of copper and a dilution of 150 cc. but little copper ammonium salts separate out. Fifty grams of copper and a dilution of 500 cc. gave on standing a considerable quantity of the salts. They are, however, readily soluble in dilute ammonia on warming, the precipitate not being appreciably so. On account of the dilution the method is only qualitative for arsenic and phosphorus. For lead, bismuth, tin, iron, manganese, and antimony it is complete. Silver, zinc, and cadmium were removed from the filtrate by decolorizing with solid potassium cryanide and precipitating by hydrogen sulphide. The barium salt gives no trouble. The sulphates of lead and barium can be weighed together. The lead sulphate separated by any of the known solvents, and determined directly or by weighing the residual barium sulphate. The treatment of the precipitate containing lead, bismuth, etc., is a matter of choice.

PATENTS OF INTEREST TO CHEMISTS.

EDITED BY ALBERT H. WELLES.

Ore Separators, etc.—511,512, December 26, Crosby, G. G., magnetic ore separator. 511,162, December 19, Roberts, F. C., puddling furnace. 510,251, December 5, Giroux, J. L., reverberatory, smelting, and refining furnace. 511,476, December 26, Vattier, C., roasting furnace. 511,090, December 19, Mathewson, E. P., furnace tap. 510,223, December 5, Wohlschlegel, C., pottery kiln. 509,890, December 5, Gonder, P., brick kiln. 510,448, December 12, Smith, M. V., coke oven. 510,051, December 5, Seymour, C. E., system of concentrating ores. 510,395, December 12, Ashcroft, E. A., apparatus for generating steam by aid of molten slag. 509,912, December 5, Jory, J. H., amalgamating sluice. 511,334, December 26, Hewett, G. C., manufacture of coke by heating coal at low temperature under pressure, consolidating into lumps, and coking in an ordinary furnace.

Iron and Steel.—511,648, December 26, Parkinson, W., converting cast-steel into wrought iron, by mixing charcoal and rolling mill scrap, reducing to spongy mass and mixing with particles of low steel and puddling. 509,973, December 5, Urick, W. P. B., method of casting solid ingots of steel. A rod is thrust into mold, then withdrawn and more molten metal is added to fill the mold. 510,340, December 5, Hines, J. H., coating iron with magnetic oxide, covering first with metal or alloy which will volatilize at a temperature below the fusing point of the iron, and then heating.

Lead.—510,979, December 19, Lunge, G., basic lead salts and caustic

alkali. Crude pig lead is oxidized and treated with nitric acid, the silver is precipitated with finely divided lead, and basic lead salts are formed by adding an alkaline carbonate and some free base. The alkaline nitrate is decomposed by ferric oxide, heated air, and steam, and the resulting ferrite is decomposed into ferric oxide and caustic alkali and nitric acid is recovered.

Copper.—510,340, December 5, Hines, J. H., ornamenting metal, after cleaning, by depositing copper, or aluminum and enameling.

Acids and Alkalies.—510,900, December 19, Cutten, E. B., electrolytic apparatus for soda and chlorine. 511,330, December 26, Fahrig, E., process of and apparatus for obtaining ozone from the air, by absorbing oxygen, releasing the gas from the absorbent, heating, drying, cooling, and passing the electric current. 509,957, December 5, Siepermann, W., manufacture of cyanides; alkaline carbonates are subjected to a dark red heat in presence of ammonia, and potassium cyanide is separated from its aqueous solution by increasing the per cent. of potassium carbonate or caustic potash in solution.

Sanitary Chemistry.—510,825, December 12, Stratton, J. L., and Murdock, F., disinfecting apparatus. 510,756, December 12, Adam E., and Rehfuss, M. O., filter, and 510,757, same parties, sterilizing apparatus.

Brewing and Distilling.—510,827, December 12, Wiesebrock, F. W. A., manufacture of beer. 510,219, December 5, Warren, M., method of and apparatus for beer manufacture. 511,353, December 26, Mosler, J., caramel, from distilling refuse.

Bleaching and Dyeing.— 511,532, December 26, Kothe, R., *et al.*, blue tetrazo dye. 511,653, December 26, Schultz, G., blue basic dye from alkalized paradiamins. 509,929, December 5, Moeller M., blue azo dye. 511,688, December 26, Diehl, T., and Moeller, M., blue black tetrazo dye.

