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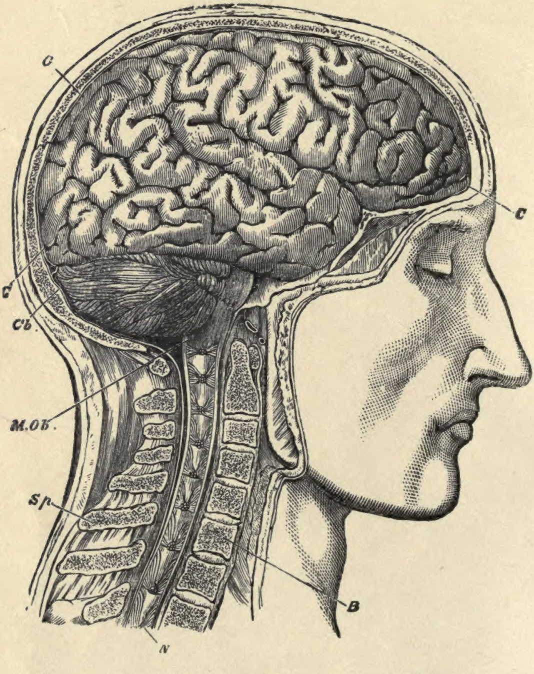

A side view of the brain and upper part of the spinal cord in place—the parts which cover the cerebro-spinal centres being removed. *C.C.* the convoluted surface of the right cerebral hemisphere; *Cb.* the cerebellum; *M.Ob.* the medulla oblongata; *B.* the bodies of the cervical vertebræ; *Sp.* their spines; *N.* the spinal cord with the spinal nerves.

Psychology applied to Music Teaching

(Curwen Edition 8307)

By Mrs. J. SPENCER CURWEN

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To

PROFESSOR JOHN ADAMS

to whose writings I owe so much,
to whose friendship
so much more.

PREFATORY NOTE

MUCH of the matter contained in this book has already been given in the form of lectures at holiday courses and at the Royal Academy of Music.

My thanks are due to Dr. Ernest Walker (Oxford) for permission to select examples from his collection of examination 'howlers.' To Mr. W. W. Starmer (Tunbridge Wells) for giving me the formula for working out the 'changes' in bell-ringing. To Professor Adams for finding time in his busy life to read my MS. To Messrs. Macmillan for the use of the plate illustrating the Brain and Spinal Cord, facing page 31. To my son-in-law, Phosphor Mallam, for valuable help in final proof-reading. A. J. C.

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Chapter I
THE TEACHER'S NEED OF PSYCHOLOGY

'Teachers have not yet discovered their true function in the community. They insist, in accordance with a bad tradition, on regarding themselves simply as teachers of this or that subject—English or Mathematics or Latin [or Music] as the case may be. For this a totally different idea has to be substituted and firmly grasped; and that idea is that they are not, primarily, teachers of subjects at all, but teachers of minds by means of subjects. When they fully realize that, they will at once see that they are bound to study Mind.'—*S. S. Laurie.*

'How widely must teaching as it is differ from teaching as it should be, when hardly any parents, and but few teachers, know anything about psychology.'—*Herbert Spencer.*

THE attempt to teach anybody anything is made on the assumption that the pupil has a mind; so it is curious that teachers should, as they generally do, leave Mind out of their calculations altogether. They stake their chances of success on knowledge of their subject. Now, knowledge of one's subject is, of course, the first essential—we cannot teach what we do not know—but it is by no means the whole of a teacher's equipment. The teacher must know how her pupil's mind is likely to behave with regard to that subject. For the mind has its *ways* of taking in different kinds of knowledge, and dealing with it and combining it and reproducing it; and, like the body, it has an appetite for different kinds of food at different stages, and deals with different kinds of food in different ways. It stands to reason that if we know something of these ways in which the mind learns, and what kind of work, and how much, we may expect from it as our pupils pass from childhood to boy-and-girlhood, we shall have a better chance of choosing aright the knowledge suited to each stage of their development, the food that they can then digest.

2. In spite of the vast improvement in methods of teaching all subjects, we still find that much of the knowledge presented to little children is adult knowledge chopped up small; and that skill is demanded from baby fingers of a kind for which brain and muscle are not as yet properly co-ordinated.

3. Parents are sometimes very anxious and very insistent that their children should begin pianoforte lessons at about five years old, when very few children are ready either mentally or physically. Parents forget, or have never realized, that pianoforte-playing is only a part of the child's musical education; and they are probably neglecting altogether the part that belongs to those early years, and to which it is their own special province to attend—I mean the musical education of the home and nursery. If parents realized that the success of the future music *lessons* depends largely on the amount of nursery music that is stored up in the child's memory, they would, if only from motives of economy, do their part in the preparation, and do it *at the proper time*. For, in music, as in everything else, each stage in the child's development demands its own kind of instruction, and these are not interchangeable.

You cannot demand from the child of five the kind of work that the child of ten does with interest, understanding, and enjoyment. But neither must you expect from the child of ten either interest or enjoyment in work that he should have been doing when he was five. Each age and stage brings with it the opportunity for certain kinds of activity, and when the stage has passed, the opportunity has passed also. Nature is remorseless and marches on, and what we did not do when we should we cannot do when we would. Early childhood is the time for fostering that *love* of music which I believe is planted by nature in every child's heart; which, combined with the right sort of teaching later on, buds out into the power of appreciation, and without which we never do really appreciate music, however technical our knowledge of it may be.

4. On the other hand we find some of the carefully elaborated methods for young children laying out a course of musical *theory*, to be carried on for a couple of years without any piano-playing at all. This is the other extreme. In some of these schemes the teaching of adult knowledge is very rampant. In one course for little ones from five years old to seven we find exercises (worked in notation) on (1) modified intervals and their inversions; (2) all the key signatures, major and minor; (3) modulation; (4) analysis of chords, including dominant and diminished sevenths; (5) information about the range of orchestral instruments; and one course, sent me from America, included musical biography, with a set of cabinet

photographs of the great composers. Fortunately, mind as well as body rejects unsuitable food, and the processes are much alike. The mind simply throws off information for which it has no use; and the teacher who took such pains in administering it wonders what has become of it.

5. Now these educational mistakes are made by anxious loving mothers and equally anxious enthusiastic teachers, honestly wishful to do the best thing for the children. Why? Because 'hardly any parents and but few teachers know anything about psychology'; and because teachers are thinking about their subject and its development, and do not understand that it is the pupil's point of view that counts, that it is by *his* mental activity that the work must be done. We cannot learn for our pupil any more than we can eat for him. All that the best teacher can do is to arouse in the pupil's mind an activity by which he, the pupil, takes in and assimilates the material of knowledge that is presented to him. If that activity is not aroused there is no teaching, because there is no learning. Now the probable reaction of a pupil's mind upon a given idea can only be calculated on if we know something of the laws of mental life; and these laws of mental life are the subject matter of psychology.

6. You may feel inclined to ask here: 'Are all teachers who are ignorant of psychology necessarily bad teachers?' Not at all. Every good teacher is an unconscious psychologist, for every really good teacher of children is so in virtue of his power of seeing things from the child's point

of view. As Professor Laurie puts it: 'Sound practice is sound theory unconscious of itself; sound theory is sound practice conscious of itself.' So that 'there is a latent psychology in all good teaching.' But this unconscious, sympathetic insight is a rare gift. Those who have it we call 'born teachers.' Unfortunately they are not born in proportion to the juvenile population, and—they are not born *teaching*. They are 'born' only in the sense of the born doctor or the born engineer; and we do not entrust the building of a bridge to an engineer or the life of a child to a doctor on the strength of the endowments with which he was born.

7. Again, you may ask: 'Will psychology make teaching easy for us, banish all our schoolroom worries, tell us what to do from day to day?' By no means. One of the things that psychology *reveals* to us is that teaching is not an easy thing. In the very first of Professor James' delightful 'Talks to Teachers' he tells them that 'to know psychology is absolutely no guarantee that we shall be good teachers.' At the back of her psychology the teacher needs that sympathy of which I spoke, and tact, and patience, and mother-wit, and presence of mind in dealing with the unexpected; and these psychology cannot supply. They are part of the teacher's native fitness for her work—the 'born' part of it.

8. Again, psychology cannot give us definite directions about our daily work, or provide each teacher with 'methods for immediate schoolroom use.' For this, as Professor James says, 'an inter-

mediary inventive mind must make the application by using its originality.'

9. Now, having said what psychology cannot do for us, we must inquire what it can do. Let me quote Professor James again: (*a*) '*We know in advance, if we are psychologists, that certain methods will be wrong, so our psychology saves us from mistakes.*' Not only that; it saves our pupils from the results of our mistakes, which is still more important. In the words of another American educationist, 'It is an important function of the science of pedagogy to protect children from the experimenter in devices and fads,' and our psychology certainly 'narrows the path for experiments' if we know in advance that certain methods must be wrong.

10. (*b*) *It makes us more clear as to what we are about.* If so, it saves both time and worry. A person who sees her way clearly goes about her work calmly. A teacher should be able to state clearly not only why she teaches a certain subject, but why she teaches it in a certain way and marshals its facts in a certain order. In preparing a lesson she should see clearly its relation to past lessons and to future ones.

11. (*c*) *We gain confidence in any method we may be using as soon as we believe that it has theory as well as practice at its back.* Notice that Professor James takes methods for granted. Notice, too, that he makes psychology the touchstone of method. He says, practically, 'If a method squares with psychology it is a good method; if it does not square with it, it is not good.' This sounds

simple enough, but you must have the touchstone. Every text-book in schoolroom use is a method, a *way* of teaching arithmetic, or history, or the grammar of a language, or any other subject. Of these many will be excellent, many may be futile. How shall we judge of their merits? They must agree with psychology as applied to the particular subject, and several different *ways* may so agree, but you must have the touchstone. There are, to-day, almost as many methods of teaching music to children as there are theories of voice-production for adults. If, among these, you can find half a dozen that square with your psychology equally well, they are all equally good, and you are pretty safe in adopting any one of the half-dozen; for there is no 'one and only way' of teaching anything, and a method is only a means to an end. But you must have the touchstone or you have no means of forming a judgment. Herbart says 'we must have it (psychology) before we can say of a single lesson what has been taught wrongly and what rightly.' We could not, at all events, give a reason for our judgment.

12. Then there are things that every teacher wants to know. How to be interesting. How to capture the pupil's attention, and how long we may expect to keep it. How to introduce ideas into his mind in such a way that they shall not at once slip out again. How to direct his observing powers—very important in music teaching. How to train his memory with regard to one's special subject. How to test whether his knowledge is real or not—for what people call 'results' are most

elusive and deceptive. All these things—attention, interest, observing and remembering and forgetting—are only *ways* in which the mind behaves, and psychology is only the study of the mind's behaviour.

13. Now the mind's behaviour is a thing that we can observe, so that psychology is studied, like any other natural science, by observation. But the student of psychology has one great advantage over the people who study other sciences. The student of chemistry, physics, or mechanics needs a laboratory. The student of botany or geology must work in the fields and hedgerows, on the hills and among the rocks. But the student of psychology carries his laboratory about with him; for there is only one mind that he can observe *directly*, and that is his own. So he can do a large part of his work anywhere and at any time; in the light of day or in the dark.

14. This looking inwards, or introspection, is a thing you are constantly doing without being conscious of it. Every time you say to any one 'I think,' or 'I feel,' or 'I wonder,' or 'I am trying to recall,' etc., you are telling of a process that is going on in your mind. When you say 'I have an idea!' you are not laying claim to a *thing*, but describing a *happening*. All that the psychologist asks is that you should do this consciously and with a purpose.

15. Introspection, however, is not sufficient for the teacher, because the mind she is examining is an adult mind; and if she tries to apply this adult psychology to the teaching of children she may

make serious mistakes; she may demand from a child that which at that stage of his development he is not capable of doing, and call him naughty or stupid because he does not do it. Or, on the other hand, she may succeed by skilful teaching in making the child do things which at that stage of his development he ought not to be able to do, and for this nature usually takes her revenge later on.

'The decisive fact is not what children *can* do under skilful stimulation, but *what they ought to do*. . . . The highest interest and enthusiasm may be awakened by exercises that violate the most fundamental principles of child-training.'—*Emerson White*.

16. So, alongside general or adult psychology, and as a corrective to it, the teacher must learn as much as possible about the child-mind and its behaviour and its gradual development, because it is the child-mind that she is attempting to educate; and here her study has to be indirect. She must do it by observation of the words, looks, and actions of all the children with whom she comes into contact. And, as the student of other sciences compares his observations and experiments with his textbook, so the teacher will compare her personal observation with the statements that she finds in books. Observation, in short, must be under guidance, at least in its early stages.

17. Much, too, she may learn by trying to remember her own knowings and feelings and doings when she was herself a child; for though here she may call up a picture either blurred by distance or based too much on accounts of her childhood given her by too partial relatives, the

attempt will give her a sympathy with children that hardly anything else can give.

18. The nearest approach to the born teacher is she whose memory of her own childish thoughts and ways is so fresh and keen that she never has to make an effort to come down to the child's level; she instinctively sees things from the point of view of her youngest pupil. Accustomed to realize the attitude of the learner, she is herself, as a rule, eminently teachable, and glad to seize upon every principle, every device, that may make her way clearer. Her very teachableness is a danger, for if she does not possess the touchstone of which we have spoken she has no guide in her choice of teaching devices; but her *attitude* is right. A teacher of much insight and experience said to me: 'I divide teachers into two classes, improvables and un-improvables. The best that I can say of myself is that I hope I am an improvable.'

19. Educators who have high ideals about the teacher's function have said some very severe things about those who, thinking themselves born teachers, are 'content to practise an art the principles of which they do not understand, and haughtily resent any attempt to enlighten them.' —(*Adams.*) With some grave words from Professor Laurie I will conclude. He says:

> 'It is, when you think of it, a very daring thing to profess to educate a human being. . . . You are engaged in helping to form the finest, most complex, most subtle thing known to man, viz. a mind; and do you propose to go on from day to day as your fancy prompts, tinkering here and tinkering there, and seeing what comes of it? Surely not.'

Chapter II
MIND AND BODY

WHAT, then, is mind, and where is it? What does it do, and how does it do it? In short, what is that mental process which we call *knowing* or learning? What mind *is* no one knows, perhaps no one will ever know. The psychologist does not speculate about the nature of mind; he busies himself only with its processes, which he can observe.

21. But although we do not know what mind *is*, we all know what we mean when we use the word. None of us doubts the existence of a part of us which thinks and feels, remembers and forgets, prompts one action and arrests another. A something which is not the bodily Me, but a still more intimate Me, and which, moreover, seems to direct and control the bodily Me. Our everyday language takes mind for granted. We 'change our mind'; we have 'half a mind' to do so and so; we keep a thing 'in mind.' The word and its accompanying idea are quite familiar; but though we have a sufficient notion of its meaning for everyday use, it is a very indefinite notion, and psychologists do not attempt to define it. Let us see what they say about it.

'We cannot give any scientific account of mind, but we can specify three of its functions: Feeling, Will or Volition, and Thought or Intellect, through which all our experiences are built up.'—*Bain*.

'Mind is the sum of our processes of knowing, our feelings of pleasure or pain and our voluntary doings.' —*Sully*

'The elementary facts of mind cannot be expressed in less than three propositions: "I feel somehow, I know something, I do something."'—*Ward.*

'The powers of the mind may be arranged in three classes: Intellect (the powers by which we know), Sensibility or the Emotions (the powers by which we feel), and Will (the power to choose and execute).'—*Hewett.*

'Mind is that force which manifests itself in knowing, feeling, and willing.'—*Roark.*

22. Some psychologists prefer the term *Consciousness* to Mind, treating them as equivalent terms.

'Mind is consciousness, from its lowest manifestation in animals to its highest in man.'—*Laurie.*

'By consciousness we mean "Mind *now*; the mind of the present moment."'—*Titchener.*

But Professor Lloyd Morgan points out that—

'Whatever the mind may be as an existent reality, . . . it is wider, fuller, richer, than any given field of consciousness.'

Using the term *Consciousness* does not get us much further, for we cannot explain what that is; though, like mind, we know quite well what we mean by it.

Again, you will sometimes find the term 'Soul' used in the sense of 'Mind' and as an equivalent for it.

'The soul is the I, myself, of each individual; that which knows, and feels, and wills.'—*Putnam.*

'The word "soul" is not used in its narrow theological meaning, but is held to include all the higher parts of the child's nature: his knowings and feelings, wishings and willings.'—*Adams* on *Herbart*.

23. What these writers say is practically this: We cannot say what mind *is*, for we only know

it through its manifestations, activities, or 'states'; but we find that all our mental experiences fall into three classes. The mind is always knowing something, feeling somehow, prompting or checking some action. Never one of these alone, though one may seem more prominent than another, but all three together. By the recurrence of these three terms in the passages quoted you will already have concluded that psychologists—who, like doctors, differ about many things—are practically agreed upon this classification, and tell us that mind is *that part of us which knows and feels and wills*.

24. This way of describing mind may seem to you at the first glance to have little to do with your work as teachers. But look at it more closely, and you will find that its suggestions cover the whole field of education. For what do we desire to do for our children? To give them *knowledge*; to put before them ideals of truth and goodness, that their *feelings and desires* may be in the direction of what is best in life; to train their *wills*, so that they may choose to do, and be able to do, what knowledge and feeling pronounce to be right. It might well be summed up in the words of the old Collect: 'That they may perceive and *know* what things they *ought* to do (feeling) and also may have grace and power faithfully *to fulfil* the same (action).'

25. I find that the term *willing* gives students a little trouble, possibly because this technical use of it and our everyday use of it are somewhat different. In a declaration of willingness we very often feel an undercurrent of *un*-willingness.

When a person says 'I am willing' to do so and so, we generally understand that on the whole he would rather not. But *willing*, as the psychologist uses it, includes the idea of action. You can trace this in the doings of little children who have not yet learnt self-control. A child sees a cake on the table The *knowing* that it is there gives him a *feeling* of pleasure; the feeling becomes *desire*, which again passes over into *action*. The child *wills* to possess the cake, puts out his hand and takes it. Perhaps a part of the difficulty arises from the fact that after early childhood so much of our own tendency to action is inhibited, or checked, by training and custom, until the veriest ghost of an idea is sufficient to inhibit an action. But though the grown-up person does not snatch at the desirable cake, the tendency is there all the same. The less familiar term, *Conation*, seems to be less perplexing to students, as we do not use it in any other sense, and conation means a tendency to act, or to attempt to act.

26. Although in the process which we call education we include the training of the whole child—his intellect, his feelings, and his will—yet when we speak of teaching him we find ourselves thinking of his intellect alone. When knowledge is the end in view the knowing powers are the all-important, and so mind has come to have a technical meaning which limits it to the intellectual or knowledge-getting part of us.

27. It may be well, just here, to give the three equivalent terms for those we have been using, which some writers use by preference:

Knowing.	Feeling.	Willing.
Cognition.	Emotion.	Conation.

28. The next question is, 'Where is Mind?' In our everyday language we localize mind. We say of a clever person that he has a good *head*, of a silly one that he is empty-*headed*; and though phrenology, as a science of bumps, may be discredited, there is no doubt that a well-shaped head attracts and an ill-shaped head repels us. We associate the one with intellect and refinement, the other with stupidity and grossness.

29. We localize still more definitely when we talk of puzzling our *brains* over a problem, or say of a person that he has plenty of *brain*-power. And yet the answer to the 'where?' is the same as to the 'what?' *We do not know.* All that we know is that between brain processes and mental processes there is a close correspondence; that on the health of the one depends to a great extent the health of the other; that when something happens in the one something also happens in the other. Why it happens, or what the connection is, has not been discovered, but enough is known to prove that in some mysterious way the brain is the instrument through which the mind does its thinking and reasoning and remembering and other things.

30. Because this is so, the teacher should know something about physiology—the physiology of the nervous system, which is the part of the subject that chiefly concerns us as teachers. Fortunately a great amount of such knowledge is not necessary for teaching purposes, but there are certain facts

about mental processes and physical processes the knowledge of which is of very great practical use to the teacher. For body and mind act and react on each other in a curiously close and intimate manner; and although the comparison of bodily and mental processes may not explain such action and reaction, it will give us a notion of when to expect a reaction and how to control it. This knowledge is of the first importance to you teachers, whether you are dealing with your pupils' minds in giving them musical knowledge, or with their bodies in teaching them skill in the use of an instrument. For example—

31. (*a*) If a teacher knows that of the whole blood supply of the body about one-sixth is needed for the upkeep of the brain, she will not expect the same amount of mental activity from an anæmic or ill-nourished child as from a physically healthy one.

32. (*b*) If she knows that for a supply of healthy blood to the brain the worker needs a good supply of oxygen, she will not teach in close and stuffy rooms, if she can help it.

33. (*c*) If she knows that the blood supply goes to the place where work is going on, she will not, if she can help it, give a lesson immediately after the pupil has had a full meal and the body is attending to the process of digestion.

34. (*d*) If she knows that during mental work there is an actual *using up* of brain tissue, she will understand that children should have periods of rest between lessons to repair the waste, and that a tired brain does not learn.

35. (*e*) If she knows that bodily discomfort interferes with mental work, she will see that the child is comfortably seated, and not suffering, for instance, from cold hands and feet.

36. (*f*) If she knows that when the body is growing very fast the brain should have comparative rest, she will make allowance for some degree of mental laziness during the growing spurts, and will understand why the long-legged spidery child is a less satisfactory pupil than the compactly built little person who is doing her growing more gradually.

37. (*g*) If she knows that nervous disturbance is fatal to clear thinking, she will not irritate her pupil or reduce her to tears, for that will prevent any good work being done.

38. (*h*) If she knows how the nervous system directs and controls the muscular system, she will have a better chance of success in teaching pianoforte or other instrumental work.

39. Perhaps we hardly realize how much of our knowledge of one another we owe to the action and reaction between body and mind. The only way in which we can know the mind of another is through some bodily manifestation: a spoken word, an act, an attitude, an expression of countenance. A smile or a frown—what are they? Physically considered, only a pucker in one part of the face or another. Considered as indications of mental states they have a deep and widely different significance. We are apt to think about mind communicating with mind by speech only, and to forget how much we owe to look and

gesture. Sometimes, indeed, the body insists on expressing what the word was meant to conceal.

40. We can even read a dog's mind from attitude and movement—though he does not help us much by facial expression. Watch him as he lies dozing. A noise disturbs him. He lifts one ear, and then his head; then he jumps up and stands in an unmistakable attitude of attention—paw lifted, tail stiffened, ears cocked in the act of listening. You can almost hear him ask, 'What's that?' and you can mark the precise moment when he answers the question to his own satisfaction; either darting off after the suspected cat, or lying down with an air of detachment which says very plainly ''Tis nothing that concerns me.' Here we have some signs of knowing, feeling, and willing in the animal mind.

41. If you would cultivate that skill in mind-reading which is so necessary to the teacher, begin by watching a young child *who cannot talk to you.* And later on, during his first four or five years, you will find that a child's acts and looks will tell you more about his inner life than his halting attempts at verbal expression.

42. The teacher who observes narrowly and compares carefully will become in some sort a thought reader. Not all in the same degree, for insight is partly a gift. But, with keen observation and the desire to help, it is certain that some insight will come; it is indeed surprising how much does come. The more we observe, the more we are able to observe.

43. It is also useful for the teacher to remember

that the thought-reading is not all on one side. Your small pupil, who looks up at you so innocently when you put a question to him, is scanning your face for a clue, and will often hazard a guess on what he fancies he reads there. So, if you would make him use his own wits, you must be able to assume at will the stony countenance that denies assistance to the mere guesser. The studied blankness that is familiar to you on the face of the experienced doctor—or the musical critic at a concert.

44. Some teachers deliberately try to help small children to an answer by suggestive facial expression and by gestures, but it is not well to do that in any case, for children learn to wait for the suggestive look or movement, and do not use their own wits. If the question is one that the pupil ought to be able to deal with in the light of his own knowledge, he should be allowed to deal with it. If it is not, then for him it is a wrong question altogether.

45. But we have not yet answered the question, 'What is the process which we call knowing or learning?' How does the brain, inside its small dark box, communicate with the great world outside, and gather in the knowledge with which the mind has to be nourished and exercised?

46. Probably most of you are familiar with statements like these: 'The mind gets all its knowledge through the senses.' 'There is nothing in the mind which was not first in the senses.'

47. We all know what is meant by the senses: Sight, Hearing, Touch, Taste, Smell. And by the

sense organs: Eye, Ear, Skin, Tongue, Nose. But this does not take us very far. The sense organ is only one end of the story; and as a matter of fact it is not the eye which sees the landscape, but the brain; not the ear which hears the skylark, but the brain; not the skin which feels the burn, but the brain; not the foot that knows when there is a pebble in the boot, but the brain. How does this come about? How, for instance, does the fact of the pebble in the boot travel from the foot to the brain? By that marvellous telegraphic installation which each one of us carries about in his own body; without which that body would be an inert mass, and mind, as we know it, would not exist at all. I mean the nervous system.

48. It may be well to spend a little time just here in speaking about this human telegraph. Some of my readers probably know all about the nervous system from their physiology lessons at school, but may not have thought about it in this connection, though the comparison has been often suggested. Others may not know anything about it, so for their sakes we will glance over the whole subject, comparing very roughly what we know of the nervous system with what we know of the electric telegraph. Children who are old enough know what the telegraph wires are for, and to be familiar with the sending and receiving of telegrams by their elders, are much interested in hearing that they have something like that in their own bodies; and they will often repeat a movement of hand or finger for the sake of 'sending a message' which would bore them if it is called an exercise.

So the comparison may be of some practical use to you, besides helping to fix some facts that concern teaching.

49. We marvel at many things of man's invention. Some of the older folk of to-day can remember when the telegraph and the photographic camera were recent inventions, just a few years old. The mechanism of the pianoforte that we use every day is in itself a delicate and wonderful thing. But now, listen to this. Summing up Huxley's teaching about the eye, Titchener says—

'The best way to understand it is to think of it as a photographic camera. It has an automatic diaphragm, the iris, which regulates the opening of the pupil according to illumination. Behind the iris, in the pupil, is a lens which focuses automatically—not by coming forwards or retiring backwards, but by altering its curvature. Behind the lens is a dark chamber. The back wall of this chamber is covered by a sensitive film upon which visual images are formed. The film is self-renewing, so that images can succeed one another upon it very rapidly. The action of light upon it sets up processes of chemical decomposition, just as in the real photographic plate.'

50. Some of us have heard all that before; but this may not be so familiar—

'If the eye is a little camera, the ear is a tiny piano, a piano with a keyboard for the air to play upon, with 11,000 strings behind the keyboard, and with a damper to stop the movement of the strings after they have sounded. That is why we can speak so quickly: the sound of each word is damped before the next word comes.'

51. You see, Nature forestalled the modern inventor; did it all, and did it better, just a few

millions of years ago; gave us these things, and we carried them about with us and never knew, until patient scientists found out all about it and told us. Tell the children too, when they are old enough to understand and to wonder.

Chapter III

THE HUMAN TELEGRAPH

WHAT do we ordinary folk know about the electric current and its use in the telegraphic system? We know that the current or force is generated in dynamos or batteries; that it can be collected and stored; that it travels along conducting wires to various points, carrying messages for us. We know that these conducting wires are bound up in cables or travel through tubes, and that in these cables and tubes each wire is 'insulated' or separated from the rest by a coating of non-conducting material, so that no message may go astray. We know that a large cable or set of telegraph wires divides up into smaller sets, each wire eventually finding its way to an office, where it delivers messages and receives others—messages travelling both ways.

53. But though we know what the electric current can do for us, though we have learnt how to create the conditions under which it shall come into being, and have made it our servant in a thousand ways, we do not really know what it *is*. All that we know is that in the cells of the battery *something happens* which liberates from certain substances a mysterious force, for which man is every day finding new uses. We know that this force, or current, is liberated either by mechanical action or by chemical action, i.e. by the action of a certain liquid on certain metals, as in the little battery that supplies our household electric bells. This latter instance I want you to keep in mind.

54. So much for the familiar yet mysterious current itself. Now as to its uses in the postal telegraph department. We know that there is a great central office in London—how great it is few of us have any conception—with supreme control over the whole system, and responsibility for every new regulation or development of the system; and that there are district offices, each attending to the business of its own circuit, the central office not interfering unless something goes wrong or something new has to be introduced. If Manchester wants to communicate with Liverpool the message does not come to London and out again, but travels directly from point to point over its own wire. But if any difficulty should arise in the transmission from Manchester to Liverpool it may have to be reported to the central office.

55. Now we must remember that this gigantic system did not burst upon us in full working order as we know it to-day, but has been a growth and a development. A little while ago (the telegraph was only born in the thirties) we can imagine the central direction a very one-man affair, every step being experimental, every little detail requiring the attention of the directing head. We can imagine, too, how details would get into working order, would grow into 'regulations,' would be handed over to a staff of assistants, and could be dismissed from the controlling mind, leaving it free to contemplate new possibilities and initiate fresh departures. Thus there would be, and has been, not only a growth of the system as a whole, but an internal development: the spring-

ing up of new departments, each gradually handed over to its own management. And yet the central office, while thus constantly relieving itself of the burden of detail, may at any moment become conscious of what is happening at the smallest, remotest village telegraph-office in the kingdom.

56. The resemblance between this modern outcome of man's inventiveness and the human telegraph, which has been in existence as long as man himself, is very striking, and a comparison of some of the details in which they correspond is interesting.

57. The nervous system is also worked by a mysterious current, generated and stored in nerve-*cells* and carried along nerve-*fibres*. The nerve-cells are found in masses called *ganglia*, and exist chiefly in the cavities of the skull and of the spinal column. They are centres of nerve-*impulse*, and correspond to the electric battery. The brain and spinal cord, taken together, are the central organ of the nervous system. From these issue the nerve-fibres, the tiny telegraph wires along which the current is conducted, carrying messages to and fro.

58. But while in the postal telegraph system messages travel along a wire in either direction, the human system provides two sets of fibres, one set to carry messages *in*, and another set to carry messages *out*, the one set being called the *afferent*, *in-carrying*, or *sensory* nerves, and the other the *efferent*, *out-carrying*, or *motor* nerves.

59. In this wonderful system the brain is, very literally, the head office. From it issues every

definite order, and to it is referred every matter requiring attention, deliberation, and decision; but a good deal of business, when it is, so to speak, in 'going order,' is handed over to other centres, which we may liken to district offices; and these district offices, or lower nerve-centres, are in the spinal cord. The brain is thus relieved of a good deal of detail, but it keeps the ultimate control, and may at any moment become conscious of what is happening at the remotest part of the body, that kingdom over which it rules.

60. For instance, to you and me the action of walking is perfectly automatic; we are not obliged to *attend* to it. While we are walking our minds are full of a thousand things which have nothing to do with locomotion. But should a pebble get into the boot, and walking become limping, we become conscious of the accident. The news of the pebble has been flashed to the head office, and from the head office messages have been flashed to certain muscles, and the back bends, and the hands unlace the boot, shake out the pebble and lace the boot up again. We shall come back to this illustration later on.

61. We shall get a clearer idea of these processes if we look more closely at the central organ itself, which consists, as we said, of the brain or higher centre, and the spinal cord or lower centre.

62. The spinal cord runs down from the brain through the spinal column, which is, as you know, a series of bones (vertebrae) connected together by strong cartilages. The cord itself may be roughly described as a column of *grey* matter

enclosed in a column of *white* matter, the whole in an envelope composed of tissue containing a great number of blood-vessels. The grey matter is a continuous mass of nerve-*cells* (ganglia), and the white matter is a column of nerve-*fibres* arranged longitudinally round it. You remember that we said such masses of nerve-cells were centres of nerve-impulse, and we compared them to the electric battery; so that the spinal cord is practically one long generating battery with a constant supply of the liquid necessary to keep it active, and lying in the middle of a cable of innumerable conducting wires.

63. So, just as we have in the electric telegraph two parts, one which generates the current and one which conducts it, so we have in the human system two parts, the cell, in which the current is generated, and the fibre which conducts it. And there is even that curious correspondence between the necessary supply of liquid to the electric battery—you know how, when our bells refuse to ring, we say 'the battery has gone dry,' and we fill up the cells with water—and the necessary supply of blood to the nerve-cells throughout the body.

64. Bundles of nerve-fibres are given off from the cord at regular distances. These leave the spinal column in pairs through openings between the vertebræ. They are bound up in trunks, or nerve-*cases*; and, like the wires in a cable, every fibre in a nerve-trunk is insulated by means of a non-conducting material, and kept apart from its neighbours during the whole of its course. For the nerves do not form a 'network,' as we are apt

to think. They travel side by side in one general direction; and (as in the telegraph system) the larger trunks or cables divide into branches, and these divide again, until each little fibre reaches its destination in a muscle-cell, a skin-cell, or a blood-vessel. Some of them, at their extreme ends, are split up into more minute fibres, but the more important continue undivided to the end, and terminate in a little *pad*, or *bud*, or *end-organ*, all these names being given to them. In most of the nerve-trunks afferent and efferent fibres are bound up together, but being insulated they do not interfere with each other.

65. 'Each in-carrying nerve is played upon and excited to its inward activity by a particular force of the outer world. Usually it is insensible to other forces.'—(*James.*) That is to say, the optic nerve is insensible to air-waves, which give us sensations of sound; and the auditory nerve takes no notice of ether-waves, which give us sensations of light. The nerves of touch cannot smell, nor can we distinguish heat or cold through hearing. Yet the structure of all the nerve-fibres is alike, and the current which travels along them is the same. The difference is in the end-organs of these in-carrying nerves. Professor James says:—

> 'Just as we arm ourselves with a spoon to pick up soup, and with a fork to pick up meat, so our nerve-fibres arm themselves with one set of end-apparatus to pick up air-waves, with another to pick up ether-waves.'

In his picturesque way he compares these end-organs to little telephones—

> 'into which the material world speaks, and each of which takes up but a portion of what it says. The brain-cells

at the fibres' central (inner) end are as many others, at which the mind listens to the far-off call.'

66. The upper part of the spinal cord, when it enters the skull, broadens out, and is there called the *Medulla Oblongata*. This continuation of the cord has the same general structure, the grey matter inside, the white outside, but the mingling of the two is more complicated and there is a greater quantity of grey matter.

67. 'The medulla is a very important organ, for all the nerves pass through it and every impulse that travels to or from the brain. Any injury to the medulla brings serious consequences.'—*Huxley*.

68. At the base of the skull, in front of the medulla and including a part of it, there is a collection of ganglionic masses which are called the Sensory Ganglia, or, taking them together, the Sensorium.* Here the nerves of special sense (smell, sight, hearing, etc.) have their inner terminations, and this is the department where incoming messages from the special sense-organs, travelling through the afferent nerves, are received and are answered by outgoing messages through the motor nerves. We might call it the Central Telegraph Department.

69. As an illustration:—Your hand accidentally touches the hot tea-kettle: you feel a burn and

* The nerves of Touch extend all over the surface of the body, and are sometimes called the nerves of Common Sensation. It is perhaps for this reason that some writers refer to the whole body as the Sensorium. Carpenter, however, is very definite in applying this term only to that 'assemblage of ganglionic masses *lying along the base of the skull* in man, in which the nerves of the special senses, Taste, Hearing, Sight and Smell, have their central terminations.'

snatch the hand away. The whole thing is what we describe as instantaneous, and yet what happened between the touching and the snatching away takes some time to tell.

(*a*) A stimulus was received by the little nerve-end in the skin—a sense-impression.

(*b*) Along those in-carrying nerves the news of that impression was flashed to the central office.

(*c*) On reaching the sensorium the *impression* became a *sensation* and then you felt, or became conscious of, the burn. (That is what I meant when I said that it was not the skin that felt the burn, but the brain.)

(*d*) Back through the motor nerves flashed a message to the muscles, bidding them contract and pull the hand away.

70. Now this is a simple reflex action. Thought and will were not concerned. The message was taken and answered by the lower brain. The same reaction to a stimulus would have occurred, in exactly the same way, had you been a frog, or a fish, or a centipede; for down through the descending types of the animal kingdom for a long way we find just the same *kind* of nervous system that we ourselves possess, so far as our description has taken us. In some of the lowest forms of the animal creation a solitary ganglion and a few nerve-fibres suffice for the needs of the little life. As we ascend the scale we find a gradual addition of new organs, needing new muscles to move them, and these again needing new nerves and new ganglia; till, with the development of

eyes and other organs of special sense, these sensory ganglia appear which we have grouped together and called the sensorium. So far as our animal and organic life is concerned it is much the same as that of the lower creation. The human telegraphic system, like that of the post office, has been a growth and a development; but it has taken millions of years.

71. We have now to speak of a further step in that development. There is an inner as well as an outer life. Thought, feeling, memory, reasoning, judgment—where are they? The seat of all these processes is that mass of matter which fills the skull above the sensory ganglia; the cerebrum, or upper brain.

72. The structure of the brain is complicated, and has been called the *Pons Asinorum* of physiology, but fortunately a few facts are all that we need to know about it, and these are interesting.

73. In the cerebrum the arrangement of white and grey matter is just the opposite of what it is in the spinal cord. There the grey matter (the battery) lies in the middle, and the white (conducting fibres) massed round it. In the cerebrum the grey matter is outside, forming a kind of rind, called the *Cortex*, and beneath that is a great mass of nerve-fibres, crossing and recrossing each other. The cerebrum is divided into two hemispheres, left and right, united by a band of white matter at the bottom of the dividing cleft. In fact, its shape is very like the kernel of a walnut. If you wish to give a child an idea of the shape of this

useful part of his anatomy, take a walnut out of its shell and divide it. The dark skin, covering all its convolutions, may stand for the grey matter of the cortex, except that the brain-rind is much thicker in proportion, and there are many more convolutions. If you want to see it yourself, buy a sheep's head and ask the butcher to split it open without injuring the brain (if he can) and take the brain out for you. The best way is to saw it round and then across the top, but not to let the saw go quite through, and then split the parts off with a chisel and hammer. When the skull bone has been safely removed there will still be a covering to take away, a tough sort of membrane, which can be slit round the edges and removed. Then you will see the brain with all its convolutions, and notice how the cortex is covered with another membrane which keeps it supplied with blood, dipping down into all the convolutions. This is probably as far as you will want to go (!), but if you investigate further you will find that the 'grey' matter is not really grey, but rather a reddish brown, and soft, 'something between jelly and porridge,' and the white part stringy.

74. We have spoken more than once about the importance of a blood-supply to the nerve-cells; and one thing which gives us an idea of the expenditure of power during mental activity is the fact that 'though the brain of man has not ordinarily more than *one-fortieth* of the weight of the whole body, yet it is estimated to receive from *one-sixth* to *one-fifth* of the whole circulating

blood.'—(*Carpenter.*) And the blood supply must not only be sufficient in quantity but good in quality. The nourishing parts of the blood go to keep the cells in repair, and the oxygen which it carries is the chief agent in the production of the current. When we feel stupid and faint in an overcrowded room, it is because heart and brain are being starved of oxygen. These facts have a meaning for the teacher (32).

75. The cells of which this grey matter consists serve not only to generate the current but to switch it on. By the energy generated in the cells the in-coming (sensory) currents are changed to out-going (motor) currents, and the motor currents are switched from one fibre to another.

76. When a current of neural energy passes through the cortex it leaves a kind of 'path' behind. The nature of the paths is not known, but it is known that every time a path is travelled by a current it makes it easier for the next current to travel that way. Now, this is the physical part of the formation of Habit and of Memory. When you play a passage for the first time you have to think about it. The head office is attending to it. The eye sends in from the page a certain message through the in-carrying nerves; it passes through the grey matter of the brain and is switched on to some out-carrying nerves which cause certain muscles of your arms and hands to make the movements necessary to the playing of the passage. This nerve-process leaves a path in the actual matter of the brain. Every time you repeat the passage the path becomes deeper and more definite

and the transit of the message is *more rapid.* After a while it does not go to the upper brain at all, but is switched off at another point, outside consciousness, at one of the lower centres. When that happens, *Habit has taken charge of the mere mechanism*, leaving your mind free to attend to the meaning and interpretation of the passage.

77. The grey matter of the brain is constantly being used up by the discharge of neural energy needed for all our doings and thinkings (34), and as constantly renewed; and the curious thing is that though the tissue in which a neural path has originally been formed disappears in time, the renewal is so gradual, and the new cells fit so exactly into the place of the old, that not only is the organic structure of the individual brain maintained, but these neural paths are reproduced and perpetuated. As a scar remains upon the body though its tissues wear out and are renewed many times, so a memory or a habit will persist, because though the 'paths' on which the memory or the habit depend wear out gradually, they are as gradually renewed.

78. Now of what practical use is all this to a music teacher? We talk about muscular control in pianoforte-playing, but can we really control any muscle or group of muscles and make them obey our will? I don't think we can *directly* control our muscles. What we really do is to will a *result*. To go back to the illustration of the pebble in the boot. We do not *will* that some muscles in the back shall contract and others relax, so that the back shall bend; or those of the hand combine

to unlace the boot. The only thing we *think* about is getting rid of the pebble; our nervous system does all the rest for us automatically. If I want to take a book down from a shelf, I do not have to think about the co-ordination of all the muscles needed for the stretching and grasping and holding. I only think of my object, and the process of attaining it is done for me. It is something like driving a motor car. The driver of the car does not directly control the action of each little separate part of the engine, but by his control of the driving wheel he decides the direction of the car. A gentle pressure to right or left, and the engine does the rest. The *Will* is our driving wheel; it 'commands the automatic power of the brain,' and the machinery of the nervous system obeys.

79. To come to our own subject, music:

> 'No better illustration could be adduced than that which is furnished by vocalization. The co-ordination of a large number of muscular movements is required: and so complex are their combinations that the professed anatomist would be unable, without careful study, to determine what is the precise state of each of the muscles concerned on the production of a musical note. Yet we simply *conceive* the tone we wish to utter, and say to our automatic self "do this"; and the well-trained automaton does it.'—*Carpenter.*

If we had to think about controlling all the muscles brought into play in walking, we should never walk; and though it may be quite right and useful for the *teacher* of singing to know all about the vocal ligaments and thyroid and cricoid and other cartilages and the work they do, in my humble opinion the less the young pupil knows about them the better. Let him *listen to a beautiful tone* and try to imitate it. So far as he succeeds, his vocal apparatus is getting into working order. It is all a matter of *listening, with an ideal before the mind.* The gradual co-ordination of the muscles, through practice, is automatic.

80. And in learning the make-up of pianoforte technique, what do we do? We can *will*, separately, certain movements or non-movements: rotary movement, lateral movement, arm-weight, arm-support, arm-balance, and so forth. Each movement is simple, and the muscular adjustment needed for it is already established; but a farther and more complex adjustment is needed when several of these are used in combination.

81. How does this complex adjustment come about? The cerebrum is apparently a higher nervous system controlling the lower, combining and co-ordinatng simple elementary movements into the complex movements needed for certain kinds of activities that have to be *learnt*, such as throwing a cricket ball, riding a bicycle, or playing an instrument. The elemental movements needed in pianoforte-playing are already provided for by the lower nervous system, and we use them unconsciously all day long. When a woman is sewing she uses most delicate rotary movement; give her a duster and the movement is lateral. For some purposes the muscles are tense, for others they are relaxed, and so on. These simple movements and conditions are habitual. But new conditions and new purposes necessitate new combinations and fresh adjustments, and then—the head office, the upper brain, steps in, takes the

matter in hand, and gradually gets this new department of activity into going order. After that it is a matter of listening, or, rather, of *prehearing*, i.e. imagining the effect of what we are about to play. We may not at once achieve that which we mentally hear, but gradually the automatic co-ordination will occur in answer to the musical thought, and we can forget that we have any muscles at all. An American writer says:

> 'Muscular ability depends not so much upon the degree of development of muscles as upon the harmonious working of all the muscles concerned in a movement. It is therefore more a matter of nervous connections than of muscular strength. This is perhaps best illustrated in throwing and wrestling, where victory goes not to the strongest but to the one whose muscles work together to the best advantage. A skilful thrower uses first the muscles of the legs, then successively those of the body, shoulder, arm, forearm, wrist, and fingers; and the ball, shot, or hammer leaves his hand with a force equal to the sum of the forces exerted by these muscles. An unskilled thrower, on the other hand, uses principally the muscles of the shoulder and upper arm, and these not in harmony; hence, though he have the arm of a blacksmith, he may be beaten by a stripling baseball player.'—*Kirkpatrick.*

And we know how the small, slightly-built Japanese wrestler, with his *ju-jitsu* training, throws a large and heavy man with ease.

82. In pianoforte-playing, too, tone-production and finger dexterity depend less on actual development of the muscles than on their harmonious working and on the elimination of all unnecessary movements. A large biceps is not necessary for producing chords that are full and rich in *quality*,

though a heavier limb may increase the tone-*quantity*; and though from an artistic point of view all unnecessary body-movements should be avoided, yet in pianoforte-playing, as in ball-pitching, the whole body is involved. A firm seat is as necessary to the pianist as to the rider; and because children's pieces are usually limited in range to the middle of the keyboard, exercises should be invented to give freedom of movement. Thus the very early interval exercises ('Teacher's Guide,' page 47) can be played all over the keyboard, as far up and down as the child can reach without toppling over, so that he learns early to keep a firm seat. Chord exercises, too, can be utilized in this way.

83. In early pianoforte-training another important fact has to be considered. The large muscle-groups—those of the whole arm—begin to work harmoniously before the finer ones of the fingers are under control. As soon as this fact was grasped by educationists those occupations which needed delicate finger adjustments, such as needle-threading, 'Froebel' drawing, etc., were banished from our infant schools and kindergärten, and there were great modifications in the teaching of writing.* 'The true rule with little children is to begin with large movements in every activity and pass gradually from them to smaller ones.' In view of all this do we not, when we begin pianoforte-training with five-finger exercises, begin (literally) at the wrong end?

* The one good thing that I could discern in Dr. Montessori's apparatus was that for teaching writing, beginning with letters so large that the whole arm has to be used in the process.

84. It is noteworthy that Tobias Matthay starts the child with arm movements, and the finger-differentiation needed for five-finger exercises is not attempted until several of the important arm conditions and movements are fairly well established.

85. If we could postpone the practice of five-finger exercises until the need for them can be understood by the pupil—namely, their use in training for endurance—it would be a great gain every way. Technically, because we should avoid the premature fatigue of those delicate muscles that often results in weakness; and musically, because I believe that there is nothing more deadening to a child's musical feeling than the dreary repetition of a foolish little group of notes which he cannot think of as music. Really intelligent and attentive practice of such exercises is only possible to the pupil who is of an age to appreciate their final value.*

86. The addition of the cerebrum to the nervous system was its crowning. It first appears in vertebrate animals as a very rudimentary organ, and in proportion to its development they show signs of what we call 'intelligence.' In the higher types we recognize a behaviour that can only be due to an elementary power of reasoning; and dogs give unmistakable signs of feeling. But from

* If the Primary and Elementary divisions of the Associated Board Examinations were exempted from Aloys Schmidt, or these exercises made optional, and examiners judged the children's technical ability by their playing of the pieces and studies, I do not think we should lose anything, and might gain a great deal. The experiment might be worth trying for a couple of years.

animal intelligence to human intelligence is a far cry, and so is the difference between the animal brain and the brain of man in its proportionate size and in its enormous development.

