cotton thus modified were found to show a simple relationship amongst themselves as was the case when the behaviour of Cibanone Orange R. In case of dyes such as Caledon Yellow G, Indanthrene Yellow FFRK, etc., which apparently did not appear to have undergone any modification with the hypochlorite treatment, the ratio between the -CHO groups and -COOH groups formed in the oxidised dyeing was found to be 2. On the other hand for dyes such as Indanthrene Blue R and Ciba Blue 2B which suffered modification as a result of the hypochlorite treatment, the above ratio was found to be 1. It appears, therefore, that the mode of oxidation of cellulose in these two cases is not exactly the same. The work is in progress.

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1. Nabar, Scholefield and Turner, *J. Soc. Dyers. Cols.*, **1935, 51,** 5. 2. *Ibid.*, 1937, **53,** 5.

A NEW INDICATOR

AN aqueous extract of Hollyhock flower has been found useful as an indicator in acidimetry and alkalimetry. This indicator is superior to the generally used indicators, *viz.*, methyl orange and phenolphthalein as it can be employed for both weak acids and weak bases. Several varieties of this flower and also some other flowers belonging to the same family have been investigated. The colour of the aqueous extract varies being colourless, faintly green or dirty brown. It, however, changes in all cases to green colour with alkalis and to red colour with acids. The end point in the majority of cases is definite and in case of some flowers it is quite sharp.

The Hollyhock flower, the colour of which is brownish violet at the top and deep violet below towards the calyx region, yields better results. The extract is initially colourless and becomes faintly green in colour on standing. It has to be evaporated until the total solid content in it is about 2 per cent., when it is deep blue in colour and suitable for use as indicator. The titrations have been carried out using this indicator between standard solutions of approximately decinormal strength of hydrochloric acid, oxalic acid and acetic acid with sodium hydroxide, sodium carbonate and ammonium hydroxide, including those between weak acids and weak bases. Wherever possible the titrations have been carried out using other indicators for comparison. The results show an agreement within 0·1 c.c. with the expected readings. Taking the alkali in burette greatly adds to the ease and the accuracy with which the end-point can be determined.

Attempts are being made to analyse the extracts of these flowers in order to separate this indicator and to determine its composition.

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ORGANIC REAGENTS IN INORGANIC ANALYSIS

CUPFERRON or the ammonium-salt of nitrosophenylhydroxylamine, $C_6H_5.N(OH).NO.$, has been widely used for the estimation and separation of different metals. This compound has the following defects which, however, have considerably limited its applicability:—

1. The free nitroso compound is insoluble in water and easily affected by heat and light.
2. The precipitates formed are comparatively unstable towards heat and are also contaminated with the reagent and so direct weighing of the precipitates is not possible.
3. The reagent does not show any specificity towards any particular element or group of elements.

In order to improve upon these defects the following allied compounds are being examined:—

$R\cdot N(OH)\cdot CHO$, (1) $R\cdot N(OH)\cdot CO\cdot CH_3$, (2)

$R\cdot N(OH)\cdot CO\cdot R$, (3) $R\cdot N(OH)\cdot CO\cdot NH_2$, (4)

$R\cdot N(OH)\cdot CO\cdot NH\cdot R$, (5) $R\cdot N(OH)\cdot CS\cdot NH_2$, (6)

$R\cdot N(OH)\cdot CS\cdot NH\cdot R$, (7)

$R\cdot N(OH)\cdot CS\cdot NH\cdot CH_2\cdot CH{:}CH_2$, (8)

$R\cdot N(OH)\cdot CH{:}N\cdot R$, (9) $R\cdot N(OH)\cdot N{:}N\cdot R$ (10)

where $R = C_6H_5$. Compared to cupferron all these compounds and the precipitates formed by them with different metallic ions are comparatively stabler towards heat. Many of these reagents are soluble in water and form insoluble salts with comparatively smaller number of metallic ions. Copper has been estimated and separated from lead and mercury (*ic*) with (3). Titanium has also been estimated gravimetrically and separated from aluminium. Estimations of vanadium, molybdenum, tungsten and iron are in progress. Compound (6) is a versatile precipitating agent like cupferron but the precipitates are stabler and the reagent is enormously soluble in water, so that direct weighing of the precipitates is possible. Compound (7) unlike the parent substance (6) does not give precipitate with Ti^{++++} and Zr^{++++}, whereas the corresponding allyl compound (8) produces good precipitates only with a few elements, *e.g.*, Sn^{++}, Sn^{++++}, Hg^{+}, Hg^{++} and Ag^{+}. A change in pH of the reaction medium has been found to exert profound influence on the precipitating capacity of the reagents, thus increasing their specificity. The results of thorough examination of all the above-mentioned compounds in the form of full papers will be communicated shortly.

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