IT may appear strange, at first sight, to bring forward the subject of Child Welfare for consideration in the pages of this Journal, but a little reflection will show that every medical man should have a general working knowledge, at least, of this branch of his profession, if he is to pull his weight in the effort being made to raise the physical and mental standard of each individual to a level which will enable him, or her, to take an active part in promoting the welfare of the community. Important as it may be for the civilian medical practitioner, the possession of this knowledge is essential for each of us, whose duties may be at any time in distant lands where thousands of soldiers' children are passing through one of the most important stages of their existence, far removed from the careful supervision expended on their more fortunate contemporaries at home.

Bodily fitness being essential in the make-up of an efficient citizen, systematic physical training must play an important part in the education of a child and the following notes, sketchy and marked by many defects of commission and omission though they are, have been submitted for publication in the hope that they may arouse an interest in the principles which should guide such training in children, little reference being made to details of exercises and the like.

Under the heading of physical training may be grouped all forms of exercise which are employed for the purpose of improving bodily health, and it is entirely wrong to suppose that this system of instruction is confined to courses of set movements. These have been devised solely for the purpose of presenting exercise in “tabloid” form, if one may use the term, being so arranged that all parts of the body will receive equal attention, and that the resulting development will be symmetrical.

Though the primary object of introducing physical training into school life was to counteract the evil effects on the body of confinement in schoolrooms, where individuals have to remain for long periods in a state of inactivity, and in the more or less cramped positions imposed on them by the necessity for class formation, yet the results of such training are more far-reaching than they appear to be to the casual observer.

It is essential that all those to whom the supervision of children is entrusted should realize that this system of instruction must have results of an infinitely wider scope than that evidenced by increased muscular activity and physical development.

They should understand also that ill-advised exercises, by causing
mental strain and fatigue, may do much to retard a child's progress in its studies.

Further, as the finest system of physical training is of little value unless assisted by good hygienic surroundings, wholesome and sufficient food and cleanliness, it is most important that the closest attention to these matters should be paid by medical officers and instructors.

Not only does a sound body assist indirectly in the production of a sound mind, but the training carried out has a well recognized direct mental effect in arousing new nerve centres to action, by stimulating co-ordination of movement and promoting habits of self-control and observation.

The objects of physical training, therefore, are twofold:

1. Physical, the production of an individual whose vital functions have full play as the result of well-ordered physical conditions.

2. Mental, the stimulation of nerve centres to their full activity and the establishing of control of mind over body.

In determining the lines on which physical training should be carried out, the best guide to a successful procedure is obtained by close observation of the steps taken by Nature in building up the physical and mental development of the child.

The earliest normal muscular activities of an infant are largely reflex and are confined to massive movements designed to assist growth by stimulating circulation and digestion, and the removal of waste products from the body. It is not until the lapse of a considerable period that one finds more intricate movements, demanding the action of individual muscles, or groups of muscles, being carried out.

Increase in the intricacy of movements depends on the development and awakening to activity of nervous centres, a slow and gradual process, and it is here that physical training steps in to assist Nature.

Experience shows that, by training a child slightly in advance of its normal mental condition, it is possible to arouse new centres to action, to establish combined action between existing centres, and to render automatic many actions previously carried out as the result of conscious thought, thus causing a great economy of effort.

As too energetic measures may have serious evil effects on the mental and physical condition of the pupil, great patience and attention are demanded of the medical officer when deciding on a series of exercises to ensure that those adopted are not too far in advance of the dictates of nature.

Danger signals are clear and decisive. Points which should be watched for are lassitude, gradually increasing irritability, and inability to carry out orders previously obeyed with alacrity, greater than that shown by other children of similar age and development, indicating mental exhaustion which may be caused by exercises which are too advanced for the pupil. Increasing pallor, breathlessness and faulty slack positions when standing easy are signs also, the significance of which cannot be neglected.
In the early stages of physical training, and in young children, it is found that "general activity" exercises, such as running, jumping, dancing and simple games are all that can be tolerated, and nothing more should be attempted until there has been an opportunity for observing their effects. As the pupil advances these exercises are gradually left behind, and movements designed to exercise definite groups of muscles, and individual muscles are substituted in steadily increasing degrees of complexity and difficulty.

