ABSTRACTS.

GENERAL AND INORGANIC CHEMISTRY.

Molecular Weight of Iodine in its Solutions. MORRIS LOEB.

The fact is recalled that iodine dissolves with different colors in different liquids. For instance, the solution in ether is deep reddish brown, and that in carbon di-sulphide is pure violet. Obtaining, by an apparatus of special construction, the difference between the vapor-tension of the pure solvent, and that of the iodine solution; the author establishes a formula, giving a molecular weight for iodine corresponding to I_4 for its red solutions, and a value between I_2 and I_3 for those of violet color. (*J. Chem. Soc.*, **53**, *805.*) W. P. M.

ANALYTICAL CHEMISTRY.

Determination of Sulphur in Coke. By L. BLUM.

The author found, on comparing different methods for the determination of sulphur in coke, that the fusion method was the only one giving reliable results. The finely pulverized coke should be fused with a mixture of 16 parts NaCl, 8 parts KNO_3, 4 parts Na_2CO_3, and the mass, after fusion, dissolved in water, etc., the sulphur being weighed as barium sulphate.

Oxidation of the sulphur in the coke by potassium chlorate and hydrochloric acid or bromine in hydrochloric acid, yielded only about 20—25 per cent. of the true per cent. of sulphur. (*Zeit. anal. Chem.*, **27**, *pp. 445-452.*) J. F. G.

Determination of Carbon in Iron. DR. L. L. DE KONINCK.

To obviate any error arising from the possible generation of chlorine during oxidation with chromic acid in the carbon deter-

mination according to the McCreath-Ulgren method, the author recommends the addition of a small quantity of silver sulphate. (*Zeit. anal. Chem.*, **27**, *p. 464*), J. F. G.

New Mixture for Separating Carbon from Pig-iron, Steel, etc. T. W. Hogg.

The usual method of procedure occasionally allows the precipitation of the somewhat insoluble cuprous chloride with the separated carbon.

To prevent this precipitation, advantage is taken of the reaction

$$Fe_2Cl_6 + Cu_2Cl_2 = 2FeCl_2 + 2CuCl_2.$$

The weighed metal is placed in a beaker, covered with half an inch of $CuCl_2$ solution (Sp. Gr. 1.35), and then a considerable excess of Fe_2Cl_6 solution (Sp. Gr. 1.30) is added. After five minutes stirring, heat is gently applied up to the boiling point. Decomposition is complete in twenty minutes. Precipitation of basic compounds is prevented by addition of a few drops of HCl, and the carbonaceous residue is filtered off. (*Chem. News*, **58**, *199.*) W. P. M.

Qualitative Separation of Gold and Platinum from Arsenic, Antimony and Tin. By Dr. L. L. de Koninck and Dr. A. Lecremier.

The moist sulphides of the metals contained in a small porcelain vessel, which is placed in a glass tube of 30 cm. length, are heated while subjected to a stream of hydrochloric acid gas, generated by the action of sulphuric acid upon solid ammonium chloride. The antimony and tin rapidly volatilize as chlorides and the arsenic as sulphide, leaving the gold and platinum in the residue. (*Zeit. anal. Chem.*, **27**, *pp. 463.*) J. F. G.

Use of Aniline as an Absorbent of Cyanogen in Gas Analysis. Morris Loeb.

Cyanogen is readily absorbed by aniline with formation of HCN. The prescence of CO_2 causes an evolution of the HCN present, at the same time a portion of the CO_2 passes into solution. Carbon monoxide acts in like manner.

As the above gases are those which usually accompany cyanogen,

the use of aniline as an absorbent is not practicable. (*J. Chem. Soc.*, **53**, *812.*) W. P. M.

Chemical Examination of Gums and Resins. ROWLAND WILLIAMS.

Eighteen different kinds were examined, and percentage determined of : Potash absorption ; Saponification equivalent ; Iodine absorbed ; Loss on drying ; Mineral matter.

The results are tabulated. (*Chem. News*, **58**, *224.*) W. P. M.

Specific Gravity, at 100° F., of Fat when Clear, and also when Clouded with Crystals. E. W. T. JONES.

Lard was melted until quite clear, and then the temperature was allowed to fall to 100° F. At this temperature the clear fat gave a specific gravity of 905.87. The melted fat was then maintained at 100° F. for some hours until clouded with crystals. On again taking the specific gravity the result was 910.49. The determinations were made with the gravity bottle. (*Analyst*, **13**, *201.*) W. P. M.

Determination of Fat in Oil Cake. By R. KLOPSCH.

The drying of linseed oil cake should be limited to three hours and conducted on the water bath. Ether will then readily extract the oil, and on evaporation leave it as a residue having a yellowish green color, whereas, if overheated while drying, the oil residue has a more or less brownish color.

Drying at temperatures over 100° C, and even at lower temperatures for too long a time, seems to oxidize some of the oil and render it insoluble in ether. (*Zeit. anal. Chem.*, **27**, *pp. 452–457.*) J. F. G.

The Chemical Character of Peptones and the Separation of Pure Albumen from the same. By R. PALM.

