

with written expression. The responsibility, the pleasure, and the profit arising from the art of giving correct and vigorous oral expression to one's thoughts is shared too largely by the teacher and too little by the class. No matter how well pupils express themselves with pen, pencil, brush, or otherwise, their education must be considered one-sided and defective if what is in their mind cannot come freely and clearly off their tongue. Those schools are very few where the burden (a burden that can become a great pleasure) of questioning and answering is rather on the pupil than on the teacher. Only where there is a spirit of freedom and confidence will the natural curiosity of the child be called into play to probe the many problems of every subject. Only thus will the pupil leave the school with his intellectual curiosity stimulated, and not dulled, as it often is with the passing of the years.

*Arithmetic.*—Arithmetic is, on the whole, of satisfactory quality, but in too many schools a want of accuracy seems to be pronounced. Until teachers become more insistent on the necessity for accuracy, on which arithmetic is based, this fault will not tend to disappear. Intelligent treatment of the smaller numbers, regular drill in addition and multiplication tables, compiled as a result of this intelligent treatment, and continued throughout the classes up to the highest, will do much to minimize the risk of inaccuracy. It is to be feared that the custom that has grown up of recent years among examiners of practically condoning inaccuracy and seeking merit for mere method, unaccompanied by the all-necessary correctness of working, has done much to weaken the efforts of those who previously rightly evaluated the need for accuracy. Through the columns of the *Education Gazette* the attention of teachers has been drawn to this topic, and it is likely that an improvement will be noticeable in the coming year. Whether this inaccuracy is innate in a subject practised by juvenile minds it is difficult to determine, but the fact remains that arithmetic receives nominally 20 per cent. of the school time in all classes from Standard I to Standard VI (actually nearer 25 per cent. in many schools) and yet few classes make a showing commensurate with the time spent. The subject is certainly not a difficult one, and failure to achieve good results is due to one or more of the following causes:—

- (1.) Insufficient table practice in all classes from Standard I to Standard VI. In the primer classes concrete methods are used, and rightly so; but teachers do not seem to realize that when a child has gone through the mental process of learning, by means of beans, sticks, counters, &c., that 9 added to 5 make 14, he should know that 9 and 5 make 14, and not require to use his counters to obtain the result. Another weakness that is rather common is the absence of quick mechanical oral work in the four elementary rules—and more especially in addition—throughout all classes. This work is apt to be abandoned once Standard II is passed. If sound, quick, arithmetical calculations are to be made, constant practice in sums of steadily increasing difficulty is imperative. Too often we see Standard VI pupils making very simple calculations on paper instead of in their minds.
- (2.) In some schools in the lower classes quick oral mechanical work is sacrificed to problems. Problem work is good, but the time given to it is largely wasted unless the mechanical work upon which it is based is sound.
- (3.) Slovenly methods of teaching. There are many teachers who do not possess the mathematical sense of neat and orderly arrangement of the steps and parts of a sum. Their blackboard demonstrations lack continuity and clearness: they do not seem to see anything amiss in a wilderness of meaningless figures in what they call the "working columns," which sometimes extend to scraps of paper, or even the top of the desk—careless, untidy figures and bad writing are tolerated day after day. It is not surprising that pupils taught by these teachers show a low degree of accuracy. Teachers must realize that the setting-out in an intelligent manner of the various steps in the reasoning, coupled with neatness and pride in his work, will do much to train the pupil in habits which will be of inestimable value to him in later years.
- (4.) Allowing the class to work their sums by any method they can discover for themselves, instead of teaching them one, or occasionally two, sound methods. The teacher, and not the pupil, should be the best judge of the easiest and neatest solution. Such teachers claim that they are cultivating originality in their pupils.
- (5.) Insufficient practice in easy mechanical operations. It is in these that a great number of the mistakes occur—*e.g.*, easy multiplication (reducing pounds shillings and pence to pence), simple division (bringing pounds to tons), finding the numbers of days between given dates, &c. A few minutes' daily practice in tables and simple mechanical work would help to eliminate a considerable number of inaccuracies.
- (6.) Allowing and even encouraging the children to work much too slowly—to get five sums right when they might easily do ten or fifteen. Perhaps this has as much to do with causing inaccuracy as any other factor. Many of the pupils become mentally indolent and unobservant, because they are not required to work to the limit of their capacity. The brightest children, of course, suffer most in such cases.
- (7.) Large classes make it difficult to train each pupil to find his errors.
- (8.) Insufficient quick mental arithmetic in which short methods are not only taught but not encouraged.

These are some of the principal weaknesses found in our schools in the teaching of arithmetic.

*Geography.*—This subject is taught with intelligence and skill in the larger schools, but with indifferent success in the smaller ones. The poor results obtained in the latter schools are due in part to the lack of reading by the teacher, who considers that names of places, rivers, mountains, &c., are all that is required to be taught. The mathematical and physical aspects of the subject are still often divorced from the commercial and political, and the teaching becomes most uninteresting to both