

ABSTRACTS.

GENERAL AND INORGANIC CHEMISTRY.

Experiments upon Alum Baking Powders, and the Effects upon Digestion of the Residues Left Therefrom in Bread. J. W. MALLETT.

The author concludes as follows :

(a) The great part of the alum baking powders in the American market are made with alum, the acid phosphate of calcium, sodium bicarbonate and starch.

(b) These powders, as found in retail trade, give off very different proportions of carbonic acid gas, and, therefore, require to be used in different proportion with the same quantity of flour, some of the inferior powders in largely increased amount, to produce the requisite porosity in bread.

(c) In these powders there is generally present an excess of the alkaline ingredient but this excess varies in amount, and there is sometimes found, on the contrary, an excess of acid material.

(d) On moistening with water these powders, even when containing an excess of alkaline material, yield small quantities of aluminium and calcium in a soluble condition.

(e) As a consequence of the common employment of calcium acid phosphate along with alum in the manufacture of baking powders these, after use in bread-making, leave at any rate most of their aluminium in the form of phosphate. When alum alone is used the phosphate is replaced by hydroxide.

(f) The temperature to which the interior of bread is exposed in baking does not exceed 212° F.

(g) At the temperature of 212° F. neither the "water of combination" of aluminium hydroxide, nor the whole of the associated water of either this or the phosphate, is removed in baking bread containing these substances as residues from baking powder.

(h) In doses not very greatly exceeding such quantities as may be derived from bread as commonly used, aluminium hydroxide

and phosphate produce, or produced in experiments upon myself, an inhibitory effect upon gastric digestion.

(i) This effect is probably a consequence of the fact that a part of the aluminium unites with the acid of the gastric juice and is taken up into solution, while at the same time the remainder of the aluminium hydroxide or phosphate throws down in insoluble form the organic substance constituting the peptic ferment.

(k) Partial precipitation in insoluble form of some of the organic matter of food may probably also be brought about by the presence of the aluminium compounds in question.

(l) From the general nature of the results obtained the conclusion may fairly be deduced that, not only alum itself, but the residues which its use in baking powder leaves in bread, cannot be viewed as harmless but must be ranked as objectionable, and should be avoided when the object aimed at is the production of wholesome bread. (*Chem. News*, 58, 276.) W. P. M.

Water Supply to Steam Boilers. T. P. BRUCE WARREN.

Petroleum or other non-saponifiable lubricators should be used in every case where it is intended to use waste steam, direct, in heating the feed water; otherwise earthy soaps form, are decomposed on the sides of the plates, and, where these greasy spots occur, contact between the water and the metal is prevented. Corrosion is more rapid at these spots, but the nature of the action is obscure.

Magnesium chloride in large quantity is objectionable in a feed water as tending to the generation of hydrochloric acid. (*Chem. News*, 58, 273.) W. P. M.

The Calorimetric Bomb as a Combustion Furnace for Ultimate Analysis. ARNOLD EILOART.

As elsewhere stated, the bomb is a steel crucible lined with platinum. Through the cover, which screws on air tight, passes a tube with stop-cock and also an insulated platinum wire.

Complete combustion of carbon compounds may be obtained by filling the bomb with oxygen under pressure, and producing ignition by an electric current.

The author suggests the estimation of water and chlorine by introducing small, weighed absorption vessels into the bomb, and allowing sufficient time after the combustion for complete absorption of the products. (*Chem. News*, 58, 284.) W. P. M.

Detection of Antimony in Minerals. ALEXANDER JOHNSTONE.

The white coating which appears on charcoal before the blow-pipe is moistened with a drop of ammonium sulphide. The characteristic reddish or orange antimony sulphide is immediately formed. (*Chem. News*, 58, 296.) W. P. M.

The Sensibility of Earth-Nut Oil to Heat when Electrified. T. P. BRUCE WARREN.

When placed in an inner glass vessel, the annular space (nearly half an inch) between which and the outer glass was packed with paper, the oil was still so sensitive to heat as to cause an instantaneous deflection of the galvanometer when the exterior glass was touched with the finger. A lighted taper at a distance of twelve inches also produced marked deflection. The author asks: "Does electrification increase the susceptibility of bodies to heat?" (*Chem. News*, 58, 259.) W. P. M.