possible for him to find any intrinsic interest. As soon as he has mastered the symbols which represent words we set him to acquire all sorts of second-hand knowledge; we give him oral lessons, in which we too frequently throw away every opportunity for developing his intelligence; we collect his facts for him; we classify them for him; we name them for him; we define for him the names we employ; we reason from the facts for him; in short, we do everything that is likely to render him stupid for life. It would be quite as reasonable to expect that he would grow physically strong, if we ate and drank and took exercise for him, while he looked quietly on. We get rid of his brains, as somebody said, to make room for his learning; we crush out his native intelligence under pretence of developing it; we load him with knowledge, but prevent him from acquiring the power of making a wise use of it.

The transition from the school of Nature to our so-called schools is at present too abrupt. The infants' school teacher should pay greater attention to children's instincts and natural tastes, and use them to a much larger extent as instruments of education. Children learn more from things than from words, and should obviously be first taught through things; they learn more quickly by doing things than by hearing about them, and action should enter, therefore, very largely into their school occupations. Kindergarten enthusiasts would not allow children to learn to read and write until they were seven or eight years of age. We would not wait so long as that; but we are confident that children would gain in intelligence, in the long run, if we were not in such a hurry to teach them the three R's.

Children are made stupid in the later stages of education by burdening their memory with knowledge which they have never digested, and are consequently unable to assimilate. Knowledge of some sort must, of course, be acquired in school; but it should be mainly such knowledge as will be instrumental in acquiring more, when the mind will be riper to receive it, and the value of it will be more keenly appreciated. The new code will confer no greater benefit upon the rising generation than that which is involved in the increased importance it attaches to intelligence; but it is useless to insist on intelligence so long as demands are made for indigestible knowledge that stifles intelligence. If our children are to retain the spontaneous mental activity of infancy; if their school life is to be bright, joyous and natural; if they are to escape becoming "bookful blockheads," we must care less for what they know, than for what they can do; we must be content to wait till they have reached a suitable age before we impart to them knowledge which at present only serves to render them more stupid. Childhood is the age for acquiring mental tools and learning how to use them, for forming healthy tastes and learning how they are to be gratified. It is not without its appetite for knowledge; and we are far from suggesting that this appetite should not be ministered to; but let us supply it with the kind of knowledge it spontaneously asks for; when it asks for bread, let us not give it a stone; and let us not forget that mental development is of far greater importance than mere knowledge. Knowledge may be forgotten; all knowledge acquired in early life, unless it be constantly used, is almost sure to be forgotten; but intellectual power is a possession that cannot be lost. Nay it will go on increasing.—*The School Guardian* (Eng.)

At the semi-annual meeting of the N. E. Assoc. of Supts., held in Boston, Friday, May 25th., the subject of arithmetic in Grammar Schools was discussed by Supt. G. T. Fletcher, of Maine, as follows:—

"The average American citizen needs to understand *thoroughly* the application of notation, numeration, addition, subtraction, multiplication, and division, to integers, decimals, and common fractions, to be familiar with the processes of reduction and mensuration, and the application of the principles of percentage to business transactions. These subjects comprehend nearly all that is of practical use in arithmetic. For mental discipline the proportions and roots may be studied. A large percentage of our pupils go from the grammar school directly to life's duties; hence, what is there learned should be well learned. Many subjects treated in arithmetical text-books are of no practicable value to most pupils. Non-essentials should be eliminated, and what remains be mastered. Arithmetic is valuable for mental discipline, but this can be secured only through work. The blackboard has wrought some harm as well as much good. There is too much chalk-work and too little brain-work. The pupil should be taught to *think* before doing, and to prove his work. The tendency of answers, printed with the problems, is to destroy the pupil's confidence in his own work outside of the book. More attention must be given to clear analysis, and mental arithmetic should be taken with written. Much that is well taught will be held as mere facts in memory, but, if thoroughly learned, it can be used in practice, and as the pupil's mental powers mature it will be understood. The reasoning powers cannot be forced. There must be persistent drill in the fundamental rules. Fractions should be presented by illustration, and the terms, relations, and changes in form and values made clear. Many problems should be given,—first, to illustrate principle, second, to afford the practice necessary to impress the principles and methods upon the mind. They should not be too complex, confusing the mind. Reduce the subject matter of most of the text-books from a third to a half; select wisely, and teach thoroughly, keeping these objects in view as the objects to be attained,—to obtain a knowledge of the properties of numbers; to secure skill in their application to business; to give practice in mathematical reasoning; and to attain precision in the use of language."

ARITHMETICAL MATCHES.

The September number of the *Journal* contained an interesting article from the *Pacific School Journal*, describing an *adding match*. Such exercises tend to secure *accuracy* and *celerity* in arithmetical work, as forty-five years of school-room experience has proved to the writer of this article. The boys sometimes call them "single skull races."

An example of work in multiplying that many of my pupils have worked correctly, with as much alacrity as they would play a game of ball, is to find the product of—

9,582,653,477,982,169
Multiplied by 8,795,631,824,673,912

The ans'r is f'nd to be 84,285,491,895,672,114,131,600,175,475,128

The practical worth of such work is more that the oral reciting of the *multiplication table* as many times as there are units in the product.

Another good example for a multiplying match is to find the twenty-seventh power of 8. Surely a boy or girl, with slate and pencil, can do what Daniel McCartney, who was almost blind, did mentally. He found the required power to be—

2,417,851,639,229,258,349,412,352.

Pupils who know all about cube root will like to find the cube root of—

123,456,789,123,456,789,123,456,789.

It will be interesting to know if the number 216,895,848,347 is prime, or if compound, what are all the factors?—N. B. Webster, in *Virginia Educational Journal*.