plied in amounts greater than we have been able to squander.

Let us try another illustration. The German intellect is farthest removed from the Irish—the first is conscious of every step in reasoning; the second leaps over a dozen and often misses its way. The power of leaping and flying are glorious powers. One may go direct to the top of the mountain without touching the sloughs below. The German crawls through the sloughs, but he leaves behind him a good substantial road, which only requires to be illuminated to become the much desired object—a king's highway to learning. It would be exceedingly pleasant to follow this out into the history of science, and to observe what flashes of light have gone from various nations; but it would equally surprise us to see that the German will not be behind even if he have nothing to collect for his fire but brushwood; he will heap it up until it becomes grand by quantity.

And how shall we apply these remarks to ourselves? If we differ from the Germans, why should we imitate their modes of education? There is a mode of training every animal, but not one mode for all. Some will say, then, if the German is so fond of details, let him be fed upon them; if we like conclusions, let us have them, and waste no time. But this conclusion is too hasty. It is the weakness of the German to be so fond of detail, and it is his strength to be so well acquainted with detail; it is our weakness to dislike it, and it is our strength to overleap it. Among these apparent contradictions it seems hard to steer our course, but we may begin thus: A trained man can be depended upon so far; an untrained man may do better, if he has genius; and who can tell what he may have? We cannot train men to be marvels, and if they were they must still submit to some extent, and the only resource left to us is to yield to the influence of plodding in education, caring, however, to observe if any of the young thinking machines that we are polishing shew any peculiar movement which shall be indicative of progress beyond the teacher's intention. These spasmodic wilful movements may take place amongst our youths more rapidly than among the Germans; but it no less becomes us to look for fundamental training in the direction where it has been most successful. If our youth become weary sooner, it is well that we should seize on them as early as possible. It is from our Teuton friends that we have received models of careful teaching from their kindergarten upwards. These infant schools were a step beyond ours—introducing practical lessons; their laboratories are the same idea carried out. Let a man touch and handle if he will learn. Let our youth be taught natural laws by seeing them in action, not as abstractions only.

The first thing that will occur to many people is: "This is exactly the method of the practical English nation; the opposite has been the custom of the dreamy Germans." True we sent boys into practical life to pick up principles at random; and those who thought enough made systems for themselves. This apprenticeship method was good when principles were on the surface; but when they are so deeply sunk that generations have been required to find them, and when the phenomena themselves are not superficial, the method falls to the ground. No man can learn his duties in a chemical work by apprenticeship, or by the imitation of the action of others.

The rapid development of the teaching of physical sciences in Germany was the result of previous training, and the rapid development of manufactures followed immediately.

But we must take the privilege of Englishmen, and rush through intermediate stages to a conclusion. It seems to be that in Germany the army of labour is organized as carefully as that for fighting. The unanimity is complete, and the determination to invade our markets is strong. Every chemical work has at least one trained chemist, and the training is careful. With us it is frequently considered needless to have one for large works, as they can go by themselves, and small works cannot afford one. We know very well that this is not universal, but some of the exceptions are more apparent than real, and at any rate we shall defer speaking on that point.—*Chemical News.*

On the removal of Odorous Compounds from Alcohol by Permanganates.

BY GEO. F. H. MARKOE, OF BOSTON.

QUERY 22.—What are the practical reactions between the permanganates and alcohol of various strengths and degrees of cleanliness; and how far can such reactions be made available for producing deodorized alcohol, cologne spirit, or clean alcohol, upon a small scale, with special reference to the alcohol recovered from fluid extracts, and other Galenical preparations?

It is a well known fact that the permanganates are among the most powerful oxidizing agents at the command of the chemist; and the ease with which they furnish nascent oxygen when merely placed in contact with organic matter, has led to their extensive employment as disenfectants and deodorants. The power they possess of destroying disagreeable odors suggested their employment in the purification of alcohol, and some years ago a patent was granted to Mr. Atwood for a process in which permanganate of potassa was the agent used in producing a deodorized or cologne spirit, which is well known to pharmacists as Atwood's alcohol. The article used by Atwood as a purifier is not the true permanganate of potassa (KO,Mn_2O_7), but the so-called commercial permnganate of potassa, which is in reality manganate of potassa (KO,MnO_3), a much less effective oxidizing agent than the permanganate of potassa.

In the following experiments, the writer, in every instance but one, used the officinal permanganate of potassa; and the materials worked upon were unclean alcohols of various strengths, obtained in concentrating the percolates in the preparation of some fluid extracts and syrups. Many more experiments were performed than those detailed in this paper, but it is deemed sufficient to give the results of nine experiments, together with samples of the products. One of Neynaber's Pharmaceutical Steam Stills, of one gallon capacity, was employed for the distillations, and five pints of unclean alcohol were used in each rectification, with 100 grs. of permanganate of potassa.

Exp. 1—Five pints of alcohol were obtained in following the officinal process for the preparation of comp. syrup of sarsaparilla. By the accidental passage of a small part of the