samples of phosphor-bronze yield as much as seven per cent. of the total phosphorus in the solution; others show only traces.

LABORATORY ILLINOIS STEEL CO.,
SOUTH CHICAGO.

PATENTS OF INTEREST TO CHEMISTS.

EDITED BY A. H. WELLES.

Nitric Acid.—Oscar Guttmann makes nitric acid by forming gaseous nitric acid in a distilling chamber, conducting it in a tube to a condenser and introducing an air-blast into the tube to act upon the gaseous nitric acid before condensation (491,481).

Starch.—Julius Dubiel has a process for the manufacture of starch (493,689).

Fertilizers.—To make fertilizer from tank water, O. T. Joslin (489,010) evaporates the water to a thick syrup, adds a small per cent. of sulphuric acid and from five to twenty per cent. of magnesium sulphate, absorbs the supernatant liquid with some suitable substance and dries the mass at 300°–400° F. and grinds.

Cattle Food.—Arno Behr treats Indian corn in aqueous solution with sulphurous acid, separates the starch as usual, adds sulphuric acid to the steeping water, evaporates, and adds an absorbent to form a rich cattle food (491,234).

Sugar.—489,879 is granted Carl Steffen for a process for obtaining sugar.

Milk and Butter.—A milk coagulating product is patented by Clarence P. Eyre, but the description is exceedingly vague as to the nature of the ferment used (491,416). Pepsin, gum arabic, and alum are claimed by S. C. Wilson (489,775) as a compound for increasing the yield of butter from milk, and David W. Hudson *et al.* proposes (489,814) to manufacture a so-called butter containing pure butter, sweet milk, and oil of cocoanut.

Brewing.—A. Hummel has a new process for the manufacture of beer (492,292), C. Heintz, a method and apparatus for purifying and softening liquors (492,542), and R. Rahr a process for making caramel malt (491,813). Moses Wool is granted 493,460 for a process for making brandy-mash and composition for same, and electricity is used by John Becker for purifying and ageing liquors (493,809). 490,538 is a process for preparing raw grain proposed by H. T. Brown. 490,056, Otto Zwietusch, patentee, is a process for making beer, and Arnold Kreusler (489,018) also has a new method of obtaining the same beverage, and E. A. Spink ages liquors in an original way (489,337).

Filtering Apparatus.—Simeon L. West has an apparatus for purifying, sterilizing, and filtering drinking water or other potable liquids (491,828).

Disinfectant.—Should the cholera come this year, as is feared, Albert

E. Woolf's disinfectant and deodorizer (490,797) ought to be a valuable one, containing as it does "chlorine, chlorides, hypochlorites, free oxygen, and ozone." What more could one desire?

Grease Extractor.—Benedickt Ehman employs a mixture of gasolene, sulphuric ether, alcohol, spirits of ammonia, powdered borax, powdered carbonate of soda, and saltpeter, for removing grease (491,413).

Paints, Cements, etc.—Finely ground mica is used as the base, which combined with oil, a pigment, and a binder forms a paint compound introduced by W. B. Abert (491,003). Robert R. Graf uses tungstate of ammonium, hyposulphite of ammonium, sulphate of soda, caustic lime, chalk, alum, carbonate of soda, and oil for a fire-proof paint (494,508). Vinegar, lime-water, salt, alum, white vitriol, linseed or other drying oil, and petroleum is the combination Richard J. Doyle uses (490,547) for a non-inflammable paint, and the same combination with the addition of from twenty-five to eighty-five per cent. of aluminum silicate in the form of soft unctuous clay (490,548) is used for a non-inflammable cement. Aluminum dissolved in glacial phosphoric acid, mixed with zinc oxide, which has been first "heated to reduce to a gummy condition," forms a base for a dental cement, which Max Sichel covers by 492,056. A cement composed of pulverized spent lime, pulverized carbon, silica, iron oxide, alumina, lime, magnesia, slaked rock lime, and sand is the invention of Bernard Dreyfuss (491,280)

Patent Plasters.—Herman Endemann is the patentee of a composition for artificial stone (489,377). Magnesia, magnesium hydrate, basic oxalate of magnesium, and sand are named. Air-slaked lime, glue, or oil cake, and china clay, are the ingredients of a compound used by Enos A. Bronson for retarding the setting of plaster (493,613).

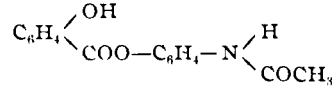
Miscellaneous Compounds.—Caroline S. Ely (493,693) names soda ash, ammonium sulphate, borax, oat and wheat flour, as a washing compound. R. B., J. L., and R. W. McEwen patent a process for forming paper board from old newspapers (492,927). Frank S. Culver patents a fire-proofing composition for wall covering containing asbestos fiber, clay, plaster of Paris, "Acme" cement, and a binding fiber (493,152) and James F. Thompson has a new burnishing composition (494,514). John F. Newell receives two patents on compositions for bearings: 494,156 mentions plumbago, fibrous substance, red lead, white lead, and a drying oil; and 494,433, plumbago, fibrous substance, an oxide, carbonate or basic carbonate of lead. James L. Covel describes his material for covering pipes as consisting of wheat flour, pulverized alum, arsenic, red lead, litharge, beef gall, and water (491,836). Richard V. Mattison has taken out three patents: one (492,092) is for a non-heating composition composed of calcium carbonate, magnesium carbonate, and asbestos; the second (492,093) is a boiler covering composition containing magnesium carbonate, plaster of Paris, asbestos, and wood pulp; and the third is similar (492,094) with the exception that calcium carbonate is

