ON THE SPECTRA OF AZO-COLORS.

(Second Paper.)

By J. H. Stebbins, Jr.

In the last paper on this subject I described a series of dyestuffs, which differ from one another not only chemically but also, to quite an extent spectroscopically, if I may use the term.

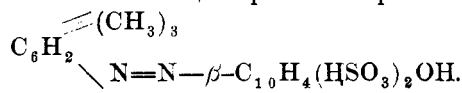
It will also be remembered that they produced no characteristic absorption bands, but merely a cutting out of the green, blue and violet parts of the solar spectrum. This cutting out of the spectrum was more or less pronounced according to the nature and strength of the solutions.

The few remaining dyestuffs of this series, which I have now to describe, possess these properties likewise but to a much less extent than the former ones.

I have also made quantitative tests with the view of determining how small an amount of coloring matter can be estimated by this means.

Ponceau R. R.

Pseudocumol-azo-β-naphtholdisulpho-acid



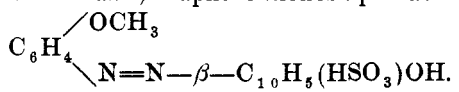
Dissolved ¼ grm. in 1 litre of water and examined the spectrum. It gave a band extending from C. 48—H. 170.

Region of greatest absorption is D. 52—H. 170.

The same on being treated with caustic soda produced a spectrum extending from C. 42—H. 170. Region of maximum absorption D. 51—H. 170. This dyestuff, as will be seen, (Plate II) cuts out all the green, blue and violet parts of the solar spectrum. The absorption band is still plainly visible with a dilution of 1 pt. in 40,000.

Anisole Red.

Anisol-azo-β-naphtholmonosulpho-acid



Dissolved ¼ grm. in 1 litre of water and observed the spectrum. The absorption band extends from C. 47 —H. 170.

Region of maximum absorption D. 52—H. 170.

The same on being treated with caustic soda produces but a very slight variation in the position of the absorption band. It extends from C. 48—H. 170. Region of greatest absorption D. 54—H. 170.

The same diluted to 1 pt. in 40,000, still shows the band very plainly, only in this case it cuts out less of the green.

Its position extends from D. 54—H. 170.

Region of greatest absortion D. 64—170.

A dilution of 1 pt. in 400,000 no longer produces an absorption, but still plainly shows a faint coloration.

Bordeaux.

Naphthalene-azo-β-naphtholdisulpho-acid

$C_{10}H_7$—N=N—β-$C_{10}H_4(SO_3H)_2OH$.

Dissolved $\frac{1}{4}$ grm. in 1 litre of water and examined the absorption band. In this case the band extends from C. 40—H. 170. Region of greatest absorption C. 42—H. 170. The same diluted to 1 pt. in 40,000, shows a band extending from D. 50—H. 170. Region of greatest absorption D. 68—H. 170. The same, plus caustic soda, gave a band extending from D. 52—H. 170.

Region of greatest absorption E. 82—H. 170.

Azobenzol Fast-Crimson.

Dissolved $\frac{1}{4}$ grm. in 1 litre of water and examined the spectrum. A band was obtained, extending from C. 46—H.170. Region of greatest absorption D. 52—H. 170.

The same diluted to 1 pt. in 40,000 showed a band extending from D. 50—H. 170. Region of greatest absortion D. 66—H. 170. The same, plus caustic soda, gave a band extending from C. 48—H. 170. Region of greatest absortion D. 64—H. 170.

From the above it will be seen, that the spectra of these colors, resemble one another so closely, that it is quite a difficult matter to recognize them with the spectroscope, and this can only be done by strictly adhering to the strength of solutions indicated. In conclusion I would state, that in working with very dilute solutions, I found that the absorption bands continually recede from the red toward the green and blue parts of the solar spectrum, until a certain dilution has been reached, when they disappear altogether. Acids but have little action upon the spectra while caustic soda produces a more marked effect.