87. It may interest you to know that the male brain is usually about four or five ounces heavier than the female. You may draw what inference you like from that! But I don't think that the size of the brain (within limits) need affect its efficiency, because there may be a greater number of convolutions in the smaller skull-space; but it might affect the *kind* of mental output we get from the individual. So far as my own observation goes, the smaller brain is the quick brain. Its owner 'sees a point' quickly and is apt to trip you up in an argument; reads rapidly and takes in what he reads. But he is usually impulsive, and his judgment is not so reliable as that of the man of larger brain, who thinks more slowly and weighs things more carefully. One's own experience, however, is not sufficient basis for any theory, and I have no statistics on the subject.

88. All our sense-organs have not equal importance as gateways of knowledge. Touch is really the foundation sense, though sight and hearing are oftener placed at the top of the list. Think what a number of primary ideas the little child gets through his skin and muscles. By touching, handling, pushing, he learns about smoothness and roughness, hardness and softness, shape, size, weight, space, movement, distance, direction; as well as heat, cold, and pain. When people tell little children 'not to touch' things,

they do not realize that they are barring the door against ideas that are necessary to the child's mental growth. We need not give them our best china to play with, but they should be amply provided with objects that can be *handled*. Even the inevitable breakages and accidents are educational. Dolls and other toys give their little lives in a good cause; and baby's experiences in discovering that chairs and tables have sharp corners, that floors are hard when they fly up at you, that soap is not good to eat nor a hot teapot a pleasant plaything—all these go to make him, if for the moment a sadder, permanently a wiser baby. It is all part of his education.

89. Gradually the child becomes less dependent upon actual touch for the realization of the qualities of the things in the outer world. One sense reminds him of what another sense taught him.

'The world as we see it is built up on the framework of the world as we have handled it with our hands.'—*Magnusson.*

90. In connection with certain callings the senses may, and do, change their relative values. To the chemist, and in connection with the wine and tea trades, taste and smell—the mere 'protective' senses—are more important than hearing; while to one who is studying music hearing has even a higher value than sight.

91. That each sense organ should be perfect is, of course, important; but however perfect the organ, it must have material on which to exercise itself. The average nursery is well provided with objects for the education of hand and eye, but

what about the ear? Parents do not realize that here also the principle holds good that 'it is not sufficient that a human being have good sense organs; the objects on which to exercise them must also be present.' The ear, in the nursery, finds exercise in discriminating between varieties of *noises*; but noise is not sufficient for its education.

92. Do we realize that into many a nursery musical sounds never enter; that there is no material for the development of that mysterious sense which is hearing and so much more?

93. Suppose the nursery were kept bare of all but the necessary things; that there were no toys, no pictures, no dolls and teddy-bears and woolly lambs to take to bed and cuddle and talk to. The mind of the seven-year-old child would be a poor thing for the school teacher to begin upon. Points of contact would be difficult to find, and the observing powers would be weak for lack of exercise. That is exactly the difficulty that faces the music-teacher whose little pupil has had nothing musical to listen to, no baby songs stored up.

94. Happy the little one whose nurse sings to him, whose mother plays to him. Happy his future music teacher. But we know that in thousands of otherwise cultured homes little children live without any musical experiences, and come into the teacher's hands unable to imitate a sound and not knowing one tune from another. And the higher we ascend the social scale and the ladder of wealth the less do the children come in contact with music.

95. The value of the gateways of knowledge

depends on what the mind does with the knowledge when it comes inside the gate. Observation means more than mere seeing and hearing. It means attending, comparing, judging, and even doing. We do not train a sense for its own sake, but as a servant of the mind. The acuteness of a sense does not guarantee that the sense will be a good servant of the mind. A person may have excellent sight and hearing and be intensely stupid, deficient in observation and in power of reasoning about what he sees and hears. All that we can say is that the more perfect the senses the richer *may* be the content of the mind; but it does not follow that it will be so. The sense of hearing may be keen, but the mind behind the ear may be unable to compare musical sounds and to discriminate. Ear-training means the training of that power of discrimination.

96. Nowadays we talk of aural culture instead of ear-training, the reason advanced being 'lest it should be thought that ear-training meant the training of the outer lobe of the ear!' Now I cannot for the life of me imagine any one making that mistake but a born fool—or a South Sea islander, to whom, no doubt, a well developed lobe is an object of ambition, seeing that (for lack of pockets) he carries so many of his possessions hooked on to it or into it. Every intelligent person *knows* what is meant by ear-training. I am not quarrelling with 'aural culture.' It is a very good term—it looks prettier on a prospectus, and has the advantage of being rather vague—but it is only ear-training Latinized, and means just the

same thing, and nothing new. Whatever kind of sense-knowledge we use in the teaching of any subject, the object of the teaching is *mental* training and development, and the sense organ is only a door through which the knowledge enters. The most foolish of us knows that.

97. You see now how dependent we are upon our sense organs for all *direct* knowledge of things; and as we go on you will see more clearly that 'there is nothing in the mind'—not even the indirect knowledge that comes to us from books—'which was not first in the senses.'

98. We have examined the machinery which connects the outer with the inner world; we have talked about 'messages' and 'replies,' for which the technical terms are 'stimulation' and 'reaction,' and up to a certain point we have followed the course of the message which the end-organ picks up. But at a certain point our knowledge stops. We come to a blank wall. On either side of it we can investigate and experiment to our heart's content, but *through it* we never penetrate. Up to a certain point we see, then comes a blind spot, after which we see again. On one side of the wall, the side we have been talking about, lies physiology, on the other psychology; do not confuse the two. The physiologist and the psychologist work in adjacent fields and on parallel lines, but parallel lines do not meet, and no line of *explanation* has ever been drawn between them. Carpenter points out that 'no physicist attempts to *explain* how it is that electricity is generated by chemical change, but he knows that such a relation of cause and

effect exists between the two orders of phenomena, and that every chemical change is accompanied by a disturbance of electricity.' On this knowledge *he acts*, with what wonderful results we know; and if we teachers simply accept the fact of the correspondence between mind and brain, and act upon it, we can afford also to accept its mystery.

Chapter IV
THE PERCEPT

SO far we have been talking about the bodily machinery through which we become conscious of our surroundings. We have seen that things in the outer world have certain qualities: heat, cold, colour, shape, size, weight, texture, sound, etc., which make impressions on the nerves whose end-organs are adapted to receive them; that these sense-impressions are carried to the brain along the afferent nerves; that, arriving at the brain, they become sensations, and that then we are aware of them. The outward impression, the nerve-fibre, and the message it carries, these are physical facts; the awareness is a psychical fact. We have been transported to the other side of the wall and are in the region of consciousness. These sensations begin soon after we are born, and they come thick and fast. As all the sense organs are continually sending messages from the outer world into the soul, it would seem as if confusion must constantly reign there. And so it does, no doubt, in the earliest period of the young child's life. 'The object which the numerous inpouring currents of the baby bring to his consciousness is one big, blooming, buzzing confusion. That confusion is the baby's universe.'—*James*.

100. But very soon the mind begins to select from the crowd of sense-impressions those which, from their greater intensity, have most attraction for it—a bright light, a moving figure, a loud

voice. These it *attends* to, momentarily, and the rest are as if they were not. Attention, then, is a process of selection. Watch a young child for five minutes and you will see this mental process going on. How the eyes travel from object to object, attention attracted to each in turn, and as easily *dis*tracted, i.e. *at*tracted by something else. Every attitude, especially every attitude of the head, tells you what the baby mind is attending to for the moment. You can see what attracts him, just for a second or two; you can notice the process of selection.

101. At this stage we can recognize that the objects which he sees have no meaning for the baby. He has only momentary isolated impressions and sensations. But these impressions, momentary though they be, leave their traces on the brain, and these traces remain, so that with every fresh impression there is mingled 'the awakened vestige of the last impression,' the fresh impression making it deeper and stronger.

102. From one object the child gets several separate sense-impressions. His rattle, for example. Its ivory handle makes a colour impression on the optic nerve. This, when telegraphed to the brain, becomes a sensation of 'whiteness.' From the sense of touch, as he grasps it or puts it in his mouth, he gets sensations of 'smoothness' and 'hardness.' The little silver bells send messages of 'brightness' through the eye and of 'sound' through the ear. To these he attends, now to this, now to that, until with the repetition of these experiences an association is set up between the

several sense impressions, and these again are associated with the object whence they came, and now the baby's rattle has a meaning for him. He begins to show this by his behaviour. Instead of grasping it by mere reflex action, he shakes it for the sake of its sound. This is the dawning of perception. Each sense tells the child something *about* an object in the outer world, and these several bits of knowledge combine to give the object a meaning for him. Sensation is merged in perception, and the picture in his mind which corresponds to the object in the outer world is called a Percept.

103. The favourite illustration of this fact in psychology books is an orange; and it is a very good one, because so many senses have contributed to the perception we have of it as it lies before us. We have learnt from touch that it is cool and rather rough-skinned; the nose has taught us its scent and the palate its flavour, and through muscular resistance we have had impressions of its weight. By clasping it in our hands we know that it is globular. The eye only tells us of its colour and outline, but as we look we are reminded of all the other sensations through which we have learnt to know it. These start up from within, and, joining forces with the yellow spot before us, give it a meaning it would not have had by itself. We have then a Percept of the orange.

104. At the moment of perception we are not conscious of these separate sensations. We do not think of an orange as a yellow-round-cool-sweet-juicy thing. It is just 'an orange.' The

perception is one stroke of thought. But when we analyse a percept, as we have been doing just now, we recognize that it is through different channels and by separate sensations that the knowledge has come to us which gives to each object its fringe of meaning. The sensations are there, but we do not at the moment 'tot them up,' so to speak. And this 'fringe of meaning,' says Professor Lloyd Morgan, is 'for one's personal behaviour.' It must needs be so, if it be true that 'all states of mind are motor in their consequences —followed by bodily activity of some sort.'—(*James.*) If we grown-ups do not recognize that this is true in our own case, it is because, as we have said before, we are constantly—though perhaps not consciously—inhibiting our tendencies to action, and we certainly do recognize it in the case of the little child. The 'fringe of meaning' attaching to the objects around him is a meaning for behaviour. Thus a table soon becomes something to put things on; water in a glass is something to drink, water in a basin something to dabble in; a ball is something to toss; a chair something to climb into. The piano suggests delightful sounds that will come if he bangs it with his fists. His shoes are meant for his feet, and all doubtful things are meant to go into his mouth.

105. The fringe of meaning comes from experience. Perception therefore includes something of memory; that is to say, it is 'not an affair of *merely* catching sight of an object.' A sensation quite unconnected with any previous experience has no meaning for us; its significance depends

on the number and strength of its threads of connection with previous experiences. Thus the mind is always joining up its little bits of experience, adding to its knowledge of individual things, noticing the relations between them, seeing more in each than it at first perceived. And the mind does this by its own activity, without any effort on our part.

106. Perception develops: in rapidity, in the amount of total grasp, but chiefly in the content of the fringe of meaning. Titchener divides it into three stages. 'First the pure perception, made up entirely of outside sensations; then the mixed perception . . . made up partly of inside and partly of outside sensations; and lastly the symbolic perception, in which the only service done by the outside sensations is that of arousing important inside processes.'

107. Pure perception seems to me a wrong term, involving a contradiction. If perception depends on the consciousness of a meaning, however limited—and on this all psychologists, including Professor Titchener himself, seem to be in agreement—and if the meaning is the result of past experiences, then the feeblest perception must be 'mixed.'

108. As experience grows, memory enters more and more into perception, until 'the mind becomes ready to meet the material thing half way, and a full and complete perception can be touched off by a single aspect of a thing, and the other aspects supplied by sensations aroused within the brain.'—*Titchener.*

109. When you see a peach in a fruiterer's window your percept of it is complete without the aid of touch or taste or smell. Sight gives you its colour and outline, but mentally you can feel its velvety surface, smell its rich aroma, taste its juicy flesh; with your mind's eye you can even see the stone in the middle. And though you know you cannot put out your hand and take it, the fringe of meaning 'for behaviour' is there right enough.

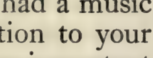
110. This kind of perception, so familiar to us all, is manifestly 'mixed.' In fact, by far the greater part of it is a revival of sensations from within. The child's everyday perceptions, and our own, are of this kind. The child's percept differs from ours only in the proportion of outside to inside sensation. The child is nearer to the sensational level, that is all.

111. Now we must not run away with the notion that sight is the only sense through which perception comes, that the 'object' of any mental process is necessarily something seen. You find a garment in a dark room by touch, and as you touch you seem to see. You have a revival of the colour of the stuff and of the pattern on it as well as of its texture. You *perceive* it through touch alone. Or in the morning a certain odour assails your nostrils and you say, 'Ah, bacon for breakfast!' You do not need to *see* it in the pan or *hear* it fizzling. All that is in the fringe of meaning, with perhaps a vision of the breakfast table and its surroundings, a sense of satisfactory anticipation, and a feeling that you must hurry up and

dress. In this case the 'complete perception is touched off' by your nose.

112. So far, the development of perception is the result of everyday experience. The child learns, from his surroundings, through his senses and through intercourse with his elders, quite naturally and without any formal teaching. But there is a further stage, that of symbolic perception, to which we, as teachers, have to introduce the child. When you, my readers, take up a piece of music, the sensations from outside—i.e. the impressions made upon your optic nerve by those black marks of various shapes—are the same for you and for the child who has never had a music lesson. But in your case, in proportion to your musicianship, those black marks 'arouse important inside processes,' and your complete percept includes a mental hearing of the music represented by that page of symbols. Each symbol, each group of symbols, has a meaning for you that it has not for the uninstructed child. And it is a meaning for behaviour; for what happens when you grown-up people are playing at sight?

113. You see—or perceive, or have a percept of—a key-signature, for instance:



What is your behaviour at the sight of it? Automatically your fingers get ready to play in that key; the keyboard seems to arrange itself in that key in your mind. You see a time-signature ($\frac{3}{4}$), and before you play a note your mind falls into the swing of three-pulse measure. You see a thing this shape <, or that >, and automatically you increase or decrease the tone. The violinist sees a mark of this shape ⊓, or that ∧, and automatically his bow moves in a certain direction. To this stage at least of symbolic perception we have to bring our pupils.

114. Or take this other example. You are learning a piece, and find a certain passage difficult with the marked fingering. You choose a fingering to suit your hand, and then *you draw your pencil through the marked figures and substitute those for your own fingering*. Why do you do that? You say 'to help me to remember it.' Not altogether; for fingering is best memorized (and is always eventually memorized) through the muscles; so that the quickest way to fix it would be to practise the new fingering at once until it became automatic. But you know that even if you did this, and left the old fingering there, your fingers would automatically obey the eye, and you would be thrown out every time. You substitute another set of figures, and your experienced nerves and muscles obey these.

115. A great part of the music teacher's work consists in the teaching of notation—the meaning and use of musical symbols; and in the teaching of notation the fringe of meaning *for behaviour* is very important. The only real proof that a pupil understands a musical symbol is that he *does* the right thing in response to it. Instead of asking 'What is a sharp?' notice what a child does when he sees one. If his behaviour is not right, his description or definition is useless; if he does the right thing, it is unnecessary.

116. I have seen the names of the lines and

spaces taught in class with a large staff diagram. It was very well done, and the children answered quickly and easily. But this sort of exercise must necessarily miss the mark; for what happens in actual playing from the printed page? There is first the message *in* from the note or line or space to the brain—the *im*pression; and then the message *out* from the brain to the muscles—the *ex*pression—the behaviour, in fact. Now, from drill on the diagram we only get half the work done—the recognition. The answering message to the muscles is not sent out, and no behaviour follows. A child may do well in a class such as I have described, and yet from difficulty in *localizing* the sounds on the keyboard may be a slow and stumbling sight player. Interval reading, for the same reason, is unsuitable for class teaching. Recognition of a fourth or a sixth is only half the battle. The response of the finger—the behaviour—is what we want. Locality and Interval,* therefore, should be taught at the keyboard. The large staff diagram is, of course, invaluable in the singing class, used as a modulator. But here the conditions are different; the behaviour is vocal, and theory and practice are kept together. The large keyboard diagram is also extremely useful. It, too, can be used as a modulator with excellent results.† In all such work the only *use* of the outside sensation received from the symbol is to arouse a certain activity in the mind, a mental behaviour, which again is related to and followed

* I refer here to the exercises in my own books.—A. J. C.

† See 'Teacher's Guide,' page 192.

by a physical behaviour if the perception is complete.

117. The stage called symbolic perception is an artificial one. The child enters on it when he begins to learn his alphabet; and at every step, in connection with new subjects, new sets of symbols confront him. Hardly has he learnt to read when he has to tackle the notation of arithmetic, and music brings him yet another set of signs. The function of each sign is to set going some mental activity leading to a certain result.

118. If I write in two columns the figure 6 and the figure 2, I can, by placing a different sign

6	2	between each pair of figures,	6 + 2
6	2	cause a different process to	6 — 2
6	2	occur in your minds, and each	6 × 2
6	2	time you will give me a dif-	6 ÷ 2

ferent result. But if the figure 6 and the figure 2 have not themselves acquired a meaning for a child's mind by concrete experience, i.e. by arranging objects in number-groups and then by visualizing these groups; and if the further processes of splitting up these groups or adding them together has not actually been *done* over and over again in the concrete, the additional symbols we have just been using could not have any meaning or arouse any mental process whatever.

119. What, then, is the use of telling a little child that a thing this shape (𝅗𝅥) is worth two things that shape (♩ ♩)? It conveys nothing to him. Nor does it help towards any musical truth if we compare it to a penny in its relation to two halfpennies; for minims and crotchets are not

symbols of money-values but of sound-values. The sounds and their relations to each other must be realized first. Then the analogy with the arithmetical values is seen and understood.* But whatever the subject, the same educational maxim holds good—namely, that the thing signified must be known before the symbol is introduced. The younger the pupil the more necessary it is to follow this rule.

120. Ordinary relationships repeat themselves in daily life, and by repetition the relationship is strengthened. But the relationship of a musical sign to a musical sound, because it is purely artificial and arbitrary, is an experience which has to be deliberately presented to a child's mind again and again until the connection is firmly established and the right response made habitual. We shall have more to say about this later on.

121. Sight-singing requires a higher degree of symbolic perception than sight-playing. In sight-singing there is (*a*) the recognition of a symbol; (*b*) the mental hearing of the corresponding sound; (*c*) the production by the voice of the sound that has been realized mentally; (*d*) the recognition of the sound now heard by the outer ear as the same that was heard mentally. The singer cannot produce a note until he has realized its pitch mentally. In playing the piano this inward pre-hearing is not necessary. The process is simpler, more mechanical, more meagre altogether. The player simply (*a*) recognizes the symbol, line or

* For suggestion as to procedure see 'Teacher's Guide,' Preliminary Course, Third Lesson.

space; (*b*) finds the corresponding pianoforte key; (*c*) hears the sound with his outer ear. Because the pre-hearing is not *necessary* in the reading of pianoforte music, no effort, as a rule, is made to encourage it; and the average schoolgirl or adult amateur is unable to realize the melody of a piece of music (much less its harmony) by looking at it. A good many pianoforte teachers are equally unable to 'hear with their eyes.'

122. The foregoing applies to the realization of pitch. With regard to time the singer and the player are equally in need of realizing sound through sight. If, when looking at a group of notes, we do not hear, mentally, the *patter* of their rhythm, the passage is quite likely to be incorrectly played. The fact that pupils who correctly work problems in note-values in 'theory' papers are helpless in front of a very simple sight-test proves this. The arithmetical relation of the notes must be taught, because it is the basis of the time-theory, but in practice it only helps up to a certain point, when there is time to think it out, and we cannot stop to do sums when reading at sight. If the groups of notes do not say something to us we are helpless. The *time-names* help them to say that something, so that little children hear as they look.

123. In our teaching of notation we should cultivate quickness of response. The time needed for the response—or the 'reaction time,' as it is called—varies in individuals. The teacher must remember this. The physiological psychologist, the man who works in a laboratory, can measure

the reaction-time of individuals to the fraction of a second. The teacher cannot do that, but she must look out for indications of it and make allowance for the personal equation of the pupil. If the reaction-time is slow she must use devices to improve it;* but she must not call the slow thinker 'stupid.' The child who sees a point in a flash is a delightful pupil, especially for a teacher with a similarly quick brain. Both are happy. But I have known a very quick-brained pupil bored to death by a very excellent teacher who tried to keep him to a slower pace. On the other hand the quick-brained teacher is apt to condemn as stupid the slow-brained pupil. This is a mistake, and may be a great injustice. A slow brain is often a very good brain.

124. Children may be classified, according to their temperament, as *motor* and *sensory:*

> 'Motor children are those that respond very readily to any outside influence, and this response takes the form of immediate action. . . . They learn quickly, but do not retain particularly well what they have learnt. . . . Sensory children are slower in responding to any stimulus. They receive all manner of impressions and make no sign . . . but their minds are active enough. The difference between the two temperaments is most marked in the greater tenacity of the sensory children. . . . The thoughtful teacher, who studies and understands child nature, finds that on the whole his best work can be done with the less immediately responsive children.'—*John Adams.*

125. Now let us turn from the perception of visible and tangible things like rattles and oranges and consider the perception of music. Music, like other things has, certain qualities, from which we

* See 'Teacher's Guide,' page 84.

receive sense-impressions. They all reach us through *one* sense-organ, the ear; but there is infinite variety, nevertheless. Sensations of pitch, with an immense range of highness and lowness; sensations of loudness and softness, of long sounds and short; and sensations due to the peculiarities of the instrument producing them—voices, strings, pianoforte, etc. The simplest little tune, whistled or sung, gives us many sensations of long and short, high and low, and from the combination of these we get a percept of the tune. The combination is by grouping, as in melody and rhythm, or by fusion, as in a chord.

126. And the fringe of meaning? Again it is for behaviour. From babyhood onward it is a *movement*-meaning. Some little children are so sensitive to music that it sets their whole bodies in motion, with every sign of pleasure in the movement. At first it is only a *some-sort-of-movement*-meaning; but gradually it becomes rhythmical, for man is a rhythmic animal. He is made that way.

127. Wundt shows us, by a very simple experiment which any of my readers can try for themselves, that it is extremely difficult to hear unrhythmically. Set your metronome going—first making sure that the instrument is correct in its ticking, i.e. that the tick to the left is not louder than the tick to the right*—then listen, and you

* The test for the metronome is this: as you listen, emphasize the ticks as , etc., and then as 
If you can hear the ticking equally well either way, the instrument is fit to experiment with; for you have proved, by hearing *the same tick* as a strong or a weak one, that the difference is entirely in yourself, a subjective difference, as we call it.

will find that you are mentally grouping the ticks with some kind of recurring accent. Although the ticks are actually uniform in intensity you will hear them as—

or as—

You can, in fact, *hear into* any uniform row of beats almost any grouping you like. You can group them in threes or in fours as easily as in twos. You will find, too, that it is difficult to hear the ticks as of equal intensity, though you may have proved that they are equal. Wundt explains this by saying that our consciousness is rhythmical, and that it is so because our whole organism is rhythmical.

128. All through life the hearing of music is accompanied by a strong tendency to 'behaviour' of some sort. There is music that makes us laugh, music that makes us weep, much music that stirs us to 'keep time' bodily. As we walk along the street we sub-consciously march to the tune of the barrel organ, and a feeling of conscious irritation arises when the time of the tune does not fit our walking pace. Watch the faces of the audience during the performance of a modern orchestral work, in which the composer has successfully *camouflaged* the natural bar-accent and avoided the restful fall of a cadence. The musicians are listening with a look of strained interest, and the rest—are simply bored. Then let a Haydn symphony begin, and all over the hall heads are

nodding (especially old heads) and hand-movements refuse to be inhibited, and the very air seems to be alive and moving in waves of rhythm. Dignified people may inhibit the suggestions of their nervous system, but even these, I dare aver, are keeping time inside.

129. The germ of truth in the eurythmic scheme lies in the fact that our ideas of rhythm undoubtedly begin from movement. Undoubtedly, too, from the movement of walking. All creatures walk rhythmically. The click-clack of the horse's hoofs on the road is regular. We hear nothing when the cat walks across the room or the tiger paces its den, but we see the regular swing of its body.

130. The walking movement gives us a *one-two* rhythm, and cannot give us anything else. Titchener says:

> 'The four limbs are, so to speak, four pendulums, attached to the trunk of the body. As we walk or run the legs swing alternately, and with each leg swings the arm of the opposite side—there we have the basis of the idea of rhythm. . . . Movement can give us nothing but *one-two* rhythm; sound and movement together give us the one-two-three rhythm of music and dancing.'

131. The last sentence raises an interesting question. What was the origin of the one-two-three rhythm? Was it spontaneously generated by music and did people learn to dance to it, or did dancers invent it, and was music made to fit in with it? It has been suggested that it is the rhythm of breathing, i.e. inspiration, one beat; expiration, two beats. But we only breathe in

that way when we are lying down. When upright and in movement the in and out breaths are equal.

132. Be that as it may, we are evidently right in beginning the child's perception of time in music with the natural *one-two* rhythm, because we start where the child *is*. However unmusical he may be, at least he can walk! And if we can get him to *listen* as he walks he will probably begin to feel a connection between his natural *one-two* swing and the *one-two* rhythm of the music. In spite of being made on the pendulum plan, a child here and there seems incapable of keeping a perfectly even step with others. It is his ear that is at fault, not his limbs. How are we to deal with a pupil of this kind? In something like the way in which a circus bandmaster treats the horses. Those who have been to a military tournament have felt a thrill of wonder and delight when a troop of horse has gone through complicated evolutions *in time* (apparently) to the music of the band. The audience cries 'How wonderful! The creatures are trotting to the music.' But if you turn your eyes on the bandmaster, you will find that it is the music which is trotting to the horses. This trick would not be possible were there not a fairly reliable regularity in the stepping of the animals, which, of course, are matched in size as nearly as possible. Suppose you treat your unrhythmical pupil in this way. Take him alone, of course. Tell him to keep listening to the music all the time. Get his attention *away* from his feet. Then temper your playing to his stepping, and after a while he will

probably feel the correspondence. There is sufficient regularity in his walking to begin with, and being a 'human' and not a horse, there is a possibility that in time the connection will be established, the habit of listening formed, and music take the lead. The experiment is worth trying. There is, at all events, a better chance of success this way than by the plan of placing the unrhythmical pupil to march behind one with a good ear, and telling him to 'Watch Mary and try to march like her.' For not only is there a necessary interval between the looking and the imitating which throws the whole thing out, but the attention is switched off from the music, and looking is substituted for the *listening* on which all depends.

133. We see, then, that a musical percept is formed, like any other percept, from a union of sense-impressions, with this essential difference, that whereas for the perception of other objects we may need a contribution of impressions from several senses, for the perception of musical facts *we are entirely dependent on one sense.* In classifying the senses as to their value in knowledge-giving, writers differ. Hearing generally ranks next after sight; some place it lower (sight, touch, hearing), and it has been said that it is 'one of the least fruitful organs of direct knowledge.' From one point of view this is correct, for the writer was probably thinking of verbal information, and verbal information is not direct knowledge; in early life it gives little knowledge at all. But, with regard to music, hearing is *the only source of direct knowledge.*

134. The realization of these simple facts, which each one of us can verify by introspection and experiment, upsets altogether the traditional notions about music teaching. For if music can only be perceived, or known, through the ear, and if the teaching process depends upon the nature of the learning process, we are shut up to teaching it through the ear. There is no getting out of that.* And it is not enough to have a weekly class for ear-training tacked on to the school time-table, to show that the school is up to date, if, in the other departments of its music teaching, the ear is left out of account; if, in the teaching of notation, signs come before the observation of the facts they symbolize, and if the pianoforte-playing is not made a matter of listening all through. Listening for time, for pulse, accent, and measure; listening for tone, in quality and quantity; listening for change of key, for phrasing, for balance and proportion, for question and answer, for inner parts, for basses, for chords and progressions—for all these as the pupil gradually approaches them, not through formal lessons, but by observing them as they occur. They all occur in the simplest music, so that in his own little pieces the pupil makes the acquaintance of the kind of

* We must distinguish between teaching '*by* ear' and '*through* the ear.' Teaching by ear belongs to that important nursery and kindergarten stage when children are learning to know tunes as *wholes*, by simple rote singing, without any attempt to split them up into time and tune, or to teach notation. Teaching through the ear belongs to the school age, and refers directly to the teaching of notation. It means that every musical fact for which there is a notational sign shall be presented to the pupil first through hearing, compared with other related sounds, known and recognized and named, before the notational symbol is shown him.

material of which all music is made. In all his little pieces, too, he finds a plan, notices imitations and repetitions of figures and phrases, and by and by he begins to expect these things in all the music that he hears.

135. Also, he begins to want more scope for listening, and this is where what (for lack of a better term) we call the 'Appreciation lesson' comes in. What the child has learnt to know through small examples gives the larger example a meaning for him, and therefore helps his perception. And this does not mean that we want a child (or anybody who is not on the staff of a newspaper) to be in a constantly analytic frame of mind when listening to music. If we tried ever so hard we could not put the young pupil in that attitude, for it would be foreign to his stage of development; but we would not if we could. All that we ask is that the learner shall hear more music, and music of a larger kind, than his school experience can give him; and that this larger music shall not be for him the 'big, blooming, buzzing confusion' that sensation alone would make it. He should have an inkling of its meaning, if only—to begin with—by his ability to follow one little 'bit of tune' as it plays hide and seek through a composition. Play to the children, then. Give them opportunity for hearing and some guidance in listening—for hearing and listening are two different things. And give them, in your piano lessons, something to listen *with*; for you know from your own experience that what we get from any lecture, or any concert, or any picture-

gallery, depends on what we bring to it. If it be true that 'we only see what we know,' it is equally true that 'we only hear what we know.' The pupil whose observing powers are guided and exercised in his individual piano lessons is the pupil who will most fully experience in the Appreciation class or in the concert-room the interest of expectation and the joy of recognition.

136. We must remember, however, that in the least intelligent listening to music there is a certain amount of perception; and that in the most intelligent listening a large amount of the enjoyment comes from sensation. Our intellectual satisfaction depends on the degree of our perception, but it is sensation which gives us the thrill.

137. I want you to be clear about the difference between Sensation and Perception, because in our adult consciousness they come so close together that it is difficult to separate them in thought, or to realize that one may come in advance of the other. Perception, in our experience, is instantaneous; yet there must be a moment, however short, when sensation alone is present, before the 'knowledge about' hurries up and wraps it round.

'Ideas *about* the object mingle with the awareness of its mere sensible presence. . . . This higher consciousness about things is called Perception; the mere inarticulate feeling of their presence is Sensation, so far as we have it at all.'—*James*.

Sensation, then, is the simple message, or group of messages, from some present object. Perception includes these sensations, but adds to them what Professor Sully calls an 'escort' of revived sensation.

Sensation can be present without perception; it is so in the earliest stage of an infant's life, but rarely in adult life.* Perception cannot occur without sensation, for we must be aware of an object before it can have a meaning for us.

And the moral is that we cannot teach music by talking about it. We cannot teach it from 'Catechisms' and little 'bookies' on the Elements—though there is a distinct use for such books. We cannot teach harmony through ink and paper; the very word 'harmony' tells us that. Music, from start to finish, is a thing of hearing. Without sensation, no perception.

* Professor James says that 'sensation *never* takes place in adult life without perception also being there.'

Chapter V

THE MENTAL IMAGE

IN our last chapter we spoke of how we form percepts. How, when we look at an object or hear a tune, their various qualities make impressions on our nervous system, giving us sensations which, combining, result in an inward picture, or copy, of the object as it stands before us, or the tune as its notes flow by. Each sense tells us something about it. We not only become aware of its presence, but know what it means to us. Perception, therefore, is an elemental step in knowledge-getting or learning.

139. When we turn away from an object, or when it moves out of sight or hearing or touch-contact as the case may be, our perception of it ceases, and is only renewed if the object itself enters again our field of consciousness. So, if the mind were a kind of mirror and percepts merely reflections in it, then, as each object was withdrawn from sense-contact, the percept of it would be wiped out, leaving no trace, and though we might perceive it afresh, the new perception could not strengthen the old—there would be nothing to strengthen—and we should never know anything better. But we know that we do remember and recognize and learn more about individual things, and that every day adds to a child's store of knowledge. Now we have to learn a little more about this process, which we call remembering.

140. The sensations that we receive from things

in the outer world leave traces in the matter of the brain (76), and by means of these traces, in some wonderful way, the sensations can be revived when the object from which they came is no longer present. The revival, however, varies very much in distinctness.

141. As we walk along the street a thousand things make fleeting impressions on our senses, and sometimes after we have passed an object that has caught our attention for a moment we seem to carry a consciousness of it with us for a little way. Then the picture fades out and its place is filled with another, which fades out in its turn. None of the impressions has been strong enough or lasted long enough to leave very deep traces. But if our attention is caught for a longer time the sense-impressions are stronger, the traces will be deeper, and we shall have a much more vivid after-image, one that may be revived after it has (apparently) faded out.

142. If, in a picture gallery, your attention is caught by a canvas which particularly appeals to you, you will carry away a fairly accurate image of it; you will describe it, with many of its details, when you get home, though you may have looked at it for a few moments only. Or a cartoon in *Punch* makes an impression by its skill, its humour, or its pathos, and the impression remains with you and will remain; a much more definite image than would be left by an object of momentary attraction in the street, because you have given it your whole attention for an appreciable time, and the traces left are sharper.

143. *Repetition* of an impression strengthens it, so that images of very familiar things arise very vividly. Think of some thing or place with whose details you are very familiar. Perhaps a room that you have occupied on a recent holiday. You see it with your mind's eye, and all the objects that it contained. The mental image is not so distinct as when you stood within the room and had percepts of the objects in it; yet it seems to you as if you had the same sensations as when you looked round the room. And so you have, but now all the sensations are aroused from within, without any stimulation of the sense organs from without.

144. Even time does not always obliterate these mental photographs of ours, as we know. Think now of some place or person that you knew intimately as a child but have not seen since, or of some event that made a strong impression on you, pleasant or unpleasant, at that period. . . . The mental image rises, the impression revives, in response to my suggestion, in spite of the time that has elapsed; for the brain in childhood is plastic and easily receives and retains impressions. (I do not take it for granted that all my readers visualize equally well; I know that if I could question each separately I should find great differences in this respect.)

145. We shall return to all this when we speak more in detail about memory, which is, of course, a matter of retention and recall. At present our business is to inquire how the power of mental imagery can help us in teaching. Obvious as these experiments may appear to some of you,

they may be useful, for they can be directly applied to your work of pianoforte teaching.

The child's first lesson is about the keyboard. We direct his attention to the grouping of the black and white keys. Now, children love to try experiments; so, after he has looked at the keyboard and you have talked about it, ask him to shut his eyes and try if he can see it 'in his head' and describe it to you. Tell him that if he looks carefully at the keyboard he will be able to see its picture in his head whenever he likes. Try other experiments. Let him shut his eyes and think of his mother. He will seem to see her. Of his home, and so on. Why do I ask him to shut his eyes? Because the mental image will be more vivid if his attention is thrown completely inwards and away from the distraction of things around him. He cannot visualize his mother so clearly while he is looking at you. At his next lesson ask him to describe the keyboard before you open the piano. He will like to do this if you call it 'telling you about the picture in his head.' It is a little bit of introspective psychology within the power of a little child.

146. Then, too, you will show him the inside of the instrument. He will see what happens when the keys go down; the action of the hammers on the strings, and what the dampers do. Then he tells you about it without looking. His pictures now are moving pictures. His mind is like a little cinematograph. He sees things *happening*. At the next lesson you will test him. You will try whether with his mind's eye he can still see

these things happening, and can tell you about them. And when you find that his mental images are not clear, you will repeat the experiment—let him see it all happening again, noticing more accurately and filling up the gaps in the story.

147. The mental image left behind by any percept may be an imperfect one at first; but each time that we perceive the object afresh we compare, as it were, our idea with the fresh perception, add some detail to the picture, correct and fill out our mental image. These experiments give you an opportunity of observing differences between individual children as to their power of visualizing. But remember that what seems a lack of clearness in the child's mental image may be due to a difficulty in expressing himself in words; for the power of 'imagining' is strong in the average child, though many adults do not visualize vividly, and some will tell you that they cannot do it at all.

148. At a very early stage in the child's pianoforte lessons you will notice a difference in the ease or difficulty with which the little pupils do what I call the *Locality* exercises.* A child whose *understanding* about the connection between the staff and the keyboard is quite clear will sometimes be what his teacher calls 'unaccountably' slow in both forms of the exercise. He never seems quite sure of himself, and will from week to week make little progress in speed of response; while another child will go ahead until he can name and play a whole line of notes in a minute

*A reference to the lessons in my Pianoforte Method.

—or even with greater ease just *look* and play. The teacher wonders whether the slow child sees properly, but she tests his sight in other ways and finds it good. What is the matter? If we are to cure a fault we must account for it.

149. It probably is that he has not a sufficiently vivid mental image of either the keyboard or the staff diagram to refer mentally to the one of them when looking at the other; the percept of the one blots out the image of the other. When you, pianists, are playing 'from the book,' you have at the back of your minds a picture of the keyboard, and on this mental keyboard you find your way about while your eyes are engaged with the score; and when you play by heart, looking at the keyboard, you have a similar semi-consciousness of the written page. You seem to be playing from that.*

150. In the case of the hesitating child try this: When he has named a line or space let him, *before* looking down at the keyboard, visualize it—i.e. *imagine* that he sees it—and think where the sound he has named is to be localized. When he is sure of this on his mental keyboard he will probably go straight to the spot. Conversely, in the dictation exercise let him visualize the staff before looking at his slate (or the diagram) and deciding upon the exact line or space which belongs to the sound played before he looks up and proceeds to write it. It is because the other child instinctively does this that his work is rapid. With the slower

* Individual experiences will differ. Some people trust chiefly to muscle memory, and have but a faint image, if any, of the score.

child we must make the process a conscious one until a marked increase in speed shows that it is becoming sub-conscious. Try this plan, and try it early. Do not let the habit of slowness grow. A child begins to dislike doing what he does not do better and better.*

151. Let us see how all this applies to the storing and recalling of musical ideas. Will one hearing of a piece of music leave as vivid an image with you as the picture that held your attention for a short time in the picture gallery? Ask a friend to play to you a portion of a very simple piece—about sixteen measures—and see if it leaves as complete an image in your mind as the *Punch* cartoon did. You will find that you have only captured a few notes of the tune, while the details of the picture or the cartoon were at once tolerably complete. Why is that?

152. Because all the sense-impressions from the picture reached you together and were at once combined into a complete percept. You saw the picture as a whole. In the other case the sense-impressions came in succession. Some had passed away before the others came and you were not able to keep the earlier ones until the later ones arrived. The whole thing passed by and was gone, and you never had a complete percept of the tune at a given moment. You never, as it were, *saw* the whole tune together.

153. We must remember this great difference between visual and aural perception, and the consequent difference between visualizing and

* From the 'Teacher's Guide,' page 62.

auralizing after a single experience. The eye takes in large groups of things at a glance, and it can even rapidly retrace its path over the picture and renew its impressions. But it is not so with hearing. When a person speaks to you his words reach you in succession. Word after word falls on the ear, is 'damped,' and disappears (50); but the after image of each links on to the next word, and so words grow into sentences with a meaning, and we grasp the speaker's complete thought. So, in listening to music, its melody and its rhythm reach you gradually. Sound after sound falls on the ear, is 'damped,' and disappears; but the after image of each links on to the next; single sounds grow into figures and phrases with a meaning, and we can grasp complete musical thoughts.

154. In listening to harmony, many different pitch-sensations reach us together and are combined into one clang or chord, each of which may be called a musical idea. When we consider how in rhythmic and melodic progression group succeeds group, and how in each group the two different kinds of sensations are combined (sensations of pitch and time), and how, again, these group-ideas are intermingled with clang-ideas, we begin to realize that listening to music is a very complex process. Is it any wonder that one hearing of the simplest tune leaves behind it but the merest ghost of a mental image?

155. The amount that can be retained after one hearing of a piece of music, or even of a single phrase, varies with individuals. We have on

record extraordinary instances of the reproduction of entire compositions after one or two hearings. But these are rare.

156. We noticed that one of the conditions on which the vividness of an image depended was the familiarity of the object. If I ask you to *think* 'God save the King' you have no difficulty in doing so . . . and, if we get the cue, old tunes that we sang as little children ('There is a happy Land,' for example) come back to us as vividly as the National Anthem. If you were to hear any little tune repeated a great many times you would probably be able to 'ideate' it so completely that you could play it from memory next day. At each repetition you would compare your imperfect idea with the fresh percept, fill up the blanks, and gradually make your 'image' complete.

157. 'Image' may seem to you a curious term to apply to the memory of sounds. But there is no other technical term for *that which is left behind by any percept, through whichever sense the impressions may have come*. You often speak of 'imagining' sounds, and this just means having mental images of them. When you think a tune, i.e. when you hear it mentally, you have an auditory image.

158. I have found that many students run away with the idea that the image of a tune includes its notation. It is not so. Ask a little child who knows nothing of musical notation to sing to you 'Little Bo-peep' or any other ditty that she knows. She does it. She could not do it if she had not a mental image of the tune. The

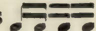
image of the notation, of which *you* are conscious, is an associated image. The child's is purely a sound-image, an image of the thing itself.

159. I want you to notice one or two things about such listening tests as I have suggested. First, that if you fail to 'ideate' the tune at one hearing, no amount of thinking back and trying to remember is of any use. Music passes by and is gone. If you have not seized it as it passed by it must pass by again. It must be caught on the wing. It is important to remember this when giving ear-exercises, whether in time or tune. I have heard a teacher say to a pupil who had failed to grasp an ear-test, 'Think!' but thinking doesn't help. The teacher should say 'Listen!' and repeat the test. Secondly, though you may find in your experiments that you cannot retain sixteen measures, you would probably succeed with two, or even four. A short phrase can be reproduced because its first sounds can be retained long enough to be associated with the last.

160. The early ear exercises, then, should be *short*. At the introduction of a new pulse-division ( for example) it is better to embody it in a three-pulse measure than in a four-pulse, or even in a two-pulse measure for some children; always, however, finishing with a resting-note of full-measure value ().

161. Musical ear-exercises require a mental alertness not required by any other kind of observation lesson. All observation lessons are good, and they are largely used in school work. The art teacher gives a lesson in memory drawing,

exposing an object or an outline for a short time and then covering it up. The picture produced by the pupil is a copy, not of the thing, but of the mental image which remains; for we can only reproduce as much of the percept as we have been able to gather up into a mental image. So improvement in the drawing denotes improvement in the pupil's scope of attention. Sometimes a number of things are placed on a table and the pupils tested as to how many of these they can remember as they pass by—the numbers being gradually increased.

162. Now, in all such exercises the teacher can, at her discretion, give more or less observation-time. But in music she has no option. An ear-exercise, by its nature, forbids any latitude or indulgence. We cannot place sounds on a table and examine them at our leisure. They mock us by their transiency; we have to be very alert if we would capture them. A teacher can only make an ear-exercise easy (*a*) by making it short, or (*b*) by making its constituents very simple, or (*c*) by directing the attention to one constituent of a group. For instance, after a lesson on a new pulse —perhaps  (*tafe-téfé*)—the teacher will say: 'I am going to play a four-pulse measure. Listen, and tell me on which pulse you hear *tafa-téfé*.' The attention being on the alert for that constituent of the test, it easily jumps to the focus, and the remaining pulses are as if they had not existed; they simply disappear. But when the teacher is satisfied that the new pulse is known, because it is recognized at any point in any

measure, she says: 'Now give me back a whole measure.' The attention is now diffused over all the constituent pulses; the rhythm holds them together, and the measure is seized as a whole, like a spoken sentence.

163. Notice, too, that the material we are called upon to observe is different from all other material. In other observation lessons we exercise the mind's judgment on visible and tangible objects; and even if we were to set ourselves to train the senses of smell and taste, the material would be visible and tangible, so that the senses would help each other. In ear-observation we deal with *sounds* and their relations to each other in pitch and duration. No other sense can help us here. The ear must act alone, and must act rapidly.

164. A little child is sometimes called stupid for failing to carry out directions which have been given too rapidly, so that the corresponding series of images has not time to appear in the child's mind. A child of three is quite able to do a simple errand if it is dictated properly. But perhaps the mother says, 'Baby, run upstairs to my room and fetch my key-basket from the little table beside my bed.' Here are five objects—stairs, room, basket, table, bed—mentioned in such quick succession that the little one has no definite image of any of them, though all are familiar. But if the message is broken up into separate presentations the errand will probably be done quite well. For example:

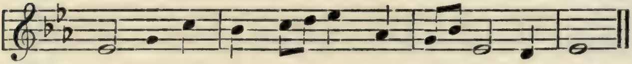
165. 'Baby knows Mammy's room upstairs?' 'Yes.' 'And Mammy's bed?' 'Yes.' 'And the

little table beside it?' 'Yes.' 'And Baby knows Mammy's key-basket?' 'Yes.' 'Well, now, Baby will go upstairs . . . into Mammy's room . . . and beside the bed . . . on the little table . . . she will see Mammy's key-basket . . . and bring it down.'

166. Now, in this way the familiar images are called up one by one into consciousness. Each has its meaning 'for behaviour,' and the little one toddles off, probably repeating the message out loud as she climbs the stairs.

167. We can treat ear-exercises in the same way. A pupil who cannot take in a phrase of four measures will succeed if it is broken up into small sections. It requires a good ear and a considerable amount of practice for a pupil to take in at one hearing the example below (1), but if we begin by breaking up the exercises the result is encouraging:

1. F. G. SHINN

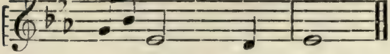


(2) The same, broken up, with a resting note introduced after the first and second measures:

2. (a)

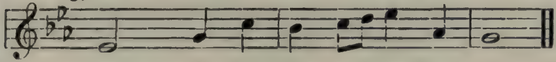
(b)

(c)



Let each little section be dictated separately, written, and sung if it is within vocal compass. (3) Rub all off the board. Then dictate sections (*a*) and (*b*) in combination, thus:

3.



And then (this being rubbed out) sections (*b*) and (*c*), thus:

4.

Play the complete phrase once through. It ought to be easily written from memory if in the early stages the training has been good and well graded.

168. Visualizing and auralizing strengthen each other. That is why sight-singing and ear-training should be taught together.

