talk Latin to your children, the next best thing is by taking some easy and pleasant book, such as *Æsop's Fables*, and writing the English translation made as literal as can be in one line, and the Latin words which answer to each of them just over it, in another. These let the children read every day, over and over again, till they perfectly understand the Latin. Of the grammar, he recommended beginners to learn only the conjugations and declensions."

In accordance with this plan, Hamilton prepared a series of interlinears to *Cæsar*, *Cicero*, *Xenophon*, etc. When I went to school, however, it was considered nothing less than moral degradation to use such aids. There is indeed one valid objection to their use, and that is the arrangement of Latin and Greek words in the English order of thought; but it is an objection that could be easily overcome by a skillful teacher.

THE PRACTICAL METHOD.

The text books of Ollendorff, which were first published about 1846—I have not had time to hunt up the accurate dates—are a type that has been imitated by a host of followers, such as Ahn, Otto, Woodbury, etc. They embody another protest against the scholastic method, which, I am happy to say, now rests in peace, at least so far as modern languages are concerned. Their leading idea is "practice before theory," and although they have been subjected to much well deserved ridicule on account of the puerility and absurdity of some of the sentences contained in them, they mark an important advance in the art of teaching languages. They contain a very large vocabulary of common words and phrases with their translation, and two kinds of exercises, one to be turned into English and the other into the foreign language. No grammatical aid is given except what may be gathered from an appendix and a few foot notes. This reaction against grammar was evidently too great. Sound instruction in language cannot be divorced entirely from grammar. The inflections, agreement, government and collocation of words must always form the basis of instruction. Technicalities can be dispensed with, and there is no use in teaching formally what the pupil can be led to find out for himself.

THE ROBERTSONIAN SYSTEM.

The Robertsonian system, named after Professor T. Robertson, who taught for many years in Paris, appeared about 1852. It is a modification of the interlinear plan, with notable improvements. A continuous story is given in forty short sections, each accompanied by an interlinear translation and also an idiomatic version. The teacher is directed to read the first lesson five or six times to the pupil, who then familiarizes himself with the spelling and the meaning of the words until he can write them correctly from dictation and from memory.

Each lesson of this kind is followed by a set of questions and answers made up of the words and phrases already learned, and by a series of sentences to be translated first from and then into French. These sentences also contain nothing that has not been explained.

The learner may then go on through the book in this way, skipping the second or theoretical part of each lesson and come back to it on the review, or he may take it at once.

Now and then lists of words are given that are easily remembered by reason of their similarity to English.

The whole is followed by twenty lessons more, in parallel columns, for translation from and into French, and by a short synopsis of grammar.

This system is represented in Germany by what is called the *Toussaint-Langenscheidt Method*, which appeared in Berlin, about 1860, in the form of thirty-six letters, each containing two lessons. The basis of the French is Chateaubriand's *Atala*, and of the English Dickens' *Christmas Carol*. Each section is accompanied not only by two translations, but also by the pronunciation denoted in a most excellent manner. Besides the features of Robertson's book, conversations on practical subjects, correction of Germanisms, forms of letter writing, lists of idioms and war terms and an outline of literature are given.

Dr. Carl Sach's *Encyc. Wörterb. der franz. u. d. Spr.* is based upon the same system of pronunciation, and is one of the best bilingual dictionaries in existence.

GAILLARD'S MODERN FRENCH METHOD.

Prof. J. D. Gaillard, now of New York City, has published a method which possesses considerable originality. Like Robertson, he uses a continuous story as a basis; but unlike him, he first teaches his pupils pronunciation and the elementary principles of grammar, including the verb. Then he gives them a section of his story without the connecting words; thus: *S'appeler—George d'Estainville—issu—famille—Huguenots—exilés—au temps—persécution—Protestants—Louis Quatorze*. These words are printed in one column, with the translation opposite. The teacher supplies the intermediate words, making a connected narrative, which the pupils repeat after him, first without sight of the book and then with the text before their eyes. They next prepare this lesson at home, by committing the different connected groups to memory, so that they can speak and write them. When they come to class again, a dialogue of the following nature ensues between teacher and pupil:

T—Notre héros
P—s'appelait George d'Estainville.
T—Il était
P—issu
T—de l'une de ces nombreuses et honorables
P—familles de Huguenots exilées au temps de la persécution
T—de la persécution
P—des Protestants
T—sous le règne du roi
P—du roi Louis Quatorze.

The next step is conversation by question and answer. For this purpose a series of questions is given with interlinear translation, and to these the pupils reply, by using the material just acquired. Conversation is also practiced between pupils, one asking and another

answering. After some time they are required to give a continuous narration of portions of the story, and also to write them out from memory. After the twentieth lesson, a mere sketch of suggestive words is given, which are to be worked freely into a narrative.

