supply is syphoned into the same from the tube above. By keeping sufficient solvent in the lower flask or receiver, there is no danger whatever of the material in the extraction tube becoming overheated and ejecting the solvent, when the latter is delivered upon the same. The inner tube of the Liebig condenser, used with this piece of apparatus, should have an internal diameter of $\frac{5}{16}$. or better, $\frac{3}{8}$ inch, and the lower end should be cut off obliquely. The following are the sizes of the different parts of the complete extraction apparatus, convenient and suitable for the needs of ordinary work :

1. A 6 oz. Erlenmeyer flask.
2. Extraction tube, $1\frac{1}{8}$ inches (inter. diameter) × 5 inches length.
3. Percolator, $1\frac{1}{2}$ inches internal diameter, × 7 inches for body of cylinder, exclusive of lower contracted end of about $2\frac{1}{2}$ inches. Total length of percolater, $9\frac{1}{2}$ inches.
4. Condenser attachment, size to deliver about 15 c.c. solvent.
5. Liebig condenser, about 15–16 inches in total length, with inner tube of $\frac{5}{16}$ to $\frac{3}{8}$ inch internal diameter, and lower end cut off obliquely.

ABSTRACTS.

ANALYTICAL CHEMISTRY.

Analysis of German Silver. FELIX OETTEL.

This alloy of Cu, Ni and Zn, with occasionally Sn, Pb, Fe, Co, and Mn, is most readily analyzed as follows :

Dissolve the alloy in nitric acid and evaporate the solution, previously filtering if tin be present, and adding 15 to 20 drops of sulphuric acid for each .5 grm. metal taken. Separate the lead as sulphate if present. The filtrate, free from Sn and Pb, is diluted to 100 c.c., 2 c.c. of conc. hydrochloric acid are added, and the solution is treated with H_2S gas. On completion of the precipitate, indicated by the rapid settling of the CuS, heat to boiling, cool and filter. Wash the precipitate with dilute hydrochloric acid containing H_2S, and complete the washing with very dilute hydrosulphuric acid. Determine the copper as sulphide.

Evaporate the filtrate from the above to remove the HCl, take up with water, neutralize with KOH solution, add a few drops of sodium acetate (1:10), and then saturate with H_2S. Determine the precipitated zinc as ZnS.

Evaporate the filtrate to remove H_2S, oxidize with bromine water, precipitate the iron as a hydrate by NH_4OH, and from the filtrate, made strongly alkaline with NH_4OH, precipitate the Ni and Co by electrolysis.

Manganese, if present, is determined as Mn_3O_4. To determine the copper by electrolysis dissolve 5 to 6 grms. of the alloy in nitric acid, add 5 c.c. conc. nitric acid, dilute to 100 c.c. and submit to electric current.

Two samples thus assayed yielded :

Cu	61.22	57.53
Ni and Co	12.77	15.57
Zn	24.41	25.46
Pb	0.16	0.42
Sn	0.00	0.25
Fe	1.54	0.66
Mn	trace	0.14
	100.10	100.03

(*Zeit. anal. Chem.*, **27**, *15.*) J. F. G.

Generation of Hydrosulphuric Acid—Generation of Pure Hydrosulphuric Acid. CLEMENS WINKLER.

The author recommends barium sulphide for this purpose. 100 pts. of heavy spar, 25 pts. of coal, and 20 pts. of NaCl, all finely pulverized, are thoroughly mixed, and formed into a heavy paste by the gradual addition of water during the stirring. The mass is packed into a crucible, dried, and then ignited for a few hours at almost a white heat; cool, and finally remove the mass, and break into convenient sizes by the blows of a hammer. The BaS should be preserved in a dry place in well stoppered bottles or tin capsules. The H_2S is liberated from the BaS preferably by dilute hydrochloric acid. (*Zeit. anal. Chem.*, **27**, *26.*) J. F. G.

Detection of Sodium Phosphate in Glacial Phosphoric Acid. ANTON BETTENDORFF.

At 12° C. 1 part of sodium chloride requires for complete solution 1348 parts by wt. of hydrochloric acid of 1.190 sp. gr. At ordinary temperatures the transposition between the hydrochloric acid and phosphoric acid of the sodium phosphate is complete. Hence the presence of sodium phosphate in glacial phosphoric acid is indicated by the separation of crystals of sodium chloride when the glac. phosphoric acid is dissolved in hydrochloric acid of 1.190 sp. gr. (*Zeit. anal. Chem.*, **27**, *24.*) J. F. G.

