

EDUCATION.

ARITHMETIC.

When the Almighty Power created all
And spanned with compass this terrestrial ball,
Its vast foundations then by Him were laid
By weight, and measure, and by Wisdom's aid.

Arithmetic has a special claim on every one. Who needs not a knowledge of numbers? What business can be carried on without them? Are they not the great instruments by which the world moves on, and without which science and art could not be? The study of numbers has an excellent effect on the mind. No one can make arithmetic a study without variously invigorating his faculties. Some studies have the faculties little moved, little affected. Arithmetic, intelligently taught, provides the mind with a healthy stimulus to diligence and activity at the very outset of its study. And seldom or never does the knowledge acquired, and the practice to which the infinitely varied vocations of life demand, lie on the memory as a burden—useless to its possessor. Its cultivation, either as a science or as an art, is, indeed, one of the best and most effective instruments for vanquishing mental inertness and rousing the mind to action—giving it direction and elasticity—enabling it to turn and exert its powers in ways without number.

Nor is it a branch of education which lies beyond even the humblest mind. Weak, indeed, must the mind be, and its power to comprehend, which cannot be taught a knowledge of numbers. The wisdom it gives, and the practice for which it prepares act on the mind as gravitation does on matter,—ever leading it to something positive on which the mind can rest,—to realities, which bid defiance to contradiction. Its conclusions work no delusions;—it leads the mind into no obscure subtleties. Every thing within its reach is plainly and conclusively demonstrated. Its processes unfold and lead to absolute results. Its training ensues and corroborates the mind to constant continuous onward effort,—tends to fortify the mind against credulity and scepticism, and gives strength and clearness to the understanding. It produces no habit that is valueless. Its lessons belong all to the useful and practical, and offers wholesome food to every faculty of the mind. It is the world's great business branch. And its value, as I have said, in developing, training, quickening, and consolidating the powers of the mind, fully equals that of any other branch of education.

To develop its principles as a science, to show the infinitely varied application of these in computations; the varied powers of numbers in giving results, and how best to employ them in the multifarious affairs of life, are subjects which most specially concerns every educator. And he who studies them most, and how most intelligently and profitably to lead others to have a thorough practical knowledge of their application must ever be classed with the most valuable members of society.

We know no period in man's history, when education occupied so much of public attention, or was so deeply considered by every rank and by every class, as the present. The man of birth and the man of fortune; the man of genius and the man of humble toil, are alike interested in its advancement,—seeking the benefits of its results. But I view it not as Lock's marble beauties brought out by art, but as the unfolders, the developers of the living man, bringing to light the wonders of his being, the powers engrafted on his spirit, helping to give them a health, activity, skill and wisdom which can never perish, but become the grand initial unfoldings of an ever advancing intelligence, reflecting the image of his maker.

To this great business branch, as indispensable to the humblest mechanic, as to the erudite mathematician; to the tiller of the soil, in laying off a field or measuring a ditch, as to the astronomer in calculating the motions and distances of worlds, I beg to direct attention, and give a few suggestive hints in teaching this part of education.

Within the last few years much has been done to improve the methods of teaching arithmetic; but much more has to be done to make it sufficiently rational, interesting and profitable, to reach a higher standard of perfection.

The methods employed in commencing to initiate children in the nature, power and use of figures are perhaps the most defective part of arithmetical teaching.

No part of the education of a child is encompassed with so many difficulties to him; nor requires, on the part of the educator, more skill, more tact, more knowledge of the working of the mind in its immature untrained state, and just setting out on the career of

efforts, altogether new, and restricted to specific objects. His ideas then are few and vague; his capacity to comprehend, and ability to use his faculties, are little; his efforts fitful and volatile; and too immature for much continued effort. All this renders it a delicate and most difficult task, when, how, and at what point to commence.

Commence the education of a child every way favourable to his growing capabilities, to the natural development of the powers of his mind, to the generation of those mental habits, necessarily to be called forth and invigorated, and in a way interesting and winning; and the work of education from the beginning will be comparatively easy and pleasant, and the teacher will be pretty sure of success.

But let any teacher miss the true way to deal with his young neophyte; let him begin to teach, not considering where to begin or how to begin, what his initial steps, to suit the weak expanding mind, should be; how to bring before it in the simplest and most taking form the elements of truths; how most effectually to work them into his mind, and there to take a deep hold, and so to make the whole of his first training sure and effectually preparatory for successful onward progress,—and most certainly it will render his own labour most difficult, and that of his pupil, difficult, barren, and repulsive.

Teachers, do you wish to be successful in your labours? Then study well how to begin a child's education. Do you desire to make school work easy and interesting to him? Then make its first beginnings every way suited to his infantile capacity. Are you in earnest in the work? Then—slight not the advice—be careful how first to deal with the faculties of a rational being, placed under you, to have these exercised and developed—strengthened, and enriched with truth, that ultimately they may reach that manhood of maturity which will make them a blessing to himself and to the community into which his lot may be cast. Do you view education in its beginnings, a training of the mind that is to broaden, and deepen, and enlarge at every step of advance? Oh, then, lay your foundation materials deep and sure. As a right-minded—true-hearted educator—as prudent as earnest in the work committed to you—prove yourself a wise foundation-layer. Remember that every act you do, every word you utter, or example you set, in educating your scholar—especially at the outset of his school-life, carries with it an influence, and extends over, and gives a colour, less or more to the whole of his school-life.

In commencing to teach a child a knowledge of numbers:—

1. Remember your pupil is but in the childhood of his schooling: and as such should he be dealt with.
2. Make it a special study, how and at what point to commence.
3. Endeavour to so address his mind as to quicken it to self-mobility.
4. Work on his mind till you have made thereon a positive, enhanced effect. But see that this is through the understanding.
5. See that your voice so reaches his ear, and your illustrations and examples so meet his eye, as to reach the understanding, and make impressions correct and permanent. It is thus that the mind is inspired to effort—that its action receives spring—and a direct-ive spur.
6. Advance from step to step as each is understood—and because understood—and his mind is suitably prepared for the next. Be sure that you teach and train till you are sure that what you have taught is annexed to the understanding, and so made a sure stepping-stone to the next gradation. Arithmetic all over presents us with realities. See then that the effects of every part of your teaching bear the impressions of realities,—rooted in the understanding.
7. As you proceed, test results. Trace the developments of his mind—to what degree it is passing out of ignorance into light—comprehending what before was to it incomprehensible—able to take in truths, which at first it could not grasp,—and understanding processes and principles in their multifarious applications, by its own reflections and reasonings.

Attention to these suggestions will be found of value.

8. Never lose sight of this,—that a child, to teach him rationally and successfully, has to be taught what he does not know, by what he does know; and that the knowledge acquired is the most suitable preparatory for a farther advance.

9. In his first gradations, never hurry a child onwards from one to another. By daily reviewing what is gone over—and thus familiarizing his mind with what has been taught him, time is given to digest what he gets, till they become in his mind familiar and ready truisms—always at his command.

10. Guard against making any incorrect, misty impression on the mind. Every such impression made, or allowed to remain,