The features upon which most stress is laid are that the words and phrases of the fundamental story are grouped according to the law of the association of ideas, and that the subjects treated impart knowledge and excite interest by appealing to human feelings. It is claimed very justly that these features are of great service in helping the learner to remember.

It remains to be added that the interlinear translation is idiomatic, and does not give the meaning word for word, and that many of the subjects discussed require a somewhat matured intellect.

Too much must not be expected from the claim that the law of association has been followed. In our own language, where we have to deal with familiar words, this law applies, and we can remember a series of words connected in sense, like: *Fire! bells, excited crowd, flames, distracted mother, brave fireman, ladder, rescued child*; better than a series of disconnected ones, like: *Barrel, sky, to waltz, rooster, windy day, murder, apples, volcanic eruption*. But in a foreign language, where the words are still unfamiliar, the law of association is of little assistance at first.

MARCEL'S RATIONAL METHOD.

Claude Marcel (about 1868) considers the ability to understand spoken language and to read of more importance than speaking and writing. He would have us begin the study of a language by reading at once without any previous preparation. His arguments and directions are as follows.

To prevent mistakes, do not pronounce the foreign language at all, either aloud or mentally, but let the information enter through the eye alone. Pronounce instead the English equivalent of the passages under consideration. The book should be very easy, and should contain a close English translation on the opposite page. The learner compares the two pages, sentence by sentence, and infers the meaning of as many words as he can. The use of grammar and dictionary is forbidden. To use the latter would be to substitute the thumb and finger for the intellect.

Read in this way five or six volumes two or three times over in three months. At first all is confusion, but light will gradually dawn; because the most useful words occur the most frequently. On seeing them in different positions, we receive successive additions to our first impression, and thus our knowledge of their meaning is gradually built up. By continuing to read, we become more and more independent of the translation, and finally discard it altogether.

The art of reading in this way can be acquired without a teacher. The next step consists in training the ear to the art of understanding the spoken language. The teacher now reads aloud what his pupils have translated, while they follow him without looking at the text, and translate by ear. At first he reads slowly and by phrases, and then gradually faster and more connectedly. After some time, they will understand him when he reads what they have not prepared beforehand, and when he speaks so rapidly that they have no time to translate. The art of speaking, adds Marcel, will then follow as a necessary consequence.

Marcel considers narration better than conversation, and asks: "What conversation can there be between a master and his pupils?" Accordingly he recommends relating anecdotes, historical facts, and noteworthy events. His remarks are intended principally for the study of French, which he thinks a pupil of suitable age should be able to read with pleasure and speak with ease in eighteen months or two years.

It will occur at once to an experienced teacher that his pupils will generally violate Marcel's directions as regards pronunciation. They will pronounce mentally according to the analogy of English, and thus render it more difficult for themselves to acquire the correct sounds afterward.

Again, the spoken language corresponds so little to its conventional representation on paper, that the pupil's previous silent reading will be of little service to him when he comes to hear the same text read by the teacher. As the time must come sooner or later when the sounds are associated with letters, syllables, words, and phrases, it is difficult to see the advantage of postponing. Besides, if the sounds were taught first, they would assist in remembering words. The combined memories of the eye and the ear are manifestly better than either alone.

The excellences of Marcel's method are his substitution of the intellectual processes of comparison and reflection for the use of grammar and dictionary, and his recognition of the importance of the conjunctions, prepositions, pronouns, and short adverbs which constantly recur on every page. There are hardly 300 of them, and yet they are used more than all the remaining 100,000 words of the dictionary.

For languages like Greek, Latin and German, in which the collocation of words differs widely from English, an interlinear translation would be necessary to carry out Marcel's ideas; but the words of these languages should not be taken out of their natural order and arranged after the English sequence, as is done in the interlinears of Hamilton. Students should be led to understand them as they stand, viz., to take in the full meaning of each word or phrase as it comes without mentally rearranging. My "First German Reader" and "Die Anna-Lise" are arranged on this plan for German. In French a number of books have been published besides Marcel's own. Among them may be mentioned *Mme. Barbauld's Lessons for Children*; *French Children at Home*; *Comment on Parle à Paris*; *Le Voyage à Paris*, by Williams; *Collet's Interlinear French Reader*; and *Roemer's Polyglot Readers*, which contain the same pieces in English, French, German, Italian, and Spanish. Books of this character are of especial value to those who study without a teacher.

My experience does not incline me to agree with the idea that reading leads directly to speaking. If any one desires to discover why reading usually contributes so little to this end, let him ask a student to repeat from memory some simple idiomatic sentence of very moderate length that he has just read. The student will rarely be able to do so; because, in fact, he has not performed any mental operation analogous to speaking. He may have perfectly understood the sense of the