Faithful Mirror to a Profession

During the nineteenth century the leading articles in *Nature* tackled such topics as scientific and technical education, industrial competition from Germany, and the role of the Royal Society. Lockyer was concerned about British organic and industrial chemistry.

Of *Nature*'s notes, reviews, letters and leading articles, perhaps the leaders had the greatest social impact. They were of two general kinds—editorial opinions and review leaders. Between 1869 and 1919, about one fifth of the 2,600 leaders were editorials and it was these, together with selected reviews of non-scientific books, which attracted most general notice. Generally speaking, the editorials were written by Lockyer himself (who wrote sixty-six), his staff members (sub-editors) or a selected band of outside experts. In the editorials, about 70 per cent of which were anonymous, much of the journal's flavour, and its attitudes towards society, can be seen.

In its first decade, *Nature* gave prominence to general issues, including the successive scientific voyages that began with the *Porcupine*, the *Challenger* expedition (1870–1875), and continued through the ill-fated polar expedition of 1874; repeated geographical expeditions to Asia and Africa, the Transit of Venus expedition and the four eclipse expeditions between 1870 and 1878. Lockyer himself also devoted space to the Franco–Prussian war and its significance for Germany, and to government provision for scientific education, the organization of local scientific effort and national museums and the fate of animal physiology at the hands of the vivisectionists.

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THE APPRECIATION OF SCIENCE BY GERMAN MANUFACTURERS

RECENTLY, when giving evidence before the Gresham University Commission, I had a reason to speak of the attention devoted in German chemical laboratories to higher studies, and when asked what were the results of this instruction I drew attention to an article published a short time before in that most enterprising of chemical periodicals, the *Chemiker-Zeitung*, edited by Dr. Krause. In this article a description is given of the research laboratory provided to accommodate *six and twenty skilled chemists*, attached to the works of the Farbenfabriken, vormals F. Bayer and Co., of Elberfeld, who are manufacturers of dye-stuffs and other products derivable from tars. I told the Commissioners that if, at the present time, it were desired to fit up a research laboratory for chemical purposes in London, we could not do better than take these plans and reproduce them in their entirety, and that we should then, I believed, have reason to congratulate ourselves on possessing the best-appointed public research laboratory in the world.

In addition to the two dozen skilled chemists in the research department at the Elberfeld works, a large number are engaged in other departments, the total number employed being, I believe, over *sixty*!

The Elberfeld works do not stand alone: the world-renowned Badische Anilin and Sodafabrik probably has in the aggregate far more laboratory accommodation than is provided even at Elberfeld. I learn from my friend Dr. Caro, that of the *seventy-eight* chemists in the employ of this firm fifty-six have the Ph.D. degree.

At many other works equally ample provision is made—in fact the colour works throughout Germany are simply laboratories on a very large scale.

As an antithesis, I may add that I told the Gresham Commissioners that I did not think that any English colour works had six skilled chemists in its employ; at all events six was the maximum number.

Is it then surprising that, notwithstanding that a very large proportion of the coal-tar used is of English origin, and that both the "aniline-colour" and the alizarin industry were first established here, according to a statement in the Chicago Exhibition Catalogue of the German Section, about nine-tenths of the total quantity of artificial colouring matters now produced is manufactured in Germany? Whatever the proportion, in 1891, Germany exported aniline-colours of the estimated value of no less than 44,269,000 marks, and alizarin valued at 12,906,000 marks—or little short of three millions sterling—a very large proportion of these manufactured colouring matters being sent to the East Indies, where they are fast displacing those of natural origin. Dr. Caro in a comprehensive monograph just published in the *Berichte* in which the gradual development of the coal-tar colour industry is fully traced out, speaks of it as a German *national industry*. *Manufactured in Germany* is certainly now the recognized trade mark for chemicals throughout the world.

Not many years ago Wurtz wrote, with reference to the origin of the science, "La chimie est une science francaise;" at the present day we may say, without fear of contradiction, that, whatever its origin, it is now a German science; that it is to this fact that the Germans owe their supremacy; and that it is to our failure to feel the pulse of the times, and to educate ourselves up to the proper point that we owe our downfall. It is to be feared, moreover, that unless we realise this without further loss of time, and hasten to fit ourselves to do our fair share of the work, other industries in which chemistry plays an important part, ere another twenty years are past, will also have quitted our shores. To do this we must put aside the idea that University extension and County Council lectures, or even polytechnics and technical schools for the multitude, are to bring about the necessary reform; and we must rise above the belief that a degree given for text-book knowledge and an acquaintance with the ordinary methods of analysis is evidence of competency. A true conception of what a chemist is—what he is called on to do and to know in this age of progress—must arise in high quarters and especially among our manufacturers.