169. When you have memorized a piece, and afterwards habitually play it by heart, small inaccuracies sometimes creep in, which you discover to your surprise if some day you play it with the score before you. Knowing this about yourselves, when inaccuracies begin to appear in a pupil's memory-playing we may guess what is happening. The mental image of the score has become blurred. Now, memory-playing is very important, and we can guard against inaccuracy by making a simple rule about practising: Never start practising a piece from memory without reading it through first. I mean reading without

playing,* though any doubtful passage may be played. Even children may be trained to do this. The object is to get a fresh percept of the score; to fill up the gaps in our mental image of it.

170. In teaching our pupils to memorize music we have to keep in mind an interesting fact—namely, that individuals differ in the ease with which they form and retain images of different classes. Some people seem to have a kind of mental preference for eye-images, some for ear-images, some for touch-images. This is what is called the Preferred Sense. Some people tell you that they can recall tastes and odours, and this is possible; for every sense-impression leaves a trace—each sense has a memory. Most of us can at least *recognize* tastes and odours, but to conjure them up in imagination — to think them—is a different thing, and such

* Reading music without playing it is an economy of physical strength which is often important for growing girls, and also tends towards strengthening their symbolic perception. The preparation of a new piece without playing it is strongly advocated by Mr. Ernest Fowles, who accustoms his more advanced pupils to prepare in this way, playing the piece for the first time at his lesson. It is excellent eye-training, and also necessitates a mental association of staff and keyboard and fingering. It does not necessitate any mental hearing, except of the patter of the rhythm. A piece may not only be prepared for sight-playing, but actually memorized, apart from the piano (as pupils of the Virgil School proved), without that mental realization of melody and harmony which is included in the full perception of a pianoforte score; and if pupils are not tested in these particulars we may give them credit for more musicianship than they possess. That is to say, it may be *merely* visualizing, with no musical perception behind it. But this does not take away from the value of the exercise as a preparation for and training in sight-playing. By many teachers nowadays little beginners are trained to this kind of mental preparation before starting their tunes and sight-playing exercises. (See 'Teacher's Guide,' page 88, on the treatment of a Reading Exercise.)

memory-images must be faint. They do not, at any rate, concern us here. Our direct interest is in the other three classes of persons, whom we call Visuals, Audiles, and Tactiles. With many people, along with the visual or aural image there is a distinct revival of the muscular sensations and movements connected with it. When they think of swimming or climbing they have a feeling of exertion, and when telling you of such feats they will show a tendency to make the appropriate movements. When they think of a tune they will beat time with hand or foot, or move the fingers as if playing it. These are Motor-visuals or Motor-audiles.

171. In some people this motor memory is so strong that they are classed apart, as Motiles. I can instance a friend of my own who was quite tone-deaf, but was very sensitive to rhythm, and danced beautifully. She recognized music entirely by its rhythm, and it was a favourite joke to play to her the melodies of 'Garryowen' and 'Bonnie Dundee,' which are identical in rhythm, and ask which had been played. She never could tell, the 'up-and-down' sense being altogether wanting. She was evidently a Motile.

172. Such idiosyncrasies do not seem to be due to the native acuteness of one sense or another. A person may have perfect sight and be unable to visualize, and deafness is no bar to the inward realization of music if the person has not always been deaf. Perhaps habits started by early teaching may have something to do with it. A person whose first study of languages was from books will

often have difficulty in picking up a language by ear, although his ear and power of imitating may be excellent. He may, indeed, be essentially an audile, but trained as a visual; so that, from habit, he needs the picture of the written word to fix it in his memory. So also we find people who have given years to the study of music but are weak in aural perception; not because they cannot hear, but because the inner sense has not been cultivated. Good sight-players, good performers, showing musical feeling as well as brains, they cannot recognize and name the chords in a simple progression played to them, though they have 'done' advanced harmony. Nor can they—as many a youth can who has no technical knowledge of music—pick up by ear a song that they have heard a few times and play it on the piano, making a very good shot at the harmony. They may have started life as audiles, but they were trained as visuals, and have lost the habit of listening.

173. It is often difficult to judge whether one is one's self a visual or an audile, because there is no absolutely pure memory type. Most of us can visualize and auralize, and have tactual and motor images. We belong to a mixed type. But there is always a *tendency* to one way or another: that is all that is meant. And we can test ourselves to some extent. When you are in a concert-room, do you like to shut your eyes and listen to the music or do you like to watch the player or the singer? When you come away, what is your most vivid impression: the personality, the mannerisms, and the dress of a singer, or the music she has

sung? When you read a play *which you have not seen acted* do you imagine scenery and see the performers moving about it—or do you seem to hear the words of the play uttered with proper emphasis by voices, male and female, young and old? When you have been to the opera, do you carry away with you more of the music or of the scenery and action? When trying to recall mentally a piece of music which you have partly forgotten, do you find yourself trying to remember the score or the keyboard, or do you simply *hear it*, apart from either? Does a sense of the fingering come in? Are you trying in imagination to *play it?* In ordinary matters do you learn more easily by being told things or by reading them in a book? When repeating poetry by heart aloud or mentally, do you hear the words or see them in their place on the page? All these are approximate indications of our 'preferred sense.' It is interesting to compare notes, if only for the sake of realizing how different we are from one another and being prepared to find our pupils different from ourselves.

174. You will find visuals, audiles, and tactiles among your music pupils, and their tendencies will affect their work. The pianoforte pupil has to cultivate eye-memory, ear-memory, and touch-memory pretty equally, and you may have to level up as you go along. To level up, we must notice which is the pupil's preferred sense, and while we use it as the quickest way to achieve an immediate result, we must see that he does not trust exclusively to it, and so miss the help

he may get through other senses in this particular kind of work.

175. In relation to instrumental music, the eye-memory works in two directions; there is the mental image of the score and that of the place or *shape* of each passage on the keyboard.

176. The ear-memory also works in two directions. It detects wrong notes when played—correcting after the mischief is done—but it also reminds us of what is coming, and in this way it is very valuable. Under certain conditions the ear-memory, usually the least reliable, might be the best of all. When harmony is taught from the beginning in a *direct* fashion—i.e. at and through the keyboard—so that ordinary pianists can readily transfer to the keyboard what they mentally hear, then the ear will be an invaluable reminder to the many, as it is now to the few, who have skill in thus applying their harmonic knowledge.

177. The muscle or 'motor' memory is useful in establishing fingering; it is automatic. It often carries us over a dangerous place when visual and aural images fail us. But in memorizing whole compositions it is a broken reed on which to lean.

178. The analytical memory is a corrective to the mechanical muscle-memory. It keeps before the player the composer's sequence of ideas and their development, and so takes intelligent command of the mere sense-memories. But that belongs to a further stage in our study. Memory means more than the revival of images; but all that it means may be considered later on.

179. Among amateurs you will generally find

that the fluent reader is a poor memorizer, and will probably tell you that he cannot memorize; while the person who by preference plays from memory is not usually a fluent reader. We may almost say that (among amateurs, at any rate) sight-playing and memory-playing are in inverse ratio. I think this can be accounted for.

180. The eye of the fluent reader passes over the score rapidly. His attention to it is fleeting, hardly conscious; it is a case of automatic behaviour in response to the notation (113), and leaves hardly any trace in the mind.

181. The fluent reader seldom looks at the keyboard. His hands find their way about without the help of his eye, and he has no vivid picture in his mind of the *placing* of his passages on the keyboard.

182. The fluent reader's technique is equal to all ordinary demands upon it (if it were not he could not be a fluent reader), so that he only *practises* difficult passages, and the connecting tissue of the piece is not committed to his muscle-memory. His tactual images are fragmentary.

183. Now, the poor reader is the reverse of all this. He deciphers slowly, and almost invariably looks at his hands while doing it. His eye travels up and down, up and down, between score and keyboard, and he gets a blurred image of each. Reading being irksome, he prefers to memorize as he goes along, learning in short sections, and giving more and more attention to the placing of each section on the keyboard. It is to muscle-memory and keyboard-memory that he eventually

trusts; and in an extreme case of this kind it has been found that when a piece has been laid aside for a while and the muscle-memory has failed, the pupil has had great difficulty in playing it from the score. It was like learning it over again. When you mark this tendency to trust altogether to keyboard memory it is well to insist on the precaution I have suggested above—namely, that the piece shall be read, with or without playing it, between the memory practisings.

184. For the public performer memory-playing is all-important, and I have heard, though I cannot vouch for it, that some trainers of young artists are not particularly anxious that their pupils should be fluent readers. But for the average person, the amateur who has some talent, sight-playing is one of the things which will make her most useful in her day and generation. Nor is it necessary that memory-playing should suffer. By all means let her memorize, for we never enjoy to the full what we do not play by heart; but do not let a preferred sense lord it too much over the other senses. Level up.

185. With good powers of visualizing, auralizing, and tactualizing you can practise very effectually when lying awake in the dark. You see the score (you also discover the gaps in your image of it), you hear your ideal interpretation of it, you perhaps feel your limbs actually playing it. It is a mistake to suppose that practising can only be done at the piano. As a matter of fact, a great deal of time is wasted there; and wasted too by the conscientious pupil who thinks she

fails in her duty if she stops playing for one moment! So she plays her piece over and over, with a vague hope that it will come right somehow. If she would stop and *think* the piece, or sections of it, between the repetitions—think it, i.e. imagine it, as she would like to hear it played—she would probably, at each repetition, bring it nearer to her ideal. Leschetitzki told his pupils, 'For one playing, think ten times.'

186. To call up a mental image we need a reminder or cue. This may be an identical experience, such as meeting the same person again; or a similar one, when we say 'that reminds me' of so-and-so. Or one idea may call up another, so that sometimes we find ourselves face to face with an unexpected mental picture, and say 'I wonder what made me think of that.'

187. But our principal reminders are words. On these we depend for the larger part of our mental activity from moment to moment, and we rely mainly upon them for holding communication with the minds of others. It is curious that by a word—which is, as Professor Adams says, 'only a peculiar kind of noise'—we should be able to cause a mental image or idea to come into another person's consciousness. But so it is.

188. You see then, that by giving names to objects in the outer world we establish cues by which their images can be called up in our own minds, or similar ones in the minds of other people.

189. The importance of naming is hardly realized by teachers. The great difficulty they

have had to contend with in the teaching of time and its notation has been a lack of a name for the thing *heard*. The names used in the ordinary teaching of time are only the names of the symbols: *crotchet*, *minim* or *whole note*, *quarter note*, etc.; and there has been no way of teaching it except through the symbols, which is the wrong order. Aimé Paris recognized the need of naming time-*sounds* as distinct from time-*signs*, and invented those syllables which he called the *Langue des Durées*, and which we who use them in England call the *Time-names*. These meet the difficulty completely. When the pupil has observed a new fact, a fresh pulse-group, he gets a name for it, a something with which he can record his observation, which is not the name of the symbol, and which he can use *before he sees the symbol*. Thus we are enabled to follow the true psychological order in teaching—namely, first the thing itself with its name, and then the symbol. Teachers are finding out the value of the time-names, and many who began by scoffing at them now say, 'How did I ever teach without them?'

190. In the teaching of pitch-relations naming is of primary importance. For the teacher of sight-singing and ear-training—two aspects of one subject—the difficulty is not a lack, but a choice. If she tries to teach by interval and absolute pitch she will, of course, use the absolute pitch (keyboard) names, A, B, C, D, E, F, G. I should not anticipate much result from that plan, however. If she decided to work by relative pitch, as most people do nowadays, she must choose between the

figure scale-names, 1, 2, 3, 4, 5, 6, 7, or the syllabic scale-names, *doh*, *ray*, *me*, *fah*, *soh*, *lah*, *te*. The question for her will be, which set of names is likely to be most efficacious in fetching up into the mind the images of the scale-sounds? A sound must be imagined before it can be sung. Which word will the more probably help the learner to imagine the sound of the fourth of the scale—the word *four* or the word *fah?* Of the key-tone, the word *one* or the word *doh?* There is no lack of statistics on this point. Inquire, experiment, and judge for yourselves.

191. To attempt to teach without names is futile. Names of some kind you must use. Without names you cannot teach—anything. Names individualize, classify, help us to record what we observe. Music is just like any other subject in this respect. Its every little detail is a fact that reaches us from the outer world, and until we have named it it can have no permanent place in our inner world.

192. In teaching, we may have to use temporary names, to be exchanged later for the more technical ones used by musicians. But a change of label is no difficulty when the thing signified is thoroughly known. A child says 'breakfast' when she is in England. When she crosses the Channel she learns in a day or two to call it 'déjeuner,' but the change of label does not affect her behaviour towards it, which is all that matters. The pianist's behaviour in response to a sign of this shape (♯) is the same whether she calls it a 'sharp' in London or a 'dièse' in Paris. Think

of these things, and choose the helpful name. If, as in the case of the time-names, it seems to you childish or elementary, never mind. Your task is to get knowledge, by hook or by crook, into the learner's mind. To choose the hook that will best hold it there is simple common sense.

193. Grown-up people do their thinking and reasoning by means of words, which may or may not (as we shall see further on) call up mental images; but children do their thinking by means of objects and images for a very long time, and if we would guide the pupil's thought and give him clear notions we must be able to call up in his mind such images as may help him to understand. We cannot teach without using illustrations and analogies very freely, and for this we are dependent on the child's existing ideas. We must take stock of these, else we may find ourselves talking over his head and using terms which have no meaning for him, or else words which he may entirely misunderstand. *We* must think in *his* terms.

194. In the beginning of our teaching we are dependent for illustration on the musical images or ideas that the children already possess, and for any analogies we may desire to use we must find related ideas in their experience outside music. The child who has a good store of tune-images within call has the material for illustration ready to hand; hence the importance of rote-singing in the nursery and kindergarten. For the mind knows things first as *wholes*, and then analyses the wholes into parts. The pupil who can *think*

'God save the King' has a mental image from which we can illustrate—

(*a*) Three-pulse measure.

(*b*) The continued half-pulse (♩. ♪ *taa-a-té*).

(*c*) The effect of low *te*.

(*d*) The effect of *soh*.

(*e*) The effect of *fah*.

(*f*) The increase of tone on repeated notes.

195. So we can utilize the same tune in different departments and at different stages of the child's work, and it is easier to teach a child who has a good stock of tunes stored up in his memory, because our illustrations are references to familiar things. It is also easier for the child to learn. He can pick the familiar tune to pieces, and hold a section of it before his mind long enough for it to be a real illustration of what you are teaching him. He can compare and form a judgment. With a new musical example this is more difficult.

196. Before we go further let us note the differences between the mental image and the percept, and be clear about that.

(*a*) When the object is before you, you have a percept of it; you perceive it.

(*b*) When the object is no longer there you have no percept, but you have a mental image of it.

(*c*) The percept comes to you from without, though it is reinforced from within.

(*d*) The image comes to you entirely from within.

(*e*) Perception stops when the object is removed, but—

(*f*) We carry our images about with us.

(*g*) The percept may be called a copy of the present object.

(*h*) The image is a copy of the percept.

(*i*) The image is less vivid than the percept, less accurate, and tends to become less and less accurate. We might expect this from the copy of a copy.

(*j*) The percept cannot alter, unless the object itself alters.

(*k*) The image *becomes general* in course of time, and what that means we shall see by and by.

Chapter VI
IMAGINATION PROPER

THE kind of imagery we have been speaking about is usually called by psychologists Reproductive or Representative Imagination. Its imagery is limited to the reappearance of things or events in our past, whether that be a past of many years or few minutes; its images are purely memory-images. I have purposely been sparing of the term 'imagination,' because in our everyday use of it we imply something more than this and something different. Representative imagination is what we usually call by the simple name of Memory; but there is another kind of imagination of which we have yet to speak, a form which exercises itself in much greater freedom. This is known as Productive, Constructive, or Creative Imagination.

198. Perhaps the simplest form is imagining a means to an end, and we often see this at work in early childhood. Here are three examples from recent personal experience.

(*a*) Two small boys, on the edge of the ornamental water in Regent's Park, are playing with a little sailing-boat. It evidently belongs to the younger, who may be five years old. The string, insecurely fastened to the small craft, comes undone and is left in the child's hand, while the boat sails out of reach. The little fellow is desperate: 'Oh, 'tis gone! 'tis gone!' But the other boy, very little older, picks up a stone and ties the cord firmly round it. Then, aiming beyond the boat, at the second try he gets it over, and the derelict is towed into port. Before the boy did that he must have seen himself in imagination going through the whole performance, connecting ideas of things that had no common relationship to one another to compass a possible end.

(*b*) The next example is from a younger mind. Grannie had spent the day with the bairns, and had made no provision for getting home from a neighbourhood where cabs were scarce. Various routes by tube and bus were suggested, all impossible for Grannie, who was very lame. The baby, not quite three, was plucking at her mother's sleeve, evidently bursting with an idea. At last it came: 'Mammy, there's the rocking-horse in the nursery!' It was pretty, and incidentally proved that when Jean was on the rocking-horse she was not merely rocking; she was going somewhere. If Jean could go, then so might Grannie. Here was real thinking, and purely in images.

(*c*) The hero of the following was aged eighteen months. Douglas was taken by his mother to visit a friend. The children of the house were out and their mother occupied in another room. So Douglas was planted on the nursery floor with some toys at his hand, the little safety gate across the door, 'nothing within reach that could hurt him,' and the mothers retired to the next room. Nothing within reach! But Douglas knew a jam-pot when he saw it, and also knew one of the uses of a chair; and when the mothers were at liberty they found Douglas on the chair, the jam-pot nearly empty, and as much of its contents outside the baby as inside. Whether we can class this as Constructive or Reproductive Imagination depends on whether Douglas had ever done this before or not. Was it the suggestion of a mere memory-image, the revival of an identical experience, or did he—all the attendant conditions being different from those in his own house—think it out? Unfortunately he cannot tell us yet, his form of self-expression at present being deeds, not words.

199. The inventive mind is of this constructive type. A cook wishes for some quick way of peeling potatoes or stoning raisins. A mechanic says, 'I see how that can be done,' and his '*I see*' is literally true. With his mind's eye he sees the tool that

is to do the work. Now, we have been learning that a mental image is a copy of something which at one time or other has been actually present to sense-perception. How, then, can he have a mental image of a tool which is not yet in existence? He has ideas of various other tools, each a means to an end; and, just as a child breaks up his house of bricks and builds another and quite different house out of the same materials, so the inventive mind breaks up its existing images and pieces them together in a different way to compass a different end. And when the inventor's vision materializes, the world is the richer by—well, it may only be a potato-peeler, but it may be a typing machine or an aeroplane or a wonderful substitute for a lost limb that will make life bearable to a broken man.

200. You see, if imagination were always limited to memory-images we should never get any further. As things were in the beginning so they would be now, and ever would be. But we can split up our images, dissociate ideas, and recombine them in a fresh connection. We can break up complete images into part images, and join parts to parts, and so produce something new, something that is not a copy of any actual object or any actual experience.

201. In teaching we rely greatly on the pupils' reproductive imagination, i.e. their memory. We use it to test their retention of facts. We use their memory of one set of facts to throw light upon another set, through comparison, analogy, etc. But we have also to call into play their constructive

imagination to a very great extent. Children have to learn about many things which we cannot show them in the concrete, so we have to help them to build up mental pictures out of those they already possess.

202. For though we call imagination free, it is not totally free. In all our mental creations we must use existing material. 'You cannot imagine a colour over and above the colours you know, though you may imagine these combined in new ways.' It is out of memory-images that our liveliest imagination has to construct its fancies. We cannot build houses without bricks, not even castles in the air. And so, when we want to teach a child about something that has never, and may never, come into his experience, we have to begin with that concrete fact, or a memory-image of it, which comes *nearest* to what his imagination has to construct.

203. Some years ago there was a very interesting article in the *Journal of Education* on 'Hampstead Heath as a starting-point in teaching physical geography.' The child's imagination magnifies its ponds into great lakes, its trees and scrub into forest and jungle, its sandy places into deserts; the Spaniard's road typifies a plateau and a watershed, and so on. Any familiar thing may be changed in imagination to something 'the same, only much bigger,' or smaller. Professor Sully points out that an iceberg or a glacier can only be imagined by a child who has fairly distinct images of the blocks of ice he may have seen. Starting from the fishmonger's window he arrives

at the iceberg. Pigmies and fairies are only real people looked at through the wrong end of our mental telescope. The delight of a fairy-tale is the free exercise of this constructive imagination. Things that never were are created out of things that are, and improbability is no bar to a new combination of ideas when we are very young.

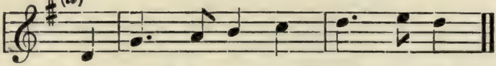
204. The poet, the painter, and the musician cater for us in this way, putting together in a new fashion things and fancies that we know already in other combinations. But while the poet and the painter have all creation to come and go upon, the musician's material is extraordinarily limited. Have you ever realized how limited it is? In our musical scale there are twelve sounds, and out of these twelve sounds all the music in the civilized world has been constructed.* We multiply them by seven or eight octaves, we form them into groups that we call keys, we ring the changes on these, we alter their quality by producing them

* The bald statement sounds startling, but it is simply explained. On a chime of four bells you can ring twenty-four changes. A simple mathematical progression gives 720 changes on six bells and 40,320 on eight. That is to say, out of one diatonic octave you may construct over forty thousand melodies. They wouldn't all be good melodies; a large proportion would probably not be harmonizable—though we could not nowadays be sure about that—but they are a possibility. If we extend the same mathematical formula to a peal of twelve bells, a chromatic octave, we get 479,001,600 changes. A possible 479 million tunes leaves a large margin for harmonic limitations, so that we need not be nervous about the supply of workable melodies 'giving out' like the coal supply. And to the possibilities of melody and harmony we have to add the endless possibilities of rhythmic combinations, unthinkable in number. We sometimes hear it said that the classic composers exhausted the good tunes, so that it is difficult to be original; but, on the whole, it looks as if our young composers may carry on, in confidence that the supply of raw material will last their time.

on stringed instruments and instruments of wood and brass. We combine and re-combine all these, and stimulate the imagination still further by adding to them mere noises, the clash of cymbals, the bang and rattle of drums. But there they remain, the twelve—a contemptible little army that has conquered the world and still has worlds to conquer.

205. This brings us to the question of how far we can call the constructive imagination, so active in the child's free play, into use in our music lessons. The let-*me*-do-it spirit is strong in children; can we use it in creating anything new? The kindergarten idea of encouraging 'self-expression' has caught on with the music teacher, without much consideration of the medium through which the thought has to be expressed or the nature of the thought itself. The exercise commonly used is one that I first saw thirty years ago at the Summer Sessions of the Tonic Sol-fa College, when experts in teaching demonstrated methods, suggested devices, and tried experiments in front of the students. It consists in singing a short phrase to a child and eliciting a response to it. For instance, the teacher might sing—

(*a*)



and the child would perhaps reply—

(*b*)

or something like it. It was a favourite experiment with the late Dr. McNaught, who, in his teaching days, was particularly happy in the handling of classes of very young children. But he never tried to build anything on this rickety foundation; he knew just how much it meant and how little.

206. To the teacher the experiment is very useful, enabling her to form some estimate of the general musicality of her class, and what response to the more direct and real teaching may be expected from individual children; for you can almost pick out the child who comes from a musical home by the spontaneity and fitness of his replies. To the child its chief value is as a relaxation, and the teacher will use it to that end. A lesson to a class of little children consists generally of exercises in observing the facts of time and tune. Attention is short-lived, therefore the exercises have to be short and varied. Learning to know and name the sounds of the scale; singing short groups of these from the modulator, the hand signs, or the blackboard; recognizing them in ear-exercises; marking the accents in tunes by clapping; recognizing and naming pulse-divisions, and so on. Fortunately a music lesson offers scope for more variety in presentation than almost any other subject, because music is so many-sided. Now, short and varied as these exercises are, each involves comparison and judgment, and requires a moment of concentrated attention. So, to avoid fatigue, it is well to give little periods of mental rest by using exercises which require little or no thinking, and the

question-and-answer device is one of these; also that variant of it which consists in giving a snatch of a nursery rhyme and eliciting a spontaneous tune to it. The children, by these devices, can be kept actively occupied with a minimum of mental effort. The balance and proportion, the rhyming nature, so to speak, of the simple tunes a child sings, become by long use a part of his inner consciousness, so that a phrase of a questioning (i.e. incomplete) character suggests an answering phrase, and this, of course, will be an imitation or even reproduction of some remembered phrase.

207. Teacher and pupils can get much interest and amusement from this battledore and shuttlecock game, and if the teacher prepares her own phrases, so that she can quickly capture and write down the children's replies, the combination will often make quite nice little tunes. So long as the replies bubble up spontaneously all goes well; but if a child stops to think, i.e. to *make up* an answer, he comes to grief. The moment his attention is turned inward, self-consciousness comes in, and he is baulked. The conscious construction of a suitable phrase in answer to another would involve conditions belonging to a different stage of development; the possession of a certain amount of knowledge and the power of applying it. The spontaneous reply requires no knowledge and no thinking. It is merely the automatic appearance of a tune-image in response to a reminder. The child does not think about what he is going to sing. He does not hunt round

for something suitable, as you or I might. He sings whatever his tune-image brings to him. Yet people talk of this as composition. A school mistress, after describing this device, says naïvely: 'It is curious that if the children are asked to write their compositions they cannot do it.' It would be much more curious if they could; for if the child is baulked by a momentary glance at his own inward process he is baulked tenfold by the attempt to express that process through a medium that is not as yet fully at his command.

208. The use of these devices, then, is limited. I should say, use them, but to a limited extent; use them while you can. But do not expect the interest in them to last, for children tire of doing anything which does not develop, in which they feel they are not getting any further.*

209. But there is a stage at which we get something of rather more worth, when the child's practical knowledge of notation is sufficient to make him want to write down what comes into his head, and he begins to 'make up' tunes of his own, sometimes even to words of his own. Here we have some real constructive imagination. If it happen—and do not expect it to happen with every pupil—it is worth while to spend a portion of a few lesson-times in helping the child to put into notation the little tune he has perhaps picked out on the keyboard. The wish to write gives an

*An exercise in imagination, more useful, because more lasting in its effects, is playing to the children and asking them what the music says to them, what kind of *picture* it brings to their minds, what name they would give the piece. This reacts on their interpretation of the pieces they play and the songs they sing.

immediate value to knowledge of notation, and invests it with a new interest. Strike while the iron is hot, tell him anything he wants to know, engage his interest in anything musical while you can. But do not spend much time on it. Give him a start, and then let him try to get along by himself. If he is keen he will do it in his playtime, and you will show your interest by spending a few minutes of his lesson in looking at the tunes he brings to you. But do not be disappointed when this interest, too, fades out. In fact, the more you enlighten the child the sooner it is likely to subside. 'Why should it?' you ask. 'Surely here is something that may be developed, something we can build upon.'

210. Perhaps you can find the answer in the following little letter from a child of nine, enclosing a composition, quite a good minor tune, with a drone bass, single notes, tonic and dominant alternately:—

> 'I made up the piece I am sending, and I hope you will like it. I am afraid the bass is all the same, but I never can make any kind of tune in the bass of my make-up pieces without getting the treble all wrong.'

We smile at the child's way of putting it, but it expressed the feeling that a good bass ought to be something good in itself, and showed that she had been taught to observe what happened in the basses of the pieces she was learning. Now, the more a child learns in that way, the more she feels her own limitations, and the sooner she abandons composition. I do not say that in this case the interest *dies*. The active interest subsides, but the intellectual interest will survive in the form of appreciation, and the active interest may revive years later in actual creative work. The child's attitude is different for having tried.

211. The practical question is, how much time are we warranted to give to work of this kind? The musical parent—I mean a parent who is a musician—in constant touch with a child, and able to give many odd moments of his spare time to him, can do much by such little games as I have spoken of to stimulate the child's pleasure in music; and that is worth while. Spare time, like spare money, may be spent on things that have not much intrinsic value but may have an indirect value. But what about the teacher who meets the child for, say, two half hours a week? We have seen that the little give-and-take exercise has a legitimate use, in small measure and up to a certain point; but what is to be done for the child who wants to 'compose'? Are we to take her seriously and embark on a course of harmony and composition? Surely not. Even the musician-parent would probably say to the child, 'Get on with your pianoforte-playing, and you will see how composers make nice basses and do other things that make us like their music, and all in good time you may be able to do something like them.'

212. In borrowing the idea of self-expression from the kindergarten, music teachers have not considered the kind of medium through which the thought has to be expressed. When the child makes what she calls 'poetry,' she uses the familiar

medium of her mother tongue. When a little chap wants to give you his notion of a bird's nest, he digs his chubby fist into a ball of clay or plasticine and works it round, and to show you that it is a nest and not a sugar-basin he puts some little eggs at the bottom. His possibilities of self-expression through modelling increase in proportion to his command over clay or plasticine, and neither of these is a difficult medium. Again, in brush-work, a child must attain a certain mastery over his tool and his colour medium before he can produce anything recognizable. His teachers, knowing this, give much attention to *the medium*, and his progress is gauged by his gain in control of it.

213. Now, apply this to music. In the earliest stages the child's medium is his own little voice, and because he uses that easily we are deluded into thinking that self-expression in music is easy. But once we get beyond that stage we are confronted with the very difficult media of notation and the keyboard, the two channels through which the musician must express whatever ideas may be in him. Is not the teacher's first task to *build up the medium*, the only means by which the pupil, if he should ever have anything to express, can do it? Musical thought and invention soon become too intricate for the average child-mind. If an exceptional child-mind is discovered, the average teacher is not the person to deal with it. I am speaking to the average teacher of the average child; and, honestly, I cannot see how we are to bring the schoolgirl's musical knowledge and skill to any *useful* stage if we devote much of the

precious two half hours a week to side-shows. We must preserve our sense of proportion, remembering that for the amateur music is only one part of an all-round education. We must cultivate our sense of perspective, not placing in the foreground what may properly belong to a very dim distance. And we must exercise our common sense, and not—as Sir Oliver Lodge puts it—'spend precious time digging a soil in which nothing is to be grown and from which no fruit is expected.'

214. In Professor Adams' 'Students' Guide' I find this—and if by altering two words we put the teacher in the place of the student, it sums up the matter better than I can do it:

> 'When we are at a loose end, it may be quite a desirable thing to follow up interesting investigations, but we must keep in view in our [teaching] the main lines, so as to make systematic progress, and not be allured into following the strange gods of desultory [experiment].

215. There are so many delightful experiments we might make—and ought to make—if only time allowed; and it is good to know that some schools are giving sufficient time to music for such experimental work. The questions for the teacher in ordinary schools and private families are simply these: I have two half hours a week with my pupil, and the pupil has four (often only three) half hours alone. Of all the things I should like to do, how many *can* I do in that time? Which calls for immediate attention? How can I secure the maximum of understanding in a minimum of time, and give my pupil some command of the

keyboard as well, getting proof of musical intelligence through the fingers?

In the reaction from the old unintelligent grind at playing alone we are apt to go into the other extreme and say, 'Playing doesn't matter; let them learn to listen.' But it matters very much. On this side also let us keep our sense of proportion.

Chapter VII
THE CONCEPT

ONE of the differences that we noted between the percept and the mental image was that the percept does not alter, but the image may change very much. A percept is always definite. Being a mental copy of a present object, if that object does not change neither can the percept of it change. But images, we said, *became general* in course of time. This is how it happens.

217. If our experience is limited to a single specimen of a class, the mental image is a definite picture. The idea, like the experience, is limited. But as experience is extended our image expands, and the more examples we know of objects of the same class the less definite is our mental image, until at last the idea becomes so general, so indefinite, that the word which used to bring into our minds a definite image no longer does so. The word still stands for an idea, but a different sort of idea.

218. Thus, if I say to you 'King Edward VII was a fine-looking man,' the word *man* calls up in your mind a definite image. It is limited to the notion of an individual. It is a portrait of King Edward as you saw him or saw photographs of him. But if I quote, 'The proper study of mankind is man,' the word *man* calls up no mental image. It has now such a wide, general significance that its particular significance is lost. *Man* in the first example is a concrete notion; *man* in the second

is an abstract notion. We call it abstract because we arrive at it by abstracting (or drawing away) from the total qualities that we attribute to objects of one kind or class whatever qualities we find to be common to all of them, and the combination of these gives us a general notion of that class. This wide, general notion is called a concept, an 'idea' in the strictly technical use of that term. I want to say a good deal presently about those two terms, concrete and abstract, because I find that they are very commonly misunderstood, and the misunderstanding has caused some fundamental mistakes in music teaching. We cannot stop to say much about these mistakes just now; it is sufficient to say that the concrete is that which is discernible by the senses.* Perception deals with the concrete, conception with the abstract.

219. The little child's first step towards forming general notions of things is a rude classification of the objects in his immediate world. Classification means arrangement by the observation of likenesses and differences. At this early stage, however, there is little observation of differences, little comparison at all, in fact. As the child's

* When I ask a class of students, 'What do you understand by the concrete ? ' in nine cases out of ten the reply is, ' That which you can see and handle.' . . . The misunderstanding is very general, and has given rise to serious mistakes in music teaching. (See article in Appendix, reprinted from *Child Life*.) *See* and *handle*, yes ; but also *hear*, and *smell*, and *taste*. The concrete is that of which you became conscious through any of the senses, and the pupil learns in the concrete that which comes to him through any sense ; not hand and eye alone, as people seem to believe, but ear or nose, or palate, or muscles, or skin, according to the nature of the knowledge he is in search of.

acquaintance with his surroundings grows, he begins to be conscious of resemblances between things, and very soon we hear him say 'that's like' So-and-so. Professor Sully instances a child just over two years old who, watching a dog panting after a run, said 'Dat like puff-puff.' So, in the child's mind, objects arrange themselves in groups according to real or imaginary likenesses between them, and things that are 'like' each other he calls by the same name. All large four-footed things are 'gee-gees' for a time; all soft furry things are 'pussies.' A fur muff is a real pussy to the little one who only sees the likeness and does not notice that it has no tail, no eyes, no movement, and no *miaw*. At this stage, memory is only budding; there is probably little mental imagery at all. But gradually definite images begin to arise and are easily called up by words. From that point we can trace the development of the general notion from the particular notion, the concept from the percept. For instance:—

220. In response to the word *cat* there comes into the child's mind an image of his own nursery pussy, which may be a tabby. As long as this is the sole cat of his acquaintance the image is definite. But presently other cats come into his world, black cats, white cats, tortoise-shells, and gradually he learns to use *cat* as a class-name. There is still a mental image in answer to the name, but it is blurred; it has only the essential qualities of all cats—the furriness, the purriness, the long tail, the sharp claws, the stealthy tread—and is indefinite as to the variable qualities of size and

colour. We call this a *generalized image*, and you see that the child arrives at it by grouping together all the likenesses between cats and leaving out all the differences. He keeps his classes separate by naming them. Sully says, 'The name is the bond by which the mind ties together the several members of a class.'

221. By and by the child hears people call cats, dogs, horses, cows, etc., *animals*, and, recognizing a general likeness between the classes, he soon learns to use this new class-name. By looking into your own minds you know that *animal* is a still more indefinite term than *cat* or *dog*. To some of us it brings no mental image at all; we can think *animal* without picturing anything. When that happens we have a concept; but into most minds would come, I think, a vague notion of hairiness and four-footedness.

222. 'In creating a class, such as animal or metal, the child need have no knowledge as to the number of things to be included in it. He has simply invented a new compartment into which he is prepared to put whatever is found to have the necessary qualities.'—*Sully*.

Here we have a different analogy. Instead of bundles of specimens tied up by names, the names are compartments in a cabinet, into which the specimens are put.

223. When the child comes into the teacher's hands he has already a great many of these group-notions; but, his experience being limited, he makes mistakes in his classification. He generalizes from too few examples—an error from which grown-ups are by no means free—and some of

his specimens get 'into the wrong box,' so to speak. As he grows, his rough classification is corrected by his observation of differences, his wider experience, and fuller knowledge.

224. Children think in particular terms. They have mental images, more or less definite, behind the words they use. Grown-up people think in general terms, and use words which call up no mental image either in their own mind or in those of other grown-up people to whom they speak; words like beauty, virtue, politics, human nature, commercialism, etc. And because grown-up educated people think and speak in general or abstract terms, a great deal of the teacher's work, as children grow up, consists in helping them to turn their limited particular notions into wide general notions, or, as some books on education have it, 'to turn their percepts into concepts.'

225. This may sound to you very alarming, but it need not be so; for concept making is a thing the mind does for itself just as surely as it forms percepts or images. It is part of the mind's way of developing. A concept of some sort or other the mind will inevitably form. What the teacher has to do is to provide the kind of experience and the kind of knowledge that will tend to the formation of a *right* concept.

226. Without assistance from any teacher a child will form his own concept of *house*, *animal*, *colour*, or *music*; but without a teacher's help he could not arrive at concepts of *key*, *rhythm*, *gavotte*, or *sonata*. And because concepts are built up out of percepts, we must always make

sure that the pupil has in his memory the necessary percepts for the building up of his concept; for we cannot make bricks without straw. So, from the very beginning and all along the line we must provide the concrete examples from which the percepts will be stored up. But we must not be in a hurry about it, or ply the child with definitions with the idea of 'getting him on'; we must let his concepts grow out of his experience. It is ours to supply the experience, and the names as they are needed. If the teaching is right the concept will take care of itself.

227. Throughout childhood and perhaps for many years the class-name may call up a mental image, more or less generalized, but in course of time even the generalized image disappears and only the name remains. Concepts are wrapped up in names.

Two Aspects of the Concept

228. Our general notions may be divided into two classes, sometimes called 'Concrete Concepts' and 'Abstract Concepts.'* We have concepts of *things*, the kind we have been talking about; notions in which certain qualities of objects of the same class are grouped together. The concept includes all the essential qualities, and we feel that they belong to the object and cannot be separated from it or from one another.

* I do not like these terms. Abstract Concept is mere tautology, and Concrete Concept involves a contradiction. Yet some excellent writers use them; perhaps because, writing for teachers, they find that the simplest way of putting the distinction between the static and dynamic aspect of the Concept. For the same reason I follow suit, and find that students see clearly the incongruity of Concrete Concept and understand that we use the terms *faute de mieux*.

229. But we have also concepts of *qualities apart from things*, and we arrive at these in a d fferent way. Instead of grouping together *several* qualities of *one* kind of thing we select *one* quality belonging to *several* things, separable from each, applicable to all. We speak of the whiteness of snow; but we can separate our idea of whiteness from our idea of snow and apply it to a flower, a wedding-gown, or a sheet of notepaper. This class of concept comes from having discovered the same quality in a great number of different things, and hearing the same term used in every case. The little child learns that his bath is hot, his porridge is hot, the fire is hot, the sun is hot, etc., and so he acquires an abstract notion of heat. So with sweetness and sourness, roughness, smoothness, and so on.

230. A qualitative term is first learnt in connection with a particular object—a blue sash, for instance; but presently a child hears the same term applied to a different object—a cup is blue, a book-cover, a dress, a cushion—and gradually the idea of *blueness* is loosened from its concrete connections and becomes an idea in itself, a concept—not of a class of things but of a quality *in* things. Later on come notions of right and wrong, duty, courage, cowardice, truth, unselfishness, fairness, and the like, through intercourse with others, directed conduct, and the gradual growth of ideals. You can recognize the difference between such concepts and those represented by *animal* or *timepiece*, for example, indefinite as these are.

231. Sometimes we have to hasten the formation of certain abstract concepts because they are needed sooner than they could be developed by the child's ordinary experience. Ideas of numbers are among these, and the way in which these abstract notions are taught to little children through the kindergarten occupations has always seemed to me very interesting and beautiful. The child is learning the meaning of *three*, for instance. He builds it in bricks, threads it in beads, weaves it in slips of paper, makes a pattern with it in sticks. There is constant change of material with the persistence of a term, until gradually the idea of three-ness is shaken out, so to speak, from the concrete material, and the child knows that *three* is not bricks, nor beads, nor paper, nor colours, nor sticks, but something that he can only *think*.

232. As an example of the expansion of a definite musical image into a concept we may take this: A child learns his first sonatina. We give him a few elementary ideas about its plan, comparing it with the simpler forms of the little pieces he has already learnt, and the comparison of the new with the old interests him. For some time the word *sonatina* only calls up in his mind an echo of his own little piece. His idea is limited to that. But every *sonatina experience* adds something to his observation of the characteristics of this kind of composition. He compares one sonatina with another, and with your help he finds points of resemblance. So his idea expands, until *sonatina* becomes for him a class-name, and

means for him only a *kind* of piece of which there are numerous examples with common characteristics—though, of course, he could not give you that description of it. In the same way he arrives at concepts of other musical forms.

233. There are abstract notions connected with music, but few that cannot be allowed to grow out of the pupil's growing experience. Pitch, time, rhythm—each of these terms embodies a concept; but to the child who learns them (as he should learn them) in connection with singing and movement, these concepts are very concrete in character. In fact, from the teacher's point of view, music is altogether a concrete subject. There is no need to invent material to illustrate it, as in teaching arithmetic, for the thing itself is always at hand. No need for models or pictures, as in teaching many other subjects; the thing itself is there.

234. In comparing and classifying objects of sight or touch we say to the child, 'look,' 'handle'; in comparing and classifying musical sounds, high and low, long or short, we say 'listen.' What is a scale? Listen. What is a chord? Listen. What is rhythm? Listen. No round-about process of reasoning is necessary in the child's early music lessons; just the tacking on of names to things that he can hear. And as he listens we direct his attention to likenesses and differences, especially differences. The likenesses and differences are discovered by the ear, and the mind classifies and names accordingly. That is what we mean by ear-training. *Mental discrimination of differences in the effect of musical sounds*. The more

minute the discrimination the better the musical ear, and also *the greater the need for accurate naming*.

235. There is a well-known educational maxim, 'Proceed from the particular to the general.' You can see now why it was formulated. The teacher's way of teaching must conform to the mind's way of learning, and one of the mind's ways of working is just this—it proceeds from the particular to the general.

236. Now, though, strictly speaking, a concept is 'the kind of idea that cannot be reduced to a picture,' the term is often very loosely used. If you notice the use of it in the daily papers and in ordinary books, you will find that what is called a concept is really a generalized image or type. For instance, in the journal of *Educational Psychology* a few years ago a lecturer in an American Normal School gives the result of his inquiry as to his students' 'Concept of a Mile.' He says:

'A few weeks ago I was taking up the subject of the concept with students of a first year class. After some preliminary discussion of the meaning of the word and the various concepts that we possess, I asked every member of the class to explain her concept of a mile. Introspection showed that practically every student had two different concepts; one a purely arithmetical concept, which could be used effectively in doing problems in arithmetic, but was very vague, almost useless in other adaptations; the other, a more practical kind of concept which, for want of a better name, we will call here an empirical concept, that was used with some degree of success in estimating distances. An investigation of this empirical concept revealed the following facts: (*a*) The exact imagery used was different in the case of each pupil, and, when thoughtfully used, ordinarily referred to some definite experience of distance, such as the distance between the home and the church, or between the home and the school. (*b*) Some judged distance by comparing any given distance with a visual image that they knew to be a mile; others, by the *time* taken to walk or ride a mile; and a few by motor images and the feeling of fatigue once experienced in walking a mile. The visual imagery predominated. (*c*) The nature of the concept used depended largely on the student's environment. The country girl would think, perhaps, of a distance between two cross roads, while the city girl might refer to an experience of a certain number of blocks. (*d*) The concept not only grew out of a certain environment, but it was almost useless when applied in a foreign environment. In passing from the country to the city, or from either to the seashore or mountains, it was discovered that a new kind of concept had to be built up. (*e*) There was little feeling of relationship between the arithmetical concept and the empirical concept, except in cases where the numbers were small. (*f*) It was realized that the arithmetical concept could have no really vital meaning unless it was reinforced by the empirical concept. (*g*) In most cases the empirical concept had not been affected to any great extent by the influences of the school. (*h*) The empirical concept usually had its origin in childhood. (*i*) A large number in the class complained of vagueness in the use of concepts, especially when they referred to long distances. (*j*) A few pupils had no empirical concept of a mile. A mile to them meant merely some kind of name applied to the measurement of distance. (*k*) It was realized that it was immaterial what kind of concept was used so long as it could be used with a fair degree of accuracy. (*l*) Some pupils were troubled by bad methods of learning. One girl, for example, used a measuring unit of a mile and a half (the distance from her home to school). In judging distances she had great difficulty in applying this awkward unit.

'The same kind of introspection was directed to determine the characteristics of the concept for acre. The results were similar, except that about seventy-five per cent. of the class confessed that they had no idea of what an acre really meant. Many had a vague arithmetical concept. Other concepts of measurement were considered with like results.'

237. Now, you will have noticed that what each of these students had in mind was not strictly a concept at all, but an image; hardly even a generalized image, but a fairly definite one. Is the term 'concept' justifiable here, and in the usage of the daily papers? I think it is, *provided we realize just how much it means.* For however accurate we may be, and ought to be, in our recognition of the proper significance of the term 'concept,' the fact remains that we do the greater part of our thinking by means of images, more or less generalized. As Titchener puts it:

'Take the abstract idea of "horse." My idea will not be the picture of any special horse, but a picture of average horsiness. . . . As a rule the abstract idea (while it remains abstract as far as meaning is concerned) takes the form of a memory-idea of a particular object. . . . So our abstract horse will have a good deal of some particular horse about it.'

Adams, too, says:

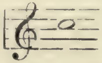
'Theoretically, the kind of general idea which cannot be reduced to a picture is the kind that is properly called a concept. Practically, however, we need the support of the generalized image to assist the mind in dealing with concepts.'

238. The American lecturer quoted above agrees with this. 'It was realized that the arithmetical concept could have no really vital meaning unless it was reinforced by the empirical concept.' I have dwelt upon this because I want you to be clear as to the accurate meaning of *concept*, and

yet to be able to take at its face-value the rather loose use of the term as you may meet with it in your everyday reading.

239. There are other interesting points in that American report. (*a*) That the imagery which helped those students varied—some had visual images, some motor (the memory of walking a mile). With some it was a time image (how long it took for them to walk a mile), and with others it was actually muscular (the memory of the amount of fatigue experienced in walking a mile). (*b*) That they used these images *as standards of measurement*. They discovered that they had a standard of space, of time, of endurance, etc. A mental image as a standard is extremely useful. You know how handy it is to be able to take a little packet in your hand and to be able to judge by its weight whether it will go as a letter for a penny or cost threepence as a parcel. The modern teacher of arithmetic is not content that his pupil should rattle off 'twelve inches one foot, three feet one yard,' etc. He makes him verify his tables by actual weighing and measuring, and so gives him an approximate idea or standard of how much a foot is, or a pound, or a gallon. At a boys' school that I know, a one-acre field is fenced off that the boys may have a visual standard by which they may judge of greater or lesser areas. It may be worth noting that the Bank of England building is said to cover exactly an acre.

