

nature if we use the term "apples" merely to impress upon the pupil the fact that one apple remains, it appears to me we are to a certain extent misleading him and perverting the use of the concrete. Is it not for us to keep before him the five apples brought into comparison with the four apples exceed the four apples by one apple, for by such means the co-ordinating and reasoning faculties become aware that the difference between the eternal verities of five units and four units is one unit? Of course, after that, drill must come, and drill upon drill.

If, however, some such method is not pursued, and problems in terms of the concrete are given to children with each process duly ticketed, instruction becomes more mechanical than it could possibly under the use of the abstract. The children are experts with formula, but deficient in the reasoning power. Are there not plenty of simple problems in which, dispensing with formula, the budding reasoner might have ground for exercise?

"If three-fourths of an acre of land is worth \$120, what will two thirds of an acre be worth?" Why do the advanced pupils stumble over such a problem? Why will they insist that one-fourth of an acre will cost one-fourth of \$120? Lack of power to analyze. If you teach children to analyze you teach them to reason. Attempts to analyze subjects are as common among children as adults. It is a mistake to suppose this is a product of age or a high civilization. Savages are as expert analysts in some respects as the most highly educated genius. Their premises are wrong in most cases, that is all. But in arithmetic, children have the premises given them. Let them follow their natural instincts and analyze for themselves. Don't for a moment imagine because

you give them problems in concrete terms you are assisting their reason by telling them such problems are to be solved by certain formula. There is no royal road to arithmetic any more than any other branch of knowledge, and just as the tired muscle is the sign of exercise, and increasing strength, so the tired brain, within limits, is the sign of increasing mental strength.

For a limbering up, a sort of general oiling of the thinking apparatus, I think there has never been anything in our schools equal to the old intellectual arithmetic. In using it the pupil had to cut from the rule of thumb methods and think. In the oral work nimbleness was given; in the written, power of expression and analysis.

Mental arithmetic is a good thing. By all means have plenty of exercise in it. Never for a moment, however, can I conceive that a child can get along, at first, without having the idea visible before it. Children's imaginations are vivid, but they are vivid only in proportion as they are brought more and more into contact with the outside world. That impression made through the senses of both sight and hearing must be deeper and more lasting than the one made only through the sense of hearing. I refer to the use of written work.

We are living in an age of changes, and our primary grades are at present in a state of transition. Arithmetic, mental, purely mental, is a very good thing for a bright pupil; he enjoys it, he is always ready with his answer before any one else in the class. But what about poor little Johnnie, who is all right but slow, oh! so slow; a nice little writer, a good little reader, a good little mathematician, but, oh, how long before the idea takes root, but when once rooted, firmly