The synthesis of brazanquinone vat dyes obtained by the condensation of 2:3-dichloro-1:4-naphthoquinone (I) with 4-bromo-1-naphthol, 6-bromo-2-naphthol and 2-hydroxy-3-naphthanilide (Naphtol AS) has been described in the previous paper. The constitution of the condensation products as furan derivatives was also discussed. As against the poor substantivity of 1:2-benzobrazanquinone (II), the 4-carboxyanilide derivative (III) possessed good substantivity. The parent β-naphthol and Naphtol AS, from which the above dyes were obtained, exhibit parallel substantivity to cotton, the latter being more substantive. In general the introduction of heterocyclic rings, carboxyamido groups, halogen atoms, methoxy groups and increase in structural complexity promote substantivity in the Naphtol AS series. A similar study has now been undertaken in the brazanquinone vat dyes which have been prepared by the condensation of (I) with compounds of the Naphtol AS series.

Naphtol AS-E (2-hydroxy-3-naphthoic-p-chloranilide) is one of the highly substantive Naphtols. In order to see whether the introduction of a chlorine atom in the anilide half of (III) has a similar effect, Naphtol AS-E was condensed with (I) to give the bright yellow dye, 1:2-benzobrazanquinone-4-carboxy-4'-chloranilide (IV); (III) and (IV), however, had nearly the same
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substantivity. The dye (III) from Naphtol AS was slightly superior in fastness to light than (IV), whereas fastness to washing and chlorine were the same. The azoic dyeings from Naphtol AS are likewise faster to light than the dyeings from Naphtol AS-E.

With a view to study the effect of the introduction of a bromine atom in the anilide and naphthalene half of (III), 2-hydroxy-3-naphthoic-p-bromanilide and 6-bromo-2-hydroxy-3-naphthanilide were condensed with (I) to give 1:2-benzobrazanquinone-4-carboxy-4'-bromanilide (V) and 3'-bromo-1:2-benzobrazanquinone-4-carboxyanilide (VI) respectively. Whereas the parent bromanaphthols gave faster azoic shades than Naphtol AS, the brazanquinone vat dyes (V) and (VI) obtained from them did not show superior substantivity or fastness properties over the bromine-free dye (III). The increase in the substantivity by the introduction of bromine in brazanquinone dyes from a- and β-naphthols was, therefore, not noticeable in dyes from the bromo derivatives of Naphtol AS.

Naphtol AS-D (2-hydroxy-3-naphthoic-o-toluidide) has nearly the same substantivity as Naphtol AS and both give shades of nearly equal fastness. 1:2-Benzobrazanquinone-4-carboxy-2'-methylanilide (VII), obtained by the condensation of (I) with Naphtol AS-D, was however only weakly substantive to cotton and gave shades which were less fast than those given by (III). Introduction of a chlorine atom in the p-position to the anilide group in (VII) led to increase in substantivity. Thus 1:2-benzobrazanquinone-4-carboxy-4'-chloro-2'-methylanilide (VIII) obtained by condensation of (I) with 2-hydroxy-3-naphthoic-p-chloro-o-toluidide (Naphtol AS-TR) had good affinity to cotton and gave bright yellow shades of good fastness. Introduction of chlorine in (VII), in common with other examples where halogen atoms were introduced, did not give dyes faster to light. The inferior fastness in general of the dye (VIII) compared to (IV) indicates the unfavourable influence of the introduction of a methyl group in (IV).

2-Hydroxy-3-naphthoic-o-anisidide (Naphtol AS-OL), and p-anisidide (Naphtol AS-RL) and 2:5-dimethoxyanilide (Naphtol AS-BG) are more substantive than Naphtol AS and give faster azoic dyeings; the p-anisidide being more substantive than the o-anisidide and the dimethoxyanilide being more substantive than the monomethoxyanilides. Condensation of Naphtol AS-RL, Naphtol AS-OL and Naphtol AS-BG with (I) gave 1:2-benzobrazanquinone-4-carboxy-4'-methoxyanilide (IX), 1:2-benzobrazanquinone-4-carboxy-2'-methoxyanilide (X) and 1:2-benzobrazanquinone-4-carboxy-2':5'-dimethoxyanilide (XI) respectively, but the dyes were inferior to (III) in substantivity and fastness. In the condensation of (I) with