240. In teaching (and learning) music, mental standards of pitch and of speed are very desirable. Children soon learn to pitch from memory the

sound C,  and from that, by a very simple formula, those who use the Tonic Sol-fa syllables learn to pitch tunes in all other keys. You can set up a standard of speed, or *tempo*, by selecting a song which your children know, and which is usually sung at about M.60. 'John Peel' goes very well at that speed, beating once to the measure. Let that song, or some other suitable one, be the standard for M. 60. By beating twice to the measure you get M. 120, and from these rates other rates can be approximately arrived at.

241. We have now got two of the terms which puzzle the beginner, Percept and Concept, into juxtaposition. By dwelling for a while on the nature of the Mental Image which comes between, and seeing how it is born of the one and merged in the other, even the youngest of my readers should be able to keep them distinct.

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242. As the child is presumably about seven years old when he comes into the music teacher's hands, why need we consider the minds and behaviour of animals and babies and very young children as we have been doing?

243. Because mind development is a continuous process, and 'in every branch of inquiry which deals with continuity of process it has been found that the initial stages cannot be disregarded if the development as a whole is to be made clear.'—*Lloyd Morgan.*

244. This principle is commonly recognized. Go into an industrial museum and look at the

exhibits of any of our manufacturers: linen, for example. There will be a picture of the growing flax, in masses of waving blue; another of the fields in which the stalks lie drying after being soaked. There will be dried specimens of the plant, and of the fibre in all its stages, from the rough separation from its gummy flesh till it is ready for spinning and weaving; pictures or models of hand-looms and power-looms, and specimens of the manufactured article, from the coarsest fabrics to exquisite damask and filmy cambric. An exhibit of the making of a big gun, or of a pianoforte, will offer a similar example of development. It is taken for granted that we do not really know a thing until we trace its development from its beginning. And so we must know what the child *has been* if we would understand what he *is*, and lend a hand in making him what he *is to be*.

245. Now the older academic psychology is a study of the adult mind, the complete article, and therefore this academic psychology is not of much practical use to the teacher; but the newer, *genetic* psychology begins at the beginning, watches the first dawning of intelligence in the young child, and studies its development till it overtakes, and merges into, and learns from the psychology that is ages old.

246. Such a study of the mind's behaviour at various stages is of immense practical use to the teacher, enabling her to choose the kind of knowledge suitable to her pupil's stage of development, warning her of the futility of attempting *over-*

development, saving her from the disappointment that results from expecting at one stage the kind of mental work that properly belongs to another (15).

247. In the preceding chapters we have briefly considered these stages of mental development and the thinking process. Thinking is seeing relations—or, perhaps more accurately, trying to see relations—and we have noted that the child begins very early to see relationships between himself and the objects in his environment (104). The objects acquire a meaning, a meaning that involves a *relationship* to himself and suggests a *behaviour* on his own part. Then he begins to recognize the relations of the objects to *one another*, e.g. sounds to the things from which they emanate; he refers the ticking to the clock, music to the piano or his musical box.

248. Although the child's thinking at this stage is confined to actual present objects, language is rapidly being associated with his experiences, helping to classify and organize his ideas. Children learn very early to use a number of abstract terms which express relationship. 'On' and 'under,' 'from' and 'to,' 'up' and 'down,' have a clear meaning for the little one because they are associated with certain simple relationships and have been learnt in connection with certain kinds of behaviour.

249. Then we found that there is a certain stage when words become *reminders* of things, the thinking is done through mental images and it is not necessary to have the objects really present.

And then we saw how, later on, those images become less and less definite, until, among adults, words which have no mental image at the back of them are sufficient for the inter-play of ideas and the communication of mind with mind.

250. But though for convenience sake we divide the total mental life into periods and speak of 'the child mind, the adult mind, and the senile mind,' we must not think that a hard and fast line divides each from each. The passing from infancy into childhood and from childhood into boy-and-girlhood is not like changing carriages on a railway journey. There is nothing sudden about it, nothing to tell us precisely when it happens. The mind is *one* mind all the time. The periods melt into each other, and some children of six have more intelligence and reasoning power than some others of eight. Nevertheless, about the seventh year there is a change in the condition of the brain, and that there is a corresponding difference in the kind of work a child can do after that is the experience of all educators. Therefore they call those first seven years the first period of childhood.

251. With which of those periods are you music teachers chiefly concerned? Manifestly with that difficult transition time when the knowledge-getting is largely through sense perception (and the teaching must therefore be mainly in the concrete), and partly through that power of imagining which is so marked an activity of the child-mind. It is just at this stage that mistakes are most likely to be made in the teaching of ordinary school subjects; some children being

kept too long at the concrete stage, to the detriment of memory and imagination, and others fed with a diet of mere words which do not correspond with anything in their experience.

252. But the music teacher is not so likely to make this kind of mistake, because *music is a concrete subject from start to finish*. From the first attempt to make the little pupil—who may not be very musical—notice the difference between high and low sounds, to the lessons in advanced harmony, every new fact must be presented to the pupil through the sense of hearing, if it is to be realized by the mind and if the pupil is ever to arrive at the power of hearing music when he looks at its notation. The reader who has taken in what we said about musical perception in the latter part of Chapter IV (133) will understand this.

253. The *bête noire* of the music teacher, especially of the young teacher, used to be the necessity of teaching beginners. But things have changed a good deal, and this fear of beginners is giving place to a special interest in them. The teacher who has some knowledge of the child mind and its behaviour and its development prefers beginners. We shall see additional reasons for this later on

Chapter VIII

ON THE CHOICE OF LANGUAGE

THIS may be a suitable moment for speaking about two other terms which are sometimes confused because of their outward similarity, as I have found Percept and Concept to be. I mean Denotation and Connotation. Although they are not terms that belong to psychology you will meet with them frequently in books about teaching, and that you should understand them clearly is of importance in dealing with pupils. You have noticed that in speaking of classification stress was laid on the importance of naming. 'The name is the bond,' and so on. By a name we point out the several objects in a class; but when we apply a name to any object we also imply that the object possesses those qualities in virtue of which it was admitted to that class. So the same name can be used in two different ways. We saw this in the use of the word *man* in two different sentences. Take any common noun at random from a dictionary—turnip, for instance—and you will find that it has two uses. It points out an object, and it does so because that object has certain qualities. These two uses of a word are what is meant by Denotation and Connotation.

255. The word *denote* is familiar; *connote* not so common. To denote is to point out. The thing pointed out, or denoted, by a word is its *denotation*; and all objects belonging to that class of things fall under the denotation of the term. For

instance, the term 'church' applies to all churches, whatever their style of architecture. These are its *denotation*. That is simple enough; the trouble is with connotation. The easiest way to approach it may be to call it the *meaning* of the term; the notions that the word brings with it. The name 'taxi-cab' conveys to your mind a class of vehicle, plying for public hire, with very distinctive features, which I need not enumerate. These distinctive features or 'attributes' are the *connotation* of 'taxi-cab.' They are what the idea of it *includes* for us, and the word only applies to (or *denotes*) vehicles having those attributes. They have their denotation *because* they possess those attributes.

256. But the *denotation* of the term is also a *meaning*. When I say 'dog' I mean a dog, and not a cat. When I say 'taxi' I do not mean a hansom. So it comes to this, that a word—name—term*—has two kinds of meanings; its meaning for denotation and its meaning for connotation. It *denotes* an object; it connotes its attributes. You see, then, that *denotation* refers to *things*, and *connotation* to *qualities*. You may say, 'What has this to do with teaching?' A great deal. The connotation of a term is a personal matter; it depends on the extent and accuracy of our knowledge. My connotation of a term is its meaning for *me*; your connotation of the same term is its meaning for *you*, and you can understand that these may not be identical. They may, in fact, differ very much.

* 'Word,' 'name,' 'term' are equivalent.

257. But there is also what is called the *accepted* connotation of a term; the meaning which thinking people attach to it—a kind of dictionary meaning. Now, in teaching we may be entirely misunderstood if a word which we use has a different connotation for the pupil and for us. The term used may have for the pupil a connotation of which the teacher never dreams. For the teacher's connotation will probably be that which is the generally accepted meaning of the term, including no more and no less than that; while the pupil will have what Professor Adams calls 'a private dictionary,' a particular connotation arising out of his particular experience, which may include much more or much less than the accepted meaning.

258. Remembering this makes us careful in the choice of language. If the particular or private connotation of a term, i.e. its significance to the individual, depends on his knowledge in connection with it, it follows that as his knowledge increases the connotation of the term will change. It will mean more to him, and less. More, because he will have discovered attributes of which he was previously unaware; and less, because he will recognize which of the attributes were accidental and which are an integral part of the idea. The teacher should remember this, seeing that so much of his work aims at the increase of the pupil's knowledge and the accuracy of his notions about it.

259. Every increase in knowledge causes a change in the connotation and denotation of a

term. Take this, for example. A few years ago I gave a little grandson a toy monkey, with wheels attached to the feet, so that he could draw it about the nursery. When he was six he was taken to the Zoological Gardens, and his great desire was to see the monkey-house. When he came out he looked puzzled, and, I thought, a little disappointed. I asked, 'What is it, David? Didn't you like the monkeys?' and he answered, 'Yes, but—they haven't any wheels on their feet.' You see, his connotation of 'monkey' included wheels, and the reality had upset his mental picture. Thus 'knowledge oft brings sorrow in its train,' and in our process of instruction we no doubt administer some mental shocks of which we are unaware.

260. 'Very young children, those under six, have few, if any, general ideas of the objects with which they deal. . . . In other words, their meanings are almost entirely in *denotation*, not in *connotation*. Thus, when a young child is asked what a *chair* is, he can do no more than point to one. But if a normal child of six is asked the same question he will usually attempt some sort of definition. He will say that a chair is 'What you sit on' or some such thing. His meanings are beginning to be in *connotation* as well as in *denotation*.'—*Dumville*.

261. Now, Professor Adams points out that 'not unfrequently the teacher asks a question in connotation and gets an answer in denotation. He asks, for example, "What is a prophet?" and gets the reply, "Elijah." It is true that Elijah was a prophet, but it is clear that this is not what the teacher wants.' And I would add that not unfrequently the teacher accepts such an answer, not because it satisfies her, but because she doesn't

know what is the matter with it. If she were clear in her own mind on the subject of denotation and connotation she would, by questioning, draw some kind of definition from the child, lead him to see where his answer was amiss, and so help him to think clearly. If I asked one of you, 'What is a rondo?' I should hardly be satisfied if you whistled one.

262. A definition is very useful, but the greater part of its value is in the search for it, and if it is given to the pupil ready-made that part of its value is lost. If he works for it himself he not only remembers it better, but if its wording should slip out of his memory he knows how to find it again. Children cannot formulate a definition without help, and this is best given by questioning. The following class-lesson on the definition of a familiar object is an example. The ages of the children would average seven years.

263. TEACHER.—We are going to talk about a very common thing—a chair. We are going to ask ourselves whether we really know what a chair is. (*Smiles go round the class at such a notion.*)

TEACHER.—What is a chair?

SEVERAL CHILDREN.—Something you sit on.

TEACHER.—Can you give me one word that we could use instead of chair?

A CHILD.—A seat. (TEACHER *writes on blackboard*, '*A chair is a seat.*')

TEACHER.—Will Nellie read what I have written? (NELLIE *reads.*) Is what you are now sitting on a chair?

CHORUS.—No! It's a bench.

TEACHER.—But it is a seat. Why isn't it a chair? (*Some hesitation; then a hand goes up.*)

A CHILD.—Because there's a lot of us sitting on it.

TEACHER.—Then what is the difference between a bench and a chair? (*A few hands raised.*) Well, Johnnie?

JOHNNIE.—Only one person can sit on a chair.

TEACHER (*adds on board, 'for one person'*).—Mary, please read what is on the board now.

MARY (*reads*).—' A chair is a seat for one person.'

TEACHER.—Is that right?

CHORUS.—Yes.

TEACHER.—But a stool is also a seat for one person, is it not? (*After a few seconds of thinking, several hands are raised.*) Alice has something to tell me.

ALICE.—A stool hasn't a back to it.

TEACHER.—Then what is on the board is *not* quite right?

CHORUS.—No.

TEACHER.—What must I add to make it right?

(*Several suggestions, finally reduced to ' with a back.'* TEACHER *writes.*)

TEACHER.—Fred will read what is on the board now.

FRED (*reads*).—' A chair is a seat, for one person, with a back to it.'

TEACHER.—I daresay you can tell me other things about chairs. (*Hands go up and children volunteer.*)

FIRST CHILD.—Daddy's chair at home has arms.

TEACHER (*writes*).—' It has arms.'

SECOND CHILD.—Some chairs have little wheels on their legs.

TEACHER.—Yes; who knows what they are called? (*No reply.*) ' Castors.'

THIRD CHILD.—I once saw a chair with very big wheels each side, and the man moved the wheels with his hands and it went along.

TEACHER.—That was a chair for a person who couldn't walk. (*Writes.*) ' Large wheels.'

FOURTH CHILD.—Some chairs are stuffed all over.

TEACHER (*writes*).—' Stuffing.'

FIFTH CHILD.—Yes, and some stuffed chairs are so big you can hardly move them.

TEACHER (*writes*).—' Great size.' Now let us talk about all those things you have mentioned. Is bigness necessary to make a chair a chair?

CHORUS.—Oh no!

A CHILD.—My baby sister has a teeny weeny one.

TEACHER.—Then we may rub out size (*doing it*). Can a chair be a chair without the big wheels? (*By this time we are getting excited.*)

CHORUS.—Yes, 'course it can.

TEACHER.—Then we may rub out large wheels. Are castors necessary?

CHORUS.—No.

TEACHER.—Away go the castors. Is it still a chair if it has no arms?

A CHILD.—Not such a comfortable chair.

TEACHER.—But is it a chair?

CHORUS.—Yes.

TEACHER.—I'm afraid its arms must go, then. Now, let us see if we can rub out any more. 'With a back.' Can that come out?

CHORUS.—No.

TEACHER.—Why not?

BRIGHT PUPIL.—Because if it hadn't a back it would only be a stool.

TEACHER.—May I rub out 'for one person'?

ANSWER.—No.

TEACHER.—Why not? (*Hands up, but children cannot express themselves.*) If a seat with a back holds more than one person, what is it?

SOME CHILDREN.—A sofa. A bench.

TEACHER.—Yes, it might be a sofa or a bench. Would it be a chair?

ANSWER.—No.

TEACHER.—Now the things we rubbed out were all parts of your notion of a chair; but, you see, they were not necessary parts of a chair. They didn't matter to the chair; it could do without them. That's why we rubbed them out. We found that just what is on the board now is all that matters. You found that out yourselves. Now, children, all say after me: 'A CHAIR IS A SEAT—FOR ONE PERSON—WITH A BACK TO IT—and the other things don't matter.

264. Do the children know any more about a

chair at the end of this lesson than at the beginning? Not a whit, but they have had a lesson in clear thinking, and an exercise of this kind now and then amply repays the time spent on it.* To be given a ready-made definition is not very interesting, but hunting for one and running it to earth is quite good fun. The moral of the tale is that the time for memorizing a definition is at the *end* of a lesson, when the ideas embodied in the lesson are quite clear, and not at the beginning.

265. In teaching the elements of music to children, definitions must be used with care. As I have said elsewhere (115), what we want at this stage is the right behaviour in response to the symbol, and we want also the power to *use* the symbol intelligently. The proof of the pudding is not so much in the eating as in the digesting; and when it is a question of musical notation the proof of the understanding is in the doing, and not in the reciting of a definition. But when the understanding has been proved by doing, a simply worded definition helps to fix the knowledge in a clear form.

266. 'Catechisms' of music and primers of the elements are of no use for teaching purposes. They are so condensed that they are practically only collections of definitions—not always good definitions either. But they can be used in other ways quite usefully. When preparing a pupil for an examination it is not a bad plan to take the

* I met with this lesson, or something like it, a very long time ago, but in what book or paper I have entirely forgotten, and cannot therefore make a direct acknowledgment of its source.

index of one of those little books and question the pupil on each point as it happens to come. If the index is good and full, this is an excellent all-round test. If your teaching has been good, you will probably find that your pupil knows most of the subject matter. Mark those points about which fuller teaching is needed, or such points as you have not yet touched on at all, and attend to these, finding the 'points of contact' with the well digested knowledge. In this way you will save your pupil's time and your own, and at the same time feel that you are not omitting anything that may be called for. A primer is also an excellent *notebook*, for reference at any time, and may be used by the pupil in this way, while the knowledge itself has been gained in quite another.

Chapter IX

IDEAS AND THEIR BEHAVIOUR

BEFORE we go further I want to speak about that everyday word *idea*, in the technical use of which psychologists differ. Each writer has a good reason for his own conventional use of it, and if we know their various views we shall not only understand them better, but be better able to judge as to how we may use it ourselves.

268. *Lloyd Morgan* very definitely limits it to the concept:

> 'I propose to use the term only for what are called general ideas, or abstract ideas.' And further, 'You can form *no image* of the idea as such. It refuses to be imaged save in its concrete examples.'

Adams agrees that this is the usual conventional use of the word.

In this case the ideational process would begin with the concept.

269. But *Titchener* as definitely associates *idea* with the *mental image*. Although twice on one page he speaks of a perception *or* idea (both being groups of sensations) he immediately points out the difference between them thus:

> 'When we perceive, the object which arouses the sensation is actually before us, . . . whereas, when we have an *idea*, the object is not before us, but the sensations are set up inside the brain without any disturbance of the organs on the surface of the body.' And again, 'When I am looking at a table, as it stands in front of me, I perceive it; but if I shut my eyes and think of a table, or if some particular table comes into my head along with other memories . . . then I have an *idea* of a table, I ideate it.'

Here the ideational process starts with the image.

Stout also defines an *idea* as 'a significant mental image,' and adds, '*Ideas* compared with *percepts* possess a peculiar plasticity,' thus including ideal construction and images of fancy.

270. For *Wundt*, however, *idea* is applicable to all states of consciousness, and he resents any limitation of its meaning. He says:

> 'Even at the present time many psychologists use the word *idea* only for a complex that does not arise from direct outward impressions, i.e. only for so-called memory images. For ideas formed by outward sense impressions they generally use the word *perception*. Now this distinction is psychologically of absolutely no importance, since there are really no valid differences between memory ideas and so-called sense perceptions.'

His own use of the word he sets out very clearly:

> 'By an *idea* we shall understand that mental state or process which we refer to something outside of ourselves, whether the attribute of externality be thought of as directly applicable in the present' [this would include sensation and perception], 'or as applied to an object which has been directly given to us in the past' [the mental image], 'or even as applied to an object which is only possible, not actual' [i.e. born of our imagination]. 'Under *ideas*, therefore, we include: (*a*) Sense-perceptions, which depend on direct excitation of the organs of sense. (*b*) Memories of such perceptions. (*c*) Images of fancy, be they what they may.'

271. *James* would accept this, but that for him *idea* does not include bodily sensation. He says:

> 'We ought to have some general term by which to designate all states of consciousness merely as such, and apart

from their particular quality or cognitive function. *Idea* is a good, vague, neutral word, and was by Locke employed in the broadest general way, but . . . it does not cover bodily sensations, and it has no verb.' *

272. Huxley, who classed sensations along with emotions, volitions, and thoughts, under the common head of states of consciousness, would probably, if thinking psychologically, have accepted *idea* as covering all these.

273. So, whichever view we adopt, we shall find ourselves in good company. The practical question is, which convention will be most convenient to us as teachers? It is obvious that accurate discrimination and definition and terminology are necessary to clear thinking. But the teacher needs 'a good, vague, neutral word' that will cover all his pupil's mental processes; and for this purpose there is no term so handy as *idea*. No other term can fitly take its place. Even the most accurate thinker, when he writes for the man in the street, uses it in the most loose and general way, because in that way alone does the man in the street understand it. It is, in fact, an elusive term, and however carefully we may try to pin it to one meaning it is likely to escape from its shackles when it catches us napping. In its adaptability lies its usefulness. We can make it mean what we like, so long as we are quite clear as to what we do mean, what scope we give it, what meanings are given to it by other people, and what its special significance is in an accurately limited terminology.

* 'To *ideate*' has, however, come into common use.

274. We may each have a leaning towards one particular convention. Personally I incline to the view of Titchener and Stout: ruling out the *percept*—because our *percepts* disappear, while our *ideas*, our *images*, we carry about with us—and rejecting altogether Wundt's dictum that there is no valid difference between them. We must remember, too, that though children can and do generalize, and have concepts, they think mainly in images, and it is with the behaviour of the child mind that the teacher is concerned.

275. Now we have to consider how ideas behave when we have got them; for a good deal of our work as teachers consists in managing—so to speak—the ideas in our pupils' minds, and knowing how to add to them other ideas. In studying the behaviour of ideas we shall find Consciousness a better word than Mind, because we are apt to think of Mind as a sort of fixed quantity, while we are all aware that our consciousness is always changing. Not only does it seem to be more extended, or less, at times, but there is a constant change in the ideas that make it up, and in the grouping of these.

276. Psychologists use various figures of speech to represent this constant flux of ideas. The commonest of these is 'the field of consciousness,' something akin to the 'field of vision' in which one object occupies the centre or focus and others are more or less dimly perceived in the margin. But there is a difference. In the field of vision the objects may be fixed, as in a landscape, and if we wish to attend to something in the margin

we have to turn our eyes in that direction. In doing so a new field of vision comes into our ken. Objects in the margin of the old field, or even outside it, may be brought into the centre of the new, and the focal object become marginal.

277. The notion of the field of consciousness is more like that of the kaleidoscope. The field of the kaleidoscope does not change, but there is a constant alteration in the coming and going and grouping of the objects within it, and it is a question whether the same exact grouping even appears twice. It is so with our thoughts. They come and go. 'Mind *now*' is not the mind of five minutes ago. Through the shifting of attention marginal and focal thoughts change places. Ideas that have disappeared for months or years suddenly flash into the field, the same—yet different, and bringing with them others that seem altogether new. Although our interests may be mainly centred in one subject our ideas about that subject alter considerably. Since you began to read this book your ideas about music teaching may be changing from day to day, from hour to hour.

278. The figure used by Professor James is not a 'field' but a 'stream' of consciousness. It has a past, a present, and even a future. Consciousness flows on, wave after wave. 'All ideas on the crest of the wave are said to be focal, while those in the body of the wave are said to be marginal or sub-conscious.'

279. Professor Adams, in his brilliant essay on the Herbartian psychology, furnishes us with

another figure. Referring to Herbart's theory that ideas are constantly either helping or hindering each other during our thinking processes, he likens consciousness to a dome, within which ideas struggle for a place at the summit, or focal point. As it will help us to understand a part of the Herbartian psychology which is of great practical use, I will quote from Professor Adams's cleverly worked out analogy. He personifies ideas and treats the soul as a place. You will recollect that Herbart used the term Soul instead of Mind (22).

280. 'According to Herbart, the ideas are always competing with each other for a place in the soul. But all places in the soul are not of equal value in the eyes of an idea. To use a somewhat gross comparison, the soul may be regarded under the figure of a dome, the summit of which is the goal of the ambition of every self-respecting idea. The summit is certainly the best place, but anywhere within the dome is good, and the nearer the summit of the dome the better. When an idea gets low down in the dome near the base it becomes dim and languid, and the nearer the base the more languid, till on the base it gasps for a while, and then either rises to higher and happier levels or sinks beyond the base altogether into the limbo of unconsciousness. The base of the dome, which separates the regions of light and life from the nether regions where the ideas gnash their teeth, is called the threshold.'

281. Now, all these figures resemble each other in the main features of their symbolism, and yet there are elements of difference worth noting.

282. First the resemblances. In the 'Field' we have the centre, or focus, and a limiting line around it, beyond which is unconsciousness. In

the 'Stream' we have the crest of the wave, the body of the wave, and a limiting line, or threshold, below which is unconsciousness. In the 'Dome' we have the summit, the area, and the base or threshold, below which is unconsciousness.

283. But each figure has, I think, a different shade of meaning. The 'Field' gives us an idea of limitation, it is the consciousness of the moment only, it is 'Mind *now*'; in the 'Stream' there is the suggestion of progress, from and towards; in the consciousness of the moment there is something of memory and something of anticipation; while in the 'Dome' ideas are ever surging upwards or being repressed—the Soul is 'the battlefield of contending ideas.'

284. To understand in what sense it is a battlefield we must come back to Professor Adams's analogy:

> 'The first time an idea passes the threshold into the dome, his chief care is to make acquaintances. For his only chance of gaining a footing in the dome is by making suitable connections. His conduct is like that of an ambitious young man on his introduction into society. He finds there ideas akin to himself, with whom he forms fast friendships; but, on the other hand, he encounters certain ideas utterly opposed to his style, and these do all in their power to expel him. An idea's first visit to the dome seldom lasts very long. He has few friends and many enemies; he soon sinks to the threshold, and passes out into a longer or shorter exile.'

285. And then he goes on to tell us how ideas, like people, form themselves into 'cliques,' which Herbart calls *Apperception masses*. An apperception mass is a group of ideas of the same kind, which is, as it were, on the lookout for a new idea

of its own kind, and is ready to seize it and welcome it into the soul.

286. Then we are told that the ideas in a 'clique' are very loyal to each other:

> 'As soon as one of them has crossed the threshold into the sunny land, his first thought is naturally to make for the summit, but his second is to drag with him those with whom he is more or less connected. He never seeks to push on to the centre alone.'

This part of the analogy is going to be very useful to us by and by, so keep it carefully in mind.

287. The notion that ideas are associated with each other is, of course, not new; and no doubt one has often, consciously or unconsciously, acted upon it in one's teaching. But upon the old 'association' theory ideas were like beads on a string, each following another with which it has been associated. Apperception means much more than mere succession. It tells us that to assimilate a new idea we need the help of all the ideas already in the mind, or soul, as Herbart prefers to call it.

288. Now you may ask, 'If an idea can only be assimilated by the help of existing ideas, how does knowledge begin? For there must be a first idea.' Herbart saw that. Like all psychologists, he brings knowledge to the soul through the senses. But in the combination of sensations into a percept he came up against something that could not be accounted for by any mere sense-process.

> 'This combination is only conceivable on the assumption of an existence other than the body, an existence which Herbart calls the "Soul."'—*Felkin.*

289. The soul, according to Herbart, comes into the world empty; that is to say, the mind of the new-born child has no content of any importance. The production of a content begins as soon as the soul enters the body; it is supplied by the senses. But if the soul has no content, it has a power, a latent activity which it exercises on whatever the senses present to it. 'Man enters life a stranger. . . . Nature knocks at the door of the soul with stimulations of sensitive nerves. . . . The soul answers with sensations and ideas. . . . It masters the world by perceiving it.'

290. Perception, then, might be called the soul's response to the appeal of the senses. The response is spoken of as *reaction*; not the happiest term for us, perhaps, because we use it generally in a slightly different sense, yet easy enough to understand and adopt. But there is a further assertion which sounds more complicated. The mind reacts on the presented idea. *Having reacted on one idea, it reacts on the next in a slightly different way, because of the first reaction;* i.e. the presence of the idea that has established itself affects the mind's activity with regard to the next idea. In fact, every idea is worked up into the whole mental content so as to modify it to a greater or less degree; and the new idea itself is modified by its fusion or combination with the rest.

291. We might, roughly, compare this to cookery. The addition of each ingredient modifies the whole mixture, while each ingredient that is added loses something of the tang of its original

flavour, which is modified by admixture with the rest. Do we not see this happening every day? A boy grows up in a strongly conservative environment (or the opposite), and for a time reflects the politics of his family. Later, when he begins to read and think for himself, the youth imbibes ideas which—perhaps unwelcome at first—considerably modify those he has inherited, and may even give rise to enthusiasms of a different kind. But these new ideas are affected by the young man's early impressions and traditions, so that probably he is never, at heart, as thorough-paced a Radical (or Tory) as he thinks he is.

292. New ideas are not always received with enthusiasm. Every innovation in music has had to fight for its life. Among the traditional ideas in men's minds it found 'few friends and many enemies.' If it had sufficient vitality it leavened the lump sooner or later, but in the process of absorption may have parted with something of the offending flavour.

293. And then people forgot that they had ever opposed it.

294. We must not let the term Apperception *Mass* mislead us. One great difficulty in dealing with things spiritual is having to use language that is of the earth earthy. In choosing terms to describe mental happenings we are driven to make use of the everyday words that seem best to express our meaning. Our language is full of examples. We *see* the point of an argument, we *grasp* the meaning of a phrase, we are *hurt* by an unkind word, we *scent* the motive for an action,

we speak of *taste* in art and literature, and call a person's disposition *sweet* or *sour*.

295. Often, too, we describe certain sensations in terms which do not strictly belong to them. Musical sounds are not 'high' and 'low.' Vibrations are more or less rapid, and the resulting sensations of sound are more or less acute or grave; but when we call them high and low, we apply to one set of sensations terms which we generally use for quite another set. It is true that there is an analogy between the high and low of sight and the high and low of hearing, and perhaps the physical effort to sing 'high' sounds creates a further resemblance. Be that as it may, we find the terms used in both connections in several languages.* This being so, a series of lines rising like a ladder becomes a sufficiently suggestive symbol of that increasing acuteness in musical sounds which we call 'getting higher.'

296. The very suggestiveness of this symbol leads to another misapplication of a term. The word interval means distance. Now there *is* distance between any two lines or spaces on the Staff, any two points on the modulator, any two places on the keyboard that give us certain sounds. In these cases the word interval is rightly used. But between the musical sounds themselves there is no distance. *There is a difference between the ratios of the vibrations which give us octaves, fifths, etc.*, and this difference between the ratios we speak of as distance or interval only because there are distances in the symbols that

* The French, however, use the correct terms, 'aigu' and 'grave.'

represent them to our eyes, the spaces on the keyboard that we know by touch. So that here again we are describing one set of sensations—those of hearing—in terms of other sets—those of sight and touch. And we cannot help it; but if we remember these facts the conventional use of the term need not mislead us. *It isn't true;* but it is handy, and it works quite well in practice.* But to return.

297. The word *Mass* expresses pretty nearly the notion of a closely associated group, and need not mislead if we remember that ideas are not *things* but *processes*, *ways* in which the mind acts. Professor James objects to the term, his reason being that 'we can gain no insight into what really happens either in the mind or in the brain by calling previous experience and habits an apperception mass.' Perhaps not; but we get help in teaching, which is what we are seeking. What really happens is of primary importance to the psychologist as psychologist—for the teacher a general notion is enough, provided that it is not a misleading notion. We may *know* that there is no such thing as a *mass* of ideas in any mind, but if we act as if there were we get what we want—an intelligent reception of what we present. Professor James himself says, 'of course, it may upon occasion be convenient,' and that is all that is claimed. It is a convenient term, and for the average teacher comprehensible and workable.

* That is, in instrumental teaching. But when it comes to teaching *sight singing* 'by interval' it is another matter. The ear does not measure intervals, for an obvious reason. This, however, is not a subject for discussion here.

Chapter X

IDEAS AND THEIR BEHAVIOUR

(*continued*)

WE must not think of apperception masses as quiet, contented little communities of ideas independent of each other, and waiting for us to call them up at will. Ideas are not clustered in groups of a kind, but mixed up with the general population of our mental world, as Liberals and Conservatives and Socialists are, in our political world, always rubbing up against each other and very actively influencing each other. And, far from waiting to be called up, ideas are very apt to intrude themselves when not wanted, as we know when we want to go to sleep and cannot. James asks: 'Why do you provide yourselves with light literature for a railway journey? Because you know that without it your mind would be a mere medley of ideas, romping in and out of consciousness without much apparent connection between them.' On these occasions we treat our minds as we would treat children: to keep them from being a nuisance we give them something definite to do. The magazine or the newspaper answers the purpose.

299. So you see that ideas have a sort of activity of their own, and this is called *Presentative Activity*. Every time an idea appears in consciousness it increases its chances of appearing again; its presentative activity is strengthened.

300. We all know what it is to be haunted by

a tune—not always a tune in which we are interested for its own sake, but one to which we have been compelled to listen frequently; one which the London organ-grinder inflicts upon us on his regular weekly round, or an examination piece which several of our pupils are preparing. We may hate the tune, yet its presentative activity is so great that we find ourselves humming it.

301. Now, in teaching, there are always certain ideas connected with our subject which we want specially to keep within call, ideas on which we depend for the assimilation of other ideas, to which we can refer with the assurance that the reference will be understood, and that light will be thrown on the topic we are seeking to expound. We want such ideas to have a strong presentative activity.

302. In all our teaching about pitch relations we are greatly helped if the pupil has vivid mental images of three things, the Keyboard, the Staff, and the Modulator. We need all three, in their inter-relation, to make quite clear the subject of pitch in its twofold aspect, relative and absolute. If they are to be of use they must be *kept in use*, with constant reference from one to the other; and if the pupil can picture them vividly it saves us from being dependent on the actual presence of the objects themselves for a casual reference.

303. So also in the teaching of time and rhythm the fundamental ideas of Pulse, Accent, and Measure, of Pulse-progression and of Cadence, must be kept alive if we would guard against a

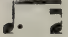
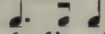
wild and meaningless rubato and the sentimental exaggeration which turns pathos into bathos.

304. 'An idea's first visit to the dome seldom lasts very long.' It is comforting to know that if an idea we have introduced to-day is forgotten by to-morrow it is only what we may expect; but we must see to it that the visit is repeated until the visitor is at home there, part of a growing apperception mass.

305. I have said in another place (3) that the success of future music lessons depends largely on the amount of nursery music that is stored up in the child's memory. In the light of the doctrine of apperception my readers will see the truth of that. Nursery music is no mere rubbish heap. It is raw material certainly, but raw material stored up in the retentive little brain for use years later, in apperceptive processes, if the teacher knows how to use it. If the home has not supplied the raw material, the kindergarten must do it; and if the child's first school has not provided the necessary rote-singing, then the pianoforte teacher has not only to make the bricks but to gather the straw. For 'material must be acquired, somehow, somewhere, before the higher processes can take place.'

306. When the children are at the stage of singing by rote we should look forward to the time when we shall begin to teach them to sing by note, to know the scale-sounds in their relations to each other, to take leaps from one to another, and to recognize those leaps—which we call intervals—when heard. With this new stage

approaching, it is as well to teach the youngsters songs that will 'come in' aptly for illustration when the time arrives—as we women often buy a piece of stuff that we do not immediately need, because we see that it will 'come in' for a special purpose later on. The 'Blue Bells of Scotland' supplies an example of the leap from *soh* to upper *doh*^{1} (**s d**^{1}), and also of the rather difficult leap from upper *doh*^{1} to *me* (**d**^{1} **m**). 'Annie Laurie and 'John Peel' give us the octave *doh doh*^{1}(**d d**^{1}), and so on.

307. In time-teaching, too, we want examples. Some day we shall be teaching the pulse-group  and its rhythmic effect; so, in advance we may teach by rote songs with the rhythm  such as 'Hearts of Oak' or 'Charlie is my darling.' Some day we shall be introducing Compound time, which (notationally) is much more difficult to apprehend than Simple time. We shall be very much helped if among the pupil's apperception masses we find 'Here we come gathering Nuts and May' or the still earlier 'Little Bo-Peep.' We are told that the elements of what we want to teach 'should lie ready long before they are wanted.' In fact, 'the farther back we can begin the preparation the better.' The meaning and value of a lesson are seen more quickly and clearly when the particular detail we are treating of, be it a pulse-group or a scale-sound, is recognized as an old friend, long known in some familiar tune. In the lesson we single it out for special attention, show it in new relationships, and fit it

with a notational dress. These new ideas are readily seized when there are apperceiving groups of known tunes ready for us to use in illustration.

308. There is another thing about apperception masses which has much significance for us. Keeping to the analogy with society we may say that, as a person may belong to several 'sets' or 'cliques,' so an idea may belong to more than one apperception mass; and herein lies danger for the teacher. For a word which the pupil does not understand, or does not hear distinctly, may, by reminding him of a word somewhat like it, call up a wrong apperception mass, set him off on a wrong track, and cause him to *mis*-understand. What are known as schoolboy's 'howlers' are mostly due to this kind of misunderstanding.

309. Now, children do not deliberately give wrong answers, so no wrong answer should be lightly passed over. A wrong answer is, in fact, only a symptom, and should be diagnosed as such. The teacher should ask herself: 'Why did the child say (or, in music teaching, why did the child *do*) something so different from what I expected?' The cause is usually discoverable; it may prove to be a fault or an oversight in one's own teaching.

310. The word not understood, or misunderstood, or imperfectly heard, is frequently the first cause of the wrong answer. But it will not be the sole cause. There will generally be other elements, and we should look for these.

311. In examining the 'howlers' published from time to time in educational papers we find, I think, indications that the subject on which the

pupil was being examined was rather over his head. Ideas had been presented to him for which he had no apperception masses ready. This is perhaps inevitable when children are taught in very large classes, and have home experiences of very different kinds, but the imperfectly caught word is more often the cause of the mistake. The examiner asks, 'What is a blizzard?' The answer he gets is, 'The inside of a fowl.' The cause of the Peasants' Revolt is stated to be 'Because a shilling poultice was put upon everybody over sixteen.'

312. An inattentive child may wake up to the last word of a question; and this, if it belongs to more than one apperception mass, will call up the one that has the most immediate interest for him. 'What became of Nineveh, Willie?' 'It was destroyed.' 'And what became of Tyre, Johnnie? Johnnie, you're not listening—what became of *Tyre?*' 'Punctured,' says Johnnie, taken by surprise.

313. One would like to know from what schools some answers come. They seem to have a local connection. 'Lord Rayleigh was the first to see the invisible Armada' might be the output of an Essex school, where the local and contemporary apperception mass that included Lord Rayleigh would have a better chance of recall than the historical one in which Sir Walter Raleigh had his place.

314. In answers given by one's own pupils it is much easier to account for wrong connections, for we have some knowledge of their mental content and also of their environment.

315. Sometimes we can trace a fault to lack of a clear mental image. A boy rattles off, 'A parallelogram is a figure composed of four parallel straight lines.' It sounds quite nice, but he evidently does not see mentally the figure he is describing. How should a teacher deal with a mistake like this? If, without any remark, she turns to the blackboard and begins to draw a figure according to this definition, with the third line the boy will see his error.

316. The same kind of thing may occur in a music class if we ask for a definition. Instead of correcting such an answer verbally, it is better to write it on the board and ask, 'Is it right?' The class, between them, will usually correct it satisfactorily, teaching each other and clarifying their own ideas.

317. In dealing with written exercises, too, it is better not to correct, but to mark the place where there is an error and let the pupil find out what the error is. If he cannot do this without help, go over the work with him, but pupils rarely look at the corrections made in private by the teacher. This is by the way.

318. Misunderstanding and muddle often arise from the subject being unsuitable for the pupil's stage of development. In the *Musical Herald* some time ago there appeared some extracts from an examiner's notebook which are rather illuminating. The contributor says:

'I select some answers which may perhaps afford entertainment, *not unmixed with instruction*, to teachers of musical history. I may say that all the competitors belonged to what are ordinarily described as the educated classes (girls in secondary schools), and were, as a rule, over fourteen years of age.'

The answers are certainly amusing—I quote some below—but they prove beyond doubt that the course of musical history on which the questions were set had been inflicted on pupils who had not the wherewithal for its assimilation. A lecture, excellent in itself and pronounced delightful by the head mistress and staff, may produce utter confusion in the minds of the pupils, because the lecturer, when preparing it, did not imagine himself in the place of the young hearers and make a rough estimate of their apperception masses.

319. Here are a few gems, and we can sometimes make a very good guess at what the lecturer *did* say.

'Palestrina's music is very monotonous and holy; when listened to it makes a man soar above all the evil and dark spots in his character.'

The next competitor differs. She says:

'Palestrina's music is very long and tedious; although it is real good music, it would not be thought much of now.'

'Bach's preludes and fugues are not things you would like to play at a concert, but were more for exercises.'

'Bach's smooth-tempered preludes and fugues were written in French first, and they were translated afterwards.'

'Bach's preludes and fugues are very clever, and if one wants clever work they might suit, but music that sounds well is preferred.'

One girl, however, finds the preludes and fugues—

'Very pretty; almost too pretty for exercises.'

'Beethoven's music is full of accidentals, and if not played with largeness does not sound well.'

'The older composers were mainly inveterate thieves, but Beethoven wrote most of his music himself.'

'Beethoven was not very great at religious composition, though he harmonized the *Messiah*, introducing into it a few new melodies.'

'Purcell was the only English composer there ever was.'

'Composers such as Handel and Bach knew next to nothing about chords and keys.'

'Berlioz was the tutor of Handel.'

'A fugue takes about three hours to compose, but Bach took longer over his.'

'Gregorian Music is very weird; it ends in little wails high up in the treble.'

'Mozart wrote most of his compositions in the train.'

'The folk-song of the Highlands is Mixolydian; that of the Lowlands Dioclesian.'

'Handel borrowed some few traits from Chopin, the first great violinist.

'Mozart's operas were smooth, while Weber's were all large chords which only he himself could stretch.'

320. The examiner who sent those extracts to the *Herald* did not do so merely to amuse its readers. He tells us so. He does not point a moral, but invites teachers to think it out.

321. Those pupils were not stupid young people. The answers do not indicate stupidity, but only muddle. The girls had evidently taken some pains, and they were presumably of the average intelligence of girls 'over fourteen, belonging to the educated classes.' The lessons given in the various schools had probably been prepared with care. They had also been illustrated, for the girls had apparently *heard* the music, and no doubt they had applauded every item, which would be

taken as a proof that they had appreciated it—a very common mistake this. No doubt, too, there were many good answers unrecorded. But allowing for that probability there was a distressing percentage of bad ones, for I have not quoted a quarter of those printed.

322. What was wrong? First, I think, that the teachers were so absorbed in their subjects and their treatment of it (5) that they never thought about the pupil's apperceptive ideas. Secondly, that the years up to fourteen, during which those apperception masses should have been built up, had not been so employed. Music teachers do not always think of teaching as mind-building.

323. The History of Music is hardly a school subject. The whole school period is rather a preparation time for a future course in it; and, that it may be such a preparation, no opportunity should be lost for bringing the composer's personality into the music lesson. Beethoven should be something more than a name to the children who play those two sonatinas that every child learns. A biographical sketch is not necessary. Where he was born, or lived, or died does not matter very much, and dates convey nothing to children. 'Whens' and 'wheres' are very vague notions to them. It is the man himself that matters. Lest they should measure him by the sonatinas, give them an idea of how great he was. Show them the photograph too. And when they say, as no doubt they will, 'He looks awfully cross!' try to awaken their sympathy for his deafness. Appeal to their imagination. Speak of the *loneliness*

of the stone-deaf man, and show he would long for the sounds he loved and could never hear.*

324. If the piece the pupil is learning is by a living composer, let him realize that too. If you can point to the composer's name and say, 'I know that man,' the interested but half-incredulous look on a child's face shows that he has not thought of composers as flesh and blood people, if, indeed, he thought about them at all.

325. If you would have an example of how to talk to children about pieces and composers, get Ridley Prentice's 'Musician,' Grade I. It is teaching of that kind that builds up the apperception masses necessary for that appreciative listening to music which we are working for.

326. If the presentative activity of an idea is to be strengthened by calling it up frequently into consciousness, it is evident that repetition is necessary in teaching. Yet nothing has been more deadening in school work than the false idea of what repetition means. The old style of teaching was altogether verbal repetition and drill. It was very often barren teaching, for we were not taught to observe for ourselves, to discover relations, to reason, but only to repeat a ready-made formula without any proof that it was understood. In the rebound from that the modern teacher is apt to rush into the other extreme, to neglect repetition and drill altogether, and to be afraid of a formula.

* For older pupils a concise history of music should be at hand for reference. Looking up the composer whose music they are playing is one way of providing apperceptive ideas for a systematic course later on.

327. The multiplication table was perhaps, in the past, the formula most often memorized without understanding, illustrating the saying that 'it is possible for a pupil to know a statement and not to know the fact stated.' By the mere mechanical memory of the multiplication table a child can make 144 true statements without really *knowing* the truth contained in any one of them; 3 times 8 is followed automatically by 24, and the child who has learnt the tables in this way is often quite a reliable little automaton. But suppose the mechanical memory should fail. Suppose that one day after 3 times 8 comes —— a blank. The child has no means of setting himself right, except by beginning at 3 times 1 and pattering the table through, a device that is often successful. The child who, under modern teaching, has 'built up' his multiplication table out of his knowledge of the powers of single numbers is not thus helpless when his memory fails. If he knows, through working with concrete material, that twelve twos, two twelves, six fours or four sixes, eight threes or three eights, will make 24, then '3 times 8' is a reminder of a familiar and understood process on which he can fall back.

328. But the modern teacher who taboos drill is apt to forget that the mechanical memory induced by frequent repetition is also necessary if the child is to be a rapid worker, for the tables should be 'on the tip of his tongue.' The mechanical drill should come *after* the understanding is clear; this is all.

329. In like manner the child who merely

memorizes the number of sharps and flats in the key-signatures may at any time forget, and has no means of restoring lost links; but the child who has 'built' his scales on the keyboard (with the modulator at the back of his mind) knows *why* a certain scale has so many sharps or flats. He cannot forget, because he has only to fall back upon a familiar process.

330. The repetition of a mental process, like the repetition of a physical process, tends to make the process easier and more rapid, and a formula as a framework for the process will tend to make it not only more rapid but more accurate. For instance, in the *First Scale Course* ('Guide,' *Part III*, *Section iv*), the object of which is to enable the learner to *think the scales* clearly, it is well to build every scale in the same way (see the 'Experiments' in *Lesson* 2); and in the *Second Scale Course* to have the mechanical part—the written work—done always in the same order: (*a*) the notes, (*b*) the writing of the scale-syllables under, (*c*) the marking of the little steps, (*d*) analysis and addition of the new sound, (*e*) the writing of the key-signature.

331. By repetition *in the same way* both the thinking and the doing become more rapid, and there is always enough difference every time to make thinking necessary. So in chord-building, by the formula for finding the dominant and subdominant chords (*Chord Lessons* 3 *and* 4) the chords are quickly and accurately found *in any key*. But repetition of the process is necessary—drill, let us call it—and it cannot become merely

mechanical, because in every key the constituents of the chord are different. The pupil has to think every time; but by repetition the brain-paths are traversed more easily and the thinking is more quickly done. A connected group of ideas is called up into consciousness at each repetition, their presentative activity is increased, and they are more closely connected with each other.

332. The formula in which a teacher—with the help of her pupils if possible—sums up the result of a lesson, if it is worth anything is worth memorizing. Hear Professor James on this. He says:

> 'In every branch of study there are happily turned, concise, and handy formulas which in an incomparable way sum up results. The mind that can retain such formulas is in so far a superior mind, and the communication of them to the pupil ought always to be one of the teacher's favourite tasks.'

