

studied mainly by German children, there are left twenty-five different branches, with the number of pupils engaged in the study of each. These branches are mental arithmetic, written arithmetic, geography, grammar, history, algebra, physiology, physical geography, natural philosophy, geometry, trigonometry, surveying, chemistry, geology, botany, astronomy, book-keeping, natural history, mental philosophy, moral philosophy, rhetoric, logic, Latin, Greek, French.

The number of pupils pursuing these various branches is as follows: Mental arithmetic, 210,036; written arithmetic, 247,552; geography, 156,851; grammar, 96,553; the twenty-one other branches, 32,746. This gives a total of 743,138.

The smallness of this total is surprising. If the pupils were studying each two branches, on the average, the total would have been twice the number of pupils enrolled; that is, 1,456,980, instead of 743,738. Making all due allowance for the number of children that are too young to learn lessons of any kind, one cannot but be surprised at the results stated above. A very large number of the pupils in the public schools are studying each but one study.

If we notice the distribution of the pupils among these various studies, we are still more surprised. Counting mental arithmetic and written arithmetic as one branch, we find that the twenty-five branches mentioned above occupied the attention of the pupils in the public schools in the following proportions: Arithmetic, 61 per cent.; geography, 21; grammar, 13; the twenty-one other branches, 5. Could anything be more astounding? Here are twenty-one branches of knowledge, nearly every one of which is considered indispensable to a well-educated man, to all of which is given only one-twelfth the attention that is paid to arithmetic alone! If other States show statistics like these from Ohio, the assertion which the writer made before the National Association of Teachers at Indianapolis in 1866, was fully warranted by the facts: "That in the case of a majority of the lads in the United States, time enough was *wasted* in the study of arithmetic to give a very fair knowledge of Latin."

Unquestionably, there is a large number of pupils in our schools that study nothing but arithmetic. Some take geography in addition, and a few others study grammar also. In our high schools, and to a limited extent in our grammar schools, the range is wider; but in very many of the ungraded schools the education obtained is most meagre and narrow, as our statistics show.

In arranging a course of study, two questions need to be considered with regard to each branch that is to be introduced. The first is, How much time can be devoted to it? The second is, How can that time be most profitably employed? Besides reading, writing, spelling, etc., and besides the exercises in declamation, composition, vocal music, etc., there are, say, twenty-five branches of knowledge to which it is desirable for the pupil to attend, and a fair knowledge of which not a few do obtain in the twelve years from six or eight to eighteen or twenty. But to accomplish this no one study must receive a disproportionate amount of time. The work must be properly laid out; the field must be carefully surveyed. It is evident that in the mass of our schools, arithmetic has monopolized the ground. Relatively to other branches, this one is largely in excess. With any just regard to the claims of the twenty and odd departments of knowledge whose aggregate time is *five*, while that of arithmetic is *sixty-one*, this last should not occupy the pupils in our schools more than one-third of the time which it now receives.

But if a proper regard to other studies makes it imperative on us to reduce the amount of time now bestowed on arithmetic, the duty is not less manifest from a consideration of the pupil's attainment in arithmetic itself. In answer to the second question propounded above, How can the time which may properly be devoted to a particular study be spent most advantageously? it may be said that so far as arithmetic is concerned, a part of the time should be given to something else. Too much time is spent on arithmetic absolutely, as well as relatively. Not

only is time devoted to it which ought to be given to other things, it is also studied too much without reference to other branches.

Our public schools are divided into two classes. Those of one class have the same teachers through the year; they are graded schools. In these arithmetic is taught systematically and continuously, till the pupil is supposed to be familiar with it. Usually, the pupil goes through a number of books on the subject. He goes over the same ground again and again, though not with the same book or in the same grade. In this way an undue proportion of time is given to this branch. Time is also wasted by keeping the pupil at the higher parts of it, when he has not sufficient maturity of years to enable him to comprehend them.

In the ungraded schools the loss arises in a different way. The pupil does not usually study so many arithmetical works in succession, but he goes over the same ground again and again in the same book. In many cases the pupil attends school three or four months in the winter only. During the summer he forgets partially what he had learned the previous winter, and on the commencement of the next school he begins back. Probably there are thousands of lads in the State who have studied arithmetic for half-a-dozen winters in succession, and yet have never finished the book.

The evil in the ungraded school could be remedied by the teacher more easily than in the graded one. In the latter, the teacher must conform to the course, substantially, though the course may be a bad one. But in an ungraded school the teacher should not allow the pupils to repeat the same work year after year. If the pupil wished to go back, because he had forgotten, still he could be taken rapidly along. In a multitude of cases it would be better to drop the arithmetic entirely for the winter, and substitute something else. This, however, would be regarded as an innovation. Arithmetic is almost sacred in the eyes of many parents. Algebra, geometry, natural philosophy, they know nothing about, and they do not believe they will be of any use to their boys, who expect to be farmers, or business men of some sort.

The most of our schools are narrow. They offer scarcely any variety. Reading, spelling, arithmetic—these are the staples. Sometimes a little geography is added, and more rarely a little grammar. Parents and children seem hardly to have dreamed of the possibility of doing anything outside of this meagre range. And thousands of teachers, I fear, are as ignorant as parents; or, if not absolutely ignorant, have not force sufficient to enlarge the course.

In the graded schools the difficulty is different. The course of study, as a whole, may be broad enough; but usually that part of it below the high school is narrow. The pupil is expected to pass an examination well-nigh perfect in arithmetic, geography, and grammar before he can enter the high school. In order to do this he is compelled to drill and drill on these; whereas, if he could have dropped them, at least arithmetic, and taken elementary algebra in place, and after an interval returned to his arithmetic, he would in a much shorter time have obtained a much better knowledge of arithmetic, and secured very considerable familiarity with algebra in addition.

Regarding, then, the knowledge of arithmetic alone, we ought to abridge the amount of time given to it. When the ground rules have been so well learned that the pupil can add, subtract, multiply, and divide with accuracy and rapidity, and to these have been added denominate numbers, reduction, and fractions, let the pupil take up elementary algebra. The study of this will help him amazingly when he comes back to arithmetic. He will understand better the portions which he has already studied, and his progress in interest, proportion, etc., etc., will be facilitated to an extent almost incredible to one who is ignorant of algebra.

The range of studies in our winter schools ought to be increased. The schools of the State will never approximate to the degree of excellence which they ought to attain, till this is