Dehydrogenating Action of Sulphur Monoxide.

IN connection with the work on the mechanism of the chemical action of certain sulphur compounds, we have been studying the properties of sulphur monoxide. The oxide prepared according to the method of Schenk[1] was passed through dry liquid paraffin kept at a low temperature and found to yield hydrogen sulphide. Similar results were obtained when decalin was used for absorption. No hydrogen sulphide was obtained on absorbing the gas in tetrachlorethylene. Sulphur monoxide was found to be comparatively stable in tetrachlorethylene solutions. These solutions yielded hydrogen sulphide with liquid paraffin or decalin. Sulphur monoxide gave hydrogen sulphide readily on treatment with methyl alcohol and more slowly with ethyl alcohol. Using special micro-analytical methods we were able to show that during the production of hydrogen sulphide the methyl alcohol was converted to formaldehyde by the sulphur monoxide in terms of the following equation:

$$2\ SO + CH_3OH = H_2S + HCHO + SO_2.$$

The dehydrogenating action of sulphur monoxide can, in general, be expressed as follows:

$$RH_2 + 2\ SO = R + H_2S + SO_2.$$

The reaction can in some cases be possibly on the lines:

$$RH_2 + SO = RO + H_2S.$$

Further work is in progress.

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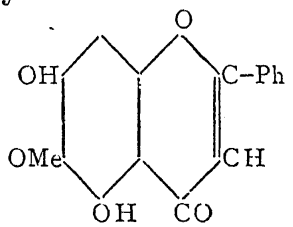
[1] *Zeit. Anorg und. allg. Chemie*, 1934, **220**, 268.

The Constitution of Oroxylin.

"OROXYLIN" (m.p. 225°), the yellow colouring matter, isolated by Naylor and Chaplin[1] from root bark of *Oroxylum indicum* Vent. was investigated by Naylor and Dyer[2] who assigned to it the formula $C_{19}H_{14}O_6$. These authors inferred the presence of three hydroxyl groups from the preparation of an acetyl derivative, assumed to be a triacetyl derivative from the amount of oroxylin recovered from it by hydrolysis. Hydrolysis with alkali gave benzoic acid, a neutral substance, giving colour reactions of phloroglucinol, and phthalic acid. Hydrolysis with dilute alkali is stated to give benzaldehyde. Absence of a methoxyl-group was shown by a negative result for methoxy-determination by Zeisel's method.

We have investigated "Oroxylin" (m.p. 231–32°) isolated from the same source. Our carbon and hydrogen values for oroxylin agree with those of Naylor and Dyer, and we have also definitely identified benzoic acid as one of the products of hydrolysis. In other respects, however, our results differ essentially from those of these authors. We find that it contains a methoxyl group and is a dihydroxy methoxy flavone—$C_{16}H_{12}O_5$, $[C_{15}H_7O_2(OH)_2, OCH_3]$, its actual constitution being (I), *viz.*, 5 : 7 dihydroxy-6-methoxy flavone. This conclusion is confirmed by the properties of nororoxylin (the demethylation product of oroxylin), its monomethyl ether, and its dimethyl ether, all of which agree closely with those recorded for Bargellini's 5 : 6 : 7-trihydroxy flavone[3] (the baicalein[4] of Shibata, Iwata and Nakamura), 6 : 7-dimethoxy-5-hydroxy flavone,[3] and 5 : 6 : 7 trimethoxy flavone[3,5] respectively. Oroxylin is thus shown to be the 6-methyl ether of baicalein.



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According to previous workers, oroxylin dissolves in dilute alkali with a red colour, which rapidly changes to green. We have established that this is due to an impurity associated in a small quantity with oroxylin, and oroxylin freed from this impurity, is stable to dilute alkali in which it dissolves with a permanent deep yellow colour. The colour reaction of this impurity with alkali indicates that the impurity is baicalein, which probably occurs along with oroxylin.

A detailed account of this investigation will be shortly published elsewhere.

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[1] Naylor and Chaplin, *Year Book of Pharmacy*, 1890.
[2] Naylor and Dyer, *J.*, 1901, 954.
[3] Bargellini, *Gazetta*, 1919, **49**, ii, 47.
[4] Shibata, Iwata and Nakamura, *Acta Phytochim*, 1923, **1**, 105.
[5] Hattori, *Acta Phytochim*, 1930, **55**, 99.