

cheery method of explanation being an aid to which children are really entitled in meeting new and unknown difficulties. Hunting out together in class the number of aorists, perfects, imperfects, etc., in a given passage is often a pleasant relaxation from the actual head work of memorizing or repetition.

Irreverence and flippancy in all its forms should be strictly discouraged, as the uniform index of a shallow mind, and the cloak of ignorance vaunting itself beneath a fancied and fictitious superiority. The law holds good in every department of knowledge that great thinkers receive back the instinctive reverence of childhood, only deepened and intensified by the manifold experience of varied knowledge. Thus we are led into the development of that reverence for purity, for holiness, for God, which is the crown and stay of human character. After the brilliant and exhaustive way in which the subject was treated from the presidential chair of this association by Mr. Archibald MacMurphy some two years ago, and the emphatic action taken by the association thereon, in advocating the efficient use of the Bible in schools, as well as that of smaller associations of teachers in various parts of the Province, it will be quite unnecessary for me to dwell upon the supreme importance of Bible study as the best of all studies to the formation of a devout and noble character. My own views on this matter have been repeatedly expressed, and are well known both to the public and the educational authorities. I am sure that the vast, the overwhelming majority of the people of the Province were profoundly grateful for the unmistakable testimony at that time given by this great association, that the heart of the Teachers' Association of Ontario beats sound upon this great question, and that you thoroughly endorsed the dictum then laid down, I think by your president, that a man who could not or would not teach the Bible was not fit to teach children at all.

It may be better for me, instead of speaking further upon a subject upon which most happily no division of opinion in this body exists, to offer a few remarks in reference to the volume of Biblical selections lately issued by the Minister of Education. Apart from the great advance made by the recognition of the Holy Scriptures as an integral and necessary part of our educational system, much of the educational value of the book appears to me to lie in its character as a volume of Biblical selections. We are thus forced to recognize the composite character of that Library of Revelation, including a literature extending over thousands of years, and the historical character of which it seems to me so important to teach. By means of this selection our scholars can hardly fail to recognize the gradual development of the Kingdom of God from the call of Abraham, as it came successively in contact with the varied civilizations of Egypt, of Phœnicia, of Assyria, of Babylon, and of Persia; how by the continuous demonstration of the inability of the chosen people to realize their destiny by themselves, the way was being gradually prepared for the coming of the Christ, whilst the hopes and fears and the devotional aspiration of each successive crisis are enshrined in the literature of the period, of which the most striking passages have been selected. Thus the student is led up to behold the Person and to study the teaching of our Lord in all their magic sublimity and tenderness, yet so accurately fulfilling the hopes of the generations of the past, and regenerating the future by the foundation of the Christian Church rising majestically under the work and teaching of apostolic builders. It certainly seems to me that as our youth has thus unfolded before it in each generation the grand central panorama of all history, it will be best qualified to probe by its searching analysis of human character, so pure and honest, yet withal permeated with the quickening breath of a higher and nobler life, or to receive its more distinctly dogmatic and spiritual teachings. Such teachings must, undoubtedly, in

the present circumstances of the country, be left to the authorized spiritual guides of the various religious bodies, provision for which is so carefully made in the new regulations. One suggestion I would venture to make: it would be a great convenience to clergy who have several schools in their parishes if provision were made by authority that the same readings should be used at the same time in all the schools.

I see nothing whatever in the way of the use of a small handbook to the Selections, to be used either by the teacher alone or to be placed in the hands of the children, giving supplementary information with regard to the several selections as may be necessary for the complete understanding of their meaning and setting from an historical point of view. Nor do I believe that if such a book were edited in the same spirit as the volumes of the Cambridge Bible for Schools series, that any difficulty would be raised to its adoption. Of one thing I feel certain, that it only needs the subject to be thoroughly understood and placed fairly before them, and that then the Christian people of this Province will not long brook any obstacle which really stands in the way of the imparting throughout our educational system of a wise and liberal but at the same time Christian education; and that they are thoroughly in earnest in demanding that the education given to their children shall not merely fit them for the duties of this life, but shall also, as far as education can do so, mould their characters for God, for righteousness, and for truth.

C. W. E. Bony.

#### ELEMENTARY EXPERIMENTAL CHEMISTRY.—II.

In the last Number we showed how the principal characteristics of chemical affinity may be deduced experimentally. In the present Number we shall investigate some of the fundamental propositions of chemical science.

##### Indestructibility of Matter.

**Exp. 2.** Take a piece of phosphorus about as large as a small pea, put it into a little water in a test-tube, and gently heat till it melts. Place the point of a thin wire in it and let it cool. The phosphorus will then be supported on the end of the wire. Bend the lower end of the wire into a spiral so that it will stand upright. Select a thin, light beaker, and a large, thin, and light flask of about 1500 cubic centimetres (about 2½ pints capacity.) Put about 400 cubic centimetres ( $\frac{2}{3}$  of a pint) of water, colored blue with litmus, into the beaker, place the wire in it, and invert the flask over the phosphorus with its mouth reaching almost to the bottom of the colored water. In this condition place the whole apparatus on a pair of scales and exactly balance it by weights in the other pan. In about forty-eight hours we shall find that the water has risen into the flask as if part of the air had been annihilated, and its color has changed from blue to red. The phosphorus has evidently wasted away as if part of its substance also had been destroyed. Nevertheless the apparatus weighs exactly as much as at first, showing that no loss can be detected. And yet, if the substance which has disappeared had been destroyed, the apparatus would weigh at least .48 of a gram less, which a good common balance would easily detect. What has taken place is this: the phosphorus has combined with the oxygen, which is one of the constituents of the air in the flask. The compound formed has been absorbed by the water, and remains unseen, but indicates its presence by changing the color of the water. This new substance contains all the oxygen and all the phosphorus which seemed to have been lost.

Hence we infer that *No loss of matter occurs in Chemical Combination.*

**Exp. 12.** Put a 2.16 grams of mercuric oxide into a test-tube, not too thin, which is provided with a bent tube, reaching just through the cork of a flask of about 200 cubic centimetres capacity. Let the flask be joined to another of equal size, by means of a bent tube which reaches almost to its bottom, but only just through the cork of the other. The first flask is to be nearly or quite full of water, and must be quite air-tight at the cork, whilst the second is empty and loosely corked. Place the whole apparatus, which must