He refers to the formulas and summaries in books, but his words apply to any summary that answers to his description. Make sure that your summary is short and clear and *adequate*; then let the pupils memorize it, and in review work expect it to be remembered accurately. Older pupils should summarize in their own words, but we cannot expect the younger children to give a summary that shall be 'short and clear and adequate'; therefore their attempts at explanation should be reduced by the teacher to a form that will be to them an example of clear language and thus a preparation for self-expression later on. The danger lies in giving a formula too soon. First let the pupil get at the facts and their inter-relation;

test his grasp of a principle till you are sure of his power of applying it. Then give him a formula *as a reminder* by which the ideas it links together —a whole apperception mass—shall come into consciousness in an orderly manner.

333. Whenever the mind encounters something new it challenges it, tries to account for it. It seeks a solution of 'What is it?' in 'What is it like?' and will name the newly presented object according to its real or fancied resemblance to a known one. It struggles to apperceive, and may apperceive amiss.

334. One of H.M.'s Inspectors, Mr. Rooper, tells a story that illustrates this. He was one day listening to an object lesson given by a pupil-teacher to a class of young children. She chose as her subject a pot of ferns. 'Who can tell me what this is?' she began. But there was silence (we must conclude that it was a class of little city children, who had never seen ferns growing before). At last a little voice called out, 'It is a pot of green feathers!' And the young teacher, turning to the inspector, said, 'Poor little thing, she does not know any better.' She made no attempt to account for the child's answer, but Mr. Rooper set himself to think it out, and the result was an essay which he called 'A Study in Apperception,' and published under the title of 'The Pot of Green Feathers.'

335. So even when you present an object to a child's eyes you must not take for granted that he sees what you see. Far less may you take for granted that when you play a piece to him he

hears what you hear. His apperceptive hearing depends entirely on the number and kind of musical ideas he already possesses. It is important to remember this when playing to a mixed class of school pupils, else we may be deluded into thinking that applause from all means comprehension by all. Music is a pleasant noise to most people, and children will clap on the slightest provocation, but behind the ears that hear there are no two minds with the same stock of ideas. Some, from musical experience and good teaching, will be sensitive, discerning, apperceptive—*minds* that hear. Others will hear confusedly, however carefully you expound. And behind other ears will be minds that, to all intents and purposes, are stone deaf. We cannot alter those conditions; we must do our best, but we must be under no illusions.

336. 'Children can observe only what their apperception masses are prepared to act upon; to all else they are literally blind, deaf, callous.'—*Adams*.

Chapter XI

HOW APPERCEPTION MASSES ARE FORMED

OUR next question is, how are such groups or masses of ideas formed in the mind? On what grounds do they set up their relationship?

338. Ideas may be divided into three classes: Similar, Disparate, and Contrary.

Similar Ideas

339. When a fresh presentation occurs, if there is a similar (or identical) idea already in the mind it comes to meet it. They have an attraction for each other, like bubbles in a teacup. When the two meet in consciousness they fuse and become a stronger idea.

340. For example, suppose we want to teach a little child the major tonic chord and the names of its constituents. If the child is very young—say five or six—but has a good ear, we simply let him listen and imitate, learning **d m s** as a diminutive tune, without any talk about the character, or mental effect, of its sounds. Each time he listens he imitates better. Now in this case each new presentation is *identical* with previous presentations. The child adds nothing to his knowledge, but at each fresh presentation his idea of **d m s** is clearer and stronger, until at last he can sing it when called for without pattern.

341. When he can do this, we pattern to him another wee tune: **s m d**. Now he notices that the little tune goes down—the first one went up.

Then we give **d s m**, **s d m**, and so on. In all this there is no new knowledge, but a working over of ideas which, compared with each other, are found to be *similar*. They fuse and form a little apperception mass, or group of ideas, ready to welcome the other related scale-sounds. At this stage we would not use symbols; only things and their names, as the child learns other things with their names before he learns to read.

342. The whole series of *time*-lessons in the 'Guide' is an example of the same kind of process. The central idea is that of the *Pulse* in music, discovered by listening, strengthened by comparison with the pulse in our bodies. Listening again, the child notices that the pulses in music are not all alike, some are stronger than others, and so he gets the idea of *Accent*. Again, he finds that these stronger pulses come at regular intervals. Sometimes he feels them alternately with weak ones, sometimes one in three, or one in four. They seem to *measure* out the music, like inches on a foot-rule or stakes in a fence. To this little apperceptive group of ideas—Pulse, Accent, and Measure—we refer all that we subsequently have to teach under the head of Time: rhythm, syncopation, rubato, the characteristics of dance-forms, and so on. They are similar ideas.

343. Each new pulse-division in simple time is similar to the last—I am still speaking without reference to notation—by virtue of the feeling of *two*-ness that runs through them all. The divisions in compound time are like each other through the feeling of *three*-ness; while simple and compound

time, though they differ from each other, are linked together by the persistence of the pulse-feeling itself. We shall have more to say about these threes and twos presently.

344. Remember, then, that ideas which are similar to each other have a natural affinity. When they meet in consciousness they fuse easily and become stronger.

Disparate Ideas

345. But we have often to link together in the pupil's mind ideas which have no natural affinity whatever. They cannot be compared with each other, because they belong to totally different classes. They will not fuse; but if they appear frequently in the mind together they become closely associated; and this artificial association may become so strong that when one of the associated ideas appears in consciousness it is followed by the other. We can hardly think of Wellington without thinking of Waterloo; yet, the one being a man and the other a place, they belong to different classes.

346. Ideas of this kind are known as *Disparate* ideas; the process of connecting them is called *Complication*, and the total idea resulting from their association is termed a *Complex* idea.

347. The term 'complication' may be a little misleading, because our everyday use of it generally includes the notion of some difficulty. A 'complication' is something to be deplored, a complicated problem is a tangled skein that has to be unravelled; but in the technical use of it here the notion of difficulty is not necessarily present

It only means *the arbitrary connection of two or more ideas that have no natural connection with or relation to each other*. The complex may be quite simple (though that sounds contradictory); it may also be complicated in our everyday sense if the complex idea includes a great many elementary ideas.

348. The notion of difficulty, arising from our accustomed use of the word, may lead you to suppose that complex ideas belong to the adult mind, but this is not so.

> 'Little Miss Muffet sat on a tuffet,
> Eating her curds and whey;
> There came a big spider and sat down beside her
> And frightened Miss Muffet away.'

Begin this rhyme for any child and the child will probably finish it; yet spiders and curds and whey have no natural connection with each other or with little girls in general; they are all disparate ideas. But they are brought together in the story, and at each repetition they appear together in consciousness. The story first takes hold, and repetition welds these disparate ideas into a lasting complex.

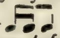
349. Every day the child's complexes grow; fresh connections are made in many different directions, and the mind becomes broader—more intelligent, we say—more easily approached, because approachable from many sides.

350. In all departments of teaching we have to make arbitrary connections, and if we know how nature does it we see our way to bringing it about. I have said elsewhere that the mind performs all

these processes of itself (225). Our part, as teachers, is to provide the conditions under which the desired process shall occur; to secure that right connections shall be made and wrong ones avoided.

351. Symbols, such as notes of different shape, have no natural connection with the sounds we have ordained that they shall represent. Ideas of things seen and ideas of things heard belong to different classes. So the moment we approach the teaching of notation we have to deal with disparate ideas, and at every step there is the formation of a new complex. The connection is arbitrary; how shall we effect it? Just by introducing sound and sign together, as strikingly as we can, and then letting them appear again and again together in consciousness. There is nothing in a thing of this shape  to suggest sounds to any but the initiated. Nevertheless, by being constantly brought together, and *used* together, such a close connection is formed that you, my readers, cannot look at that little pulse-group without hearing (mentally) the patter of its rhythm.*

352. When one part of a complex appears in

* The formation of such a complex in the mind of the ordinary pupil takes a considerable time, for it is the result of his total and slowly accumulative experience in the meeting of the two ideas. But we can hasten the process considerably by the use of the time-names. The divisions of a pulse-group— for example—and the syllables of the corresponding time-name, *tafa-té*, have the same *ear*-effect. They are similar ideas, and they fuse. We have still to make the connection with the symbol, an arbitrary connection, but here the time-name helps again. It seems to fit the eye-group as well as the ear-group, and so it forms a useful *link* between them, helping the formation of the complex; but the secret is in the continual use of sound and sign in combination when once their connection is clearly understood.

the mind we may expect the other to follow. I have instanced Wellington and Waterloo. The idea of sonata calls up that of Beethoven, and *vice versa*; *Gerontius* and Elgar would probably suggest each other. So we should expect the sight of a symbol to bring to mind the thing it symbolizes, and *vice versa*; and this usually happens. When people are learning to read their own language they hear the words mentally as they read. And by the time they can read with ease they can also usually *express* in the notation of the language words that they hear, actually or mentally; i.e. they can write as well as read.

353. But with regard to musical notation and the sounds it expresses our experience is different. There are very familiar cases of people who have 'learnt music' for many years, but in whose mind sound and symbol are very loosely connected: amateurs—and others—who cannot take up a song in a music shop and hear its melody, who cannot judge whether a pianoforte piece is suitable for a pupil until they have 'tried it over' on the piano. It is well known, too, that girls may work harmony exercises for years and have no mental realization of the chords they build up. The reason for all this is obvious. There has been no systematic association of sound and sign.

354. Then you all know the 'new pupil' who is hazy as to the difference in effect between  and , though in theory she knows all about it; who habitually misinterprets  and other compound pulse-divisions; who ignores dots and

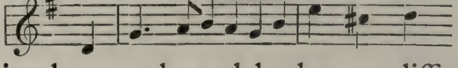
rests, though she can tell you their arithmetical values. Such cases can be accounted for. The complex has been imperfectly formed. When the manipulation of an instrument is concerned, the complex is threefold: symbol, sound, and movement. The sight of a musical phrase on paper will suggest not only the sounds it represents but the movements on the keyboard (or finger-board) necessary for its interpretation (113). The complex includes visual, aural, and motor images, and people who realize mentally the music they are looking at will often be seen to make the suggested movements. Now if, during the pupil's early training, theory and practice are divorced, as they so frequently are, the response of muscle to brain may be defective; the knowing and the doing have not been associated in the learning process, and the expected behaviour does not follow the perception of the symbol (116).

355. But it is curious that in the case of *skilled* readers the suggestion does not always work both ways, as we should expect it to do. There are people who are absolutely reliable readers of time-notation, good sight-players, incapable of making such mistakes as those I have mentioned, who yet cannot write a simple time-phrase dictated to them. You may ask: if the complex is so far formed that the sight of the notes unfailingly brings into the reader's consciousness the corresponding rhythm, why does it not work in the opposite direction—why does not the hearing of the rhythm bring into the mind of the same individual the corresponding notation?

356. Sometimes the difficulty is one of hearing, i.e. of attaching a *definite meaning* to what is heard. Here again the time-names are the needed link. But it is possible that the correct notation may have come into the mind, and that the hitch may only be due to the fact that in the individual's early experience the mere mechanical element of writing was not systematically associated with hearing. Let us think of an analogous case.

357. If you dictate to an ordinary person such a sentence as, 'The way was long, the wind was cold,' he will write it without any hesitation. He does not have to think about the spelling of each word or how to make each letter. He takes in the sense of the phrase and his pen seems to work by itself. Watch the composer at work: precisely the same thing happens. He has a musical thought, and he puts it on paper with the same facility as if he were writing a letter to a friend. His pen goes of itself. In both these cases the mere mechanical part, and even the spelling, has become automatic by habit, and the upper brain is left free to deal with the thought itself; to *hold it fast in its completeness* till it is committed to paper.

358. The unaccustomed writer may hear or may have in his mind such a phrase as—



It is simple enough, and he has no difficulty in singing or whistling it. But if he wants to put it on paper he has to think about what notes to use and where to place them, whether stems should go up or down, and so on; about the *spelling*, in fact, and the mere writing. And while the upper brain is occupied with these mechanical details he loses hold of the thought itself and it disappears.

359. Two kinds of experiences go to convince us that this is so. First, examination candidates who have had insufficient practice in writing invariably want to *hum* the tune while they write; or if it is a test in time alone, they will keep *tapping* bits of it. That is the effort to keep hold of the phrase, which is slipping away while the mind is attending to the mechanical work. And they will ask: 'May I hear it again, please?' and then we know that it is gone. When these symptoms show themselves we expect to find certain kinds of mistakes in the written exercise, and we are seldom disappointed. And yet these candidates have all the necessary knowledge about notation. It is a case of divided attention. Between two stools, etc.

360. And the second proof is that when children have been systematically trained in the mental perception of time and tune—separately at first but gradually associated—and when the processes of *hearing*, *writing*, *reading*, and *playing* have been combined in every lesson, they can write easily and rapidly what is dictated to them.

361. It is true that many of us have always been able to express in notation whatever we could definitely hear or definitely think; and that, too, without the systematic training to which I have alluded. But this fact neither proves nor explains anything. In our case it happened that this complex was formed, as many others are formed,

without any deliberate teaching; that is all that we know. But to dismiss the problem with the remark, '*I* never had any difficulty,' as so many problems are dismissed, does not help. In teaching we must do something more than trust to luck, and we ought to be helped by knowing that a lasting and reliable complex can be formed by *systematic association of its elements*.

362. Sometimes we have, as it were, to drag an idea away from one complex and force it into a fresh connection. The names A B C D E, etc., which we give to the pianoforte keys, have another connection in a child's mind before he comes into the hands of his music teacher, and this may cause confusion, though only one child in a thousand would tell us that he felt puzzled. The possibility of such a difficulty would never have occurred to me if I had not been brought face to face with it in the sturdy refusal of a very young child to call the white key between the two black ones by its name, D. He had evidently just learnt his alphabet, and, confident in his new knowledge, he stoutly maintained that *dee* was the name of a thing this shape (D), so it couldn't be the name of that other thing. But when it was explained to him that the piano keys, poor little things, had no names of their own, so had to *borrow* the names of some letters of the alphabet, he withdrew his opposition, to the manifest relief of his young and inexperienced teacher. To me the interesting thing was that so young a child—he was about five, far too young for pianoforte lessons—could see the possibility of separating a thing from its

name and transferring the name to a different thing. What had happened once might happen again; and that was why, in the next edition of the 'Guide,' I took the bull by the horns and anticipated the difficulty (Preliminary Course, Second Lesson).

363. Whenever we have to break up a complex and form a new group we must bring the new group into consciousness repeatedly, until the complex is safely formed. This does not mean that the old connection is destroyed. When, in the mind of the little boy, *dee* entered into a piano-key complex, its old alphabet complex was not shattered. But sometimes we find a wrong complex in a pupil's mind, and then we have to shatter it, or at least to separate its elements and keep them apart and bring them into new and right connections.

364. Disparate ideas, just because they have no natural connection with each other, can be formed into all kinds of complexes at will.

365. Pitch and time are disparate ideas, and every musical thought is a complex. Because the disparate elements are so intermingled in music itself they are necessarily intermingled in its notation, and this to such an extent that we forget its composite character and speak of it as if it were one thing, whereas it is two. We have also, most of us, a careless habit of saying, 'What is the name of that *note?*' when what we mean, and ought to say, is 'What is the name of that line or space?' Slipshod speech is likely to lead to wrong or unclear notions in a pupil's mind, but if the teacher

thinks clearly about the complex nature of our notation she will guard against this as far as possible. All musical notations are doubly complex. Pitch-sounds and pitch-symbols, time-values and time-symbols, are associated; and then these two complete systems, each representing a different class of ideas, are united in the *very complicated complex* of musical notation. They should be kept distinct by distinctive naming. What are the facts? The function of a note is to indicate a sound of a certain pitch, which has an alphabetical name, and to tell us for what proportion of time it has to be sustained. The name of the *sound* indicated may be F or D or C (names which we extend to their associated symbols, line or space); the name of the *note* is minim or quaver as the case may be, or two-pulse note, half-pulse note, if we so prefer. So, if when referring to pitch we teach a child to say that the name of a *note* is F or C we are wrong; though 'What is the pitch of that note?' would be correct. If we are referring to time, 'What is the *value* of that note?' is a better question. No doubt we shall always speak of the 'notes' of a bird, or of a singer's high or low 'notes,' because it is not easy to express ourselves otherwise; but in teaching, and especially in the early teaching, when the important first impressions are given, let us at least be as accurate as we can.

366. When people talk of teaching a little child music, they usually mean teaching him to decipher this very complex invention, which, though it is an admirable means of registering musical thought, is no more music than our alphabet is poetry.

When a child is singing by ear, dancing to merry tunes, listening to the songs his mother sings to him, to the pieces she plays when she thinks he is not listening, he is learning *music*; and he should know a great deal of music in this way before he is asked to tackle its notation. Children learn to know all things as wholes before they notice parts, and every whole tune a child knows is material that we may later on reduce to its elements, pull to pieces and put together again when dealing with that complex matter of notation (194). The alphabet must be learnt if the child is by and by to read literature for himself and by himself; and notation must be learnt if he is to read music for himself and by himself, and not to be dependent on the music other folk make for him. But I venture to assert that a child who has spent his first seven (or even eight) years in singing and listening will know more about 'the elements,' i.e. the meaning and use of notation, when he is ten, than the child who begins at five and has not had time for this most precious preparation.

367. And when we do begin, what have we to do? To disentangle the complex, to separate the elements, to teach a little bit of pitch, a little bit of time, to link each little bit of each to its symbol, and then to link the two little complexes together, and to present them together again and again in various combinations for recognition and for use. So the great complex of visible music is built up, easily because apperceptively; the ideas assimilated in one lesson waiting, as it were, to welcome those that may come in the next.

368. I should like to make a suggestion here. Children very often practise their pieces without noticing either the name of the piece or the name of the composer, and cannot tell you either if you ask them. Thereby they miss much that is of value; for the title of the piece is very often suggestive of its mood, and therefore a clue to its interpretation; and if the performer is to be an interpreter he cannot leave the composer out of his calculations. The musician (the teacher) knows this, and the music, its composer, and the title its composer gave it usually form a lasting complex in her own mind. She sometimes forgets that such a complex ought to exist in the mind of her little pupil.

369. A very good teacher of my acquaintance used to make her young pupils announce the title of the piece and the name of the composer before beginning to play. And why not? If the little reciter, before beginning his poem, announces: 'My bed is a boat, by Robert Louis Stevenson,' why should not the young pianist, on seating himself at the piano, turn to his audience and say: 'An Old-world Measure, by Thomas Dunhill;' or, 'Seven League Boots, by John Kinross'—giving them a notion of what they are going to hear?

370. A child can understand, from his own experience, that people *like* to know what they are going to hear, because they can listen with more interest; that that is why they buy the programme of a concert, and that when there is no programme he should tell them what he is going to play. The habit of doing this would go far to help a memory

which some of us lack: the memory of *opus* numbers. For, as the habit grew, the first thought that would come into the player's mind would be: 'What am I going to play?' and if there were no title the answer would have to be given in *opus* number and key; for example, 'Sonata in A, by Beethoven, Op. 2, No. 2.'

371. The memory-test suggested in the 'Guide' (end of First Step) also helps in this direction, viz. to play a bit of the melody of one of the duets and ask what it is. Later, a passage from any piece in the pupil's repertoire: pupil to name the piece, the composer, and if possible the key.

372. In a Canadian school I heard tests of this kind in knowledge of literature given to the children. A passage was quoted and the class was asked, 'Who wrote that?' The passages quoted were not always from the classics, but often from those charming minor poets whom we find on that side of the Atlantic; poems that had some correspondence with the children's own experiences and stage of development. Their familiarity with these was remarkable.

373. A competition of this kind would make an amusing item for a 'Musical evening' at school, but it would most probably be a failure if the associations had not been formed in lesson-time.

374. Such devices would help towards an organized system of musical knowledge, and perhaps in a generation or two people would cease to say: 'Oh, please play that awfully jolly thing you played the other day . . . you know . . . it was a fright-

fully sad tune . . . I think you said it was by Beethoven—or was it Cyril Scott?'

Contrary Ideas

375. Ideas of the third class (contrary ideas) seem to give students the most trouble, perhaps because the term *contrary* suggests that ideas of this kind must be even more unlike each other than disparate ideas. But it is not so; for while disparate ideas belong to different classes, contrary ideas belong to the same class—the same family, as it were—but within that class they differ. This is usually illustrated by reference to colour. All colours belong to the same family, but yellow differs from green, red from blue, and so on. What happens when ideas of this kind meet in consciousness? They do not fuse, like similar ideas, they will not combine, like disparate ideas. They actually get in each other's way, obscure each other, so that we cannot realize both at once.

376. Now it is important to be quite clear as to what is meant by *realizing* an idea. It is to concentrate one's whole attention on the idea, to let it *occupy the focus* for the time being. 'To realize the idea of red we must concentrate upon it all the forces that are appropriate to the idea of colour; and in so doing we are drawing off all the force that might otherwise be concentrated on some other colour.'—(*Adams.*) If we try to think of red and blue at the same time we find that we are not fully realizing either, that our attention is actually oscillating between them, and that if we

succeed in realizing the one the other disappears altogether. Try it.

377. I find that some people have a difficulty in thinking of colour apart from coloured objects. This may help. As children we have all amused ourselves by looking through pieces of coloured glass. When doing that we did not really imagine the objects we looked at—trees and houses—as being red or blue; but we got a general idea of blueness or redness pervading everything. Can you not, in imagination, get that vivid idea of colour as colour? Think red . . . think blue . . . think both together. . . . You cannot. As one colour-idea approaches the focus the other recedes, and when it is fully realized the other is gone.

378. Another example. Think the rhythm of any familiar *waltz tune*. Give it your full attention. Realize it. . . . Think the rhythm of a *gavotte* in the same concentrated way. . . . Now try to realize both rhythms together. . . . You cannot. You find yourself thinking of each in turn, and the effort to realize or give full attention to one of them blots out the other. The two ideas belong to the same class, but within that class they differ.

379. This curious effect of contrary ideas is called *arrest*. They arrest each other. Both are making for the top of the dome, and they get in each other's way. Sometimes one gets there and the other retires, but very often they both descend to a sub-focal or sub-marginal position, or they clear out of the dome altogether when they find

they are not wanted. The meaning of this we shall see more clearly by and by.

380. The theory of arrest accounts for the difficulty many people find of playing three notes against two, four against three, eight against six, etc. Devices for dealing with these mixed rhythms are given in most books about pianoforte playing. We are all familiar with these. They are based on a comparison of the arithmetical values of the notes in the two groups. The theory and the diagrams are quite easy to *understand*, but in practice it all breaks down, because such devices always suppose an enumeration which it is impossible to make with sufficient rapidity. It also supposes *attention to both rhythms at once*, and that is what we cannot give.* If we really *attend* to the pulse divisions in one part we lose consciousness of those in the other; and that is, after all, the best way to succeed. Call in the muscle memory. Practise each hand separately till its rhythmic movement becomes automatic. Then attend to the *meeting places of the beats*, and let the rest take care of itself. You will find yourself listening now to one hand now to the other, shifting the attention from one rhythm to the other, detecting an irregularity now here now there, when, if you are wise, you return to separate-hand practice.

381. For mixed rhythms the next best thing to a slow tempo is a very quick one. Chopin's C♯ minor Impromptu is very much easier to play than

* Three against two can be played by a child, by a simple combination of time-names, making a new whole; but for anything more complicated than that even the time-names fail.

some more innocent-looking pieces of the mixed rhythm kind. The rate of movement is quick and we get a two-pulse swing in either hand, the one in simple and the other in compound time. By fixing our attention on the beat-notes when we play both together the two-pulse swing carries us along, but if we try to realize the pulse-*divisions* of both rhythms we are lost. Let the meeting place on the beat be the focal idea, and let the contrary rhythms fight it out as sub-focal or sub-marginal ideas. Side by side in the margin of consciousness they live on good terms, but they *cannot be in full focus at the same time.*

382. It may comfort us to know that if the player cannot realize the two rhythms together, neither can the listener. If you try to listen critically to a passage of this kind—for example, No. 20, Book IV, of Mendelssohn's Lieder—you will find that you can only be certain about the evenness of the pulse-divisions in each part by shifting your attention from one part to the other. But what the least educated listener *can* hear is failure to make the beat-notes coincide. He may not know what is wrong, but he will feel that there is confusion somewhere. If the beat-notes meet, the equalization of the sub-divisions will not trouble him very much. It is only the ear of the expert that knows what is the matter.

383. To people with a naturally strong time-sense 5-4 time is at first a little irritating. But here the threes and twos are *not* working against each other—they alternate, and the regularity of their alternation enables us to attend to each in

turn without much trouble; 'the ear remembers and expects,' and the rhythm becomes pleasant. The regularly mixed rhythms, 5–4 and 7–4, may become popular; but I question whether some of the ultra-modern music ever will—that type in which one measure is in 2–4, the next in 5–4, the next perhaps in 9-8, and the next in 3–2.

384. The man in the street cannot adjust himself to this tipsy kind of movement. He feels 'at sixes and sevens.' His mind resents the absence of the regular swing that it expects; and he does not know how to console himself, as my readers might, by treating mixed rhythms as an intellectual exercise.* Invent as we may, the mind has its own ways of doing things. Professor Alexander Bain says:

> 'The observance of time in a succession of notes is a kind of concord between what is past and what is to come —a harmony of expectation—and the violation of it is a jar or discord, and is painful according to the sensitiveness of the ear.'

Wundt has shown us by a very simple experiment that it is extremely difficult to listen *un*-rhythmically even to a simple succession of single beats (127).

385. Now to recapitulate, and then to see how it all works.

* In a lecture that M. Jacques Dalcroze gave recently (1918) on the subject of rhythm, he improvized, in his inimitable way, with the object, apparently, of introducing into one composition as many irregular rhythms as possible. But the man himself is so intensely rhythmic that through all the irregularities there was a certain regularity of recurrence. It is difficult to describe the effect; but one might say that it was *the regularity of the irregularities* which prevented that topsy-turvy feeling which the rhythmic mind resents.

(*a*) *Similar* ideas need no description. Having an affinity for each other, when they meet they fuse, and the original idea becomes stronger.

(*b*) *Disparate* ideas belong to different classes. Not having a natural affinity for each other they do not fuse, but they combine and become a complex idea.

(*c*) *Contrary* ideas belong to the same class, but within that class they differ. They neither fuse nor combine; they arrest each other.

In teaching we should make for as much fusion as possible, and some arresting elements may be avoided if we do not become too discursive, introducing irrelevant matter by way of illustration. Confusion often arises from too much well-intentioned 'help.'

386. Most of our ideas, even a child's, are complex. Then what happens when two complexes meet?

'In the case of the two complexes being brought into consciousness together, all the similar elements in the two fuse, all the disparate elements proceed to form a new and more elaborate complex, while the contrary ideas arrest each other.'—*Adams*.

387. A child who is familiar with an upright piano in his own home is taken to a concert and sees a 'grand' for the first time. It attracts his attention and interest, for its keyboard calls up in his mind the image of the piano at home. But the two piano images don't agree. This long, flat, three-legged thing is not like the piano he is accustomed to; but yes, it *is* a piano, for presently some one comes on to the platform and begins to

play. Now, hitherto the child has only associated music-making with his mother and sisters and their lady friends; but this player is a man—a man, just like Daddy—and no one would dream of Daddy playing the piano. The child's ideas are upset, most of all by that funny piano, whose shape worries him. But the keyboard and the musical sounds fuse with the similar elements in the old piano-complex; while the disparate elements—the male performer, his position at the instrument, etc.—soon combine with the more familiar elements, giving him a wider notion of a pianoforte and its possibilities. The formation of the new complex is hindered for a while by the shape differences. These fight with each other, arrest and obscure each other, but finally drive each other out of the dome, and the piano-idea remains, stronger, fuller, and clearer than before.

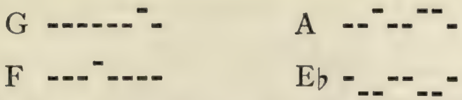
388. So you see that this process of arrest, which at the first glance seems as if it would prevent clear thinking, really helps it, by clearing out of our way *the things that don't matter* in the formation of the new complex. Flatness or uprightness, length or number of legs, are not essentials in the idea of a piano; the keyboard and the music are.

'The main work of arrest in the formation of new groups is to prevent the accumulation of unnecessary details.'—*Adams*.

389. As we have to be constantly adding new ideas as well as strengthening the old, we find complication and arrest as well as fusion occurring in our simplest lessons. Take the first scale-lesson at the keyboard.

390. The child has been accustomed to singing from the modulator—the scale picture, with its big and little steps, is familiar. He can sing the scale at any pitch, and he knows that the tune of it is always the same, be it high or low. Now we take him to the keyboard and let him play C to C' with one finger. He hears the same scale-tune. Perhaps he jumps to the conclusion that if he starts a little higher or lower he will hear it again; so we let him try, and suggest beginning on G. But at one place he gets a shock; the *te* is all wrong. The sound he hears and the sound he expected to hear clash, and there is a temporary arrest. But we show him how to adjust his keyboard scale to the steps of the modulator, and the arrest is over; *te* holds its place (379).

391. Now notice this. When the child sings from the modulator, though we change the pitch (i.e. the key) at will, not only does the scale-tune persist, but the scale-picture, the outward and visible sign, remains the same. But when he transfers his scale-tune to the keyboard it is otherwise. The scale of G has a different *shape* from the scale of C; and with the building of each new scale we have practically the formation of a new complex. The tune persists, the shape changes. Compare the shapes of the scales G and F, of A and E♭:—



392. The memory of scale-shapes and chord-

shapes is important, for it affects fingering. The experienced pianist has it. He does not have to think about fingering, unless something specially crabbed occurs—and it ought not to occur in really pianistic music. His finger is guided by his consciousness of scale-shapes and chord-shapes. In many cases it is simply the result of cumulative experience without very much thought. We cannot give our young pupils an equal amount of experience, but we *can* make them think. Instead of merely marking fingering for them, we can accustom them to choose it, on the basis of their knowledge of scale-shapes and chord-shapes, combined with the sense of the passage and its breathing places. So we can speed up the fingering sense, which is so important to the reader; intelligence, to a certain extent, overtaking experience.

393. We can understand how apperception masses can be formed by the fusion of *similars*; indeed, one Herbartian writer says that the term apperception properly applies only to the class of similar or analogous ideas. But the mind cannot be fed on similars alone. There would be no growth, no expansion. Such a mind could only be approached from one side. But by the process of complication it gathers in new ideas, and every fresh complex helps to form a new apperception mass or to make an existing one fuller; so that the mind can reach out in many directions for fresh food, can be approached from many sides, and offers many points of contact from which we can start either a new lesson or a new subject.

394. If we are to find points of contact it is

evident that we must know the present content of the mind with which the contact is to be made. Not only so, but we must remember that the *whole* content of the mind in question has to be reckoned with. Only in the light of such knowledge can our classification of ideas be of use to us; but with that knowledge our way is plain. For if each idea which we wish to present to the pupil's mind must belong to one of those three classes, we know how his mind must react on that idea, *always provided that we know what his mental content is.*

395. 'A given mind possessed of certain ideas must react in a determinate way upon a given new idea presented to it. Any one, therefore, who knows the general laws of mental activity and the content of a given mind may act upon that mind with a fair chance of being able to produce a desired mental result.' And again: 'We are sure of our ground in exact proportion to our knowledge of the content of the soul in question.'—*Adams.*

396. This sounds almost too good to be true. But it works. And see what an utter change it brings about in our notions as to the relations of teacher and pupil. The old idea about teaching was that the mind of a young pupil was 'a fair white page' on which the teacher might inscribe whatever he himself knew; 'an empty vessel,' into which he might pour any information he liked, and when he liked. (Such ideas are not by any means exploded; would that they were.) But we are learning truer theories, working them out in truer practice. We know that the child's inner world is not empty, but very full and active; and we know too that every idea already in that little

pate will either help or hinder us, will be to us either a friend or an enemy.

397. So there is quite a good deal to do at first interviews with new pupils before we can plunge into giving them a first lesson. We have to take stock of their mental possessions. In this hunt after their ideas we must be careful *not to talk too much ourselves*. Our aim must be to get them to talk to us. By tactful questioning we can lead them to tell us about the things that interest them most. Where their interests are strongest, there we find the largest apperception masses; among those interests we must look for our points of contact.

398. Once started, our task is easier, our way clearer; for every lesson in a series—if the series is rightly arranged—helps to provide apperceptive ideas for the next lesson. So 'the soul is in the teacher's hands, inasmuch as the apperception masses can be made and modified by the teacher.' But all the time we must remember that other ideas besides those that we furnish will creep in, and that it is the whole soul-content that apperceives. So we must watch out for those intruders, or they may prove potent elements of arrest. When a difficulty arises for which we cannot at once account, we must stop and find the cause, and adjust the pupil's ideas before we proceed.

399. We have noted that one idea may belong to several apperception masses, and this may lead to misunderstanding, for words which have one meaning for the speaker may have quite a different connection in the mind of the person spoken to,

especially if the latter is a child or a person of limited intelligence. The word *Canterbury* would probably bring into the minds of most educated people ideas of the old Cathedral and of Thomas à Beckett. In the mind of my cook the connection would probably be with *lamb*. What different mental images would the word *box* call up in the minds of: (*a*) a pugilist, (*b*) a gardener; (*c*) a coachman, (*d*) a lady going to the opera!

400. And not only has an idea different associations in different minds, but it has different associations in the same mind. It belongs to different apperception masses, and which of these will be fetched up by the word depends largely on what we happen to be thinking about at the time; or, as Professor Adams puts it, on our mental background. There is a well-worn story that illustrates this. An old couple are sitting by the fire in their quiet country cottage. The crickets are chirping on the hearth, and through the silence comes the hymn that the choir is practising in the neighbouring church. 'How pretty it sounds,' says the old woman, thinking of the music. 'Yes,' says her husband, thinking of the crickets, 'and 'tis said that they do it with their hind legs.'

401. The great war has been almost a permanent background to the minds of most of us. Any time within the past four years the mention of 'Brussels' would call up ideas of Prussian cruelty and misrule, of robbery and starvation. In pre-war times its association in British minds would probably have been with weddings and lace, with music, perhaps, or even with humble sprouts.

402. Again, if we happen to be talking about wars and battles, Waterloo would call up not only Wellington, but Blücher and his Prussians, Hougoumont, Brussels, and the famous ball. At another time it might mean to us only the southern terminus of the Bakerloo Tube.

403. At a dinner party we feel constrained in conversation with our partner at table until we get into touch with his mental background; and two people who have much in common may miss some pleasant intercourse because neither has courage to ask the other, 'What are you chiefly interested in?'

404. 'Most of the honest, that is, unmalicious, misunderstandings of life are the result of failing to make allowances for the background in the mind of another.' This is sadly true. Few of us, perhaps, have sufficient imagination to realize that we are flinging our argument against something from which it simply recoils.

405. If this is to be deplored in ordinary dealings with our fellows, it is much more deplorable in dealing with our pupils. A pupil, usually diligent, is not attending to the lesson, his mind is occupied with something else. Until we can get rid of that something else—can change his background—we cannot do much with him. There may be a punishment hanging over him, or an anticipated pleasure taking up his thoughts; whatever it is, we must get at it. 'Mary,' said a music teacher who felt that her words were going in at one ear and out at the other, 'I don't think that you are attending to the lesson one little bit. Tell me what

you are thinking of.' 'It's Daddy's birthday,' said the child, now bubbling over; and when the sympathetic teacher had been told all about it the subject was deliberately dropped and the lesson went on all right. The birthday background gave place to the lesson background.

406. Your pupil, or your class, may come to you fresh from a lesson on some totally different subject, and when this is so it is as well not to plunge too suddenly into your lesson. If you are class-teaching, the singing of a well-known song, or a round—something that the children know by heart—is a good beginning. If it is an individual lesson at the piano, a few preliminary remarks may be a more effective way of changing the background.

407. We are warned about the importance of securing the same point of view (in the physical sense) for teacher and pupils when imitative exercises, done in class, are in question, and confusion may arise as to 'right and left.' You will recognize the truth of that when teaching little children to beat time. The children say, 'Down, left, right, up,' but as you stand opposite to them your left is their right, and they are puzzled. The confusion may be avoided by the teacher beating with the left hand, but a better way still is to have the exercise done with both hands (*Dalcroze* fashion), when the directions will be: 'Down, in, out, up.' (*See* 'Guide,' Preliminary Course, Second Lesson.) When the movements have become automatic either hand can be used alone.

408. I find that many teachers allow pupils to

leave off beating time very soon. This is a mistake A pupil, *when replying in time-names to a rhythm test*, should always beat. The action helps to intensify the sense of accent. It is not necessary to make the large movements of the early exercises; a slight finger movement is enough. Choirboys do it.

409. When a child, in his early lessons, is learning to listen for 'high and low' sounds and to distinguish them, his experience is, 'high sounds to the right and low sounds to the left' of the keyboard; and when we ask him to shut his eyes and—standing a little way back from the piano—to tell us which we play, it is quite possible that he judges by his sense of direction only, and is not listening for pitch at all, though his answers may be correct. The sound comes to him from the right, a high sound, etc. We can test him by making him not only shut his eyes but turn his back to the piano. Now the *low* sounds will reach him from the right, and if he has not been listening for pitch he will answer wrongly. We can vary the test by asking: 'Is this the sound of a long, thick string or a short, thin one?'

410. This may seem a small point—much ado about nothing; but in teaching *everything matters*. If it is important that the pupil should discriminate, let us make sure that he does discriminate. Teachers often give their pupils credit for mental operations that they desire them to have, when in the pupil's mind quite other activities are at work. Therefore, be alive to all kinds of possibilities, and test, test, test.

Chapter XII

ATTENTION AND INTEREST

THE mind is always attending to something. There is no such thing as inattention. When we call a pupil inattentive, we mean not only that he is *not* attending to the lesson but that he *is* attending to something else; that, from our point of view, he is attending to the wrong thing. The teacher's problem is how to capture that errant attention, and keep it directed upon the work that she has provided for it. The solution of the problem is quite simple in theory; exceedingly difficult in practice. The first step towards solving it is to inquire what attention is and under what conditions it most easily works.

412. What is Attention?

It is 'turning the mental eye in a particular direction, so as to see objects lying in that direction as distinctly as possible.'

It is 'the taking possession by the mind, in clear and vivid form, of one out of several simultaneously possible objects or trains of thought.'

It is 'singling out some part of the presented content for special treatment by the soul.' 'A concentration of consciousness upon any idea.'

It is choosing one object from the many around us, one idea from the many in consciousness, allowing it to rise to the centre of the field, the crest of the wave, the top of the dome, and holding it there for a longer or shorter time.

413. How does it begin and what determines it?

In Chapter IV we spoke of the chaos that must exist in the young child's mind in those days before it begins to 'take notice,' as we call it; when the sense-organs are all sending messages at once from the outer world into the soul, and the inner world must be 'one big, blooming, buzzing confusion.' But we said, too, that very soon from that crowd of sense-impressions the baby mind begins to *select* those that, from their greater intensity, have most attraction for it—a bright light, a loud voice, a moving object. To these it attends, momentarily, and the rest are ignored. Attention, we said, is *a process of selection* (100).

414. The things selected for attention are the things that cause some sort of feeling; a feeling of pleasure, or it may be of pain. A sun-ray or a pin-prick may attract the baby's attention equally, but the attendant feeling is different.

415. Feeling and attention, then, are closely connected, and because 'a *felt* thing is an *interesting* thing' we say that Interest and Attention are closely allied—so closely, indeed, that they are sometimes spoken of as parts of one state of consciousness: 'the back and front, obverse and reverse, of the same state.' Put thus strongly it sounds as if Interest and Attention were the same thing, but that is not what is meant; we have only to examine our own consciousness to know that it is not so. Though closely allied, they are quite distinguishable.

416. The sense-organs of grown-up people are also constantly played upon by outside stimuli, the same process of selection is always going on,

and upon the same principle—namely, the things that interest us are the things that we attend to. Professor James comments on 'the extraordinary fact that, though we are besieged every moment by impressions from our whole sensory surface, we notice so small a part of them.' He suggests as a reason for it that in mature life our interests have settled down in a few permanent directions, and that we attend only to such sense-stimuli as remind us of those permanent interests; to the rest we are irresponsive. Evidently then, Interest determines Attention.

417. You will recognize this as a part of your own experience. In a walk down Regent Street, what kind of things do you oftenest look at? Can you pass a music shop? Do you not stop to read the concert announcements outside the Queen's Hall, and is not your attention attracted to the pianoforte, violin, or vocal recital according to what your own study is? Interest directs your attention; and your interests, though not limited to music, are mainly in that direction.

418. But take a child with you, and your walk will take twice as long. Things in the street as well as in the shops will call forth the constant 'What's that?' You will have to stop at every window that shows bright and pretty things. The gorgeous flowers, the still more attractive fruit; and the toys—oh, the toys at Hamley's! Children have few settled interests, and so their attention is attracted hither and thither with a butterfly inconstancy.

419. This restlessness of attention is very valu-

able to them. They are made that way, on purpose that they may develop in every direction. Every sense teaches them something, and they are saved from the lop-sidedness that would surely result if we could pin their attention down to the things we would like to present to them.

420. This kind of attention, given naturally to the things that attract us, is called Involuntary Attention. The term explains itself. It is the kind of attention we give because we cannot help it. It is sometimes called Spontaneous Attention, which is a better name.

421. But we often have to attend to things that have no attraction for us, subjects that we may even dislike, but which it is necessary for us to know, and to which, therefore, we must give attention. Then there is a struggle. When the subject is interesting in itself, Inclination and Will pull in the same direction; but where no interest exists, Will and Inclination pull different ways. The pupil may be quite *willing* to attend, and because this is so we call this kind of attention Voluntary; but with all the will in the world it is extremely difficult to resist the attraction of other ideas or of outside sensations when engaged in uncongenial work. You can prove this by personal experiment.

422. Take in hand a book on some subject in which you feel no interest, but which, for one reason or another, you are driven to study. Shut yourself up with it for an hour, with the purpose of mastering a portion of it. If the uninteresting subject is treated in an uninteresting manner, how

often will your mind wander to the veriest trivialities, and have to be called back by a distinct effort. How glad you are when the hour has passed, and *how little you seem to have learnt in the time.*

423. Voluntary attention is always attended by effort, and the effort is never made except under the influence of some external motive. In the case of the adult, the desire for self-improvement or advancement is a sufficient motive. In the case of a child it is the wish to please parent or teacher, the desire for prize or class-place, or the fear of evil consequences if the effort is not made.

424. But suppose that in that experiment of yours the book from which you expected so little turns out to be written in an attractive way, you can attend with much less effort, and probably you will find yourself after a while wanting to know more about the subject itself—which is the same as saying that it has begun to have an interest for you. As knowledge and interest grow, there will be less and less effort needed to pin your attention to the new study, and instead of having to drive yourself to your task you will find yourself attracted by it. The voluntary, needs-must, sort of attention with which you began has given place to natural, spontaneous attention.

425. To bring about this change of attitude must be the teacher's great aim; for though we cannot avoid setting tasks which require voluntary attention on the pupil's part, and though we feel that it is good for them to make the necessary effort, we know that that kind of attention, voluntary though it be, never accomplishes so much

as the attention that is spontaneous—attracted, interested by the subject itself.

426. Attention works, then, on this principle: the more interest the less effort; the less interest the more effort. And this gives us the key to the teacher's problem. If you want to keep your pupil's attention directed to the lesson in hand, you must be interesting.

427. By this I do not mean be amusing. Some people think that children need to be eternally amused, and try to be funny when teaching, but this is to under-rate the pupil's instinctive sense of the fitness of things. The child of average intelligence looks upon lessons as serious business, talks of them as his 'work,' does not pretend to like the work perhaps, but feels more grown-up and important for having to do it, and resents its being treated with undue levity. A joke is not barred—indeed, quickness in seeing the point of a joke is a good test of general intelligence—but the really interesting teacher is the teacher who can make the work itself interesting. To do that we must learn a few more facts about Interest and Attention.

428. *The mind cannot attend to one unchanging thing for any length of time.* The duration of active, voluntary attention is very short.

The longest stretch of attention recorded is a stretch of twenty-four seconds, and the average length of attention is no more than five or six seconds.'—*Titchener.*

If this is so when we want to attend, the spurts are likely to be shorter when we do not particularly want to attend; and we must remember that the things we wish our pupils to attend to are not always things that they are thirsting to know. When we realize how difficult attention would be to ourselves in such a case, we must also realize that it is a hard thing to expect from a little child, and we shall feel sympathy and encourage effort.

429. The teacher should remember, too (34), that in the act of attention there is an actual using up of brain tissue. With the effort of attention some cells in the cortex explode, and when a cell has exploded it must be recharged before it can act again. That is why we can only give voluntary attention for a few seconds at a time. The spurt of attention corresponds to the successive discharge of cortical cells.—(*Titchener*.) When a child is set to keyboard exercises at an age when the fine muscles of the fingers are not yet under control (83), it is not the little fingers we are tiring, but the little brain; because all new movements demand concentration of attention, and that means brain fatigue. If mothers realized this, they would not insist on their little five-year-olds being seated on a piano-stool, but would let them sing, and listen, for a couple of years longer.

430. It is advisable to prepare the pupil's mind for a new presentation by announcing it beforehand. For example, if we say, 'To-day we are going to learn a new pulse-group and a new time-name,' all that the pupil knows about these comes to meet the new knowledge (285).

431. Besides this general preparation we can adjust the attention in definite directions. For instance, we give two kinds of time ear-tests:

(*a*) Recognizing and describing the measure of tunes played, (*b*) Writing rhythmic phrases from dictation. Before giving a time-test, be sure that the pupil knows what he is to listen *for*. In the measure tests he listens for *the order of the accents*; in the rhythmic test he listens for *what the time-names say to him* ('Guide,' Preliminary Course, Third Lesson). The pre-adjustment of attention makes the pupil's mental process more definite.

432. In giving beginners ear-exercises on the scale-sounds we sometimes ask them to recognize a given sound in a group of three or more. We say, 'I am going to sing five sounds. One of them will be *soh*. Listen, and tell me which it is.' And we sing, perhaps, **d l s m d** to figures or to *lah*. The children who have a clear mental image of *soh* will instinctively keep their attention on the alert for that *one* sound, and all the others pass by unnoticed (162). These listen definitely; they pre-hear, and recognize. Others, who are hazy as to the sound of *soh*, will, as it were, try to examine all the sounds as they pass, in the hope of discovering *soh*. These listen vaguely. They have nothing definitely in their minds with which to compare what they hear. These are the children who need help; and we can give preliminary exercises to induce the habit of calling up the mental image of any particular sound. Give the key-chord. Say 'Think *soh*. Don't sing it; don't even hum it. Just think it. . . . Hands up, those who can hear it in their minds. . . . Now let those alone sing it.' Then give the group test to all, telling them to think *soh* as soon as you give the key-chord and

before you sing the group. The pre-perception of the sound will help its recognition.

433. In private teaching there is a greater strain on the pupil's attention than in class-work. The attention of the solitary pupil is always being called back to the point by the teacher. In class, voluntary attention to the illustration on the blackboard is relieved by involuntary attention to the fly on the window-pane. So, in the teaching of most subjects, the private lesson should be much shorter than the class lesson.