Tanning.—511,411, December 26, Dennis, M., tanning liquor, normal chromium chloride is rendered basic by adding a solution of an alkali or alkaline carbonate. 511,007, December 19, Zahn, W., tawing hides or skins, a composition of chrome alum and a sulphide of an alkali is used. 511,301, December 19, Lawley, W. F., method for tanning hides.

Organic Compounds.—511,303, December 19, Majert, W., piperazine, $C_4H_{10}N_2$ anhydrous, with caustic properties, a solvent of uric acid. 511,708, December 26, Moeller, M., amido-naphthol disulphonic acid. 511,450, December 26, Noyes, A. A., and Clement, A. A., paramidophenol-sulphonic acid, made by electrolyzing a sulphuric acid (conc.) solution of nitro-benzol. 510,617, December 12, Stevens, J. H., and Axtell, F. C., compound of pyroxylin, containing pyroxylin, phenyl acetamide, acetone, and a liquid menstruum. 510,132, December 5, Hagemann, O. C., separating tannin, dissolving tannin from substances containing it in amyl alcohol and separating the alcohol. 511,143, December 19, Higgin, W. H., manufacture of sodium acetate from "esparto liquors," by evaporating water, and treating residue carefully above 200° C., but not high enough to decompose the sodium acetate.

Oils and Varnishes.—510,050, December 5, Scollay, G. W., siccatives, formed by adding to a vegetable oil a metallic oxide. 510,734, December 12, Trageser, A. F., apparatus for distilling and concentrating glycerol and heavy oils. 510,672, December 12, Brown, E. G., *et. al.*, "sweet residual petroleum products," purified by passing steam through petroleum while it is boiling for distillation and finally air. 511,051, December 19, Lahusen, J. C., production of neutral wool-grease.

Plaster and Cement.—509,924, December 5, Lorenz, J., artificial stone, from "ashes, cinder, burnt sand and cement." 511,735, December 26, Jones, J. K., wall plaster, sugar, 100 parts, flour, 25 parts, air-slaked slime, 250 parts, plaster of Paris, sand, and water. 510,874, December 12, Dutrey, J., artificial emery stones, sulphur, Portland cement, emery, Venetian red, and sugar form the composition. 511,740, December 26, McIlvried, J. R., retarders for plaster, air-slaked lime is kept in an air-tight receptacle and mixed with water, flour, liquid glue, and wood ashes and dried.

Miscellaneous.—510,421-22-23-24, December 12, Haley, A. E., parchmentized paper board. 509,951, December 5, Schroëder, E., manufacture of metal foil. 510,276, December 5, Lyte, F. M., electrolysis of fused metallic chlorides in a specially devised chamber. 510,834, December 12, Blackmore, H. S., electrolytic process for dissociating soluble salts. 510,065, December 5, Frédureau, J. B. F., composition of matter for crockery ware, consisting of aluminum silicate combined with a soluble alkaline salt and impregnated with fatty or resinous substances. 509,887, December 5, Fischer, J. F., and Peters, O., artificial stone filter, made by heating pulverized silica and glass to a high temperature. 510,376, December 5, Bertrand, P. H., depositing metal upon metal by immersing in solution of soluble salts of metals in dilute sulpho-carbolic acid. 510,013, December 5, Endruweit, C., method of producing metal film and metal paper. 511,271, December 19, Hoskins, Wm., safety paper for checks, made by adding to paper a soluble ferrocyanide and a per-salt of iron, insoluble in water but decomposed by weak acids in presence of a soluble ferrocyanide, and a salt of manganese, decomposed by alkalies or bleaching agents.

NEW BOOKS.

DIE SCHMIERMITTEL. METHODEN ZU IHRER UNTERSUCHUNG UND WERTHBESTIMMUNG. Von Josef Grossmann pp. 186. Wiesbaden, 1894. Price M. 4.80.

This treatise is a valuable addition to the literature of lubrication—and while no new methods are described, the bringing together of the various tests, as made use of by the German chemists, simplifies the subject and renders the book one of ready reference.