Determination of Alumina in presence of Ferric Oxide and Phosphoric Acid. L. BLUM.

The author calls attention to the fact that dilute solutions of ammonium chloride are decomposed on boiling, the solution becoming acid in reaction due to liberation of the hydrochloric acid. To fully precipitate the aluminium as $Al_2(OH)_6$ by the addition of ammonium hydrate it is advisable not to boil the solution to rid it of the excess of ammonia, but to add a slight excess of ammonium hydrate, heat to boiling and filter immediately. (*Zeit. anal. Chem.*, **27**, *19.*) J. F. G.

Determination of Arsenic in Pyrites. H. FRESENIUS.

Comparative determinations of the arsenic in pyrites showed that the fusion method (fusion with KNO_3 and $NaCO_3$, etc.), offers no advantage in point of accuracy over the direct distillation of the arsenic with ferric chloride, after the preliminary oxidation in a stream of chlorine gas or with hydrochloric acid and potassium chlorate. (*Zeit. anal. Chem.*, **27**, *34.*) J. F. G.

Estimation of Chromium in Iron and Steel. J. C. ARNOLD and HENRY J. HARDY.

Precipitation as hydrate is open to the objection that phosphorus is usually present in the oxide finally weighed. Under suitable conditions chromium may be readily obtained as a basic phosphate of invariable composition ($Cr_6 P_4 O_{19}$) and may be weighed as such. The accuracy of the results depends upon rigid adherence to the details given. (*Chem. News*, **57**, *153.*) W. P. M.

Moisture Remaining in Gases dried by Means of P_2O_5. E. W. MORLEY.

Anhydrous phosphoric acid acts more thoroughly than concentrated sulphuric acid. It requires ten thousand litres of the dried gas to yield ¼ milligram of moisture, whereas this weight of moisture is contained in 100 litres of gas dessicated by means of sulphuric acid. (*Zeit. anal. Chem.*, **27**, *1.*) J. F. G.

A New Apparatus for the Direct Determination of Carbonic Acid. OSCAR OSTERSETZER.

This is a compact form of apparatus, in which the generated CO_2 is completely dried by passing through H_2SO_4, and further purified by passing through pumice stone saturated with $CuSO_4$, and finally absorbed in potassium hydrate solution and soda lime. With illustration. (*Zeit. anal. Chem.*, **27**, *27.*) J. F. G.

Gasometric Method of Determining Nitrous Acid. PERCY F. FRANKLAND.

The problem was to determine the nitrous acid present in a solution also containing nitrates, ammonia and organic matter. The quantity of nitrous acid present was too great to allow the use of any of the ordinary colorimetric methods, and the organic matter prevented the employment of standard permanganate.

Advantage was taken of the reaction between nitrous acid and urea:

$$2CO(NH_2)_2+2HNO_2=CO(NH_4O)_2+H_2O+CO_2+2N_2$$

and the calculation was based upon the volume of the evolved nitrogen. A tube, with cup and stopcock at one end similar to that of a Lunge's nitrometer was employed, and the introduction of the liquids was, as usual, made with aid of mercury.

An excess of crystallized urea was added to the residue left upon evaporation of the liquid under examination, 2 c.c. boiling water and the rinsings were added, and the solution was introduced into the tube. An excess of dilute H_2SO_4 (1 : 5), amounting to a few c.c., was then poured into the cup and admitted to the tube. An evolution of CO_2 and N followed. After 15 minutes, strong KHO solution was added and the mixture agitated until the CO_2 was absorbed. The volume of the remaining nitrogen was determined as usual.

In using this method it is always necessary, before beginning the evaporation of the original liquid, to add thereto a little strong KHO solution, as otherwise the salts of ammonium present would cause decomposition of the nitrites:

$$NH_4Cl+NaNO_2=N_2+NaCl+2H_2O.$$

Where nitrites and nitrates are each to be determined separately, the author proposes to determine the nitrites as above, and then, in a new portion, destroy the nitrites by evaporating with an excess of NH_4Cl and estimate the nitrate in the residue by the mercury method. (*Jour. Chem. Soc.*, **53**, *364.*) W. P. M.

J. Wiborgh's Gas-Volumetric Method for Determination of Carbon in Iron and Steel. H. V. Jüptner.

This method depends on the oxidation of the carbon by chromic and sulphuric acids, and the subsequent volumetric estimation of the resulting CO_2. For reasons discussed at length, treatment with cupric sulphate precedes oxidation by the mixed acids.