Peptone is the result of the action of lactic acid upon egg, milk, ser-albumen, or casien, and further, peptones are similarly produced from gelatin, fibrin, and chondrin. Peptone is a solution of protein in lactic acid. By adding ether to an alcoholic solution of peptone, a peptone of uniform composition is separated as an oily mass containing protein and lactic acid in exact stoichometric proportions. Vice versa, pure albumen can be separated from peptone after neutralizing the lactic acid of the peptone solution

by ammonia, and adding an excess of 95 per cent. alcohol, whereby all the albumen is precipitated.

Alcohol acidulated with sulphuric acid will also precipitate the albumen, if the sulphuric acid is not in too large excess.

The author found that when a peptone solution was neutralized by ammonia, all the albumen reagents gave the reactions characteristic of pure normal albumen, and that the albumen was also coagulable by heat.

Peptone, as a result of digestion, may contain lactic and hydrochloric acid. From a solution of peptone the coagulation of the albumen by heat, or precipitation by alcohol, is prevented by the presence of the lactic acid.

Peptone reduces an alkaline copper solution as readily as milk sugar. Although peptone is a solution of protein (albumen) in lactic acid, the term is also applicable to solutions of protein in other acids such as hydrochloric, sulphuric and acetic acid.

To distinguish albumen from peptone potassium xanthogenate may be used, as it precipitates solutions of peptone at once, and normal solutions of albumen only after acidulation. (*Zeit. anal. Chem.*, **27**, *359–363.*) J. F. G.

INDUSTRIAL CHEMISTRY.

Ancient Mortars. A. IRVING.

The presence of nearly eleven per cent. of soluble silica in mortar from the Roman wall of London, and in that from the Roman bath at Bath, suggests the possibility of the synthesis of calcium silicate by saturation of the ingredients with water, during a long space of time ; but it seems far more likely that the soluble silica occurred in the form of easily decomposible silicates, which are found, in a more or less vitreous condition, in the pumiceous tuffs, which are extensively worked for "hydraulic mortar." That the Romans were familiar with such a use of the material in question we known from the writings of Strabo. (*Chem. News*, **58**, *219.*)

W. P. M.

The Tees Salt Industry. T. W. STUART.

A full description as to history, mode of working, analyses of products and general statistics.

The paper is very fully illustrated. (*J. Soc. Chem. Ind.*, **7**, *660.*) W. P. M.

Influence of Silicon on the Properties of Iron and Steel. THOMAS TURNER.

The authors conclusions derived from extended and tabulated experiments, are:

"Ingot iron containing silicon in all proportions up to 0.5 per cent. (and with about 0.5 per cent of manganese) rolls well, and does not show any signs of red-shortness; it welds perfectly with all proportions of silicon, and, with the somewhat doubtful exception of the 0.5 per cent. specimen, is not brittle when cold. With less than about 0.15 per cent. of silicon, the limit of elasticity, the breaking load, the extension, and the reduction of area, are but little, if at all, affected by the proportion of silicon present.

The fracture, though not much altered, shows rather greater tendency to a crystalline or granular appearance. With upward of 0.15 per cent. of silicon, the limit of elasticity and breaking load are increased, though the effect of silicon in this respect is not nearly so marked as that of carbon. The reduction of area and extension (that is the ductility) are distinctly reduced, and rendered more irregular by the presence of much silicon. The fracture is also rendered more granular or crystalline, and is less regular in character." (*J. Chem. Soc.*, **53**, *844.*) W. P. M.

A Collection of Specific Gravities Tables. By Dr. G. T. GERLACH.

A very thorough collection of tables of specific gravities of aqueous solutions, based on the latest researches. (*Zeit. anal. Chem.*, **27**, pp. 269–358.) J. F. G.

Abstracts of American Patents Relating to Chemistry.

]*From the Official Bulletin of the U. S. Patent Office.*]

June 12th, 1888.

384,315.—Manufacture of dye stuffs. M. Herzberg.

New brown dye stuffs, prepared by combining the salts of diazo compounds of aniline, toluidine, xylidine, cumidine and the nitroderivatives of the same, amidoazobenzene, amidoazotoluene, amidoazoxylene, alpha and beta naphthylamine, or their sulpho and carboxylic acids, and tetrazo compounds of benzidine, benzidine sulpho acid, tolidine, diamidostilbene, or their sulpho or carboxylic acids with bismark brown (triamidoazobenzene or triamidoazotoluene. The above insoluble colors are rendered soluble in water by a sulphonating process.

384,316.—Manufacture of dye stuffs. M. Herzberg.

384,342.—New coloring matter obtained by the action of tetrazo-diamido benzene on phenols. R. G. Williams.

The coloring matters are obtained by the action of tetrazo-diamido-benzene (hydrochloride) or its homologues on resorcinol, the phenols, benzoic, the oxybenzoic acids and alpha naphthol, or their substitution products, on aniline and its homologues, beta naphthol and the naphthylamines, or their substitution products, and on the sulpho-acids of the above amines, amides and phenols, or their substitution products.

384,358.—Producing dried extract of rennet. F. Graeff.

Liquid extract of rennet is evaporated to dryness in vacuo at a temperature not exceeding 40°, after which it is comminuted, washed with a saturated solution of salt and dried.

384,480.—Production of blue coloring matter. E. Ullrich.

Methylene blue is prepared by subjecting paramido-dimethylaniline, dimethylaniline, hydrochloride and sodium hyposulphite to the action of an oxidizing agent, as bichromate and heat. W. R.