434. But music is so many-sided that by change of topic fatigue to any one set of nerve-centres can be avoided. We may divide a lesson to a child this way:

(*a*) Hand movements, at or away from the piano. Here the commotion is among the motor nerves.

(*b*) Locality; associating staff and keyboard. The visual centres at work mainly.

(*c*) An ear-exercise. Observation of pitch-relations. The aural centres involved.

(*d*) The reading of interval. Hand and eye again at work. And so on.

The pleasurable feeling of taking an intelligent share in duet-playing, or showing independent power in solos, arouses fresh interest and starts a fresh spurt of attention when we come to the recreative music. This, because the pleasantest part of a lesson, can come last, while any topic which is difficult for the individual pupil should be tackled first, when the mind is fresh.

435. The mistake teachers commonly make is

giving too much time to each topic. The more enthusiastic the teacher, the more likely she is to make that mistake. Absorbed in the interest of her work, she forgets that the pupil's attention is giving out. For the pupil, a short concentration of attention is best, and then a change of topic. The new topic awakens fresh interest.

436. One of the difficulties in all teaching is to handle one's topic in such a way that the pupil sees it from various points of view. Monotony in teaching is a crying sin, for it kills interest and puts the mind to sleep. Many a child's native love for music has been turned to dislike by the monotony of the practice.

437. Five-finger exercises, in the case of young children, we may dismiss as hopeless from the side of interest. Treating them rhythmically has been tried, but without much success.

438. Scales are a necessity; not merely for the sake of finger dexterity, but because they are, or ought to be, the pivot on which turns all the pupil's knowledge of key. To ill-taught children, scales are separate facts, sufficiently alike to be monotonous and sufficiently unlike to be a worry. Yet scale-teaching and scale-practice can be very varied and very interesting.

439. But—

(*a*) Do not teach scales from a book. When seen in print the long array is fearsome to a child; and when a pupil starts with a three-octave scale, and continues to play three-octave scales all through her school life, they are apt to pall.

(*b*) Do not speak of *scales* at all, but of *the* scale.

The interest is in finding out what happens when the same little up-and-down tune is played on different parts of the keyboard. The meaning of key-signatures is clear when the pupil builds his own scales in this way, and the gradual unfolding of knowledge keeps interest alive.

(*c*) Secure the understanding before you begin the playing. Progress will eventually be quicker, for understanding always helps skill.

(*d*) From the beginning associate chord knowledge with scale knowledge. The discovery that chords are selections from the scale-sounds, and that *the same things happen in every key*, is interesting in itself, and is the fundamental principle of harmony and transposition. The principle can be grasped through quite elementary work.

(*e*) Remember that it is not necessary that the pupil should know all that there is to know about scales and their relationships in his early lessons. Give a few ideas at first, right ideas that he will never have to unlearn, and add the rest by degrees as you go over the ground again. The child's initial needs are: (1) To know what a scale *is*. (2) To be able to play it in any key, i.e. to see how it works out on the keyboard at any pitch; for this, one octave, played with one finger, is sufficient. (3) To discover what happens when we begin a scale on the over-fifth (*soh*) of the last one, and then when we begin on the under-fifth (*fah*). (This is scale-*theory*, key-*knowledge*.) (4) To see the common sense of scale-fingering.

(*f*) The teacher must use her own judgment as to when to begin scale-*playing*. When it does begin, the child who can build a scale on any key-note has the great advantage of not being obliged to begin with the scale of C, in which the fingering is liable to accidents; but can begin with B, in which only one fingering is possible, and the reason for the alternation of three-finger and four-finger groups is obvious. B♭ is a good scale to follow, beginning at the top with the right hand, at the bottom with the left. The next best are D with the right hand, D♭ with the left, beginning both from below. These are the safe scales, and give sufficient variety until the alternation of the finger-groups becomes a *habit*.

(*g*) As facility increases we can avoid monotony by grouping the scales according to their various relationships. In fact, the inventive teacher will always have some fresh device to prevent monotony in practice if she knows that when the hands are employed in vain repetition the mind takes a holiday. Practice without attention is of little use, and attention without interest is extremely difficult.

(*h*) Pieces naturally give more scope for variety of treatment, so that at each lesson we may bring out a fresh point of interest. If practice is mere repetition, a piece soon becomes stale. It is the unchanging thing that palls.

440. Interest has laws of its own, within which we must work.

The too familiar has no interest for us; it either bores us or we pass it by unnoticed.

But neither have we interest in the entirely unknown. It makes no appeal. There is nothing for it to appeal to.

The new thing in which we recognize some connection with a known thing, or some likeness to it, is the thing that interests. It arouses curiosity, the wish to know more, and that is the attitude we want in a pupil; for when we want to know more about a subject we attend to it spontaneously. 'The old in a new setting or the new in an old setting is the arrangement that secures interest.' The reader who remembers what we have said about apperception will see why this is so.

441. 'Very often the teacher must introduce ideas into the mind of the pupil, not so much for their immediate importance as for the use to be made of them at some future lesson.' This should interest us, because it is a thing the average teacher would hardly think of doing. Why should we do it? 'Because there is no greater charm for any one than to find that a certain fact known in one connection suddenly comes to be of use in an entirely new way.' We are warned, however, that though an idea may be introduced before it is actually required, 'it must never be brought in where it is felt to be out of place.' And the warning is needed; for sometimes young teachers, in their zeal to follow counsel, will endeavour to do so at all costs, and while observing one maxim may infringe another which is of more consequence. Specimen lessons afford many examples of this. We must not drag in an idea just for the purpose of using it by and by.

442. But it often happens that the fit and proper moment for introducing an idea is a considerable time before the pupil has any actual need for it.

An instance of this is the teaching of the meaning and use of the C clef. The right time for teaching this is when we are teaching the other clefs and breaking up the great staff into five-line staves. If it is not done then, we are asking for trouble later on. John Curwen said: 'An idea may be presented too soon or too late.' Too soon, i.e. before the pupil has the ideas necessary for its apperception. Too late, if misunderstandings have sprung up and wrong connections have been formed. True, the pianist, merely *as* pianist, may never need to use the C clef;* but we do sometimes take up other instruments for the sake of taking part in orchestral or chamber music, or for the pure delight of applying our knowledge to something fresh. If this should happen, and the student should see others puzzled by this very simple little C clef, he may think with gratitude of the teacher who made it all clear to him when a child, though now, for the first time, he has a use for it.

443. The same kind of apperceptive interest is aroused when a pupil who has only sung from the modulator and the Tonic Sol-fa notation begins to apply his knowledge of these to the Staff. And again when, apart from its old connection with singing, he finds in the modulator a help in scale-building on the keyboard, and in the Sol-fa notation the key to transposition.

444. When teaching the elements—through the keyboard—it is well to introduce what we may call the 'white' sharps and flats (B♯, E♯, C♭, F♭)

* It is sometimes used for transposition, but this is a rather mechanical, rather clumsy, and (I think) a very difficult process.

when treating of sharps and flats in general. It is the natural point at which to do it, and it prevents a misunderstanding common among children, namely, that the sharps and flats are 'the black things'; we must 'let the first impression be a correct one.' (*Maxim* 11.) Now, little pupils have no immediate use for this particular bit of knowledge. But later, when building up the scales, they find the *need* of the white sharp. They have to use it in key F♯, but they are not puzzled by it as they would be if it were not an old acquaintance. In key G♭ they find the need of the white flat in the same way, and take it as a matter of course. That bit of knowledge for which they had no immediate use is very important to them now.

445. But knowledge which does not come into immediate use must be kept alive; for if it remain too long in the lumber-room beneath the threshold it may become rusty and be difficult to find when wanted. It is possible to keep alive the understanding both of the C clef and of the white sharps and flats without encroaching on the time needed for the more immediately needed exercises. ('Guide,' Part III, Section II, and Appendix III.)

446. *Interest is kept alive by the gradual unfolding of knowledge.* When first teaching the ♯, ♭, and ♮, merely as indications of locality, we assign to each a certain function, *raising*, *lowering*, or *restoring* the pitch of a line or space. And that is sufficient unto the day. But later, when looking more closely at the subject of key, the pupil finds that these signs may to some extent exchange functions. The natural can sharpen or flatten, and

then its function of restoration is handed over to the sharp or flat as the case may be; what it sharpens is restored by a flat, and what it flattens is restored by a sharp.

447. We must not expect the young pupil to make such discoveries unaided, though some children may do so,* nor would I make it the subject of a theory lesson, because children would not understand it if it were all fired off at them at once. If presented gradually, as cases occur in their pieces, it all becomes simple enough, and gives a new interest to old facts. In the same gradual way pupils will learn to judge whether accidentals indicate change of key or are merely chromatic. Knowledge which grows thus naturally and gradually, one fact out of another, is interesting, and 'the more unconsciously interest is developed, the healthier the process.'

448. *The teacher must look at every problem from the pupil's point of view.* Now it has been said—and you may meet with the passage—that 'no adult can take a child's point of view,' because

* Here is an example. The child was about eleven, pupil at a London County Council school, where she sang from Tonic Sol-fa, and was learning the piano and applying her knowledge to the keyboard. After working out the scales in all keys and building up the key-signatures, she suddenly turned to her teacher and said, 'But there aren't *really* any sharps and flats in the scales.' The teacher, for the moment, was taken aback, but then saw the child's meaning. To her, with the modulator in her mind's eye, sharps and flats were *outside* the scale, living in the margin—chromatics, in fact—for use when needed; and while working out her scales she had realized that the sharps and flats of the signatures were only adjustments of the keyboard and that they represented the diatonic sounds—though she did not know that word—the sounds in the middle column. To her they were 'not really' sharps and flats. She was right, but the average child would not have seen the point—nor the average teacher.

'one can no more hark back to the mental than to the physical life of a child.'* There is, of course, a truth in this, but it would be equally true to say that when we argue with an adult it is impossible to see from his point of view, because we can no more use his mind than we can adopt his body. It is a pity to raise the question at all, because an unexpected and startling statement like that sticks in the mind, and a careless reader may not notice that the writer makes the matter quite clear, and in rather a striking way, later on.†

449. Everybody knows what is meant by the common phrase, 'Seeing a thing from another person's point of view,' and nobody takes it literally. In the case of the adult, we learn in the course of our argument something about his circumstances, his interests, perhaps even his upbringing; and then we imagine what our outlook would be had our experiences been identical. In the case of the child-pupil we think of our own childhood, we recall our experiences of other children, the recorded experiences of other observers, and what we know of mental development, and then, knowing the mental content of the particular pupil, we imagine what our outlook would be if we were seven, or ten, or fifteen years of age, and had just our pupil's stock of ideas. It is by *sympathetic imagination* that we get the child's point of view, and unless we do get it we can do nothing with him. 'All who would enter into the garden of a child's mind must, like "Alice in Wonderland," make themselves small enough to

* Welton's 'Psychology of Education,' p. 20. † *Ibid.* p. 27.

enter by the enchanted door. Like her, they must go back for the little key.' That is why people who are very highly gifted in music themselves are seldom the best teachers of children. They cannot make themselves small enough, and they never find the little key. With all the zeal in the world they remain outside the door.

450. *A teacher who is not herself full of lively interest in her work cannot hope to interest her pupils.* In one of Tobias Matthay's books he says that the pupil should feel that his progress is to his teacher 'a matter of life or death.' That is his forcible way of saying that perfunctory teaching never arouses a pupil's interest, never accomplishes much. And it is useless to pretend to an interest you do not feel, for children see through you in a wonderful way. Your interest in the work must be real. If it is real you cannot help showing it, and that gives your pupil an interest in *you*, which lays him open to the infection of your own interest.

451. *If we would keep pupils interested we must let them do their full share of the work.* The teacher with a quick brain sometimes finds it difficult to wait while the pupil, or the class, thinks out the next stage in a process. She will ask, 'What do we do next?' and then, with hardly a pause, will do it herself, saying, 'That's it, isn't it?' To the pupil who is thinking—who is, perhaps, on the point of answering—this is very irritating, for the 'let-*me*-do-it' feeling is strong in childhood, and if it is killed, interest dies with it. A little difficulty stimulates. If a teacher thoroughly knows

her class, she knows just how much difficulty they can tackle, and if the pupils have confidence in the teacher they will know that she does not put questions that are entirely beyond them. They will feel that though the problem may look difficult it is within their powers, and then the hunt for the answer becomes not only interesting but exciting. A little patience, a little guidance, a correction here, a suggestion there, and when the problem is worked out the class as a whole will feel that '*we* did it,' while each member whose answers have helped knows that she has done her bit.

452. In his valuable little Primer on Teaching, from which many of the above passages are quoted, Professor Adams raises the very interesting question: 'Should the interest-curve be high or low at the end of a lesson?' I cannot do better than answer in his own words:—'At first sight it would seem that the progress in a lesson should be marked by a gradual increase of interest, and that the end should be the highest point of interest. But it must be remembered that the lesson has to be considered from two points of view: (*a*)It is a unit so far complete in itself; (*b*) It is a unit in a more complex whole. It has therefore two functions to perform. As an independent unit it must satisfy the interest it has aroused; for this is only another way of saying that it must be complete in itself. As a part of a wider whole, as one in a series, it ought to finish with sufficient unexhausted interest to carry the pupil over to the next lesson.' Comparing a series of lessons to a

well-written story, he says: 'While the chapter-interest dies with each chapter, the story-interest goes on increasing from chapter to chapter. So in teaching: the lesson-interest should run down at the end of each lesson, but the interest of the course as a whole should rise from lesson to lesson.'

Chapter XIII
HABIT AND MEMORY

PLAYING on an instrument is just a habit. Perhaps it is better to say that it is the sum of many habits; hand-habits, eye-habits, ear-habits. The singer, too, forms habits—of lungs and voice-box, mouth and lips and tongue. It is important that all such habits should be right and good, so the teacher ought to know something about the origin of habit, and how to help the pupil to form good habits and avoid or undo bad ones.

454. In Chapter III we learnt that when a neural current passes through the brain it leaves a kind of 'path' behind; and that every time a path is travelled by a current it makes it easier for a similar current to travel that way. We learnt that, in reading music, when the eye sends in a message from the printed page through the in-carrying nerves, it passes through the grey matter of the brain and is switched on to some out-carrying nerves, which cause certain muscles to make the movements necessary to the playing of the passage. Each time this process is repeated it becomes easier, because at each repetition the path becomes deeper and the transit of the message more rapid (76).

455. *Repetition*, then, lies at the back of habit. When we perform any act for the first time—a new dancing step, for instance—we have to think about it and the movements of which it is made up. When we have repeated it many times it is

done without thought, at the mere suggestion of the music. This is because after a while the in-and-out message does not go to the upper brain, the thinking department, at all, but is switched off at one of the lower centres (76). The action then becomes automatic. The nervous system acts, as it were, without asking leave.

456. Unfortunately, repetition makes wrong-doing easy as well as right-doing. When a small boy, writing from school to his mother about his 'cello lessons, said, 'I find that if I once do a thing wrong I'm sure to do it wrong again,' he unconsciously illustrated the theory of the brain-paths and the law of habit; and his conclusion that 'the only safe thing would be *never once to do it wrong*' embraced a large part of life's philosophy.

457. Among the bad habits that hinder sight-playing is the habit of constantly looking down from the notes to find the corresponding places on the keyboard. This habit, no doubt, is contracted during the pupil's early struggles with notation, when he 'spells' the music, a note at a time, and looks down to find the place of each. It is a habit very difficult to cure, but it may be prevented, and the better habit of finding one's way about the keyboard without looking at it initiated instead.*

458. The 'spelling' habit also extends to the reading of time, and can be avoided altogether by the use of the time-names. As the *look and say* method of learning to read makes the word the unit and not the letter, so the time-names make

* See 'Guide,' page 11.

the pulse-group the unit and not the single note.

459. In teaching the movements necessary to the manipulation of an instrument, then, it is well to be on the watch for *tendencies* towards wrong habits, and not to allow them to reach the automatic stage; for habit is a tyrant, and does not easily part with his prisoners.

460. The 'new pupil' is, of course, the stock example of wrongdoing. But apart from the question of correctness, which might admit of argument, she has now to conform to a new teacher's ways of doing things, and this may entail the undoing of some fixed habits.

461. A bad habit is not cured by railing at it. It is better to aim at substituting the right habit and say little about the other. The right habit has to be started consciously, and established by repetition, and so we must have patience. And because opportunities for falling back into the old ways must be avoided, it is well to put aside the pieces in which the bad habits are wrapped up. But the pupil must not be allowed to think that the time she has spent on these has been wasted. Say to her, 'Do not touch those pieces *until I give you leave*. When I do give you leave you will play them more easily than you ever did.' She will find by and by that this is true, if she has brains. But meanwhile give her your *reasons* for your prohibition. The law of habit is very easy to understand; and a pupil is much more likely to take pains, both in forming and *un*-forming habits, if she knows that what she is obeying is not

a mere fad of her teacher, but a law of Nature, which acts in an inevitable way.

462. One of Professor James's maxims is: *Never suffer an exception to occur until the new habit is firmly rooted.* A lapse he compares to the letting fall of a ball of string which one is carefully winding up; a single slip undoes more than a great many turns will wind again. Any child can understand that; and the 'brain path' theory, simply told, will give the young pupil a notion of 'how the wheels go round,' and why certain processes lead to certain results. If some of the psychological and psycho-physiological facts on which learning depends were told to boys and girls in a simple way, and when suitable opportunity occurs, it would give them a notion of what their teachers are driving at, and secure some amount of intelligent co-operation in their own education.

463. Mental habits are formed in the same way as physical—by repetition. Repeat a mental process a sufficient number of times and you have a mental habit. Hence the importance of following the pupil's thought step by step. Why does the teacher of arithmetic work out a problem on the blackboard, questioning his class at each step as to 'what to do next'? Because he wishes to guide the mental process of the class and give an example of straight thinking. Why does he do this so often, daily perhaps? Because he wants to help them towards a *habit* of straight thinking. Why, when he gives home-work, is he insistent about seeing the working of a sum, and not content with the

right answer? Because he knows the importance of the process by which the answer has been found; and he can often suggest a reliable short-cut to the painstaking pupil who thought out the problem in a roundabout way. This, too, he does frequently, perhaps daily.

464. Too often the music teacher imagines that her 'explanation' is all that is necessary, and takes for granted that her pupil is thinking as she herself is thinking, while all the time something entirely different may be going on in the juvenile pate. The instinct that discerns when the pupil's thought is making a bee-line for the truth or just going to miss it is the instinct of the real teacher. Clear thinking under guidance in childhood and early youth will go far to establish a habit of clear thinking when the student is older and has to work independently.

465. The most practically useful chapter in William James's suggestive 'Talks to Teachers' is the chapter on Habit. Every youth, every girl should read it and respond to his appeal that they should 'make their nervous system their friend and not their enemy.'

466. Memory, like habit, has a physical basis (139-40). The two are closely connected. Memory, too, is conditioned by brain paths, but with a slight difference; for while habit cannot exist without repetition, a single strong impression may be retained and be liable to revival after the lapse of years (144). But impressions weak in themselves are strengthened by repetition, and are then easily recalled. So that if, as Professor James says,

'Habit makes us imitators and copiers of *our past selves*,' we might call habit a sort of memory and memory a sort of habit.

467. I have already alluded to memory in other parts of this book, and to avoid repetition I will refer the reader to those portions when necessary. At this point, some parts of Chapter V might be re-read. Paragraphs 139 to 144, the 'impression'; paragraphs 186 to 188, the 'recall.'

468. Memory is partly a physiological and partly a psychological phenomenon. An impression is made in the cortex, and there it remains for a shorter or a longer time, its permanence being in proportion to its strength or the frequency of its recurrence. The retention is purely physical; in fact, Titchener says it is a mistake to say that the *mind* retains, for it is not the mind, but the cortex, which is retentive.

469. But retention is not memory, it is only one of its conditions; it makes memory possible, that is all. An impression on your cortex might slumber there for ever if something did not happen to awaken it; it might as well not be. So we must next consider the condition of recall.

470. In recall we pass from the physical to the psychical. The impression was made by a past experience which left a brain path. The accidental occurrence of a similar experience, or of some associated experience, throws that part of the cortex and its associated brain paths into a commotion which resuscitates the slumbering impression, and with it whatever associated impressions there may be. The whole comes rushing

into consciousness, the physical phenomenon becomes a psychical one, and we *remember*, i.e. we recognize that the group of ideas now in consciousness has been there before. This feeling of familiarity is what completes the process of remembering.

471. We have learnt that if an idea is to be assimilated by the mind we must tack it on to some ideas already there (382); and that gradually groups of associated ideas are formed, which we called Apperception Masses (285). Now, if we want to 'remember' any fact, any of its associated ideas will serve as a reminder, a cue, 'a hook to which it hangs, a means to fish it up when sunk beneath the surface.' We know, too, that an idea may belong to more than one apperception mass, so that there are many paths of association along which we may travel when we are rummaging in our minds for a forgotten fact.

472. When you recall any event of your past life which 'made an impression' on you, as we say—and you see how literally true the saying is—you will find that in your mental picture there is very much more than the object of central interest. We cannot revive that without reviving the other things—sights and sounds—that made up the original picture. Hardly noticed at the time, perhaps, they yet left their traces, and they come up unsought. It is indeed to those associated ideas that we owe the feeling of familiarity, the 'mood of at-homeness,' of which psychologists speak. More curious still, you feel *yourself* there as part of that original picture. Part of the mood

of at-homeness is the conviction that 'I was there.'

473. Sometimes, when we are in a contemplative mood, memories of past events come floating into our consciousness from nowhere. Something, we know not what, starts a train of images, one leading to another because they are in some way associated (298). This is known as Spontaneous Memory. At other times we have trouble in recalling a fact that we very much want. Instinctively, then, we work by the law of association. We all do it. We *think back*, and try every kind of reminder. Have you forgotten a friend's address? You probably begin by running through the alphabet, but with the alphabet you use every other thread of association you can think of. When you thus make efforts to remember, bringing your will to bear upon the operation, it is called Volitional Memory. But the term is scarcely more than a term, for we cannot by willing recall anything. All that the will can do is to set certain trains in motion and then to lie in wait while Spontaneous Memory presents for acceptance or rejection items from our store of associated ideas.

474. Psychologists who divide Memory into Spontaneous and Volitional also distinguish between 'remembering' and 'recollecting.' Remembering is spontaneous, recollecting is hunting up clues. The difference is very slight; for whether the fact comes into consciousness of itself, or we have to worry back to find it, the result is the same. Memory, spontaneous or volitional, is just memory.

475. We all recognize that some people have better memories than others. If memory is conditioned by brain paths we can understand how this happens. Some brains take impressions better, and keep them better, than others. In Professor James's words, 'Some minds are like wax under a seal—no impression is wiped out. Others, like a jelly, vibrate to any touch, but under usual conditions retain no permanent mark.' Now the interesting thing about this, and an important fact to remember, is that the brain we are born with is the brain with which we have to work to the end of our days, and we are told that we can do nothing to improve its original quality as to power of retention. We can keep it healthy by keeping ourselves healthy, but that is all.

476. This sounds discouraging. What is poor Jelly-brain to do? Is he to be for ever handicapped in life's race because nature has given him an unimpressionable cortex?

477. Not necessarily. It sometimes happens that a person who has a bad memory, and is aware of that fact, will in the long run prove more efficient than he who trusts to his good memory to pull him through all difficulties. The memory, as we have seen, works by association, and though it is possible that the brain cannot be improved as to its original retentiveness, the memory can be trained to work in any particular direction by multiplying the paths of association *in* that direction. In every branch of knowledge facts can be organized into a reliable system, within which memory will work satisfactorily.

478. Now, this is a matter in which the teacher has great responsibility. The grown-up student can, perhaps, learn to organize his studies for himself, but the child cannot; it has to be done for him. He has to be taught *in such a way* that every fact will be held fast by association with every other fact within a given system. He has, in short, to be taught to think, for it is thinking that does it. We learnt long ago that thinking means seeing relations, and seeing relations establishes associations; so that—

> 'Of two men with the same outward experiences, the one who thinks over his experiences most, and weaves them into the most systematic relations with each other, will be the one with the best memory.'—*James*.

479. This must not be understood to mean that a good memory is to be under-valued. It is a most precious possession; and the person so endowed may, if he uses it in the right way, rise to heights of efficiency unscaleable by his brother of the less retentive brain. The danger is in trusting to memory alone. Many do this when, after an idle term, they face an examination. We call it cramming. It is often quite successful as far as the examination goes (though much depends on the acuteness of the examiner); but knowledge acquired in this hurried fashion does not stick. It has not time to form sufficiently numerous or strong associations.

480. Cramming has its uses. The barrister has to train himself to it. He gets up the details of an intricate case in a few days; he forgets them in a few hours, when the case is over. He crams with

the intention of forgetting. But knowledge that we want to keep has to be acquired gradually, thought over, welded together step by step as we progress.

481. Forming associations is a process which the mind does for itself. What we have to do—what the teacher has to do—is to provide the conditions under which such memory processes shall take place.

482. What have we learnt, so far, that may help the teacher to provide those conditions?

(*a*) We know that the stronger the impression the greater the chance of revival (141). The effectiveness of our presentation will affect the memory of it.

(*b*) We know that to recall a past experience a reminder or cue is needed (186). What is to be remembered must be labelled.

(*c*) We know that ideas which are presented together have a tendency to reappear together (345). Ideas thus associated will serve as cues to recall one another.

(*d*) We know that familiarity helps recall (156). Repetition and drill promote familiarity.

(*e*) We know that a formula helps the memory (332). Formulas are good, provided they are a summing up of a thinking process.

(*f*) We know that attention deepens impressions (141), and that effective attention in learning is secured by interest (426). Attention, interest, and feeling, will all react on memory.

These, and the like, are conditions under which the mind will spin its own threads of association.

483. The pianist's memory is a special brand, a sort of amalgam. I have already spoken of the sense-memories and the part they play in it—eye and ear and touch. (At this point re-read Chapter V, pars. 174 to 178.) But to one important element I only alluded there, viz. to the analytical memory, the memory of the intelligence. By analysis we get a firmer grip of the composer's thought than the ear alone can give us. The thought itself becomes more definite. We note his treatment of it at each re-statement, the little differences which sometimes upset the less reliable memories of eye and ear and touch. Teachers all know how a pupil's memory is thrown out sometimes by the likenesses and differences in first and second endings, for example. As we think over a composition, the threads of association multiply and hold it together. We see it as a connected whole, as we think of a poem as a whole.

484. And here the question may suggest itself: Is it better to memorize a piece of music by repeating it straight through many times, or by practising it in short sections? It has been proved, I believe, that it is easier to learn a poem as a whole, i.e. by reading it through many times, than to memorize a stanza at a time (yet the latter is the usual way in which children are told to learn poetry). On the straight-through plan the whole argument of the poem is brought before us, with its details in their order; so that while we are memorizing the poet's words we are also memorizing his thoughts with all their connecting links. On the verse-by-verse plan we set up a connection

between the last line of a verse and its own first line (by the act of repetition) instead of with the first line of the following verse. While the verbal memory is at work on short sections the sequence of thought is likely to be missed; and when all the verses have been memorized in this way the learner has sometimes a difficulty in remembering 'what comes next.'

485. Does anything of this apply to the memorizing of instrumental music? I do not think the experiment has been tried. If a teacher with a large number of pupils at different stages would try it, we might get some interesting results. The principle of association applies, of course, to music as to literature. The sequence of ideas must be followed. But in memorizing a piece of prose or poetry we use our mother tongue, the thoughts are clothed in the words we use every day, and we have no trouble in reproducing them; and I have no doubt that in vocal music the totalwise plan would be best, the mechanism offering no difficulty. But the player, however well he may know the written language of music, always has the mechanism of his instrument to reckon with. The composer's plan may be easy to grasp, but the mechanism required in its reproduction may be difficult here and there, interfering with the straight-through method of memorizing. So that we must not jump to the conclusion that what applies to literature, whether in learning it or in listening to it, applies altogether to music. The poet's thought is (usually) clear; the musician's thought is always veiled.

486. 'Music is a funny thing,' said a little boy, when a relative had been playing to him; 'it seems to *say things* to you.' To which his brother added, 'Yes, and the queer thing about it is that *you never can tell exactly what it says*.' The children between them put the matter in a nutshell. The language of music is spiritual. It comes and it goes, and in its flight it drops a message which each soul that hears may interpret in a different way. Music does indeed say things to us. Noble things, ignoble things, merry things and sad; heroic, grand things; tender things; sometimes silly and inane things. And though we 'never can tell exactly what it says,' it influences us in some subtle way—helps to make us better or worse (there is no doubt of that); makes us happy or uncomfortable.

487. The question whether, in memorizing instrumental music, the totalwise plan or the instalment plan is best, cannot be pronounced upon until a sufficient number of experiments have been tried on pupils of different ages and of different mentality. It is worth attention and experiment because of the importance of economy of time in teaching.

488. The main fact for teachers to remember is that as habit depends on repetition, so memory depends on association.

489. If remembering is necessary to our mental wellbeing, so also is forgetting. If we remembered all things equally well, our minds would be clogged with unnecessary details; we could not think at all. Fortunately the mind has a way of dropping

threads of association when they have done their work. In learning, we may have to go through a process many times, with a certain amount of detail. Then the process becomes more rapid, we find short-cuts, and by and by we forget the process by which we learnt altogether; we simply *know*, and take the knowledge as a matter of course.

490. The teacher, by her method of working, can promote not only organized remembering but judicious forgetting. She builds up, and then gradually removes the scaffolding. Scaffolding is necessary in building, but when the structure is complete it obstructs the view. 'A good memory forgets well.' It retains the essentials, drops the unessentials.

Chapter XIV
CONCERNING METHOD AND TEACHING DEVICES

THERE is no word more often on the lips of teachers, especially music teachers, than the word 'Method.' Yet how comparatively few know what it really means, or *ask* themselves what it means and try to think out an answer for themselves.

492. We meet with different definitions of method; but though the actual phraseology may differ, the idea is always the same. It is—

> 'An orderly process toward a pre-determined end.'
>
> 'An orderly and rational procedure to attain definite results.'
>
> 'A progress toward an end.'
>
> 'A step by step approach to a distinctly defined goal.'

The simplest definition is Professor Laurie's—

> 'Method simply means a Way; neither more nor less.'

By this he catches those who deny the need for method. He says: 'You cannot, by any device, escape method. Admit that method is a way, and that methods are ways, and I defy any man to teach without them. No man ever did so. . . . You are devotees of method without knowing it. But *what* method? *What* way?'

493. Those words were used in an address to teachers thirty years ago. We have made progress

since then, but there are still many who say they have no method, and glory in it; they 'use their common sense,' and that is all that is necessary. Yet those who disclaim method disclaim purpose, disclaim an ideal, confess to bankruptcy in ideas about teaching, acknowledge that their daily work is a game of pitch and toss.

494. If method be not necessary, it is curious that all writers on education should either strongly insist on its necessity or, as the more recent writers do, take its necessity for granted.

> 'Only by sound method can we train and discipline faculty.' Method must enter into the way of teaching every subject and every lesson in every subject.'—*Laurie.*

Sir Oliver Lodge, too, while he thinks it *possible* that the motherly instinct of a lady teacher may be sufficient to enable her to care for very small children, holds that for all other teachers 'training in method is absolutely essential.'

495. Before we can say what method means we must be sure that we know what teaching means. The teacher's power is limited. She cannot learn for her pupil. As I said in Chapter I (5), all that the best teacher can do is to cause her pupils to exercise their own mental activity. The act of learning is the pupil's act. 'Teaching is simply helping the mind to perform its own functions of knowing and growing.'

496. If that be so, the teacher must know how the mind performs those functions. And that is just what we have been studying, is it not, in all the previous chapters of this book? *We cannot*

separate methodology from psychology. In every chapter the teacher's use of each psychological fact has been illustrated by some example of method; mainly, but not exclusively, from music teaching. We have been studying method all the time. If we now devote some additional pages to its consideration, it is to show further how the accepted principles and maxims of teaching have their roots in psychology.

497. The principle which lies at the back of all maxims of method is that 'the teacher's way of working must conform to the mind's way of working.' In approaching a subject the first thing to ask ourselves is, 'How does the normal mind approach it?' We know that elementary knowledge of all kinds reaches the mind through the senses (46); but different kinds of knowledge enter through different senses (133). At which gateway must we knock for the reception of those elemental facts with which we must begin?

498. And then, how much do we know about our pupil's stock of ideas (395)? We must tack on somewhere (396); where shall we find our point of contact (397)? What preparation has experience given them for the assimilation of the thing we want them to know? Are they *ready* for our subject (3)? What is their stage of development? Suppose your subject to be music; are they physically fit for the practice of an instrument (429), mentally ready for the association of sound and symbol (112); or are they still at the stage when their chief need is to store up material for future use (305), when their work as pupils is

simply to listen and imitate (366)? All those questions have to be answered before we can begin, and our psychology helps us to answer them.

499. If method is a step by step approach to an end it is evident that we must consider the end from the beginning, and always keep it in view. You are starting on a journey with children for companions. It is well to give them, too, an idea of whither they are going, and to let them at every turn of the road see clearly a little way in front of them. It gives them faith in your guidance, and there is interest in anticipation.

500. Here some young teacher may say, 'Must I then be always thinking about psychology when I am teaching?' No; to try to do that would hinder, not help. *Let it soak in*, and you will find that when you are teaching is just the time when you will not think of it at all. If you are clear as to your final goal, your psychology will give you your general sense of direction, and the pupil's need will prompt the next step.

501. What are called the principles of method are derived from the laws of mind. The reader can prove that here and now. Take half-a-dozen of the well-known maxims of method, and ask yourself after reading each, 'Why should this be true?' In seeking an answer you will find yourself turning over in your mind whatever psychological or psycho-physiological facts you know, and it is among these that you will find it. Try the experiment on the following six:—

(*a*) Teach the thing before the sign.

(*b*) In training the mind teach the concrete before the abstract.

(*c*) In developing physical skill, teach the elemental before the compound.

(*d*) Proceed from the known to the related unknown.

(*e*) From the particular to the general.

(*f*) From wholes to parts.

And then try whether you can give an example of each from the teaching of your own or any other subject. The experiment will help you to see clearly, to think definitely, and if you have any measure of success you will know that whatever you have learnt of the facts of psychology is beginning to be of practical use to you.

502. We have next to distinguish between Method and *Methods*. As the mind takes in different kinds of knowledge in different ways, it is obvious that all subjects cannot be taught in the same 'way.' History demands a different method from arithmetic, and music has to be taught differently from either. Hence, for special subjects there must be special methods. But such special methods will—if they are right methods—be *applications* in various directions of the laws of general method; using original plans and devices but always keeping 'within the law.'

503. I have already pointed out (11) that every text-book in school use is a method; the method which to its author seems the best 'way' of teaching that subject. For the sub-divisions of a subject, too, teaching plans will differ—physical and political geography call for different treat-

ment—and for different stages of *the same* subject there will again be differences of method as we follow the mind's development.

504. Some people seem to resent the idea of following a method devised by somebody else. The suggestion is a kind of personal insult. They cannot be 'cramped,' 'tied to a method,' and so on. I notice, too, that the legend that every teacher should compile her own method is almost becoming a catch-word, and is always received with a round of applause.

505. There was once a great educator called Comenius, who, though he lived in the seventeenth century, is still often quoted in books about teaching. Now, Comenius said that there is only *one* method for teaching all the arts, sciences, and languages. What do you make of that? Was Comenius wrong, and are we right to-day when we say that there should be as many methods as teachers? Can we reconcile the two statements. I think we can; but we must now make a further distinction between method and teaching devices.

506. What did Comenius mean? He meant, I think, that whatever the subject matter of the teaching may be, 'the teacher's way of working must conform to the mind's way of working.' That is the one method of teaching all things. And I have a notion that when people tell you that every teacher must have her own 'Method,' they are really thinking about the 'devices' necessary for the application of any method to individual pupils or classes.

507. *Every teacher must have her own teaching-*

devices. The fact that no two pupils are alike in character, in experiences and mental content, is enough to prove that each pupil is a separate problem for the teacher. Daily, hourly, she may have to invent fresh 'ways of putting things,' illustrations and analogies fitted to individual pupils, additional exercises for the slow-brained, and so on. Without such devices the best method ever elaborated might prove a dead thing, and a teacher who cannot thus respond to the unexpected in her pupils is really not of much use. But devices are not method for all that.

508. 'A successful educational method arranges all the necessary difficulties of the subject in such a progressive order that each one shall be a step toward the other, and that the steps from one to the other shall be sufficiently difficult to stimulate effort without being so difficult as to discourage; and the *un*necessary difficulties it removes out of the way. Such a method must be the result of a careful analysis of the subject to be taught, and a long experience in dealing with pupils studying it.'—*John Curwen*.

509. If the formulating of a method calls for so much knowledge of mind and its development as we have found to be necessary, for so much power in applying that knowledge, so much insight, so much prescience, so much experience, have we any right to demand that every teacher shall compile her own method, that there shall be as many methods as teachers? It would surely be an ideal state of things, and devoutly to be wished; but a moment's thought should convince us that, whatever may happen in a far-off Utopia, under present conditions it is impossible.

510. The young amateurs of this country are

mostly taught by girls who hold the L.R.A.M. and A.R.C.M. diplomas. How many of these are capable of analysing their subject, of developing it step by step, judging of what to teach and what to leave out in the early stages; of what to add, and how, and when, as the pupil progresses? And even when we provide them with a body of principles, as within the past few years we have been endeavouring to do, will this enable them all at once to formulate their own methods?

511. A higher authority than mine must answer that question. Sir Oliver Lodge assures us in plain words that method '*cannot be evolved by each teacher for him or herself. There is a theory to be known and a practice to be learnt.*' Professor James is of the same opinion. He warns teachers that '*you make a great, a very great mistake, if you think that psychology is something from which you can deduce definite programmes and schemes of instruction for immediate schoolroom use*' (which is equivalent to saying that every teacher can*not* make her own method); '*an intermediary inventive mind must make the application*' (8). And when he says that a knowledge of psychology will give us confidence in *any method we may be using* if we find that it is sound in theory (11), he takes for granted that teachers will use methods which are not of their own devising. Other writers seem to take it for granted too. Professor Laurie says: 'Regard *every lesson in the text-book* as merely the central point of the true lesson, which should be a conversation, starting from that lesson.'

512. A methodizer who claimed that his method

of teaching was warranted, line for line, to fit every individual child like a glove would be a quack. We always look askance on a 'one and only' way of doing anything, and a teacher who retails any method in unvarying fashion is in a fair way to become a mere method-monger.

513. The methodizer works by averages. Say it is a method of music teaching. His imaginary pupil is of only average musicality—rather under than over, to be on the safe side. The child will also be of what we call average general intelligence, but no definite mental content can be assigned him. The notion of him is founded on what is known of child development, backed by experience. All that the methodizer attempts to do is to look at the beginnings of his subject from the point of view of the average child of suitable age for the subject; and then, starting from a probable point of contact with the mind of that typical child, to unfold his subject in logical order, seeing all round the subject and seeing the end from the beginning. Keeping the average child in his mind's eye, he gives you a series of lessons, *mainly as samples* of what such lessons, in his judgment, should be. The method he offers you is, in fact, 'for example,' writ large.

514. The real child that the teacher takes in hand may be better equipped, or less well equipped with musical and general intelligence. This is *her* opportunity. She has to investigate this real child's stock of apperceptive ideas and find a point of contact for the first lesson. The illustrations and devices given in the book will probably be effec-

tive with a large proportion of her pupils, but it is almost certain that they will not suit all, or be sufficient for all. Every method must be modified in its minor details to suit the conditions of the class or the individual pupil. So no teacher need fear that she will be cramped or her originality fettered by following a method. Contending with the idiosyncrasies of her various pupils will give scope for all the originality, ingenuity, and presence of mind she may possess. Between the psychologist and the teacher stands the methodizer; and between the methodizer and the individual child stands the individual teacher. In the service of the child all three are needed.

515. One of the ways in which teachers may help each other is by passing on devices which have proved helpful to themselves. Listen to a group of teachers 'talking shop.' As they discuss the shortcomings and difficulties of their pupils, you will often hear, 'Have you ever tried this?' But devices are more likely to fit the case if they are the teacher's own. Some will be thought out when preparing a lesson; others will flash into the mind at the moment of giving it, meeting difficulties as they arise. A professor of psychology and pedagogy in an American normal college, speaking about training, says that even when watching the skilled teacher at work (the most important part of training next to mind-study), much discrimination is needed, and the observer should be taught 'to distinguish the essential from the accidental, *to separate method from devices*, and to look beneath the manner of the teacher for the

real work performed.' Again, when warning against the mere imitation of the model teacher, he says, 'The general method of procedure may be adopted, and to some extent imitated, but the devices employed, and all that is included under the somewhat indefinite term "manner," should be one's own.'

516. You see, then, that devices are very important, so important that they should not be used thoughtlessly. Teachers who have no knowledge of method in its wider sense are in danger of being caught by devices, and adopting them without inquiring as to what end they serve. They will take plans from several methods, some of which may be actually opposed to each other; so that there is danger in eclecticism if it is not guided by sound knowledge.

517. We may easily overdo devices. John Curwen wrote at one time:

> 'Devices have grown upon us to such an extent of late years that there now needs a little caution, lest the more important things are more or less buried alive under the extensive elaborations of the system, or neglected by an exaggeration of the importance of these many ingenuities. And it will become the most valuable trick of teaching to know where tricks must stop.'

To a teacher who is prolific in devices this is a needed warning. The simpler the teaching the better.

518. I have dwelt upon this difference between method and devices because I have found that some young teachers have felt discouraged by being told that, given a set of good principles, they

should compile their own methods. They know they cannot do it, and they ask: 'Am I fit to teach at all if I am so helpless?' Substitute the idea of 'devices' for that of 'method' and the difficulty disappears. *A special method* may be likened to the architect's plan: *Method* in its wider sense to the science that enabled him to make it; *Devices* to the material through which the building takes shape. Or, *A method*, again, is the road that the engineer lays out from point to point; *General Method* the science that he has applied in the work; *Devices* the ways in which other people can beautify the road and make it easy and pleasant for the traveller.

519. It is possible that the young teacher who to-day is following some one else's method may, with the fuller knowledge and experience of years, evolve something still better, and be one of the methodizers of the future. That every teacher will do so is extremely unlikely, and there will always be a generation growing up who have to learn how to teach. It seems probable that for a little while at least the intermediary mind will be needed.

520. All art begins with imitation, the art of teaching included, and the young teacher must have some sort of model to begin with. As she gains experience and skill in the adaptation of the method she has adopted, it will become to her mainly a reminder of the right order of presentation, a framework to be filled in from day to day with devices for the day's needs. She will find more and more freedom in teaching; but if the

method is a right one—and one of the uses of her psychology is to enable her to decide whether it is a right one (9)—she will not depart from its order; because it will help, in itself, to build up the apperception masses by which its own successive steps shall be assimilated (378).

Chapter XV

ON ILLUSTRATION

WHATEVER method a teacher may be using she will constantly find the need of illustrations that will appeal to the individual pupil. The different kinds of illustrations used in teaching children are often classed in order of merit, thus:—

(*a*) The thing itself—best of all.
(*b*) A model of the thing.
(*c*) A picture of the thing.
(*d*) A description in words—of least value.

You will find this in many books on teaching. But it is evident that everything depends on what it is that we are trying to teach.

522. If we want a child to understand what an island is, or a peninsula, the thing itself is out of the question. We must use a model, or a picture, or both together, and supplement them with a good deal of verbal description.

523. Or, the child is to realize the meaning of numbers. In this case, as the thing itself is an abstraction, we cannot begin with it. The pupil must work with various kinds of concrete material until the abstract notion is grasped (231), and then we associate the idea with a symbol.

524. And verbal description, without model or picture, may be quite effective, if the child possesses clear mental images corresponding to the words the teacher uses. We have seen (203) how an iceberg or a glacier may be imagined by a child who has fairly distinct images of the blocks of ice he has seen in fishmongers' shops.

So there can be no hard and fast order of merit in types of illustration.

525. Music, by its very nature, forbids the use of models, pictures, or verbal description; so the music teacher need not worry over a choice of illustrations. She begins with *the thing itself*, for it is always at hand, and she has no roundabout process to consider. She says 'Listen,' gives a name to the thing heard, and when it is recognized in any combination she says, 'See, this is how we write that,' going straight from the thing to the symbol. It is true that in talking to little children we do not use the word symbol. We speak of the staff as a *picture* of sounds rising by thirds; of a modulator or a written scale as a *picture* of the scale-tune; and in those symbols there is a pictorial element which partly justifies the term. But we recognize that clefs, and sharps, and flats, and notes are symbols pure and simple—arbitrary signs that must be used along with the things they represent over and over before they are firmly associated with them (351).

526. Nevertheless, we sometimes need analogies and other illustrations in teaching music as well as in teaching other things, though not at all to the same extent.

527. What is an analogy? It is usually understood to be a comparison of two things, for the purpose of throwing light upon one of them. Properly speaking, it is a comparison of two *pairs* of things, or two *sets* of things, each pair or each set having the same kind of relationship to each other as the other pair has, and in the same kind of proportion.

528. For instance, when we roughly compare the strong accents in music to inch-marks on a foot-rule or stakes in a fence, what we practically say is: 'As the inch-marks are to the foot-rule, so the strong accents are to the music.' And when we show the strong accent marks (the bar-lines) in actual use, the seeing sense helps the hearing sense, the analogy is recognized, and the relationship of the more familiar pair of facts throws light on the relationship of the less familiar pair.

529. An analogy is not an exact parallel in all its details. In each complex there are some elements strikingly similar, but others which may not fit at all. So an analogy must be very lightly handled, else children (who love detail) will try to make it correspond in its every aspect, and then it is likely to miss its mark altogether.

530. Teachers sometimes overdrive an analogy. For example, in speaking to a class of children about the characters, or mental effects, of the scale-sounds, we find a *colour* illustration helpful. Children, if questioned, will often, from their own feeling, say that *soh* is red. The more sober blue will stand for *fah*, and the strength of *doh* is not badly symbolized by black. If the colour notion helps the child, or the beginner in listening of any age, to realize the character of those three important tones of the scale, we have gained much. But when an attempt is made to force an analogy between the seven scale-sounds and the seven colours of the spectrum the whole thing comes to grief, for the colours do not correspond with the mental effects. The only point of contact here is

the coincidence of the number seven; there is no real analogy at all. There are three colours in the 'Step' modulator, and in the beginning this appeal to the pupil's imagination is helpful. But to carry on the colour association too long would defeat our final aim, which is to fix the attention on the *sounds* themselves, their relations to one another, and their emotional effect upon our own minds, and not to divide the attention between sound and colour.

