Sulphur Dioxide as an Oxidizing Agent.—WILLIAM WARDLAW, FRANCIS H. CLEWS, and SIDNEY R. CARTER (*Jour. Chem. Soc.*, 1920, cxvii, 1093–1103, 1241–1247) have made a study of the oxidizing action of sulphur dioxide on ferrous salts. While sulphur dioxide usually acts as a reducing agent, it also possesses oxidizing powers. Thus, if a solution of ferrous chloride in 33 per cent. hydrochloric acid be treated with sulphur dioxide, the iron is oxidized to the ferric state, and the sulphur dioxide is reduced to elementary sulphur; for this solution the optimum temperature is 95° C. The oxidation does not occur at 95° C. if the solution of ferrous chloride contain less than 165 grams of free hydrogen chloride per litre. The entire ferrous iron content of the solution is not oxidized. The maximum amount of the total iron changed to the ferric state was 9.5 per cent.; this yield was obtained in a sealed tube experiment. Solutions of iron in 33 per cent. hydrochloric acid, containing from 10 to 18.3 per cent. of their total iron as ferric iron, and kept at a temperature of 115° C., showed no evidence of either oxidation or reduction when a mixture of sulphur dioxide and hydrogen chloride, containing equal quantities by weight of the two gases, was passed through the solution for several hours. Under these conditions, solutions containing more than 18.3 per cent. of their total iron in the ferric state were slowly but incompletely reduced.

Study was also made of the action of sulphur dioxide on the phosphates of iron in the presence of concentrated phosphoric acid. No evidence was obtained that sulphur dioxide can act as a reducing agent on ferric phosphate in the presence of concentrated phosphoric acid. Sulphur dioxide oxidized ferrous phosphate to ferric phosphate in the presence of concentrated phosphoric acid, even in mixtures in which the ferric salt already formed a high per cent. of the total iron. Whether all the ferrous iron may ultimately be oxidized to the ferric state is uncertain.

J. S. H.

Digestion of Starch by Diastase.—The value of a malt is determined by its power to digest starch. EDWARD I. ROSENBLUM (*Jour. Soc. Chem. Ind.*, 1920, xxxix, Trans., 311–313) finds that the amount of acid salts present in starch varies with the sample; consequently the hydrogen ion concentration of the starch varies with the sample. The ability of the malt to digest starch (diastatic power) is influenced by the hydrogen ion concentration of the medium, and is at a maximum when the medium is faintly acid to methyl red but is alkaline to methyl orange. This optimum reaction may be obtained by addition of ammonium dihydrogen phosphate; usually 0.5 per cent. of this salt is the correct amount to be added to the medium.

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