substituted for the plaster of Paris. Gustav Gumbel uses the waste liquors from the manufacture of sulphite cellulose, glue, and hydraulic lime, as a compound for "water-proofing oil receptacles" (491,284). A composition for leather for razor straps consisting of tallow, beeswax, molasses, and chimney ashes from burnt coal is the idea of Frank Minnis (490,030). Matthew H. Devey uses powdered slag, glass, and a binding medium for an insulating compound (490,641). George S. Lee (490,667) is granted the right to use "asphaltum, distilled coal-tar, residuum of petroleum, disintegrated paper, or wood pulp, and air-slaked lime" for the ingredients for a patent pavement. David A. Wray (491,395) uses tar or the residuum, or heavier products of oils, mixed with chloride of sulphur and chloride of iron, for a roofing and paving composition. Ludwig Haarmann secures a surface of asphaltic mastic by first coating with a solution of a bituminous substance, and applying mastic after evaporation of the solvent (492,197). A new compound of blown oils is described as "blown, non-drying glycyl ether of an unsaturated fatty acid, combined with pyroxylin or nitro-cellulose," and Walter D. Field is the patentee (491,880). Plumbago, white lead litharge, and asbestos, and a binding or cementing substance as resin, or gum copal in linseed oil, is claimed by John T. Richards as a composition for journal bearings (492,750). Byron B. Goldsmith produces nitro-cellulose or celluloid surfaces by coating with pyroxylin varnish and varnishes containing resin (490,195). That indefatigable worker, Thos. A. Edison, has an improvement (490,954) in the manufacture of carbon filaments for electric lamps.

Dyes and Dyeing.—Charles Noroy (493,286) first dips goods to be dyed black into a bath of water, logwood, and a copper salt, then immerses in a fixing bath, composed of "neutralized nitrated starch," alum, metallic sulphates, potassium bichromate, and a small quantity of soda or ammonia. Leopold Le Blois has a method and apparatus for bleaching or dyeing textile materials (489,819). Bruno Beyer treats silk waste to the action of oil soap, cold water, and salt steam baths, drys, and then subjects to the action of potassium permanganate (489,919). Frank P. Pearson (491,951) and George Donald (491,961) patent processes for printing colors with aniline black, as well as Wm. Browning (491,673). Robert Guehm and Jakob Schmid introduce a new brown dye (491,422), the sodium salt of an azo-derivate of meta-diazo-benzoic acid and Bismarck brown; Theodore Diehl derives a new blue-black azo dye (491,410), Jakob Schmid and Johannes Mohler, a new violet-blue induline dye, prepared by melting a mixture of para-phenylene-diamine, hydrochlorate of para-phenylene-diamine, and alpha nitro-naphthylamine at 160° to 190°, dissolving the melt in hydrochloric acid and precipitating with common salt (491,378). Bruno R. Seifert obtains a dye from alpha oxynvitic acid (493,143); Herman Boedeker, a pink dye, the alkali salt of a sulphonic acid, derived from fluoresceïn chloride and mesidine

(493,241). Jakob Schmid has a blackish blue azo-dye (493,563) and a gray-black tetrazo-dye (493,564), and Jakob Schmid and Robert Gnehm patent a red azo-dye (493,583). Mr. Schmid and R. Paganini prepare mono-sulpho-dioxynaphthoic acid by heating the sodium salt of di-sulpho-beta-oxy-naphthoic acid with caustic alkalies at 200° to 260°, and precipitating the dissolved melt with hydrochloric or sulphuric acids (493,562). 489,623 is granted Fritz Bender on a "yellow-red" dye, by oxidizing the bluish-red dye stuffs derived from dialkylmeta-amido phenols. Albert Herrmann (490,408) derives a new color from tetralkyl-diamido-triphenyl carbinols, a copper red powder with metallic luster, "soluble in water, insoluble in alcohol and benzine, dyeing wool and silk in acid bath very uniform blue shades." Professor Peter T. Austen incorporates an alkaline nitrate with logwood extract, producing thereby a friable solid, soluble in cold, and very soluble in hot water (491,972). He uses a similar method in preparing a solid coloring matter from fustic (492,368), and to cure logwood chips, adds a solution of a nitrite (494,237).

Organic Compounds.—Joseph Berlinerblau (489,728) prepares para-phenetol carbamide by treating para-phenetidin or para-anisidin with phosgene, adding ammonia to the products, and crystallizing out the resulting compound. R. P. Pictet (489,552) purifies commercial chloroform by cooling to 80°-82°, filtering the cold mass, crystallizing the chloroform, separating the non-crystallizable part, and finally distilling the chloroform at a very low temperature, and collecting the middle products. An antiseptic and antineuralgic compound, derived from salicylic acid, is patented by Herman Janssen (492,868). It has the formula



NEW BOOKS.

LECTURE NOTES ON THEORETICAL CHEMISTRY. BY FERDINAND G. WIECHMANN, PH.D., INSTRUCTOR IN CHEMICAL PHYSICS AND CHEMICAL PHILOSOPHY, SCHOOL OF MINES, COLUMBIA COLLEGE. New York: John Wiley & Sons. 12mo cloth. Price, $2.50.

A handy little volume of 225 pages, nicely put up both in type and paper, and intended to aid those entering upon a study of theoretical chemistry, more particularly those attending lectures on this topic.

The book differs in many respects from others dealing with the same subject. It does not pretend to philosophically survey and critically sift the existing theories in chemistry; it does