531. In illustrating mental effects with little children, for whom 'character' is too abstract and indefinite a term, we may find a helpful analogy with family relations. *Soh* is the soldier husband, upright and scarlet-coated. *Doh* is his wife, motherly and restful. *Me* is the eldest daughter, sweet and quiet. *Te* is Tiny Tim, always running to his mother, and so on. You can make up a very good family modulator in this way, but you must be careful that the children understand it as 'only a kind of fairy-tale.'

532. A method of music-teaching which had a vogue in London about thirty years ago was embodied in a charmingly written story, in which the notes took the character of soldiers, marching now slowly, now quickly—I forget the details now. The story would give keen delight to any one who already knew all about time-notation, but as a method of *teaching* time it was not very successful, because the relations shown were purely arithmetical and theoretical. The analogy was very cleverly carried out throughout the story, but the over-elaboration needed to cover the whole of

time-notation defeated its end, and the pupils were found to be helpless in the practical test of time-reading.

533. An analogy must have sufficient likeness for its purpose. Far-fetched analogies fail, because there is more arrest than fusion (398) among the ideas compared. The time-teaching in another method is based upon a far-fetched analogy with the flight of birds. Now in the marching of soldiers there is a definite notion of relations. We can imagine two steps taken in the time of one, an analogous relationship to whole-pulse and half-pulse sounds. We have a standard. But the flight of birds gives us no standard, no definite image at all. No one can imagine a bird flying exactly twice as fast, or four times, or eight times as fast, as another bird; and as some of the birds in the fable have no wings, it is difficult to imagine them flying at all. It would be very misleading if it had any meaning for the children. Fortunately, it does not convey much to them. What the children *do* learn from is the practical exercise connected with it, in which the teacher beats time while tapping out the pulse-divisions.

534. Happy illustration is the soul of teaching, but Professor Adams points out sundry dangers in connection with it.

(*a*) *The 'hand-to-mouth' illustration.*—If teachers do not prepare their lessons and their illustrations with an eye to the mental content of their pupils, but leave the illustrations to the spur of the moment, the danger is that they may demand from the pupils knowledge which they do not yet possess, knowledge which in the teacher's richer mind is a commonplace and naturally leaps to the front, but which belongs to a stage in the pupil's progress which he has not yet reached.

(*b*) *The 'stock' illustration.*—Teachers who are constantly going over the same subject get into the habit of keeping certain effective illustrations 'on tap,' and using them over and over again. In this there is no harm, as long as the illustrations are not constantly trotted out in teaching *the same class*. We may have to repeat a lesson on one point several times to the same class, and when this is necessary we should provide fresh illustrations. But—

'The reproach of the stereotyped illustration is removed when it can be shown that it is a real touchstone of truth that may be applied to all uses within its sphere.'

The interest here is kept alive by the application to fresh cases. The orange as an example of perception is used over and over again in textbooks. It is such a good example that we cannot do better than use it.

(*c*) *Over illustration.*—'What is perfectly clear already needs no illustration.'

(*d*) *Using an illustration which proves more attractive than the point illustrated.*—If we try to teach the lines and spaces by pictures of little figures climbing over a five-barred fence—the heads of the little men representing *notes*—the child's interest is in the figures and their funny behaviour, and he loses sight of what we are attempting to 'illustrate.' This is one great objection to an apparatus of any kind in teaching notation.

(*e*) *An allusion which switches off the attention from the lesson.*—It sometimes happens that a pupil in class gets into trouble for inattention, the fact being that he was following up a train of thought suggested by a passing allusion on the part of the teacher.

(*f*) Finally, there is *the temptation to allusions to oneself.*—The attention of a class may sometimes be attracted by a story of 'What happened to myself,' and occasionally a personal experience may be well used as an illustration of a general principle. But we shall not be tempted to this kind of sin if we remember that while a personal experience may *illustrate* a principle, it is no *proof* that the principle is true, and it is very often as proofs that such experiences are quoted. If a teacher indulge too often in reminiscences, the pupil, instead of preparing to be interested by the familiar beginning, 'I recollect,' prepares to be bored, as the grown-up hearer invariably is. It is better to keep the capital 'I' out of our illustrations as much as possible.

535. While all these warnings are valuable to the music teacher, perhaps the most valuable is (*c*) '*What is perfectly clear already needs no illustration.*' In teaching notation, the amount of outside illustration needed is very small. The use of the time-names sweeps away the long table of note-values that divided the semibreve into thirty-two demisemiquavers and had so little

meaning for a child; so the time-honoured analogy 'as two halfpennies are to a penny, so are two crotchets to a minim (or two quavers to a crotchet)' is hardly needed. A child of seven, of average intelligence, can understand an allusion to halves and quarters; or to put it differently, a child who cannot understand such an allusion is too young to tackle the complexities of musical notation. Of course we may find a pupil of seven, or older, who is so undeveloped that we have to invent all sorts of devices to 'get at him.' But even then the pennies and halfpennies do not help very much, for the difficulty is not an arithmetical but a musical one. Not, 'Can he understand the analogy between note-values and money values?' but 'Can he *hear* two sounds in a pulse?' If he can hear, he gets the time-name, which links the ear-effect to the eye-effect, and further illustration is unnecessary. 'What is perfectly clear already needs no illustration.' But after the fact is realized and its notation understood, the ear needs further practice in observing and recognizing; and we must remember that as we can only teach music through music, so we can only illustrate music by music. When a new pulse-group has been presented, imitated, named, recognized in various combinations, and associated with its symbol, we must then let the pupil hear it and see it in its place in many musical examples.

536. In teaching pitch-relations we need copious illustrations. John Curwen's books are full of illustrations of mental effects culled from Handel, Mozart, Mendelssohn, etc., and in Section VI

of the 'Guide' I have suggested tunes adapted for use with children for the same purpose. Teachers will find others for themselves.

537. To sum up: What I want teachers to realize is that music teaching is less dependent on extraneous illustration than the teaching of other subjects, and that it is thrown back upon itself for most of the illustration that is necessary. And that is why this chapter is a short one.

Chapter XVI

DIFFERENT KINDS OF METHOD

IN books about teaching you will often find reference to different *kinds* of method:

Analytic and Synthetic Method.
Inductive and Deductive Method.
Heuristic Method.
Dialectic Method.
Direct, or 'Telling' Method.
Socratic Method.

And you may wonder which is best. As a matter of fact we not only want them all, but are constantly using them all, sometimes in the same lesson

539. *Analysis and Synthesis* simply mean pulling to pieces and putting together again. They are natural processes and soon begin in the mental life of every child. We have said (219) that children first classify objects by likenesses. They do that because they do not at first notice parts but only wholes. When they begin to notice parts they begin to see differences and then have to reclassify. Attending to parts is analytic; classifying is synthetic.

540. Analysis has a charm for a child. He always wants to see the inside of things. His curiosity is boundless. It leads him to investigate, so he breaks up his toys; not out of naughtiness, for he loves them, but because he has an analytical mind. And you will often see a little child trying to put his toy together again. He soon gives up

the attempt and throws the toy away, having a limited notion of commercial values; but give him a toy that is meant to be taken to pieces and put together again, and it has a lasting interest for him. A boy never tires of 'Meccano' because of its endless possibilities.

541. So the analysis of their tunes has an interest for young pupils. They like to see 'how they are made up,' as they express it, and by and by they discover, through analysis, that *a piece is never as long as it looks* (because of repetitions), and this they consider a very satisfactory state of things.

542. We use analysis and synthesis in teaching because they belong to the mind's way of learning. Sometimes we begin with analysis, sometimes with synthesis; it depends on the nature of the subject and the pupil's stage in the study of that subject. The elements of music are so closely intertwined that the child's mind cannot disentangle them (366-7). The teacher has to break up the whole into its parts and to present the parts separately for assimilation; and then the pupil is helped to put them together again in easy reading exercises. So the early teaching of music and its notation involves an analysis on the teacher's part, a synthesis on the part of the pupil.

543. A little later, when we come to pieces—even very simple ones—the pupils analyse, with our help; and later still we expect them to do it themselves in their preparation of pieces, such preparation showing in itself a growing power of independent interpretation.

544. Reading music at sight is a synthetic process. Note-groups succeed each other very rapidly, and must be rapidly 'joined up' mentally if we would seize their meaning. In reading music, as in reading a book, there must be a quick 'synthetic glance of eye and mind.'

545. In *Inductive Method* the pupils are helped to find a general rule, or law, by noticing what happens in a great many particular cases.

546. In *Deductive Method* they are given the rule and are expected to apply it to particular cases. For example, there are several ways of teaching scales:—

(*a*) The old-fashioned memory-method. We were *told* how many sharps and flats were in each key-signature—we were not told why they were there—and we had to remember which was which. A slippery kind of information which had a trick of disappearing when wanted. Children taught in that way were always playing hide-and-seek with the key-signatures, but a child with a good memory could pass an examination in key-signatures without even knowing what a scale *is*. No thinking music teacher uses that method now.

(*b*) Another way is to give the pupil the rule about the places of the semitones, and require him to apply that rule to all keys. That is Deductive Method. It is the quickest way to arrive at scale formation and key-signatures, and quite a good way. But it is not the best way.

(*c*) The child has the scale-tune in his mind. We set him to experiment with it at the keyboard and to find out under what conditions that little tune 'comes right.' He can only do this by listening. By comparison with the modulator he finds that everything depends on the 'little steps' being in the right places, and he adjusts the keyboard accordingly. This is Inductive Method. But there is a further step. The rule has to be applied, else it is of no use to him. So now he starts from *any* place on the keyboard, observes the rule of the semitones, and finds that in all cases it works. Here we have Deductive Method following Inductive, and verifying it.

547. You see, then, that induction works from the particular to the general, and deduction from the general to the particular again. A rule is not of real use to us unless we can apply it.

548. This (*c*) is a slower way, and you may ask: 'If we have eventually to work by the rule, whether it is given or discovered, and if economy of time is important in teaching, why use the slower method?' Because, though economy of time is important, mind-training is more so.

'A rule that has been worked for leaves behind it an effect upon the character of the person who works. . . . The mind is a better mind because it has done this particular bit of work.'—*Adams*.

549. *Heuristic Method* is the method of investigation, experiment and discovery. Maxim 11 ('Teacher's Guide') puts it in this form: *Never tell a pupil anything that you can help him to discover for himself*. The name comes from the same root as that Greek word which is quite commonly

used, but without much inquiry as to its origin: *Heureka!* which means 'I have found it!' It was the exclamation of Archimedes, when, after puzzling over a problem for a long time, he at last hit upon its solution.

550. Heurism is inductive, but it differs from ordinary inductive method in this respect: A teacher may give a lesson inductively by working out a problem on the board in the presence of the class, the pupils following his induction step by step and seeing how the conclusion is reached. But the secret of real Heuristic teaching, and its charm for the pupil, lies in the more direct exercise of the pupil's own mental activity. '*I* have found it—I, myself.'

551. Heuristic Method is the method of the scientist, and applies in all its fulness to the teaching of the natural sciences; but there are few subjects in which we cannot use it to a greater or less degree, and it is of the utmost value in training the judgment. Scientific method can be employed in other matters besides science properly so called, and in very simple matters too. There is no word oftener on a child's lips than the word *why*. If children's *whys* can be answered at all—and that depends on whether they have the necessary apperceptive ideas—they are better answered by setting them to answer them themselves. When in his early music lessons a child finds out with the teacher's help *why* some sounds are high and others low, *why* keeping down the pedal makes the music sound fuzzy, *why* some chords are bright and others sad though they look the same

on the keyboard, we are using scientific method. We do not discourse to him about vibrations, or about major and minor thirds, but let him get hold of initial ideas, skeleton notions that will be filled out in due time as his experience grows.

552. The critics of Heuristic method argue that it is absurd to put a mere learner in the attitude of an original discoverer. But that is not precisely what the Heuristic teacher proposes to do. The child is the heir of all the ages, and his heritage is lying all around him. All that we ask is that he shall gather up as much of it as he can with his own hands. The maxim tells us that we are to *help him* to discover.

553. In music teaching and other things, discovery depends in the first instance on observation. The observation is guided by the teacher, and laws and reasons for happenings are discovered by the pupil in proportion to his ability to put two and two together. The scale lesson (*c*) above is heuristic, because the pupil himself is the investigator.

554. Some children will detect an underlying principle after a very few examples—in fact, their tendency is to generalize too soon (223); others will work many exercises before they perceive any resemblance in the workings and the results. Certain things have to be told in teaching—technical terms, for instance, cannot be discovered—but so much of the interest of a lesson depends on the exercise of the pupil's own activity that the teacher, in preparing a lesson, should always keep the possibilities of heuristic treatment in

view. It is just a matter of 'manipulating' the pupil's ideas (275), keeping in touch with his thought.

'The teacher first thinks the steps to be taken by the pupil, and then he so adjusts the external means of teaching that the pupil actually takes such steps.'—*Welton.*

555. *Dialectic Method* explains itself. I have already warned the teacher not to give way to the temptation and do all the talking, but to induce the pupil to do his share. Dialectic Method is Conversational method. It helps us to get at the pupil's ideas, and being invited to talk compels the lazy-minded pupil to do a little thinking.

556. *Direct* or '*Telling*' *Method.* Some people maintain that 'telling is not teaching,' and try to elicit everything from the pupil. If we know the content of the pupil's mind we can, and must, elicit a good deal, if only for the purpose of setting his ideas in order for the reception of what we are about to present. But it is obviously impossible to elicit what is not there, and we have to put a good deal in before we can draw it out again. Telling may be teaching, or it may not. The telling method is instructing by the use of language, and it is obvious that if the teacher uses words which call up no corresponding images or ideas in the pupil's mind the telling will not be teaching. But it is possible, by the judicious use of words, not only to call up ideas of familiar things, but to show new relations between them; and we may so work upon the pupil's imagination that out of his mental images of known objects he may construct images of things outside his

experience. When language does this, then telling is teaching.

557. In teaching the minor arts, embroidery, basket work, etc., direct *telling* is invariably used. The pupil is told what to do, and why; obeys, imitates, and learns by doing. In teaching the technique of an instrument, too, the direct method is the best, direction and example being backed by good reasons. In the one case success is gauged by the eye; in the other by the ear.

558. I think that teachers sometimes confuse the processes of eliciting and discovery. It would not be possible to elicit from a young pupil the rule for the agreement of the adjective in French, but it would be quite possible for him to discover it. The Heuristic principle does not forbid telling. 'A child should be told *as little as possible* and induced to discover *as much as possible*.' So wrote Herbert Spencer, and the most advanced Heurist does not demand the impossible. As to what *may* be elicited, whan *can* be discovered, and what *must* be told, the teacher must be guided by knowledge of her pupil and by common sense.

559. *Socratic Method* in teaching has no reference to the belief that what we learnt in a previous state of existence is hidden away somewhere in our souls, and might be found if we hunted for it, so that all knowledge could be elicited from the pupil.

560. Socratic Method is the questioning method by which Socrates endeavoured to make people think more deeply and more clearly. He always went for the cocksure people, and by pretending to be ignorant and asking for information he made

them look into their own minds and sort out their own ideas more carefully.

561. Let us imagine Socrates reincarnated—this time in London. Let us fancy him plumped down on the Marylebone Road, where he is introduced to a professor of the R.A.M.

SOCRATES REDIVIVUS.—Pleased to meet you, sir. I have always taken an interest in the arts, especially in music. This I find has developed to an extent that I should have considered dangerous to the commonwealth. But I know I have much to learn. As a beginning, I know the shapes of your notes, and can see their bearing upon one of my favourite subjects—rhythm. Other things puzzle me. I hear people speaking about 'intervals' in music, and yesterday I heard two gentlemen who seemed to be musicians disputing about teaching singing 'by interval.' You will, I know, be kind enough to explain this to me. What is an interval in music?

R.A.M. PROF.—Oh, 'tis quite simple. It only means the distance between two notes.

SOCRATES.—Is that so? (*Taking paper and pencil from his pocket.*) Then if I write two notes like this , the distance between them will be an interval?

R.A.M.P.—Oh no! Interval refers to notes that are higher or lower than each other.

SOCRATES.—I see. Then if I place the notes this way that would be an interval?

R.A.M.P.—No, my dear fellow; that's not it at all. As a matter of fact the interval is not exactly between the notes but between the sounds.

SOCRATES.—Between the sounds. Why, of course; how stupid of me! Sounds follow each other, some very quickly and some quite slowly, and so we get longer and shorter intervals. I see that quite well. Thank you so——

R.A.M.P.—No, no! You're on the wrong tack altogether. That has to do with time. There aren't any intervals in time.

SOCRATES.—But I can *hear* intervals in time—sometimes quite a long interval; and sometimes the sounds come running after each other with scarcely——

R.A.M.P.—Stop, stop! You're all wrong really. (What a stupid old man this is!) Some sounds are *higher* than others (295–6). Listen (*sings two sounds an octave apart*).

SOCRATES.—I'm afraid I don't quite follow you. Let me see. Sounds are caused by vibrations?

R.A.M.P.—Certainly.

SOCRATES.—But you said interval meant distance, didn't you?

R.A.M.P.—Yes; distance between two sounds, up or down.

SOCRATES.—Sorry; but I can't reconcile these statements. Your first sound was caused by a certain number of vibrations?

R.A.M.P.—Yes; certainly.

SOCRATES.—And the other by twice that number?

R.A.M.P.—Of course.

SOCRATES.—Then sounds stand in certain relations to each other through their vibrations?

R.A.M.P.—Quite so.

SOCRATES.—Like colours?

R.A.M.P.—H'm—well—I don't know so much about colours. But why not?

SOCRATES.—Then what is the distance, or interval, between red and purple?

R.A.M.P.—Oh, come, my dear fellow, that's quite absurd, you know. Music is—well, you know—music's *quite different*, you know.

SOCRATES.—If that be so I may be wrong. I understand, then, that with regard to musical sounds there is *distance* between ratios.

R.A.M.P.—Ah, you've got me there. Anyhow, that's what we *call* an interval.

SOCRATES.—But I do like to get to the bottom of things, and I am but a learner. Perhaps you will think it over and explain it to me some other time. I won't detain you now. Good-bye, and thank you so much.

R.A.M.P. (*alone*).—I wonder if there's anything in that argument of his? I must think it out in case I should meet him again. Why, it would mean that there aren't really any intervals at all! Absurd old Johnnie.

* * * * * *

(*Afterthought*) Perhaps I'd better ask Corder about it.

Chapter XVII

METHOD WITHIN THE LESSON

Herbart's Five Formal Steps

WHAT are known as the Five Formal Steps in lesson-giving provide us with a convenient framework for a lesson or a series of lessons. Into this framework any subject can be fitted, having regard to the nature of the subject. You can see the advantage of this. It is time-saving and labour-saving. Instead of having to plan each lesson afresh you have a permanent plan on which a lesson on any part of any subject may be given, even though the subjects themselves have inherent differences, and—within the framework—will require different handling (502-3).

563. Although the Herbartians were the first to formalize such a plan, the method is so natural that teachers who never heard of Herbart will often give a lesson in much the same way. But for one teacher who has this instinctive sense of order and method there are a hundred who have not; so it is better not to leave it to chance.

564. The five steps are—

(1) Preparation.
(2) Presentation.
(3) Association.
(4) Generalization.
(5) Application.

Besides these, great stress is laid on the statement of the *aim* of the lesson.

Perhaps this looks difficult; but the more teachers think about it the more they will value the help it gives, the more natural it will seem to them.

First Step. Preparation.

565. This refers to the preparation of the pupil's mind for what is about to be presented to it; but it also helps to steady the teacher's mind, and bring it into harmony with the mind of the pupil.

'Preparation may be divided into two parts, the first of which the teacher undertakes alone, the second with his pupils. First, before any lesson the teacher must ask himself, "What do my pupils know of the subject in hand? And what ought they to know if they are to understand it thoroughly?" Every teacher should be sufficiently acquainted with his pupils to estimate the extent of the knowledge he can assume in them.'—*Herbart-Felkin.*

The statement of the aim of the lesson is really a part of the Preparation Step, because the announcement of the subject arouses attention and interest, and whatever associated ideas exist come spontaneously into the pupil's consciousness (285). We know from our own experience that this happens in all minds, adult as well as juvenile. We go to a lecture because we already have some knowledge of the subject. That knowledge we take with us. It is by its means that we assimilate what the lecturer may tell us. The amount of knowledge need not be great, but it must be sufficient to give us an interest in the lecture. If we have no ideas about the subject we stay at home.

566. When the kindergarten teacher says, 'Now we are going to talk about how swallows build

their nests,' into the minds of the little ones come whatever notions they have about birds and nests in general; and as very young children are always eager to tell how much they know, the teacher is soon in possession of the ideas of the class, and knows how much of their knowledge is sufficiently accurate, how much is wrong, and what is lacking in their apperception masses. Older pupils will not be so ready to lay bare their souls. Then we must question out of them the knowledge needed for immediate use. In either case the teacher must set in order whatever ideas the pupils have about the subject, separate the immediately essential from the unessential, and fill up the gaps before the Preparation Step is complete.

'The teacher must make sure that the apperceiving ideas are (*a*) sufficiently numerous, (*b*) sufficiently clear, and (*c*) are in the right order to apperceive the new.'—*Herbart-Felkin.*

This preparatory step is really an analysis of the pupil's mind.

567. The preparation for a new idea is cumulative. It may be a matter of months, or years. We have seen how we often have to go back to the pupil's store of nursery songs and rhymes to illustrate lessons both in pitch and time (194).

568. The amount of deliberate preparation in a lesson, and how far back we should go for it, depends on the nature of the lesson. For example, the causes of the Civil Wars and establishment of the Protectorate are found in the events immediately preceding, and the preparation for a lesson on that period would be merely a *résumé* of those events. But if we want to make it clear

how it happens that our present reigning house is of German origin we must go back to the reign of James I.

569. We have similar examples in the teaching of musical notation. The apperceptive ideas that we want may have been given in the last lesson and be quite fresh in the mind. For instance, the pulse-groups  and  are modifications of , which would be taught in the previous lesson. But for the first time-lesson in Step 2, the continued half-pulse in its two forms,  and , we have to seek the related ideas in the Fourth Lesson of the Preliminary Course, given perhaps two terms previously, where the use of the tie was taught, and of the dot as a substitute for a tied note.* This selection of the ideas to which we can directly 'tack on' is very important.

Second Step. Presentation.

570. The apperceiving ideas having been found, the process of tacking on begins—the presentation of the new matter of the lesson. Here, again, the selective process is necessary. We are told that:

> 'The ideas to be presented in any lesson must be carefully selected in view of (*a*) the nature of the ideas found to be already existing in the mind, and (*b*) the ideas we propose to introduce in later lessons.'—*Adams*.

571. Such a selection is a large order for a young teacher, more especially a young *music*

* References to Lessons in 'Guide.'

teacher; for music is so many-sided that its parts have to be separated for teaching purposes, each topic developed according to its nature, all taught concurrently and welded together. This makes it rather more difficult to plan out a course of lessons in musical knowledge than in other school subjects.

572. Fortunately, as to condition (*b*), we can be much helped by a text-book. In a really good text-book on any subject the series of lessons will have been thought out by an expert, some one whose knowledge and experience have enabled him to see the end from the beginning and the whole way of approach. The text-book supplies a programme for the complete course, and an indication at least of a possible unit for a lesson (511). But in dealing with condition (*a*), the mental content of the individual child, the teacher is thrown entirely on her own resources. It is here that she needs help, and Herbart gives it.

'Presentation,' he says, 'is mainly governed by (*a*) the law of successive clearness, and (*b*) the law of the alternation of concentration and reflection.'

573. (*a*) *Clearness*. The first condition of a good presentation is that it shall be clear. Clear as to its place in the development of the subject (442). Clear as to the teacher's choice of language (258). Clear in the sense of simplicity or *singleness*. Teachers who are well up in their subject are apt to make the mistake of presenting too many aspects of a fact at its first introduction, piling on information which only confuses the pupil. The mind of the child will usually take the right

direction if matter is properly presented, and if there are not too many interferences and hindrances on the part of the teacher, under the name of helps.'—(*Putnam.*) Herbart says:

> 'Teaching produces clearness in the mind when the presentations it supplies and uses are not heaped up anyhow, but given in single, small sections,' and 'the parts and their sequence are determined, not by the teacher's caprice, but by the nature of the subject.'

574. In every lesson we give there will be several ideas to present to the pupil. In teaching the elements, there will be ideas about pitch and about time, and the introduction of the symbols belonging to each. In the teaching of pieces there will be ideas about form and phrasing, an appeal to the imagination, and so forth, Or it may be that several presentations of the *same* fact may be needed before it is seen in all its relationship. In teaching a new pulse-group, for instance, we treat it (*a*) as apperceived through the ear; (*b*) through the eye, i.e. with its notation; (*c*) in its purely time-aspect, the pulse *as* a pulse; (*d*) in its rhythmic aspect—travelling *toward* something—illustrating this by directing attention to its use in some piece of familiar music, as  in the 'British Grenadiers.' All these connections have to be established if the new fact or idea is to become a permanent part of the mental content; not only to get into the Dome but to remain there. As Professor Adams expresses it: 'What is wanted at this stage is the new idea, the whole new idea, and nothing but the new idea in

all its important connections.' Well, Herbart tells us to take each of these separately, do one thing at a time, and be sure that one idea is assimilated before we go on to the next.

575. (*b*) *Concentration and Reflection.*—This fixing of the attention on each idea separately is called by Herbart a *Concentration*. The term explains itself, and we see the need of it. But, he says, each concentration must be succeeded by reflection; the processes must alternate. So we want to know what he means by Reflection. It is not quite a suggestive term to us, because our common use of it does not seem to answer precisely to its technical Herbartian meaning. Yet there is a connection, as we shall see.

576. One Herbartian writer says that Reflection means that 'the mind should have leisure to work by itself on the matter presented to it, or the thinking power may be paralysed.'—(*Carl Ufer.*) This, to me, would seem to point to allowing a sufficient time *between* lessons for the pupils to chew the cud.

577. To another it means giving time for reflection before answering.

'It is a mistake for teachers to urge their pupils to answer rapidly . . . the pupil should have time for individual contemplation, deep and energetic thought-labour.'—*Lazarus.*

Which might work all right with grown-up students. With children we have to act a little differently, though the maxim 'think before you speak' always holds good.

578. Another Herbartian writes:

'The matter should be divided into small, logically connected sections, and the children should concentrate their undivided attention on each of these sections separately, and reflect upon each point until it is mastered.'—*Dodd*.

Now, by this it is not meant that the teacher should pause or allow the pupil or the class to lapse into a brown study. What does reflection mean to us? It means turning the matter over in our minds, thinking about it; an essentially active process. Children cannot do this without help; and so, after each concentration the teacher has to see to it that the pupils do this very thing —turn the matter over in their minds, and see each part in connection with the other parts. We must link up again what, for clearness, we have separated.

'To restore the mental links between the separated parts is the work of reflection.'—*Herbart*.

579. In the practical application of the theory Herbartians are not very clear. In specimen lessons on the Herbartian plan I find Reflection represented by a summing up of the results of each part of the lesson, putting a short sentence or keyword on the blackboard. This is only what, in most school subjects, would be done by any teacher. For pupils over twelve, and for some subjects, it would be all that is needed, especially if the summarizing is done by the pupils and not for them (332). But for younger children the treatment must be different. Reflection, in such circumstances, seems to me to mean simply a breathing space between the little sections of a lesson, in which we may test, in any way suitable

to the subject, whether that little section is understood, and so guard against hurrying the child too quickly from one thinking-step to another.

580. The younger the child the more important it is thus to break up the lesson. In the Preliminary Course of the 'Child Pianist' Method several of the method-units are thus split up, a row of stars showing the limits of each 'Concentration.' It is not till the unit is worked through—and this may require several 'lessons'—that its unity is perceived. Intelligent children, especially if they do not begin till about eight years old, may run through all the necessary 'Concentrations' in one lesson. If a child can learn the names of all the digitals, or take in all the lines of the staff in one lesson, by all means let him. Don't insist on children taking very small steps if their mental legs are long enough to take bigger ones—and if a child says 'Please let me go on,' it is well to strike while the iron is hot; but there will be all the more repetition and drill required to make the knowledge sure.

581. Professor Adams speaks of Reflection as 'a certain diffusion of attention over the whole of that part of the lesson to which the new idea specially belongs,' and says that it consists in 'bringing the new idea into its new place, and seeing how it fits into its surroundings.' Now this, though he was not thinking about music teaching at all, applies particularly well to our subject.

582. Suppose that a pupil or a class has, so far, learnt to recognize half-pulses, i.e. to hear

two sounds in a pulse, to give the time-names for the various forms of pulses so divided, and to write them. We are then ready to take the next step, the introduction of , and do something like this:

Asking the pupil to listen for something new we tap out, on blackboard or keyboard, a four-pulse measure, taking care *not* to include the new pulse straight away. We may do this more than once.

Next time *with* the new pulse (perhaps ).

'Anything new?'

'Listen again. On which pulse do you hear the new group?'

'And now?'

'And now again?'

'How many sounds in that new pulse?'

We give the time-name, and some drill in its patter.

So far the concentration has been on the new thing only. The other pulses are scarcely heard, because attention was concentrated on the recognition of this alone (162).

But now we ask for a whole measure to be *taa'd* back, giving, perhaps, 

The concentration is not so complete. There is a diffusion of attention over the whole measure, and also a linking up of the new pulse-group with others already familiar.

Several tests like this. and then—

'Listen to this *tune*. Do you hear any *tafa-téfé* pulses in it? Hands up when you hear one.'

Here there is a further diffusion of attention, and a linking up between time and tune, separated before for clearness; and the new pulse-group is heard in its place in a bit of actual music.

583. In dealing with the notation of the pulse-group the process is much the same. The symbol being given, the ear-tests are now *written*. Then, in a reading exercise or a duet that illustrates that lesson, the pupil points out all the *tafa-téfé* pulses before beginning. The mental links are made, and the pupil both sees and hears how the new fact fits into its surroundings.

584. We are advised that 'several short concentrations are preferable to a single long one.' Many dictations, then, many reading tests, many listening to tunes, but all short. Our total music-time is limited, there is much to be done, and we must aim at rapid response in all departments (123). Every ear exercise is a concentration; and the reading exercises or duets, in which the 'new idea' is found in a great variety of combination, are means whereby the new bit of knowledge is 'worked up into the very warp and woof' of the pupil's mental content.

585. Preparation is analytic. Presentation is synthetic, a joining up of new and old, an addition to the pupil's mental possessions.

586. I have dwelt at some length on these two steps because in dealing with children they are important. Writers on the subject tell us that further than this we cannot go with young children,

because these steps, Preparation and Presentation, deal with the concrete, with objects actually present, with percepts—and children are at the perceptual stage. With regard to most of the school subjects this is true; but I have pointed out elsewhere (252) that music is a concrete subject all the way through, a perpetual object lesson, its material always at hand for examination (525), and in the application of the steps the nature of the subject has to be considered.

Third Step. Association.

587. We are told that the Third Step passes 'from the consideration of individual things to the relations that exist between things,' and that 'the best way to make this step is by conversation between the pupil and the teacher.'

588. The seeking for relations involves comparison, and we have seen how an unconscious comparison of things is always going on in the little child's mind, that through it he classifies and re-classifies, noting likenesses and differences, and that through it his percepts grow into concepts (219).

589. In the teaching of the elements of music, all lessons from the beginning include the seeing of relations—relation of sounds, high and low, long and short, to each other; relations of pulse, accent, and measure to one another, of staff to keyboard, of things heard to things seen, i.e. of sound to symbol. In the following up of each topic, or 'element,' the relation of the new to the old must be realized as we tack on. And all this

has to be a conscious process, an intellectual exercise. A pupil too young for this should not be having formal music lessons.

590. You can see that this Association step would apply particularly to the interpretative and appreciative part of the music lesson. The finding of rhythmic and melodic imitations in the child's first little tunes and reading exercises—that first easy step toward the realization of form, or 'shape,' in music; the listening for change of key, and looking for it as symbolic perception develops; the appeal to the imagination, and so on. In the conversational stage the whole subject broadens out, and minor links would be added to those more important connections established in the Presentation stage.

591. In thus talking round a point we must be careful not to get too far away from it. There is always much that might be said to increase a pupil's interest; but, after all, the business of the moment is the newly-presented idea.

592. In this step the pupils begin to see their way from the particular to the general, and so work into the next step, Generalization; for 'the work of the fourth step is to make use of the results of the third.'

Fourth Step. Generalization.

593. Generalization does not always form part of a lesson. Several lessons may be devoted to working through the instances which are to form the basis of the Generalization. But sometimes the finding of a general principle *is* the main

object of the lesson, and then we begin by looking back over what we have been doing. We must recapitulate—set out the instances in order—before the pupil can generalize.

594. Herbartians sometimes speak of this step by other names besides Generalization—

Recapitulation. Formulization.
Systematization. Condensation.

All with a suggestive shade of difference, yet all conveying something of the same idea. In recapitulation we naturally would seek to systematize; and formulization—the gathering up of results into a formula or summary—necessitates condensation of the treatment of each point, so that the terms overlap.

595. There is not much scope for generalization in the simple concrete teaching of the elements of music; yet we sometimes do have to draw conclusions from our little experiments, and then the Fourth Step comes into some very elementary work. As, for instance, in the Second Lesson on the Scale ('Guide,' Section IV, Part III), we find after several experiments that the scale-tune *only comes right when the little steps* (semitones) *are in their proper places*. In the Third Lesson we discover that *every time we shift the scale by over-fifths we have to make one new sound* (*te*); and in the Fourth Lesson, *when we shift it by under-fifths* we have again to make one new sound, but this time *fah*. The final lesson on the dot (Step 4) is a generalization from the pupil's experiences in the three previous steps.

596. Children (and others) are apt to generalize

rashly, and sweeping statements that cannot be taken seriously might be quoted even from philosophers. So, whatever may be our subject, a part of our work will be to teach our pupils, very gradually and simply, how to generalize and how to summarize the results of their generalization. We can only do this by 'thinking the pupil's thought,' as Professor Welton expresses it; following it and guiding it and helping it to take form in fitting words.

Fifth Step. Application.

597. 'The Fifth Step consists in the translation of theory into practice, the application of knowledge to doing.'—(*Adams.*) All school subjects cannot be tested by immediate practice. The invaluable lessons of history and literature may not bear fruit in action for years. The Application Step waits upon opportunity. True, the little ones will reproduce their history lessons in their play. Immediate action for them, though it be but make-believe. The 'let-*me*-do-it' instinct will not wait, and each one wants to play the hero. The youth and the girl keep their imaginings to themselves, but ideas are growing, ideals built up. The year 1914 was a year of opportunity. Then boys bade smiling good-byes to their mothers, though under the bravery of their uniform they wore an identification disc. Then girls who never waited on themselves waited on rough soldiers, carried meals and washed up dishes; and some, who loved not the look of a butcher's shop, drove ambulances laden with writhing, dripping,

mutilated humanity. And we wondered. Called it heroism, patriotism, and what not. But the boys and girls did not call it anything at all, only felt that they must go. It was the *Fifth Step* in the long lesson of history and literature—ideas, slowly gathered, bursting into action at the touch of opportunity.

598. In other departments, however, the teaching can be, and must be, tested at once, and tested by doing. In teaching arithmetic we call for the immediate application of every rule, and the more practical the application the better. We test knowledge of the grammar of a foreign tongue by the invention of new sentences. The pupil here works back from the general to the particular, because only by particular examples can the grasp of a general rule be proved.

599. The music lesson is pre-eminently one in which this fifth step is essential; for not only must 'rules' be worked for and applied, but every little bit of knowledge from the very beginning, must be rubbed in by doing and tested by doing (116). In short, though the fourth step may be omitted, or even the third, we cannot do without the fifth. Every little new fact that is brought into the pupil's experience gives new scope and variety and interest to this application step, and the test of 'behaviour' is the only reliable test (115). So the simplest music lesson should include at least three steps, Preparation, Presentation, and Application.

600. Now, we must not make a fetish of all this, or feel unhappy if we cannot map out every

lesson into five steps. A lesson may be occupied with one step only; or several lessons may be devoted to the Application step, as when pupils are studying scales and chords and their connection. Indeed, if this is not done the learner may miss the important fact, so effectively veiled by notation, that *the same things happen in every key.*

601. It was never claimed that the processes embodied in the steps were new. From time immemorial teachers, if they were teachers at all, have done such things instinctively. But there is a decided advantage in using them consciously, in using them in order, in seeing the connection with one another; so that in providing us with this very handy framework for lesson-giving Herbartians have done us good service.

Chapter XVIII
FINALLY——

MY readers will have discovered by this time that teaching is not an easy thing (7). But they may also have concluded that it must be easier to walk with some light upon the path—light that will always grow clearer—than to fumble in the dark, stumbling and taking wrong turnings, buying experience at a very high price, and possibly doing harm where one meant to do good.

Do any of us older folk like to think of our own first pupils? Do we ever wonder what became of them, musically? Do we not, even when communing with ourselves, change the subject?

That the young teacher will make mistakes at the beginning of her career, even with the best theory at her back, is inevitable. For teaching is an art, and every art is learnt through making mistakes. But her mistakes will not be as bad as those we made long ago, and she will at once detect them, because she will know something of the science on which the theory is founded. She will know where she was wrong, and why. All that is to the good.

Of the hundreds of students in our music schools, by far the greater number will have to live by teaching. They do not fully realize that; or, if they do, they do not see the necessity of any preparation beyond knowledge of music and instrumental skill. Teachers who have been in harness for some time know that this is a fallacy, and that they would have been saved both time and worry (10) had they been taught to teach what they knew.

Those who contemplate teaching as a career are perhaps discouraged by the prospect of teaching beginners. They have so often heard it called 'drudgery.' But take courage, young people. Many who used to call it drudgery now find it of such absorbing interest that they are eager to take beginners and do the foundation-work themselves. It is only unskilled work that is drudgery; skilled work of any kind never is. This work of yours needs knowledge and skill of a kind over and above that knowledge and skill which you already possess, and with the skill will come pride in your work and satisfaction and pleasure. You may have to begin with a small connection, or in a small school; but never mind. It is your little allotment, and if you make it productive you will have a larger garden to cultivate by and by. People have been discovering that even a little allotment needs much care and patience and wisdom. But wisdom is to be had for the asking, and Rudyard Kipling reminds us that—

> 'Half a proper gardener's work is done upon his knees.'

Teaching is not an easy thing, and it is a very responsible thing. Like matrimony, 'not to be enterprised or taken in hand unadvisedly, lightly, or wantonly; but reverently, discreetly, advisedly, soberly, and in the fear of God.' The music teacher is apt to think that her responsibility towards her pupil ends with the music lessons. Who thinks so is wrong; for no human soul can come in contact with another human soul for even half an hour a week without leaving on it some mark for good or ill. Influence works both ways, and probably we get as much from the children as they do from us, but with us lies the responsibility.

It is hardly necessary to say that every good lesson in any school subject is a factor in that building up of character which is the ultimate aim of all education; but you must also have an intelligent faith in the special educative value of your own subject. You must be convinced that music can give your pupils something that no other subject gives; a kind of thinking-material which differs from all others, and which is necessary to their full development as human beings.* If you believe that, you will feel sure that the work you are engaged in is highly important work, and you will know that in choosing to be teachers of music—though it may have been a blind choice to begin with—you have not chosen amiss.

* See Appendix II.

Appendix I

MUSIC IN THE CONCRETE

(Appeared in *Child Life*, April, 1899.)

THE historian who, in future years, will write the history of the schools of our era will undoubtedly choose as his headline these words: 'The era of pedagogical catch-words.'* So writes an American educationist, and his saying is true. That it should be true is inevitable. In the much talking about education, words and phrases are dropped about, and many pick them up who fancy they have found a principle when they have only found the name, the mere shell, of a principle. If people stopped short at using these words, small harm would be done, even though they did not inquire very deeply into their meaning. But, unfortunately, those who seize them are persons who are honestly interested in teaching, and wishful to do what in them lies to help on the great work of education. If such a person misapplies what Mr. Klemm calls an 'educational catchword,' or even takes hold of one principle—however good and true—and proceeds to build a system upon it without taking into consideration other and compensating principles, positive harm may ensue; or, at best, the negative harm of unnecessary waste of time.

There is no department of education in which this happens more frequently than that which concerns Child Life. The very word 'kindergarten' is misused to an extent which sorely tries the patience of the Froebelian, and any device for keeping a child quiet and out of mischief is styled a 'kindergarten toy.' 'Teaching in the concrete,' 'self-activity,' 'hand and eye,' 'constructiveness,' and 'games,' are catchwords responsible for the sale of that large part of the stock of the average kindergarten depot which has no educational value. The main defect of this material is that it is over-elaborated; it attempts too much. That which is supposed to arouse self-activity rather checks it, because no

*'Chips from a Teacher's Workshop,' Klemm, page 128.

room is left for experiment; the bribe to constructiveness falls flat because so much has been already constructed; and the 'games' are too often devices for helping children to *memorize* a quantity of undigested—and indigestible—information.

It is about 'Teaching in the Concrete' that I wish to speak of more particularly, because I think that it is a misunderstanding of that principle *as applied to music* which has inspired so many persons with the idea of teaching musical theory by means of apparatus of various kinds. During the past ten years I have come across quite a number of these devices, which, though they differ slightly in detail, have their main features in common. The prevailing ideas seem to be these:—

1. That it is desirable to divorce theory from practice.

[The quotations are from advertisements of different kinds of apparatus, but the italics are mine.]

(*a*) 'That children may learn the rudiments of music *before attempting any musical instrument or singing.*'

(*b*) 'That a child may learn the notes, sharps, and flats *without being near the piano.*'

(*c*) 'It would be a saving to a good instrument if children were made perfectly familiar with this game *before allowing them to touch the keyboard.*'

It is singular that teachers who have sufficiently observed modern teaching to adopt its catchwords and form systems upon them should not have noticed one remarkable change, namely, that nowadays we try to teach the theory of most subjects *through* the practice and not *before* the practice. Therefore, to put a child through a complete course of musical theory before he begins to play or sing is to keep our music teaching on a lower platform than the teaching of any other subject. Theory and practice should advance side by side, bit by bit. Each new effect (whether of pitch or rhythm) should be *first* observed by the ear—that is, differentiated from other musical effects—then named, and then expressed by a symbol. This is the psychological order of the music lesson. Then comes the practice—the testing whether that symbol constantly and inevitably calls up in the mind the effect (whether of pitch or duration) for which it is chosen as a means of expression. Hence the practice-material for every mental step must be very carefully prepared. But practice-material there must be; and the final testing should not end in ever-so-rapidly naming symbols or in making arithmetical calculations with symbols, but in doing something which the symbol tells him to do when he meets it in a bit of real music.

2. That something which appeals strongly to hand and eye can impress a musical fact on the mind, i.e. that 'music in the concrete' is tangible and visible.

(*a*) A full-sized keyboard (description does not say whether of wood or cardboard) on the plan of a dissected map, for the child to take to pieces and put together again. Various games are played with this apparatus.

(*b*) Cards, cubes, and dominoes with musical characters 'distinctly marked' upon them.

(*c*) Movable *giant* notes (metal) to hang on a wire staff.

(*d*) The same arrangement in wood.

(*e*) 'A music stave *of large size* on a varnished board.' Notes and other characters to use with this, 'made of thick cardboard, not easily broken, *and coloured so as to be attractive to the children's eyes*.'

(*f*) 'A model note,' consisting of all the parts of a note separated, for the child to build up for himself, by adding one piece at a time to the semibreve.

(*g*) Pricking or stitching the forms of various musical symbols.

(*h*) Sewing coloured beads, representing the scale-sounds, upon a cardboard staff.

(*i*) 'The *actual handling* of a wire staff, metal notes, time and key signatures *on a large scale*, not only makes learning the elements of music a pleasant game, but impresses the facts thus learnt more firmly on the mind.'

(*j*) 'He is interested by means of games and *objective material*.'

(*k*) The giant note method. This is a tutor, not an apparatus; but the same idea prevails.

This is where the idea of 'teaching in the concrete' comes in. Something we can see and handle? No, but something we can *hear*. The first kindergarten music—rote-singing—is truly music in the concrete. Tunes stored up in the memory are the concrete wholes, to be afterwards broken up into their elements of pitch and rhythm when conscious and directed observation begins. This conscious observation, again, is not done by seeing and handling, but by listening. Not first the staff, ever so big or ever so solid, and then its explanation in ever so pretty a 'game'; but first the fact of pitch, discovered by observing that in real tunes the sounds go up and down, and then the thought, 'How can we best make a picture of those high and low sounds and their relation to each other, so that we may write and read them?'

3. That the same kind of apparatus which is used effectively in teaching number will serve to teach time.

(*a*) A large cube divisible into thirty-two smaller cubes to illustrate the relative value of notes.

(*b*) Paper for cutting up, 'the semibreve occupying the largest piece of paper, the next being divided into two, then four, eight, sixteen, thirty-two. By cutting these pieces up the children learn to understand the value and duration of the different notes.'

(*c*) 'The representation of the number of beats a note is worth by a corresponding number of beads drawn along a string.'

(*d*) 'Coloured reeds, cut in lengths, for *time visualization.* The smallest reed represents the note of shortest duration in a piece, and others are proportionate in length.'

Here is the same mistake in the teaching of *time* and rhythm. To compare the sign 𝅝 with the sign ♩, and say one is worth four of the other, is no more music than comparing two with eight, symbol with symbol, is arithmetic. But to *listen*, and to notice that in real tunes some sounds last during four pulses and some for only one, and then to fix upon a symbol for each of these facts—this is examining *music* in the concrete, and using notation as a means of expression. And, to make this teaching effective, the symbol need not be larger than in any well engraved music, except for class teaching, nor more solid than chalk upon a blackboard; for it is not to the *symbol* that we would specially direct the attention, but to the *sound*. Cutting up paper or drawing beads along a string are admirable plans for teaching arithmetic, but so little arithmetic is needed for the realization of rhythm that it is hardly worth while to provide an apparatus for it. In spite of all tradition to the contrary, it is possible to teach a child music for the first three or four years without requiring him to realize mentally any group higher than six.

4. That music can be 'constructed' like a geometrical design.

(*a*) The various notes 'can be arranged in over a hundred different figures or designs, . . . forming an endless source of amusement and instruction.'

(*b*) 'They can be arranged in every possible combination on the model stave by the teacher *or by the pupil*.'

(*c*) 'Pupils can learn to compose.'

Arranging notes on a staff in 'figures and design' is not constructing music. We compose music in our heads, and our materials are sounds. We can teach a child to construct time-plans, and a very good exercise it is for his inventive powers; but rhythm is only one element of musical composition, and the only one that we can use as an exercise in self-expression in any sort of ordered teaching. The child who goes to an instrument and picks out by ear a tune, remembered or invented, *is* exercising self-activity, and this should always be encouraged; but to try to make it a part of any ordered teaching would be a mistake. To make a good melody is no easy matter, if I may judge from the efforts of young teachers in trying to write their own illustrations. 'Constructed' melodies are likely to show the seams too plainly; and I believe that the melodies that have lived were never constructed at all, but sent down from Heaven ready-made. They have been sent to little children now and then.

