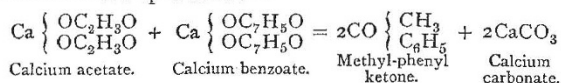
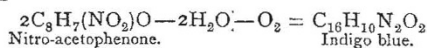


submitted to distillation in order to obtain the ketone known as acetophenone :—



Methyl-phenyl ketone when treated with fuming nitric acid yields two isomeric nitro-derivatives,  $\text{C}_8\text{H}_7(\text{NO}_2)\text{O}$ , one of which when heated with a reducing mixture composed of zinc dust and soda lime is converted into indigo blue :—



The process above given is at present only valuable from a scientific point of view, since the yield of indigotin is but small. It yet remains to convert this laboratory reaction into a practicable process, in order to do for indigotin what has already been accomplished for alizarin, and thus completely revolutionise another large branch of the colour-producing industry.

R. MELDOLA

### OUR BOOK SHELF

*Scientific Culture.* By Josiah P. Cooke, Jun., Professor of Chemistry and Mineralogy in Harvard College (U.S.). (London: H. S. King and Co., 1876.)

THIS is altogether an admirable address, characterised by real eloquence and by clearness and decision of view as to the place which science ought to occupy in any system of education. Most of Prof. Cooke's audience were teachers by profession, attending Harvard University mainly to become acquainted with the experimental methods of teaching physical science. We commend the address not only to scientific students and teachers of science, but to all who take an interest in education, and to all students who desire a clear statement as to what, in the not distant future, will be regarded as the only liberal education, an education in which science will be allotted a place of at least equal importance with that of literature. What Mr. Cooke's views are on certain matters which have for long been discussed in this journal, may be learned from the following extracts. On the place which Science ought to occupy in education, he says :—

"I must declare my conviction that no educated man can expect to realise his best possibilities of usefulness without a practical knowledge of the methods of experimental science. If he is to be a physician, his whole success will depend on the skill with which he can use these great tools of modern civilisation. If he is to be a lawyer, his advancement will in no small measure be determined by the acuteness with which he can criticise the manner in which the same tools have been used by his own or his opponent's clients. If he is to be a clergyman, he must take sides in the great conflict between theology and science, which is now raging in the world, and unless he wishes to play the part of the doughty knight, Don Quixote, and think he is winning great victories by knocking down the imaginary adversaries which his ignorance has set up, he must try the steel of his adversary's blade. . . .

"I feel that any system of education is radically defective which does not comprise a sufficient training in the methods of experimental science to make the mass of our educated men familiar with this tool of modern civilisation; so that when, hereafter, new conquests over matter are announced, and great discoveries are proclaimed, they may be able not only to understand but also to criticise the methods by which the assumed results have been reached, and thus be in a position to distinguish between the true and the false. Whether we will

or not, we must live under the direction of this great power of modern society, and the only question is whether we will be its ignorant slave or its intelligent servant."

On the uses to which Universities should be put, Mr. Cooke's opinions are decided :—

"The time has passed when we can afford to limit the work of our higher institutions of learning to teaching knowledge already acquired. Henceforth the investigation of unsolved problems, and the discovery of new truth, should be one of the main objects at our universities, and no cost should be grudged which is required to maintain at them the most active minds in every branch of knowledge which the country can be stimulated to produce.

"I could urge this on the self-interest of the nation as an obvious dictate of political economy. I could say, and say truly, that the culture of science will help us to develop those latent resources of which we are so proud; will enable us to grow two blades of grass where one grew before; to extract a larger per cent. of metal from our ores; to economise our coal, and in general to direct our waiting energies so that they may produce a more abundant pecuniary reward. . . . This is all true, and may be urged properly if higher considerations will not prevail. It is an argument I have used in other places, but I will not use it here; although I gladly acknowledge the Providence which brings at last even material fruits to reward conscientious labour for the advancement of knowledge and the intellectual elevation of mankind. I would rather point to that far greater multitude who have worked in faith for the love of knowledge, and who have ennobled themselves and ennobled their nation, not because they have added to its material prosperity, but because they have made themselves and made their fellows more noble men."

These are but small samples of the many good things contained in Prof. Cooke's address, which we should like to see in the hands of all students. The latter portion of the address students of mineralogy will find of special value.

### LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

On the most Northerly Latitude at which Land and Freshwater Molluscs have hitherto been found

I AM very sorry that I have involuntarily made a mistake in a letter to Mr. Oscar Dickson (*NATURE*, vol. xiii. p. 96), in which it is stated that Dr. Stuxberg had found a *Physa* on the most northerly locality from which land and freshwater molluscs have hitherto been obtained. When I made this statement I had not Middendorff's "Sibirische Reise" with me, and I did not then remember that this celebrated naturalist had found a species of the same genus on the Taimur peninsula north of the seventy-third degree N.L. A. E. NORDENSKJÖLD  
Stockholm, Jan. 29

### Prof. Tyndall on Germs

HAVING commented elsewhere (*Lancet* and *Brit. Med. Journ.* Feb. 5) upon Prof. Tyndall's recent attempt to establish the truth of the Germ Theory of Disease, my remarks in your columns may be very brief.

Prof. Tyndall tells the public he has uniformly failed to obtain evidences of putrefaction in previously boiled organic infusions protected from contamination by atmospheric particles.

The following investigators have, however, with one or other fluid, been able to obtain such results :—

1. Schwann, *Isis*, 1837; Poggendorff's *Annalen*, 1837.
2. Mantegazza, *Giorn. dell. R. Ist. Lombard.*, t. iii., 1851.
3. Schroeder and Dusch, *Annal. de Chimie*, tome xli., 1854.
4. Schroeder, Liebig's *Annalen*, cix., 1859, and *Chem. News*, vol. v., 1862.