

venience disappears if we adopt the plan of taking as the combining weight of a compound gas that weight which is equal in volume to two parts by weight of hydrogen. This gives a perfectly uniform method of fixing the combining weights of compound gases; and it leads to a similar uniformity in choosing the combining weights of those elements which form gaseous or volatile compounds. Let the smallest weight of any element found in the combining weight of a gaseous compound be taken as the combining weight of that element. I have been thus particular in order to show that the most general method at our command for determining atomic weights may be taught without any reference to the constitution of matter. The same is true of the law of atomic heat; and, indeed, the case is here much simpler. It is only necessary to point out that the combining weights of most elements multiplied by their specific heats give numbers closely approximating to 6.3 or some simple multiple or submultiple of this, and that the product is 6. + when the combining weights are those fixed by the method just described. The thought is at once suggested, let the combining weights be so chosen as to give the product 6. + for all.

There is a beautiful simplicity about the molecular theory of gases and its use in determining molecular and atomic weights—a simplicity which tempts one to introduce it as early as possible. But its introduction into elementary chemistry masks or altogether conceals the fact that the atomic weights determined by its use are, after all, only combining weights chosen in a uniform way, and without any necessary reference to the constitution of matter. Also, its use as a theoretical basis for elementary chemistry unfits the mind to receive at a later stage a complete and logical development of the atomic and

molecular theories. There is the difficulty of arousing the attention to a reconsideration.

The chemistry course for Form III. follows logically that for Form II.; but an outline of Mendeléeff's classification at this stage of the subject is, in my opinion, quite out of place. To see the truth of this it is only necessary to recall that Mendeléeff's (Newlands') classification is based upon an exhaustive study of the chemical and physical properties of all the elements. It is the highest generalization of chemistry, and can have no meaning for the junior student. Developed and refined by the imaginative genius of Crookes, it may do for chemistry what the Evolution Theory has done for biology; but it can never, I think, form a proper basis for the study of elementary chemistry. It is sufficient at this stage to prepare for it by dwelling upon those remarkable resemblances and serial relations among the elements which pointed the way to its discovery.

To sum up, I think that in the teaching of elementary science we should return to a subject-matter better suited to the age of our pupils, and that in the treatment of this subject-matter we should study to lead them along at a rate more nearly approaching that of their mental development.

[NOTE.—In the discussion which followed the reading of this paper I found it necessary to point out that the criticism was directed against the curricula as given in the Regulations, and not against the methods used by the science masters. With your permission, Mr. Editor, I shall add to this criticism a quotation from the Preface to Remsen's "Elements of Chemistry": "Chemical theories are treated in a subordinate way, as it is believed that the attention should first be directed to the simpler facts of the subject, and the methods by