12. *Inorganic Matter* (ash).—Burn in ordinary manner in flat platinum dish at as low a heat as possible; repeated moistening, drying, and heating to redness are advisable to get rid of all organic substances.

13. *Citric Acid*.—Presence to be shown by a qualitative test, as baric citrate.

14. *Sulphuric Acid*.—To be determined in the wine after adding hydrochloric acid.

15. *Chlorine*.—To be determined in the nitric acid solution of the burnt residue by Volhard's method.

16. *Lime, Magnesia, and Phosphoric Acid*.—These are determined in the ash fused with sodic hydrate and potassic nitrate, the phosphoric acid by the molybdenum method.

17. *Potash*.—Either in the wine ash, as the platinum double salt, or in the wine itself by Kayser's method.

18. *Gums*.—Presence shown by precipitation by alcohol; 4 c. c. wine and 10 c. c. 96 per cent. alcohol are mixed. If gum arabic has been added, a lumpy, thick, stringy precipitate is produced, whereas pure white becomes at first opalescent and then flocculent.

19. *Sulphurous Acid*.—One hundred c. c. of wine are distilled in a current of carbonic acid after the addition of phosphoric acid. The distillate, carefully condensed, is oxidized with bromine and the amount of H_2SO_4 determined.—*American Druggist*.

BLEACHING BY MEANS OF HYPOCHLORITE OF ALUMINUM.

By M. WEISS.

A SOLUTION of hypochlorite of aluminum has long been employed as a bleaching agent, under the designation of Wilson's water, and has been much appreciated on account of its activity as a bleaching agent, and also owing to the fact that it does not attack the fiber of the material being bleached to so great an extent as chloride of lime.

The production of this bleaching liquor of aluminum hypochlorite has hitherto been obtained by mixing a solution of aluminum sulphate and an aqueous extract of chloride of lime. This method of producing the bleaching liquor reduces the cost of production considerably, since the two original compounds employed, chloride of lime and sulphate of alumina, are relatively dear.

Mr. Weiss has found that a more potent bleaching compound can be prepared by acting upon the aluminates of sodium, calcium, and magnesium with chlorine gas, in a manner precisely identical with that employed in the preparation of chloride of lime.

The bleaching compounds of aluminum can be obtained either in the liquid or solid state.

In the first case the chlorine gas is passed into a solution of sodium aluminate of convenient strength, or into water, which holds in suspension aluminate of calcium or magnesium; or the two together.

In the second case, the chlorine is passed over the solid aluminates and the bleaching compound thus obtained in the solid form, in the same way as ordinary bleaching powder.

Mr. Weiss allows the chlorine to pass into solution containing the alum nates in suspension, or over the solid substance, as long as there is any perceptible absorption, taking, of course, all the necessary precautions, such as avoiding too high a temperature, as are requisite in the production of ordinary bleaching powder. When the chlorine escapes in large quantities from the apparatus, the reaction is complete and the bleaching compound contains its full complement of active chlorine.

By prolonging the action of the chlorine a further decomposition ensues, accompanied by the evolution of oxygen gas. At the same time the total chlorine in the compound is increased but the amount of active chlorine is reduced. This evolution of oxygen may be observed, when the aluminates are employed dissolved or suspended in water, by the formation of bubbles of gas and frothing.

From analysis made by Mr. Weiss, the formation of the bleaching compounds would appear to take place in accordance with the reactions expressed in the following equations:

(A.) ALUMINATE OF SODIUM (Al_2O_3 by $3 Na_2O$):

(B.) ALUMINATE OF CALCIUM (Al_2O_3 , $3 CaO$):

The reaction with magnesium aluminate is the same as equation B.

The determination of the actual composition of these compounds is as difficult a matter as the determination of the real composition of bleaching powder has been.

These compounds of aluminum, produced by the patent process of Mr. Weiss, are exceptionally active as bleaching agents, on account of the evolution of ozonized oxygen, which experiment upon the large scale has shown can be successfully accomplished; paper pulp, tissues, etc., being completely bleached in a short time, without the preliminary treatment in an acid bath, etc., entailed when chloride of lime is employed. While lastly, the most important point connected with the use of these aluminum bleaching compounds is that its action upon the material being bleached is very small, whereas this action when chloride of lime is employed is most deleterious, and has always been one of the difficulties attendant upon the use of chloride of lime as a bleaching agent.—*Mon. de la Teinture*.

TERPENE FROM COMPRESSED GAS OILS.

PORTABLE or compressed gas is prepared in France from the heavy paraffinoid oils obtained from the bituminous schists of Autun or less frequently from material similar to Scotch boghead. The oils are carburized at a cherry red heat in long cast tubes, and the resulting gas is compressed in cylinders; in this operation light liquids condense, holding in solution such gases as butylene, ethylene, etc. The authors have examined the gas oils obtained from both the above sources and find them practically identical. They distill between 20° and 360° , leaving a tar, and yield about 60 per cent. of benzene, 10 per cent. of toluene, 6 per cent. of light unsaturated hydrocarbons, and 10 per cent. of higher oils between 140° and 190° , which

give no definite boiling point, but undergo steady decomposition at about 167° . Repeated fractionation of the light oils thus produced yielded a product $C_{10}H_{16}$, boiling point 42.5° , density 0.803, vapor density 2.45 (theory 2.35), named by the authors pyropentylene; it has the principal terpene properties. It has a peppery taste and characteristic odor, is not acted on by ammoniacal silver or cuprous salts, but ammonia potassic solutions of silver deposit silver mirrors in its presence. Concentrated aqueous silver nitrate produces a white crystalline precipitate; aqueous sulphurous acid forms with it, white crystals of the composition $C_{10}H_{12} \cdot 2H_2SO_3$, insoluble in almost all reagents except alkalies, and which exhibit a remarkable tendency to retain small quantities of iron. Halogen acids resinize it rapidly or cause it to explode, oxidizing agents even when dilute destroy it completely, while bromine gives rise to liquid derivatives. In the cold it gradually polymerizes, the density increasing regularly with the time of exposure, ultimately forming a solid $C_{10}H_{12}$, melting at 8° with a density 1.003 and called di-pyropentylene, which depolymerizes on heating. Pyropentylene is neither identical with valylene nor p-ylene.—*Compt. Rend.*

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