Having decided the limit to which physical training may be pushed with safety, it remains to group movements in such a manner that the body will be developed symmetrically as a whole and that no one portion will receive attention at the expense of the rest, in other words to carry out exercises in "order of movement."

Certain other factors have to be considered also.

The bodily functions of a child who has been sitting in class for some hours are not in a state of full activity, respiration has not been working to its normal extent, and so the gaseous changes in the lung have not been efficiently carried out; circulation, also, is slow and the action of the heart has not been assisted by muscular activity in promoting the return of the venous blood. For both of these reasons, waste matter has accumulated to a certain extent in the tissues exerting a toxic influence on the nerve endings in the muscle.

In order to remove these harmful substances and thereby get the muscles into a condition in which they will obtain the greatest benefit from physical training, certain "introductory exercises" have been devised. These are: (a) breathing exercises, and (b) general activity exercises.

Breathing exercises may be of two types, "normal breathing" and "deep breathing," and either of these types may be carried out with or without movements of the arms designed to assist inspiration and expiration by bringing into play the accessory muscles of respiration. As a rule, it will be found that "normal breathing" exercises, with appropriate arm action, will suffice as an "introductory exercise" in normal children; "deep breathing" being reserved for those who suffer from malformed chests and feeble expansion of the lungs.

Certain precautions have to be observed when children are performing breathing exercises. The position must be erect but free, the mouth must be closed, there must be no constriction of the chest walls by clothing, expiration must be as complete as inspiration, and there must be no "forcing" of respiration. A regular normal rhythm must be maintained also, and breathing exercises must never be carried out when children are in a state of breathlessness after exertion.

Two tests, by which the thoroughness of the execution of these movements can be estimated may be mentioned: Standing behind the pupil, by placing the tips of the thumbs over the spine and spreading the fingers over each side of the chest wall, the amplitude of movement of the latter
may be readily ascertained. Again, if the pupils are instructed to whistle during expiration, one can tell when the lungs have been satisfactorily emptied of air by the cessation of the sound.

General activity exercises such as running, jumping, and dancing may be used as introductory exercises, but it is necessary to realize that they fulfil a different purpose here to that described when they were mentioned as being applicable to young children. Here they are used only as a means to an end, that of preparing the pupil for further exercises; then they were referred to as being the end itself, in that the young brain could not furnish the activating impulses for more complicated movements.

At the end of a lesson it is well to give pupils two or three minutes of "normal breathing" exercise to ease the strain on the nerves, quiet the circulation, and induce steady rhythmic respiration before the return to studies. It is interesting to note that a very similar procedure is often adopted on rifle ranges during musketry instruction, particularly when firing after a rapid advance has been carried out. One often hears an instructor say to a man "Three long breaths and then loose 'off,'" a remark which goes far to prove the sedative effect of quiet deep breathing.

With increasing age and growing adroitness in carrying out the movements prescribed in the earlier lessons, the necessity arises for adding to the difficulty and complexity of the exercises, and here the skill of the instructor and supervising medical officer plays a large part in the success of the training. Too much advance may result in failure, whilst too little means waste of valuable time. It must be borne in mind always that any advance must affect the whole body equally and hence we find the term adopted "progression in order of movement," in other words each exercise in the order of movement is so advanced that its effect on the part of the body which it is designed to develop is on an equality with those arranged for other portions of the body.

In the performance of all exercises attention to detail, concentration and finish are essential to success, and no half-hearted slovenly methods of execution should be tolerated. It is important that failure to carry out movements, resulting from fatigue, should not be confounded with carelessness, as a hard working pupil who, perhaps has outstripped children of his own age by zeal and energy, may find himself in a class performing exercises which demand a greater strain than that which his development can support. Such a case should be dealt with by reduction of strain, and not by censure.

For a movement to have its most beneficial effect, it is essential that the "starting position" from which it originates should be correct. Though the position of "attention" is the starting position of all exercises, it is obvious that other positions must assume the same rôle at the commencement of each stage of a complicated movement, therefore it is clear that each exercise must be watched most carefully to ensure its successful performance.
So far the physical side of the training alone has been considered. The mental aspects need to be thought of also, and in this respect it has been found that games, judiciously selected, may play a very useful part as they are the natural outlet for energy in children, and their execution does not demand any severe mental strain. Also, by carefully interspersing them among set exercises, they add interest to a class and frequently induce a lazy child to take part in what otherwise would bore him thoroughly.

