

not only one but many groups of chemical compounds foreshadowed the manufacture commercially of a great range of natural products; how petroleum—true petroleum such as we extract from the earth—could be made directly from acetylene gas; how it could be transformed by adding a molecule of nitrogen into prussic acid, and that from this most potent of all poisons other groups of chemicals could be manufactured. From the entire range of coal tar products with their almost infinite possibilities, such as the aniline dyes and medicines, other industrial products were made possible by the dynamics of the new chemistry. He stated, as the latest news from America, more interesting and valuable far than even the possible solution of the Venezuelan question, how the probabilities were that by the cheap power of Niagara calcium carbide might be made at a cost not to exceed £5 per ton, with still further probabilities in the reduction of the cost in the future. Leaving the matter of acetylene gas, Professor Dewar gave us still further instruction, illustrating by experiments all the possibilities of the new high temperature chemistry. He showed us a new chemical product which he had just received from the United States, carborundum, harder almost than the diamond, the crystalline carbide of silicon, the base of flint, a product as much harder than flint as flint is harder than common window glass, possibly even more than that—a new abrasive by which grinding and polishing of the most refractory metals is now made easy.

One of the most curious experiments he tried was the fusing of a mass of copper in a crucible. This was quickly accomplished by means of the electric furnace; to that was added large pieces of cold aluminium. One would suppose that the introduction of a cold metal to a mass of melted copper would have frozen it up, so to speak; that it would at least have extracted the heat; but, on the contrary, the more of the cold aluminium the professor added to the molten copper the hotter it got, till it glowed with an intensity even greater than when it was extracted from the fervent embrace of the electric arc. In the union of the alloy aluminium and copper a fierce potentiality of heat was actually developed greater than that of the melted copper. *Queer, isn't it?*

Another exquisite experiment with which he delighted our eyes was the action of the electric spark on acetylene gas. Although the terrific heat of 3,600 deg. is required to manufacture the substance from which this gas is made, the gas when produced will not stand any such temperature at all. In a glass vessel filled with acetylene he introduced a little electric arc, throwing the result upon a screen by means of a lens. As the spark passed from the one pole to the other through the gas, instantly were formed great particles of carbon, floating in grotesque shapes in the pure gas till

the holder was filled with the feathery filaments, which rapidly formed a carbon bridge between the poles, and carried the current without forming a spark. He showed us also the acetylene gas forming a solid, which he extracted from the tube in which it was made, a substance very like paraffin wax. Curiously enough, unless great pressure is applied it will not assume a liquid form, but under the atmospheric pressure freezes directly from the gas before becoming liquid. This frozen acetylene he threw into a vat of water and lighted it with a taper, when it burned with a brilliant but smoky flame until consumed. The wonders of the elements which go to make up our material world are more fascinating matters than any possible volume of fiction. Our sense of the marvellous is not only developed, but gratified to the fullest extent. Each month we live in this scientific age adds not only to our actual knowledge, but to the possibilities of acquiring knowledge. It seems as though we were within easy reach already of grasping the last of Nature's laws, and he is bold, indeed, who will doubt that the great problem of life and existence is not possible of solution by the exact sciences.—*Manufacturing Chemist.*

The Smatterer in Pharmacy.

By WILLIAM B. THOMPSON.

The dictionary defines a "smattering fellow" as one who does nothing thoroughly. We meet with many types of this class in our daily observations, and we notice that trades and occupations and arts are much afflicted with the genus. In many cases "botchy" work does and will pass by, escaping a close, rather than a critical, inspection; but in any and all labor and skill which demand thoroughness this individual is never "in it" with credit. This fact is more especially true of an occupation which is conspicuously prominent in painstaking care, in accuracy, in nicety, and in exactness of detail, such as is that of pharmacy. All these general attributes of habit constitute so important a part of the daily practice that they can hardly be said to be even secondary or subordinate to the prime essentials of education, *i.e.*, knowledge and skill. The character and individuality of a man is always clearly discerned in his work, and this, while it may fail to elicit the expressed commendation of some, does not fail of being observed by others. For an instance, let us take that bottle of medicine, which is to be found in every household in the land—whether it be the special prescription or some familiar domestic remedy—it should come to the hands of the sick bearing all the external evidences, not only of responsible authenticity, but an absolute correctness in the individual work and care which prepared it. This is the education of which we have spoken, and which the "smatterer" never has, and can, therefore, never exercise. Let us criticize this bottle yet

further. The sensible property of the contents, not being positive, may be obscure to us, but we will assume that it is a correct compound. First, observe the cork; is it well adapted? size just what it should be? has some regard been paid to its quality, and to the fact that its use will be extended for some time? or has an attempt been made to utilize one too large, or too small, with a result that is likely to provoke both patience and patient? Note next the general neatness, trimming, and superscription on the label—is the handwriting what it should *especially* be—clear, distinct, perspicuous, filling the allotted blank space with lines shapely written? Is there no bad English in it, and possibly no bad grammar? Is date and numerical notation distinct? Now, as to the bottle itself, is the surface cleanly and all cracks and abrasions carefully avoided?

This simple illustration of the detail which pertains to the duty of the exact as well as the careless man may appear to some of your readers trifling, and in others excite but a derisive smile; but instances abound to prove that little things are equally the stamps of character, and that attention to these has led to business fame and fortune. If a high standard of accuracy becomes a habitual practice, then, indeed, we have an apothecary worthy of the name—the fame will assuredly follow. This is the education of which we speak, and which the "smatterer," not possessing, can never exercise. It belongs wholly and exclusively to the practice and experience of good systematic shop-teaching. It can *never* be acquired under any college instruction. It is vain, delusive, and deceptive to expect it or promise it. We have only casually referred to the prime essential of the apothecary's education, namely, that of its comprehensive and varied character, with skill and art in a high degree, which can be attained only by the experience and study of years. A good foundation for it, however, must be laid in youth. The man of science ought, perforce, to be a man of liberal education. The apothecary of *fact* ought to be as well informed as the apothecary of *fiction*. For we are told of a certain apothecary in fiction whose education was the means of his fortune and his preferment. Thackeray introduces the hero of his novel, John Fendennis, as the little apothecary who, although he sold a *pennyworth* of salts and a cake of fragrant Windsor soap to the casual customer, as well as brown paper plaster to the farmer's wife, yet was a gentleman of good education, gaining the esteem of all his patrons, and the confidence of the wealthy and influential. This man ultimately, according to the well-told story, became very comfortable in his circumstances, if not actually rich — *nous verrons!* — *Alumni Report, O.C.P.*

Resorcin and spirits nitrous ether are incompatible.