COMPETITION BETWEEN THE ANILINE AND MADDER DYES.

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As these dyes are globularly used to the extent of some one hundred million dollars per annum; as they are as well known to the manufacturers of New England as to the horse-hide colorers of Japan, it may be interesting to inquire what effects, in *esse* and *posse* the one is having upon the other in commercial value. And as the market price invariably depends upon supply and demand, the source of the former must be examined into that the estimate of the latter may lead to judicious deductions.

Previous to the modern use of the above, indigo, cochineal, and the vegetable or wood dyes were altogether in vogue, and the inestimable appreciation of the indigo was primarily the cause which led to the discovery of aniline. The coloring matter of indigo has long been technically known as anil, and the manner in which it gave the name to aniline, has perhaps never been published before this present article. The botanist had ever been puzzled to know whence came the coloring matter of the indigo plant. Where it was indigenous the dyeing matter was inherent; but although the plant flourished almost anywhere in tropical climates, it invariably lost its color yielding power on this transportation! How was this? The botanist had to appeal to the chemist for explanation. Investigation demonstrated that the anil or coloring matter was solely due to the subsoil over which the indigo plant fructified, and that apart from this metaliferous or possibly bituminous earth, the coloring idiosyncrasy was lost. It will thus be seen that the article cannot be produced at will, but only where it and the soils are indigenous. However much this certainty baffled the botanist, it only set the chemist a-thinking. His analysis and synthesis showed beyond cavil, that anil, pure and simple, was neither more nor less than a hydro-carbonic compound, and that amongst some of these artificially produced compounds, anil, otherwise than the anil of indigo, might yet be discovered. The cheapest object for this research naturally suggested itself, and common coal-tar—the refuse of gas works—presented itself as the most economic basis of naphtha, and the matrix of an abundant hydro-carbon. It would be irrelevant here to trace the success which crowned the chemists' efforts to produce anil, or as it was now called, aniline, from this once—but now no longer so—rejected filth. But one portion of the discovery must be referred to, not only in demonstrating the discoverers' wonderful patience, but as proof of the capricious supply of this marvellous product. Coal tar, then, yields naphtha; naphtha, benzole; benzole, nitro-benzole; nitro-benzole, aniline. When the naphtha was first distilled from coal tar, no benzole was discovered in it, or, if it was discovered, in such small quantities as to defy remunerative production. But the trace was there, and as most auriferous deposits are discovered by traces, these said traces were pursued until the golden goal was scientifically and successfully attained. When the naptha was distilled by different temperatures, it was found that benzole was produced at one temperature that was smothered at another, and that by grading the distillations actual benzole could be eliminated in paying quantities! From this moment common coal-tar became the matrix of those valuable aniline dyes, which under the names of roseine, aniline reds and crimsons, Nicholson's blues, Humbolts, mauves, magentas, Bismark browns, oranges, iodine greens, purples, magdalas, violets, greens, phosphines, etc., have astonished the world for the last twenty years. Nearly all the dazzling colors worn now-a-days, that dim the sun and flaunt the eyes, are derived from the very cheapest of bases named, yet have arrived at such a value in the manipulation, that prices run from $2 to $30 a pound and in some cases even $6 an ounce.

At the period of these discoveries, madder had largely superceded indigo, cochineal and other dyes, and at its producable price was certainly the most economic dyeing product extant. Madder is neither more nor less than the ordinary madder root ground, a root capable of cultivation to an unlimited extent. Turkey in Asia, Italy, France, Spain, Holland, and Naples produced it in enormous quantities and British India soon followed suit. The importations into Great Britain at one time amounted to 50,000 tons, and at least a similar quantity was consumed in the countries of production. Unknown as madder may be by that nomenclature, every housewife knows it under the appellation of the "Turkey Red," the name manufacturers gave to their prints dyed by this article. Some idea of its consumption even in America may be given, when it is stated that the writer of this article saw some 500 tons of this madder in the manufactory of A. & W. Sprague & Co., of Providence, R. I., when he visited those works a few years ago.

If then aniline is used by the *pound* where madder is used by the *ton*, it may well be asked by merchants, manufacturers and dyers, what will be the effect of the competition between them? the one the limited production of human manipulation, the other the unlimited production of cultivated nature. We will examine the question.

"Every dog has its day," and in the day of aniline

there was but one opinion, that it would sweep every other dye out of the vat-house. Not only was its application so simple, requiring solvents instead of mordants, but at the price, and especially at the price then current for all dyes, it was the cheapest, with given results. A cosmopolitan demand at once set in, therefore, for anilines, a demand which not only enhanced figures to famine prices, but which was far beyond the possibility of supply. That supply depended on coal tar; coal tar depended upon gas works; gas works, after all, are of limited number all over the world—*ergo*, the aniline supply could be but limited. As madder fell into a state of almost desuetude, prices naturally depreciated, until from an average of twelve cents a pound, it is not now worth two cents. Thus, as aniline became scarce, madder became cheap, and manufacturers were enabled to pit their "Turkey Reds" in the shape of Pompadour prints and their like, at prices the very best informed anilinists, or anybody else, never dreamt of. And this brings us to the issue.

We cannot now see, whatever we foresaw in bygone days, that madder and its derivatives, have anything at all to fear from aniline and its beautiful eliminates. As circumstances alter cases, so the position of the two chief dyes are equalized by the extent of the supply and the restrictions of demand. Aniline can not be produced *ad libitum*, madder can. Almost unlimited high prices will always be given for the former; but the latter, experience shows us for the first time, can be grown for almost unlimited low prices. The rich and the poor consumers can thus be well served; but madders go with the poor and therefore the popular prices of both may, nay they will, fluctuate as markets may dictate; but the fear that aniline will end in the supercession of madder is, we think, entirely groundless. The madder "day" is imminent, if not actual now-a-days, and wherever we go its "hues" are more prominent than those of its great competitors.