Musical form, nevertheless, is a necessary part of intelligent elementary teaching—taught, not by construction, but by observation. The child need not try to compose tunes, but he ought to be taught to observe how others have composed them; and here again the necessity for real music asserts itself. In his first little tunes (limited though they must be to the material *he* can understand) he can be taught to notice the elements of musical form, the imitations of rhythm, the shape of a melodic phrase. Bit by bit, as his knowledge grows, come fresh examples in the experience afforded by his practice-material, and this habit of observation is not only necessary for intelligent playing, but the best preparation for self-expression if, in later years, the pupil should have anything to express.

5. That it is a desideratum that the pupil should know without knowing that he knows.

(*a*) '*Before they are aware of it* the children find themselves over the first difficult steps of their musical education.'

(*b*) 'The pupils, *almost without knowing it*, acquire a familiarity with the elements of music.'

(*c*) '*Without really knowing it*, they have imbibed those foundation principles of music, which may be called its mechanism. . . . These children have passed *unconsciously* through the drudgery of music, etc.'

It is true, in a sense, that we all know many things without knowing that we know them, but such knowledge is practically dead knowledge to us. It is 'below the statical threshold,' and might as well not be. To 'find oneself over the first difficult steps of musical education' (which in these instances means to have gone through a complete course of musical theory understandingly) 'without being aware of it' is a psychological impossibility. This 'awareness,' which it is so desirable to avoid lest it should interfere with the pupil's pleasure, is really the only thing that can prove that he knows anything, the one thing that causes the process of knowing to be a pleasure, that creates the interest necessary to further knowing, that gives the kindergarten child the idea that 'lessons' are pleasant things.

6. That a kindergarten game is played with teaching apparatus, and that kindergarten children have to be kept in a continual state of amusement.

(*a*) 'Conveying instruction in an easy and pleasant manner.'

(*b*) 'The whole game forms a complete course of musical instruction in an entertaining manner.'

(*c*) 'Play and work combined, and therefore a true kindergarten method.'

The notion of the educational game 'combining amusement and instruction' is not new. Some of us can recall the quartet games of our childhood, which were supposed to give us much knowledge about authors and their books, painters and their pictures, countries and their products. We played them, and some of us who were priggish tried to think we liked them; our parents thought them 'so improving,' but none of *us* were deluded into thinking that we learnt anything from them. Now, some of these things are at least harmless. For instance, I should not object to giving a child a set of 'musical cubes,' because I know that he would at once set to work to educate himself by building a house with them, paying no attention whatever to the crotchets and quavers printed thereon, except to wish they weren't there, because his house would look so much more like a real house if his bricks were quite plain. But the *tendency* of all such devices is in the direction of cram. They are mostly attempts either to boil down a quantity of information into a concentrated essence, no whit less wholesome, or to drag into child life a class of knowledge which does not belong to it. To take an extreme case—again from a catalogue—there is an apparently popular game which gives 'on twelve cards a brief but complete [!] History of England, from the Invasion of the Romans to the present day, besides the chief events of French, German, and Ancient History.' Here is 'An ox in a tea-cup' and no mistake! It may be a game, but it is certainly no joke.

The tendency of the musical apparatus is not so much to over-condense as to over-elaborate. Material and games are provided for teaching advanced musical theory, difficult time divisions, major, minor, and augmented intervals, chords, and their inversions. This is not child knowledge, and by the time the child is ready for it, the apparatus and the game are unnecessary. The kindergarten game is a different thing altogether, and has a different purpose.

7. It will easily be seen that all these devices—some of them very clever and ingenious, and most of them pretty to look at—are an attempt to adapt to the teaching of *music* the plans which answer so admirably in the teaching of *number* and *form*. But why such an attempt should be a mistake may not be so apparent, seeing that music clothes itself in outward and visible symbols, and that arithmetic seems to be a necessary part of it, even to the extent of the possible division into sixty-four parts. The reason is this: that, while the elements of form and number are visible and tangible, the elements of music—pitch and rhythm—cannot be seen or handled. For *music in the concrete is sound, and nothing but music can teach music*. Musical symbols and their names may be memorized, as arithmetical or geometrical symbols and their names used to be memorized under the old teaching. But, if they are to mean anything, the facts which they symbolize must first have a place in the mind in some concrete form; and, while in the case of form and number these concrete facts enter the mind through the senses of touch and sight, in the case of music they enter through the sense of hearing. The conditions therefore are quite different.

I do not unreservedly condemn all apparatus. *It is always allowable when it shows something that cannot be shown in any other way.* Charts are handy and time-saving, and colours in connection with the scale have been found helpful; but the less apparatus we use in music teaching the better, and the amount necessary is very small. Musical thinking has to be done with sounds, not things.

I know that many of these plans have been devised by zealous teachers, earnestly anxious to brighten and simplify the work of their little pupils, and willing to take endless trouble in securing that end. I can well understand that the adoption of kindergarten methods would suggest itself as the best solution of the difficulty, and that hard upon this suggestion would follow the associated ideas of 'games,' 'occupations,' and 'teaching in the concrete.' But there is no doubt that in the hands of a mechanical music teacher all apparatus is dangerous and harmful and I cannot help thinking that those who have any real teaching power would find that they could do better work without it.

ANNIE J. CURWEN.

[The above was written in 1899. It did some good in this country, and also in America, where it was copied into an influential kindergarten magazine. In fact, during those twenty years 'apparatus' methods have almost died out in this country. But now we have Dr. Maria Montessori providing 'material' for music teaching which has many of the same features as those mentioned above. See her Advanced Method, Vol. II, pp. 313-14 (Bell-keyboard), 319 (Staff and discs), 351 Chart with moveable notes. Dr. Montessori's Method is just so far better than those others that the children have always something to listen to as well as to see and handle. In fact, she and her assistant, Miss Maccheroni, are so near the light that if they would only discard the apparatus altogether and use the real keyboard and a blackboard they would see tolerably clearly how to teach music. In the teaching of rhythm they do better, approaching somewhat to Jacques-Dalcroze.

These ladies, like the inventors of those other apparatus methods, are not musicians, but well-meaning experimenters, wishful to help education. Musicians don't do that sort of thing —A. J. C.]

Appendix II

SHOULD ALL CHILDREN BE TAUGHT MUSIC, OR ONLY THE GIFTED?

(Appeared in *Child Life*, October, 1899.)

WRITING to me *à propos* of the helpfulness of the time-names in the realization of rhythm, a German friend says: 'I think we Germans take a different view of music, and would be inclined to say that, if a child cannot grasp the time-divisions without all that artificial help, he had better leave music alone.'

As nine-tenths of our own musical profession would say the same thing, this attitude (on the part of the profession, at least) is not distinctively German. But the fact remains that custom, with regard to musical education, differs very much in the two countries. The German parent allows music lessons only to those of his family who show early aptitude; while the English parent decides that to practise the piano shall be part of every child's daily task; and, having so decided, he opens his purse, shuts his ears, and hopes that something may come of it. It may be worth while to consider why this is so—which of the two customs is the more nearly right; on which side the educationist would feel inclined to range himself.

We must not give either nation credit for having arrived at its mode of procedure in pursuit of an educational, or even an artistic, ideal. How they drifted there is not difficult to see. In England there has been more money than in Germany; also more snobbery. In the days before class singing was dreamt of as a school subject, 'music' meant performance on the piano or the harp. It ranked as an 'accomplishment,' an 'extra,' and this was enough to establish it firmly in the boarding schools. For 'accomplishments' meant gentility, and for what was a girl sent to boarding school if not for that? Germany was poorer, and

I am inclined to think that it was economy rather than reverence for art which prompted the German parent to select for the luxury of music lessons the child who seemed most likely to make some return for the money spent. It is hard to kill tradition, and parents continue to do as their parents did, except that we now extend the music lessons to the boys.

If performance be the sole aim and object of the music lessons, the German parent is undoubtedly right; but in this 'if' lies the *crux* of the whole matter. There is no doubt that in England much time and money are lost in the endeavour to teach some young people to play the piano. On the other hand, there is such a thing as late development, and I have known German women who were not without musical ability, but had been denied instruction because a sister had earlier shown signs of aptitude; and when, later on, a keen love of music awoke in these unfavoured ones, and with the love a desire to do, it was too late to hope for any technical facility. Surely this, too, is a loss, and leaves something to be said for the love of fair play which makes John Bull unwilling to deprive one child of the opportunities he gives to another, something for the love that hopeth all things and would give them all a chance. This blind instinct (for it *is* blind in most cases) is nearer to a right educational principle than the premature specialization of the German. A recent French writer * strongly condemns parents for thus 'predestinating' their children. He says: 'Les droits qu'ils ont sur leurs enfants ne vont pas jusque-là. La raison en est évidente. On ne sait pas d'avance à quoi l'enfant sera propre; c'est précisément l'éducation, si elle est bien conçue, qui nous l'apprendra, ou tout au moins nous donnera des indications.' Yes; education, *si elle est bien conçue*. If we would arrive at a true answer to the question: 'Should all children be taught music?' we must first seek for a true *conception* of musical education and its aims, and not be surprised if the search should lead to an overthrow of traditional practice, English and German alike.

* M. Paul Lacombe, 'Esquisse d'un Enseignement basé sur la Psychologie de l'Enfant.'

What, then should be the aim of musical education, *bien conçue?* Is it dexterous performance, vocal or instrumental? Certainly not, except in special cases; and yet, paradoxical as it may sound, artistic performance is more likely to be the outcome of that kind of education which does not make it its chief aim, than of the kind which does. In saying this I speak of the average pupil, not of the gifted few. All education at first must be general, not special. We must first aim at general musical intelligence, and later at special executive skill. But the intelligence should from the beginning be developed by doing, experimenting, first with simple, and afterwards with more complex material. We can do much to educate the mind through the fingers. M. Lacombe says again: 'Puisque donner des connaissances à l'enfant est moins utile qu'exercer son esprit, nous choisirons les connaissances à lui donner, moins pour les connaissances en elles-mêmes que pour leur pouvoir d'exercer l'esprit. Et nous les offrirons toujours par le côté qui exercera le mieux l'esprit.' So we would offer the child musical knowledge, not for the sake of the entertainment with which he may one day repay us, but because musical knowledge, rightly presented, will exercise his mind in a different direction and upon a different kind of material from any other knowledge. This being so, we are not warranted in withholding it from any child. Every child has a claim, a *right*, to be developed, so far as he is capable of development, on every side of him.

'But,' says somebody, 'suppose he has absolutely no ear, does not hear any difference between one sound and another?' All the more reason for trying to awaken a slumbering sense. Suppose your child has one feeble limb, an arm without muscle, a hand that cannot grasp. Do you adopt a do-nothing policy because it is unlikely that the child will ever become a gymnast? No; you put the limb under treatment; you watch every little bit of betterment with interest; you are not discouraged if the progress is slow, or even if you know that it will never be fully developed or perfectly under control. And so we should treat the feeble ear. If at first the child cannot hear the difference between a high and a low sound, he should be encouraged to listen till he can. Children of this kind are, fortunately, rare, as rare as those who suffer from infantile paralysis. When we do find them, we must treat them as we do the paralytic, and work in love and hope. It sometimes happens that the ear which is deaf to pitch-sounds is quite awake to rhythm. If so, let us begin there. The music of savage nations consists mainly, in some cases entirely, of rhythm. On the 'culture epochs' theory, this rhythmic, pitch-deaf child is only where he should be (!), which, considering his rarity, might cast a doubt upon the theory, but would not lessen his claim to be brought 'up to pitch.'

This preliminary training is best done in the singing class. Whether every child should have it or not has been decided (for the primary schools) by Government, and the turn of the secondary schools is coming; we need hardly stay to argue the point.

But with instrumental music parents will always have a free hand, and it is in this department that so much time and money are wasted. Yet I would decidedly say that *all* children should learn the piano up to about fourteen years of age, and then, when the pressure of other subjects becomes greater, selection should be made of those who should continue. Up to a certain point, melody provides sufficient material upon which to exercise the child's powers of observation, but soon he wants something more. 'Making music' on an instrument, instead of with his own voice, awakens a new kind of interest, and calls new powers into play; and pianoforte music offers a larger field for observation. The pupil finds a wider range of pitch, a fuller development of rhythm. He can notice how chords are derived from scales, arpeggios from chords, 'passages' formed by ingenious combinations of the three; how parts respond to each other, melody answering melody, rhythm responding to rhythm. From the very beginning of the pupil's pianoforte work his attention should be directed to the elements of musical form. He needs it for the right interpretation of his simplest tunes; he needs it if he is to be an intelligent listener to the higher forms of music; it will help him to memorize his pieces, for he will find, if accustomed to analyze, that passages which look difficult and sound imposing are reducible to very simple elements.

Train the child's *ear*. Apply all that he learns in the singing class to his pianoforte work, that he may feel music to be a unity. Let him discover, as he may if rightly guided, that (in the words of a great educator) 'music in itself is easy; it is the grammarians that have made it difficult.' Develop the technical side, that all may be easily *done*, as well as easily understood. Let it all be practical. Little paper work. No 'theory' apart from the piano. Everything illustrated, everything *heard*. Give this kind of musical education up to fourteen years of age, and the time and money spent on it will not be lost. Even if the practice of music be dropped, the critical faculty will have been awakened, and will probably grow of itself as the general intelligence develops, feeding itself upon the music it hears. The aims of musical education, *bien conçue*, I take to be these:—

(*a*) To aid in the general development of the human being, so that every sense may contribute to the whole soul-content.

(*b*) To create intelligent *listeners*, for whom the artist, the gifted one, may work.

(*c*) To find the talent which shall be worth cultivating to a higher degree; the material from which to make the fine executant; and—more precious still—the wise teacher, who will help to create and hand on a better tradition.

Admit these principles, and not only must we recognize the claim of *every* child to be musically educated up to a certain stage, but we shall see the advisability of a process of selection after that stage has been reached; seeing that music is only a part of general culture, and that natural ability may be making loud calls in quite another direction. Thus we find a course, which seems to me to be the true one, between reckless generalization and premature specialization. More than that. Admit these principles, and we shall see that the *kind* of musical education required is something different from that which has prevailed either in England or, so far as I am able to ascertain, in any other country.

This brings to mind another tradition which it is about time to wipe out. It is the belief that only in Germany is there any musical education worth the name. This was true once upon a time, but nobody who knows anything about it could say that it is so to-day. 'England,' writes my German friend, 'needs another twenty years of musical education before the teaching will be efficient.' Most true! And when she has had it, Germany will need another twenty in which to catch her up.* For during the past half-century England has been making strides, while Germany has been living on her reputation. There is an enormously greater number of children taught in England; consequently, there is a greater number of teachers; consequently, there may be a greater number of *bad* teachers; but whether there is a higher *percentage* of bad teachers is another matter. The fact is that in both countries the teaching is excellent in the higher grades, and there is no need for the advanced student to leave London in search of good lessons, though there are other advantages in studying abroad.† It is in the elementary teaching—the higher work from the educationists's point of view—that our methods are so faulty, and I cannot ascertain that they are better elsewhere. I have seen quite as unintelligent teaching done by the German governess as by the English one, and the standard of playing among amateurs is not higher in Germany than in England. This is the outcome of the average teaching, and more nearly concerns the ordinary English parent than the special training of *virtuosi*.

But though it may be a sort of consolation to feel that we are 'no worse than our neighbours,' it does not absolve us from the duty of being as much better as we can be. It is not so much that we want 'more thoroughness'; though we are always being told so. There never was a time when teachers of all grades were more anxious to do

* Is not this prophecy fulfilled to-day (1920)?

† We can now say emphatically that the high grade pianoforte teaching is better here.

thorough work; and, besides, if you happen to be on wrong lines, the more thorough you are the more mischief you may do. We want to examine our aims and ideals; to apply to music some of the principles which are revolutionizing other teaching; to study the child and his needs, and leave the *virtuoso* to Providence.

ANNIE J. CURWEN.

431 QUESTIONS

For Examination and
Self-examination
on the Text of Mrs. Curwen's
PSYCHOLOGY APPLIED
TO MUSIC TEACHING

FOREWORD

AN excellent way of testing one's mastery of any book is to make a *questionnaire* for oneself from the Index or Table of Contents, if these are fairly full and comprehensive. Go through an index, asking yourself about each *item*, 'How much do I know about that?' and you will probably find that you have not read the book as carefully as you thought you had. It is not a matter of quick reading or slow reading, for the rapid reader often seizes the meaning of a paragraph quite as well as the slower one, and it is *getting at the meaning* that matters. We can only get at the meaning of a paragraph or a chapter by reading with full attention, and reading with full attention is not as easy as it sounds, especially if the subject-matter is new to us or does not at once appeal to us.

Now a question demands an answer, and finding an answer to a direct question compels one to read with attention. So it occurred to me that a set of questions on the text of my *Psychology Applied to Music-teaching* might be useful, either for class work or examination purposes, or as a means of self-testing for the student who is not within reach of classes and lectures.

HINTS

In correcting students' papers I find that wrong answers are frequently due to careless reading of the question itself. Read every word of a question.

Having found an answer, put it into your own words. The words of the book may be better, but your own version shows whether you understand or not.

In the following set, the same question is sometimes put in two or three different forms: as, for example, Nos. 103, 104, and 105. In question No. 140 alternative forms are given, and Nos. 199 to 203 refer to the same set of paragraphs.

It is not advisable to use the questions immediately after reading. Read a portion, sleep on it, and test yourself next day.

ANNIE J. CURWEN.

431 QUESTIONS FOR EXAMINATION AND SELF-EXAMINATION

CHAPTER I

THE TEACHER'S NEED OF PSYCHOLOGY

1. When you start to teach anybody anything, what part of him do you make for, his mind or his body?

2. Why is knowledge of one's subject not sufficient equipment for a teacher?

3. What serious mistakes are commonly made by parents and teachers who are ignorant of psychology?

4. Are all teachers who are ignorant of psychology necessarily bad teachers? Give a reason for your answer.

5. In what sense may we call a person a 'born' teacher?

6. Why cannot psychology make all teaching easy?

7. Why cannot knowledge of psychology make up for lack of natural fitness for teaching?

8. Why cannot we turn to psychology for definite directions as to how to give a lesson in any subject?

9. How may a knowledge of psychology save time and worry and prevent harmful experiments with children?

10. Why may psychology be called the touchstone of method?

11. How is psychology to be studied?

12. What advantage has the student of psychology over those who study other natural sciences?

13. Why may it be said that the student of psychology carries his laboratory about with him?

14. Is introspection difficult or unusual?

15. Why is the psychology that we study by introspection not sufficient for a teacher?

16. What mistakes are likely to be made by a teacher who studies adult psychology only?

17. How is child-psychology to be studied?

18. Quote Prof. Laurie's reproach to the untrained teacher.

CHAPTER II

MIND AND BODY

19. What is Mind?

20. How do psychologists classify the mind's activities?

21. What terms are sometimes used as equivalents for *Mind*?

22. Give the meanings of *Cognition*, *Emotion*, and *Conation*.

23. Give some examples from everyday life of how knowing, feeling, and willing enter into all our experiences. (Avoid the examples given in the book.)

24. Are education and teaching interchangeable terms? State what you mean by each.

25. Where is Mind?

26. How much do we know about the relation of brain-processes to mind-processes?

27. Why should we not expect as much mental work from an anæmic child as from a physically healthy one?

28. Why should we not teach in ill-ventilated rooms?

29. Why should not a pupil do brain-work just after a full meal?

30. Why should lessons not follow quickly on each other?

31. Why should your pupils be comfortably seated and feel comfortably warm?

32. Some children have growing 'spurts,' others grow in more gradual fashion. From which can we expect the better school-work?

33. Why is it bad policy to make your pupil cry?

34. Why should the instrumental teacher know something about the connection between brain and muscle?

35. Have we any means of knowing or guessing what is going on in another person's mind?

36. In teaching, a certain amount of thought-reading is necessary; how may we best acquire it?

37. We can sometimes help a child to an answer by suggestive movement or expression. Is there any objection to doing this?

38. How does the mind get its knowledge?

39. Have people with good sense-organs (keen sight and hearing, etc.) more knowledge than other people? If not, why not?

40. How do eyes, ears, hands, etc., convey knowledge to the mind?

41. How does the mind know what the eyes see, the ears hear, or the limbs touch?

42. The eye has been compared to a little photographic camera, and the ear to a little piano. Can you recollect the points of resemblance in each case?

CHAPTER III

THE HUMAN TELEGRAPH

43. The nervous system has been compared (roughly) to the telegraph system. In the Human Telegraph what corresponds to the battery which generates the current? And what to the telegraph wires?

44. What is the central organ of the nervous system?

45. What important *difference* is there between the telegraph wires and the corresponding nerve-fibres in the human system?

46. The postal telegraphic system has a head office and district offices. Is there any arrangement similar to that in the human system?

47. Describe the spinal cord.

48. As the nerves belonging to the different senses are all alike in their structure and carry the same current, how comes it that we cannot smell with our eyes or taste with our ears?

49. What is the *Medulla Oblongata*?

50. Why is the *Medulla Oblongata* an important organ?

51. What and where is the Sensorium?

52. Why may we call the Sensorium the Central Telegraph Department?

53. What is *Reflex Action*?

54. In what part of the nervous system do the processes of thinking, reasoning, etc., go on?

55. Describe the upper brain.

56. Why does the brain require an abundant blood supply?

57. How do the cerebrum and the spinal cord differ in the arrangement of the white and grey matter?

58. How does the blood-supply affect the brain?

59. In what important processes is the grey matter of the brain active?

60. What is the theory of the *brain-paths*?

61. We say 'practice makes perfect.' What is the actual process?

62. If the *process* of practising wears out the brain, how is it that the *result* of the practising remains?

63. How is the action of the in-carrying and out-carrying nerves illustrated in sight-playing?

64. How far can we control the action of our muscles?

65. When our simple, habitual, everyday movements are to be used in new combinations, how is the fresh co-ordination of the muscles brought about?

66. Does power in tone-production depend on muscular strength?

67. Why are five-finger exercises likely to cause *brain* fatigue in young children?

68. Why is instrumental music study unsuitable for the very young child?

69. From the æsthetic standpoint, what is the objection to five-finger exercises for the beginner?

70. What evidence have we that the cerebrum is the seat of the intelligence?

71. Why may touch be called the foundation sense?

72. Little children are often told 'not to touch' things. How does this militate against their general development?

73. How does the little learner gradually become less dependent on his sense of touch?

74. In cultivating the sense of touch for instrumental music, what other sense must constantly be called in to help, and why?

75. What are the 'protective' senses, and why are they so called?

76. Name the senses in what you consider the order of their importance.

77. People usually speak of 'the five senses'; is this correct?

78. The relative value of the senses may vary. Under what circumstances?

79. What is the object of 'training' a sense?

80. Savages have usually very keen sight and hearing. Why is the savage less intelligent than the civilized man, who may wear spectacles or be a little deaf?

81. What do we mean by 'ear-training'?

82. Does knowledge of the nervous system explain mental processes?

83. What is the difference between a sense-impression and a sensation?

CHAPTER IV

THE PERCEPT

84. Prof. James says that the baby's mind is 'one big, blooming, buzzing confusion.' What makes it so?

85. How is the initial confusion in the infant mind gradually dispelled?

86. How do the objects in the little child's mind get their fringe of *meaning*?

87. How can we tell when objects begin to have a meaning for the baby?

88. What is the great difference between the stage of mere sensation and that of perception?

89. How would you define a *percept*?

90. Give an illustration (not from the book) of the process of perception.

91. 'The fringe of meaning is for our personal behaviour,' says Lloyd Morgan. Looking into your own mind, do you feel this to be true? If not, what evidence have we that it *is* true?

92. What is the difference between *seeing* and *perceiving*?

93. What part does memory play in perception?

94. What is meant by *mixed* perception?

95. What is *symbolic* perception?

96. Which would be the better test of symbolic perception —an 'elements' paper or a sight-playing test? Give reasons for your opinion.

97. Why is it specially important in music-teaching to remember that symbols have 'a meaning for *behaviour*'?

98. What is meant by *hearing with the eyes* and *seeing with the ears*?

99. What is *reaction-time?* Give an example, not necessarily from music.

100. We speak of *motor* and *sensory* children. What do these terms mean?

101. How many senses combine to tell us what a clock is, and how many do we need to tell us what a tune is?

102. What is the essential difference between the perception of music and of other objects?

103. How do young children show their sensitiveness to music?

104. What kind of 'behaviour' usually accompanies the perception of music?

105. When a baby hears a tune, what possible fringe of meaning has the tune for the baby?

106. To what kind of measure—2-4, 3-4, 4-4—is a child most likely to respond readily, and why?

107. Why should music be taught through the ear?

108. What is the difference between *hearing* and *listening*?

109. How can the pianoforte teacher make the lessons a direct preparation for the 'appreciation' class?

110. Given an equal liking for music, will the performer or non-performer be the better listener at a concert?

111. State the difference between *sensation* and *perception*.

112. The old teaching of harmony was all paper work. Why was it not satisfactory?

CHAPTER V

THE MENTAL IMAGE

113. When an object that we have perceived vanishes, what happens to the perceptive process? *Or*, when an object is removed from sense-contact, do we lose it altogether?

114. On what does the vividness of the mental image depend?

115. How can you test your little pupil's power of mental imagery?

116. How would you deal with a child who *understands* the relation between staff and keyboard but is slow in the necessary response, i.e. the behaviour?

117. When you have listened to a tune, which may take about a minute to play, why is your memory of it less vivid than your memory of a picture you may have looked at for the same space of time?

118. Why do we use the word *image* when referring to the memory of *sounds*?

119. Does the image of a tune include the image of its notation?

120. Why should the early ear-exercises be very short?

121. An ear-exercise (music) is simply an observation exercise. Why should it require greater mental alertness than other observation tests?

122. Why should ear-training and sight-singing be taught together?

123. How does *reading* from the Tonic Sol-fa notation help the training of the *ear*?

124. What are the possible dangers of memory-playing, and how would you minimize them?

125. What is meant by the *preferred sense?*

126. In learning and memorizing music, what is your own 'preferred sense'?

127. What are *visuals*, *audiles*, *tactiles*, and *motiles*?

128. In memorizing music, what do we need besides the sense-memories, and why?

129. Why is it difficult to remember a lecture or sermon that is rapidly delivered?

130. What are the advantages of reading music mentally, without playing it?

131. In memorizing instrumental music, how do the different senses help us?

132. Can we account for the fact that, among amateurs, the fluent reader is usually a poor memorizer, and *vice versa*?

133. Can we practise without playing?

134. How is a mental image called up into consciousness?

135. On what do we chiefly rely for calling up mental images?

136. Can we call up mental images in the minds of other people? If so, how?

137. What practical difficulty in teaching is met by the French *time-names*?

138. Why is it necessary to have names for the facts of pitch and time as we *hear* them?

139. In the teaching of pitch-relations, what kind of names would you prefer to use? Give a reason.

140. Can we justify the use of temporary names in teaching? *Or*, How would you treat technical terms in teaching children? *Or*, Having used simple and temporary names, when and how would you substitute the ordinary technical terms? Give reasons and examples.

141. What is the difference between the thinking processes of children and of adults?

142. Why is it necessary for the teacher to find out the existing ideas in the pupil's mind?

143. Why is it easier to teach a child who has a good stock of nursery tunes in his memory?

144. How does the mental image differ from the percept?

CHAPTER VI

IMAGINATION PROPER

145. What is the difference between reproductive (or representative) and constructive (or creative) imagination?

146. What is the commonest form in which we see constructive imagination at work?

147. Give some examples of the results of constructive imagination.

148. Which is the more *free*, representative or creative imagination?

149. Why cannot imagination be totally free?

150. When we want to teach a child about something that has never come into his experience, how must we begin?

151. Give an example of creative imagination in teaching.

152. How does the creative work of the musician differ from that of the poet, painter, or novelist?

153. How can we use the child's creative imagination in music teaching? State your own opinion, and give any experience you may have had.

154. Describe the 'question and answer' device.

155. In the 'question and answer' device, what kind of imagination does the child use, creative or reproductive?

156. In debating the question of how far we can call upon the child for creative work, what should be the teacher's chief consideration?

157. It is important to encourage self-expression in all art-work. Is composition the only way in which the 'self' can be expressed in music?

158. What kind of imagination does a teacher specially need?

CHAPTER VII

THE CONCEPT

159. The mental image 'becomes general' in course of time. What does that mean?

160. Give some examples of the same word used in a general and in a particular sense.

161. What is a *concept*?

162. What is the difference between Perception and Conception?

163. What is the little child's first step towards forming general notions?

164. Describe the growth of a *generalized image*.

165. Distinguish between a *generalized image* and a *concept*.

166. On what is the little child's first classification of objects founded?

167. How is the child's rough classification corrected?

168. What is the difference between the character of children's thinking and that of adults?

169. What is meant by 'turning a pupil's percepts into concepts,' and how far can the teacher assist in the process?

170. What kind of concepts does the child form without direct teaching? Give examples.

171. What is meant by the saying 'Concepts are wrapped up in names'?

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172. What do you understand by *concrete* and *abstract* concepts? and are these commonly used terms quite satisfactory?

173. How does the mind arrive at the concrete concept?

174. Does the child-mind ever form an abstract concept?

175. Looking into your own mind, do you find yourself thinking in concepts or images?

176. What does *teaching in the concrete* mean?

177. What kind of subjects must be taught first in the concrete? Give examples.

178. Would you call music a concrete or an abstract subject? Give a reason for your answer.

179. Why is the educational maxim 'Proceed from the particular to the general' a sound one?

180. Give examples from music-teaching of 'proceeding from the particular to the general.'

181. We find the word *concept* very loosely used. What is the strict meaning of the term?

182. Give examples of the use of a mental image as a standard.

183. How would you endeavour to give children a standard of *tempo*?

184. How would you teach your class to pitch their tunes without piano or tuning fork.

185. What is *genetic* psychology?

186. Of what practical use is genetic psychology to the teacher?

187. How do little children learn the use of such abstract words as *up*, *down*, *over*, *under*, *with*, *beside*, *after*, etc.?

188. Why are the years from six to eight a difficult period to deal with, and what kind of mistakes are sometimes made by teachers at that time?

CHAPTER VIII

ON THE CHOICE OF LANGUAGE

189. Why should a teacher be careful in his choice of words?

190. Why does the individual (or particular) connotation of a term change from time to time?

191. Where are we likely to find the accepted connotation of a term?

192. What is meant by saying that 'every increase in knowledge causes a change in the connotation and denotation of a term'?

193. Give an example (not from the book) that 'a teacher may ask a question in connotation and receive an answer in denotation.'

194. What is the use of a definition?

195. What are the essentials of a good definition?

196. Is it better to give a definition to a pupil at the beginning of a lesson or at the end? Give a reason.

197. Should a teacher accept a good definition as a proof of knowledge? Give a reason for your answer.

198. How can the *music* teacher at once prove whether an answer is mere memory work or the outcome of real knowledge?

CHAPTERS IX AND X.

IDEAS AND THEIR BEHAVIOUR

199. Psychologists differ in their technical use of the word *idea*. Give a few of their differences.

200. Has the word *idea* a definite technical meaning?

201. Why is it difficult to limit the word *idea* to its definite technical meaning?

202. For those who teach children, what is the safest meaning to attach to the word *idea*, and why? *or*

203. In what sense may the practical teacher use the word *idea?*

204. Why is the indefiniteness of the word *idea* rather an advantage than otherwise?

205. In treating of things spiritual we have to use figures of speech. Name some figures of speech in which psychologists have expressed their ideas of our states of mind.

206. In what respects does the figure '*the field* of consciousness' differ from '*the stream*'?

207. In what sense may we think of consciousness as *a battlefield*?

208. What is an *Apperception Mass?*

209. If an idea can only be assimilated by the help of other ideas, how does knowledge begin?

210. According to Herbart, the soul comes into the world empty. How does it become possessed of a content?

211. What is the Herbartian doctrine as to the influence of ideas on one another?

212. Give Herbart's story of the fortunes of a new idea. Can you quote illustrations of this from the history of music?

213. Are the terms *high* and *low*, as applied to musical sounds, strictly correct?

214. What causes the differences in pitch between musical sounds?

215. Are there *intervals*, in the sense of *distance*, between the sounds in a scale? If not, how do we come to use the term?

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216. What is meant by the *presentative activity* of an idea? Give instances.

217. In teaching we may want certain ideas to have a strong presentative activity. How can we secure this?

218. How are we helped in the teaching of pitch-relations if the pupil has vivid mental images of keyboard, staff, and modulator?

219. Sentimental exaggeration and wild *rubato* are common faults. How would you guard against them?

220. 'An idea's first visit to the dome seldom lasts very long.' How are we to interpret this point in the allegory, and what practical meaning has it for the teacher?

221. How does the doctrine of apperception confirm the statement that 'the success of a child's future music lessons depends largely on his store of nursery music'?

222. How may the *rote-singing* stage be made a direct preparation for the *note-singing* stage?

223. 'An idea may belong to more than one apperception mass.' Why should the teacher remember this?

224. How should a wrong answer be treated?

225. What are the common causes of the wrong answers usually called 'howlers'?

226. Why should it be easier to account for wrong answers from our own pupils than from newcomers?

227. How would you deal with mistakes in written exercises?

228. Wrong answers are sometimes given by quite intelligent pupils. What may account for this?

229. Why is repetition necessary in teaching?

230. What kind of repetition is to be avoided?

231. Is mechanical repetition and drill ever legitimate? If so, when would you use it?

232. Under what conditions is the memorizing of formulas and summaries allowable?

233. When the mind encounters an unknown thing, how does it act?

234. On what does the apperceptive hearing of a piece of music depend?

CHAPTER XI

HOW APPERCEPTION MASSES ARE FORMED

(Read the whole chapter before answering any questions.)

235. Of what practical use to the teacher is Herbart's classification of ideas into *Similar*, *Disparate*, and *Contrary*?

236. Why must we know the pupil's existing stock of ideas before we can act upon Herbart's classification?

237. If we must find a point of contact with the pupil's mind, in what direction are we most likely to find it?

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238. What happens when *Similar* ideas meet in consciousness?

239. We speak of ideas *meeting* in consciousness. From what points do they approach the meeting place?

240. What is meant by the *fusion* of ideas, and what is its effect?

241. What kind of ideas fuse naturally and easily?

242. Give some examples of the fusion of ideas.

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243. What are *Disparate* ideas?

244. What is the process of connecting disparate ideas called?

245. What is a complex idea?

246. In the Herbartian scheme, what does *Complication* mean?

247. Give an example of the formation of a complex.

248. What is the value of complex ideas in mind-building?

249. Why should the teacher understand how to treat disparate ideas?

250. If the mind of itself forms complex ideas, where does the teacher's responsibility come in?

251. Why does the *music*-teacher (especially) need to know how to treat disparate ideas?

252. There is no natural connection between musical sounds and the symbols we use to represent them. How are we to associate them firmly in the pupil's mind?

253. When one part of a complex appears in Consciousness, what may we expect to happen?

254. If I mention the *Midsummer Night's Dream*, what other idea is likely to come into your mind?

255. How can we account for the fact that some people who have been 'learning music' for years cannot realize either melody or harmony by looking at its notation?

256. People who know all about the values of notes, dots, and rests often fail in the practical reading of time. How do you account for that?

257. Skilled players who could not make a mistake in *reading* music, are often unable to write a simple melody or time-phrase dictated to them. What is the explanation? *Or*

258. People can usually write their own language as well as read it; yet good sight-players have difficulty in writing the language of music. How is this?

259. All musical notation is a double complex. Why?

260. What processes have to be associated in every lesson to a beginner if he is to *use* notation as well as decipher it?

261. How may we form a lasting complex of any kind?

262. What preparation should a child have for approaching musical notation?

263. When the time comes for a child to tackle that complex invention called musical notation, what is the first thing to be done?

264. What means might we adopt to train a memory for *opus* numbers, etc., and to organize the pupil's knowledge of music?

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265. What are Contrary ideas?

266. Are Contrary ideas those of very different kinds?

267. What is the effect of Contrary ideas on each other?

268. What is meant by *realizing* an idea?

269. What common difficulty in piano-playing is caused by the effect of Contrary ideas?

270. What is the best way to treat mixed rhythms such as 3 against 4, 8 against 6, etc.?

271. Is there anything in our own organization which causes us to be worried by irregular rhythms?

272. Does the process of *arrest* help or hinder clear thinking?

273. If *fusion* is the simplest process, why should we not, in teaching children, make for fusion only?

274. Why is the memory of scale-shapes and chord-shapes on the keyboard important?

275. Why should the teacher's work be easier after the first lesson?

276. What is meant by the *mental background*?

277. Why is it necessary to be sure of the pupil's mental background when beginning a lesson?

278. Why should a pupil beat time when listening to an ear-test?

CHAPTER XII

ATTENTION AND INTEREST

279. We find fault with children for *inattention*. What is the real nature of their crime? *or*

280. If a child is not attending to your lesson, is his mind a blank?

281. What is *Attention*?

282. What kind of things does the mind select for attention?

283. We say that Interest and Attention are closely allied. What is the bond between them?

284. What evidence have we that Interest determines Attention? Give examples.

285. Why is a child's attention more restless than that of an adult?

286. Does the restlessness of the child's attention help or hinder his mental development?

287. What do you mean by the terms *Voluntary* and *Involuntary* attention ?

288. The terms *Voluntary* and *Involuntary* attention often give students a little trouble. What do you understand by them ?

289. What is *Involuntary* attention ?

290. Why is *Voluntary* attention so called ?

291. Which kind of attention (voluntary or involuntary) requires most effort on the part of the learner ?

292. Which kind of attention gives the best results, and why ?

293. If the subject studied is unattractive in itself, what kind of attention must we demand from the pupil ?

294. We sometimes find a child absorbed in some occupation. What kind of attention would you say that he is giving to it ?

295. Attention works on a very simple principle. What is it ?

296. What is the teacher's recipe for keeping the pupil's attention directed to the matter in hand ?

297. The duration of voluntary attention is short. What is its limit said to be, and what is its average stretch ?

298. Why is it necessary for the teacher to remember that voluntary attention works in spurts ?

299. Why is it not advisable to begin instrumental work with a very young child ?

300. Why is it well to announce the subject of a lesson before actually beginning it ?

301. What is meant by the *pre-adjustment* of attention ? Give an example.

302. Why are individual lessons more fatiguing to the pupil than class lessons ?

303. Why is it possible to give a child a longer lesson *in music* without fatigue than in almost any other subject ?

304. Why is the enthusiastic teacher apt to push the child's attention to fatigue point ?

305. Teaching necessitates much repetition. How are we to prevent repetition becoming monotonous ?

306. Why is the use of five-finger exercises doubtful in the case of young children?

307. Why should scale knowledge and chord knowledge be closely associated?

308. How can we avoid monotony and keep up interest in scale practice?

309. *Interest* has laws of its own, within which the teacher must work. Can you enumerate any?

310. 'An idea may be presented too soon or too late.' Comment on that saying.

311. What is *apperceptive interest*?

312. Should the interest curve be high or low at the end of a lesson?

313. In teaching, it is necessary for the teacher to see things from the pupil's point of view. How can an adult mind get that view-point?

CHAPTER XIII

HABIT AND MEMORY

314. What is a *habit*?

315. How are physical habits formed?

316. How are mental habits formed?

317. How have physiologists accounted for the formation of habit?

318. What is Prof. James' maxim about the formation of new and good habits, and with what simple comparison does he rub it in?

319. How can a teacher assist the formation of good mental habits in a pupil?

320. Why is it a good thing to tell one's pupils something about the physical basis of habit?

321. On the 'brain-path' theory, habit and memory are closely connected, but there is one striking difference. What is it?

322. What part of memory is physiological, and what part is psychical?

323. Is the retention of facts the whole of memory?

324. We are told that the natural retentiveness of the brain cannot be improved. How, then, can we improve memory?

325. Why have we a better memory for things connected with our calling than for other things?

326. Would you say 'I am trying to remember' or 'I am trying to recollect?' Give a reason for your answer.

327. How far can the Will help us in recalling?

328. Knowledge that is 'crammed' for examination does not usually stick. Why is that?

329. In memorizing music, what kind of memory is the most reliable, and why?

330. Why does *thinking over* a composition, without playing it, help us in memorizing?

331. If the formation of associative links is a natural process (i.e. something that the mind does for itself), what can the teacher do to help or hinder memory?

332. In memorizing poetry, which is supposed to be the better, the 'straight-through' plan or the 'verse-by-verse' plan? Give the argument.

333. Why may it be said that a good memory *forgets well*?

CHAPTER XIV

METHOD AND TEACHING DEVICES

334. Quote from memory four or five definitions of *method*.

335. What principle lies at the back of all method?

336. What is the first question for a teacher to put to himself before starting a pupil on a new subject?

337. Is training in method necessary for a person who has the 'gift' of teaching?

338. When the teacher has decided through which sense a new subject may be most effectively presented, what further points have to be considered?

339. Why must a teacher keep the *end* of the course in view as well as the beginning?

340. From what are the general principles of teaching derived?

341. If the general principles of teaching apply to all subjects, why are special 'methods' needed ?

342. If theteaching of different subjects necessitates special methods, was Comenius right in saying that '*there is only one method for teaching all the arts, sciences, and languages*' ?

343. What simple rule answers the teacher's question, 'Where shall I begin ?'

344. Can any methodizer claim that his method will suit every pupil ?

345. On what principle must a methodizer work ?

346. Method and teaching-devices are often confused. What is the fundamental difference ?

347. Can a teacher follow a given method and yet show originality and individuality ? *or*

348. Does following a given method cramp the teacher's originality ?

349. How is a teacher to decide whether a given method is a good one or not ?

350. It has been said that every teacher should have his own method. Do you see any difficulty about that ?

351. Why can we not expect a young teacher to formulate a sound method ?

352. Why are good teaching-devices important ?

CHAPTER XV

ON ILLUSTRATION

353. What kinds of illustration are commonly used in teaching ?

354. When are models and pictures necessary ?

355. How are abstract notions to be presented ?

356. When may verbal description be effective ?

357. Why is music-teaching less dependent on extraneous illustration than other subjects ?

358. What is an *analogy* ? Give an example.

359. The seven sounds of the scale have been compared to the seven colours of the spectrum. Why is it not a good illustration ?

360. Is an analogy expected to be an exact parallel?
361. Why does a far-fetched analogy fail?
362. What is the danger of the 'hand-to-mouth' illustration?
363. How may a 'stock' illustration, however good, be abused?
364. Is it possible to over-illustrate?
365. What types of illustration should be avoided?

CHAPTER XVI

DIFFERENT KINDS OF METHOD

366. What do *Analysis* and *Synthesis* mean?
367. Why do we use analysis and synthesis in teaching?
368. In teaching the elements of music, i.e. the meaning and use of notation, how are the operations of analysis and synthesis to be divided between teacher and pupil?
369. Why must the analysis be done by the teacher?
370. What kind of analysis may we ask from the pupil?
371. Why are analysis and synthesis interesting to a child?
372. Why is sight-playing a synthetic process?

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373. What is the difference between *Inductive* and *Deductive* method?
374. Which is the quicker method, inductive or deductive?
375. Why not use the quicker method always and only?
376. 'Proceed from the particular to the general' is a well-known teaching maxim. Does this imply induction or deduction?
377. When a pupil has been taught something by inductive method, how can we prove whether he understands it?
378. Which is the better, the rule discovered or the rule given, and why?

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379. What is *Heuristic* method?
380. Is heuristic method inductive or deductive?

381. What is the difference between ordinary inductive method and that which we call heuristic?

382. What is the best way to answer a child's 'why?'

383. What common teaching maxim bids us teach with heuristic method?

384. What objection has been made to heuristic method, and how would you answer it?

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385. What is *Dialectic* method?

386. What is the value of dialectic method, and what are its dangers?

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387. What is meant by *Direct* method?

388. It is sometimes said that 'telling is not teaching.' Is that altogether true? Give a reason for your answer.

389. Does the heuristic principle forbid all telling?

390. Some people demand that nothing should be told, but everything *elicited* from the pupil. Comment upon that.

391. How is a teacher to be guided as to what *may* be elicited, what *can* be discovered, and what *must* be told?

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392. What is *Socratic* method?

393. What is the practical usefulness of Socratic method?

394. For what type of pupil is Socratic method particularly useful?

CHAPTER XVII

METHOD WITHIN THE LESSON
HERBART'S FIVE FORMAL STEPS

395. What are the Five Steps in Herbart's Lesson-plan?

396. What is the advantage of having a lesson-plan like that of Herbart?

397. Experienced teachers generally have a lesson-plan of some sort. Why should Herbart's name be associated with the idea?

First Step : Preparation.

398. What is included under the heading of *Preparation* in the Herbartian scheme?

399. Why is the announcement of the *aim* of the lesson considered important?

400. Why should the teacher investigate the pupil's existing knowledge of a subject before proceeding to give a lesson on it?

401. What do you understand by the statement that the preparation for a new idea is *cumulative*?

402. How much immediate and deliberate preparation for a lesson is necessary?

Second Step : Presentation.

403. What does *Presentation* mean?

404. In selecting the next idea for presentation to the pupil's mind, how must we be guided?

405. Why is it more difficult to plan a series of lessons in musical knowledge than in other subjects?

406. If a logical series of lessons can be found in a good textbook, what difficulty remains for the teacher?

407. Herbart says that presentation is governed by two laws. What are they?

408. What is meant by *clearness* in presentation?

409. How may the very fullness of a teacher's knowledge be a source of stumbling in teaching?

410. What does Herbart mean by *a Concentration*?

411. What meanings have been given by Herbartians to the term *reflection*, and what do you understand by it?

412. *Preparation is analytic; Presentation is synthetic.* What do you understand by that?

413. Why does this theory of Concentration and Reflection apply particularly well to music-teaching?

Third Step : Association.

414. What do you understand by 'seeing the relations between things'?

415. What relations have to be established in teaching the elements?

416. What musical relationships have to be taught besides notational ones?

417. What, according to Herbart, is the best way to treat the Association Step?

418. In dealing with the Association Step, what have we to beware of?

Fourth Step: Generalization.

419. What other names have Herbartians given to the Fourth Step?

420. Does generalization form a necessary part of every lesson?

421. Give some examples of generalization in an elementary music course.

422. Do children generalize naturally, or have they to be taught to do it?

423. Why do we object to 'jumping to conclusions,' which, after all, is generalizing?

424. How can we lead our pupils to generalize and summarize in the right way?

Fifth Step: Application.

425. What is the nature of the Fifth Step?

426. In what school subjects is the Fifth Step immediately essential, and why?

427. Why must a music lesson *always* include the Fifth Step?

428. How many of the Herbartian 'steps' are necessary to a music lesson?

429. Why is the Application Step the most important of all in music teaching?

430. Must every lesson be divided into five steps to be effective?

431. If a good teacher instinctively follows some such plan as Herbart's, what is the value of his framework?

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