The effects of physical training on the mind are shown in many ways:

The power of observation is increased, as evidenced by closer imitation of the movements of the instructor when movements are explained.

Will power increases, the child who has given up trying to master a new movement seems to acquire a dogged determination to succeed.

Co-ordination improves, complex movements hitherto tried without success are carried out with gradually increasing ease and without fatigue.

A shortening of the time required to translate an external stimulus, visual or oral, into action as indicated by immediate and accurate response to the instructions or demonstrations of the instructor.

Memory becomes more retentive, the details of a new movement are remembered after they have been given out on only one or two occasions to a child to whom no impressions appeared to have been conveyed by repeated demonstrations, and descriptions of simpler exercises at an earlier stage in his career.

Concentration increases and the wandering attention of a child will be found to give place to interest and a desire to understand.

As to the games most suited for the purposes of physical training, one has only to consider those of one's own childhood to find a lesson in each. Throwing and catching a ball, cricket, and football all teach automatic action and co-ordination of movement. Such a simple game as "Two's and Three's" teaches a child to keep his eyes about him, and so on—the examples being too numerous to quote.

Dancing is of the greatest value, teaching, as it does, the value of an erect free carriage, and by giving exercise to every portion of the body by gentle, rhythmical movements.

The clothing to be worn during physical training should be loose, giving free play to the limbs and trunk without impeding movements by the voluminous nature of the garments. There should be no constricting bands such as belts, collars, and braces. Boys should wear jerseys or shirts, shorts and stockings; girls being clad in smocks and short skirts and stockings. A belt worn round the waist should only be sufficiently tight to keep the garments in position.

Shoes should be worn always, as they give the foot more freedom of movement, and also boots carry into the schoolroom or gymnasium, used for drill, the dust from the outside world, which cannot but have an irritating effect on the lungs when drawn into their cavities by the increased respiration of pupils undergoing instruction.
Physical training should be carried out in the open air, unless climatic conditions prevent this course, and, in this respect, it must be understood that mere cold is no obstruction, as exercise soon warms up both the instructor and his pupils. In wet and stormy weather a gymnasium or large classroom may be utilized, the great necessities for success being plenty of space for exercises, plenty of fresh air from open windows, and freedom from dust.

In addition to the benefits which physical training confers on the pupils through its direct effects on mind and body, this system of instruction is of great value in affording to the medical officers ample opportunities of observing pupils.

Standing well apart from his neighbours in drill formation a child may be examined from all angles; his whole demeanour is under scrutiny, and any physical defects show themselves in a marked degree.

Failure to respond to instruction may be caused by either mental or physical abnormality, and both of these aspects of a child's nature should ever be under consideration.

The medical officer must keep the eternal question "Why?" always before his eyes if he is to be successful when supervising training. Does this child fail owing to feeble mental power inherited from his forebears, or is his stupidity due to adenoids? Can that child hear the instructions given to him, or is his sight so poor that he cannot follow the demonstrations of the instructor? Why does this little girl upset the whole discipline of the class by her tricks? Is she simply naughty, or is she one of the mentally defective ill-balanced type, the breath of whose nostrils is cunning and rebellion?

These few examples of a medical officer's problems may serve to show that he must possess inestimable gifts—tact, sympathy, and infinite patience, without which no one can hope to win the confidence of a child.

No mention has been made in these all too sketchy remarks of physical exercises for the correction of physical defects, as these are matters which can be dealt with only by the expert; the great function of the school medical officer in this respect is to detect the fault so that it may be brought to the notice of those whose special training renders them competent to select the measures most likely to effect a cure.

A word of warning may be sounded on the subject of exercises with apparatus before bringing these notes to a close. Free exercises, i.e., exercises without apparatus, will be found to deal with all the requirements of school life, and unless well-trained and cautious instructors are available, exercises with apparatus are better left alone. Irreparable damage may be done to children by ill-advised exercises of this nature, as the strain thrown on their muscular structures may be much in excess of that which they have been designed to bear.