

For the REVIEW]

ARITHMETIC IN GRADES THREE AND FOUR.

I doubt if there is anything new to be said on the subject of arithmetic in the lower grades. The importance of this subject in the school curriculum has never been questioned; Educational Journals and Teachers' Institutes have vied with one another in the endeavor to find out the best possible methods of presenting its difficulties to the various grades, and yet so long as inexperienced teachers are continually taking the places of experienced ones, and old problems are thus becoming new problems, it will be necessary to go on discussing the same old difficulties year after year.

Number work in grades one and two has quite recently been the subject of a paper in these pages, but perhaps a glance at some of the difficulties to be encountered in grades three and four, particularly grade four, may not be out of place at this time.

Pupils entering grade three are supposed to have covered the operations on numbers up to one hundred. The obvious thing, then, is to complete the tables of eleven and twelve, and drill thoroughly for accuracy:

When one stops to consider that on a knowledge of the tables hangs all the future work of division, both short and long, one does not doubt the value of the months of drill which teachers find so necessary at this stage.

The drill on the table of twelve may take the form of changing feet to inches, inches to feet, individual things to dozens and dozens to individual things. "How many dozen in a basket containing 117 eggs?" is a much more interesting problem than, how many twelves in 117. To compute how many inches in six feet and eleven inches seems to have raised the child to the dignity of working problems, and yet is only a drill on the table of twelve, with the added advantages of involving the process of addition.

To obtain rapidity and accuracy in addition and subtraction will require all the time that can possibly be spared in this grade, and I know of no better way of keeping children sharpened up in all matters of mental drill, than by taking places in a class. Inattentive pupils soon become attentive with the prospect before them of gravitating toward the foot, and

even the very slow ones sometimes taste the joys of "going up."

Grade three is pre-eminently a grade for drill, the continuation of grade two work, and the introduction of simple problems involving yards, feet, inches, pecks, bushels, dollars, etc.; but in grade four, one ventures out into new and untried fields. One can hardly enumerate the new work to be covered—multiplication of numbers involving six and seven digits, short division, long division, subtraction, factors, the use of the decimal point, finding averages, reading and writing numbers of twelve figures and upwards, Roman numerals, and problems of many kinds are expected to be taught in one short year; and the surprising thing is that with pupils of average ability, it can be done.

With accuracy in the tables secured in grade three, multiplication offers no particular difficulties, but how about the much-discussed subject of long division? Are its difficulties real or imaginary? My own opinion is that the difficulties of teaching long division have been very much over-estimated.

With no particular method in teaching the subject except the scriptural rule "line upon line, precept upon precept, here a little and there a little," one can obtain, I think, very satisfactory results.

Just before attacking this subject, it will be found helpful to use as mental arithmetic such questions as: How many yards of cloth at fifteen cents a yard can I buy for seventy-five cents? This paves the way for dividing by numbers larger than twelve, and proves a great help when judging how many times our divisor is going to be used. It is a good plan to begin to teach long division early in the school year—usually several weeks before Christmas. This gives even the slowest child a chance to become thoroughly acquainted with the process before the end of June. Moreover, there are so many practical questions involving long division, to be worked, that knowledge of it quite early in the term is really a necessity.

Here is one teacher's method of handling the subject: The first day, one or two simple questions are worked out with the class, the process being explained as clearly as possible, and the subject dismissed for the time. This is repeated for perhaps two weeks, the children actually doing the work while the teacher asks