To obtain correct results, it is necessary that the carbon should be completely oxidized to CO_2, to which end it must be observed that (1) during treatment of the iron with cupric sulphate no carbon shall be lost as hydrocarbons; (2) that during oxidation with the mixed acids no hydrocarbons, but only CO_2, shall be allowed to form; and (3) that complete solution shall be effected.

[Detailed descriptions of method and apparatus are given.] (*Berg. u. Huttenwesen*, **36**, *67.*) D. W.

Tiles for Combustion Furnace. A. W. Stokes.

In place of the easily broken tiles of fire clay, the author greatly prefers slabs of asbestos cardboard. It is lighter, does not break, radiates less heat and cools more rapidly. (*Chem. News*, **57**, *150.*) W. P. M.

New Method for Determination of Ash. Ludwig Reese.

Into a difficultly fusible glass tube A B, 40–50 cm. long and 18–22 mm. internal diam. and connected with an aspirator, is placed a smaller glass "combustion tube" *a b*, 16–20 cm. long and 11–15 mm. inter. diam., having one end contracted and plugged with a double thickness of platinum gauze. A coil of platinum wire wound around the tube *a b* prevents the adhesion of the latter to the outer tube during combustion.

The material to be incinerated, contained in a porcelain vessel, is placed in the "combustion tube," a current of air drawn through the "combustion tube" by means of the aspirator, and by the proper regulation of the flames of a series of burners under the tube A B the drying and combustion proceeds very rapidly. (*Zeit. anal. Chem.*, **27**, *133.*) J. F. G.

Use of Asbestos in Filtration. W. FRESENIUS.

To facilitate the recovery and filtration of precipitates in liquid containing finely suspended matter, especially in digestion experiments, dilute the liquid considerably with water, add finely divided asbestos fibre, thoroughly mix by shaking, set the whole aside to settle, and, when clear, decant the supernatant liquid. Wash by decantation, and for recovery of the precipitated matter filter the residuum through a plug of asbestos fibre in a glass funnel. (*Zeit. anal. Chem.*, **27**, *32.*) J. F. G.

Apparatus for Fat Extraction. O. FOERSTER.

The improvement in this apparatus is in the form of the extraction tube into which the material to be exhausted is packed. The extraction tube has a cylindrical form, with lower end contracted, and the outer surface greatly thickened at a number of points, so as to allow a free circulation of the volatile solvent between the surfaces of the extraction tube and the percolator in which it rests, thus doing away with strings or wire necessary to suspend the tube in the more common forms of repercolation apparatus. (*Zeit. anal. Chem.*, **27**, *30.*) J. F. G.

Pressure Tubes. H. N. WARREN.

Glass combustion tubing (sealed at each end) is used as usual; the novelty being that the space between it and the outer (copper) tube is packed with magnesia. The whole is then immersed in a bath of melted lead. This arrangement is intended for temperatures ranging from 400° to 700° F.

For higher temperatures, as where a red heat is desired, the outer tube should be of wrought iron, and fine sand be substituted for the magnesia. (*Chem. News*, **57**, *155.*) W. P. M.

Pepper Adulteration and Analysis. F. M. RIMMINGTON.

An illustrated paper of interest from a microscopic standpoint only. The author holds that no purely chemical process can be relied upon to detect modern pepper adulterations. (*Analyst*, **13**, *81*.)

W. P. M.

Contribution to the Examination of Spices. EUGEN BORGMANN.

About 1 grm. of the pulverized spice is shaken with about 10 c.c. of water and the mixture poured upon an unglazed porcelain surface. The water is rapidly absorbed and leaves the spice in a separated condition suitable for examination by a lens. (*Zeit. anal. Chem.*, **27**, *31*.)

Examination of Cod Liver Oil and Vegetable Oils. Prof. E. SALKOWSKI.

For determining the congealing and melting points fresh samples must be taken for each experiment. Of 11 cod liver oils tested all became turbid after 2½ to 3 hrs.; at —10 to —12°, all but 2 solid. Of the chilled oils placed in melting snow 6 became liquid (clear or slightly turbid) in 2 hrs., 5 remained solid. When the fresh oils, not previously chilled, were placed in snow 8 remained clear and liquid, 2 became turbid and thick and only one became solid.

By the Reichert-Meissel method 5 grms. of oil required from .1 to .2 c.c. of $\frac{n}{10}$ NaHO.

The peculiar color reactions with sulphuric acid (using the oil in chloroform solution) are due to the yellow coloring matter, cholesterin and the fatty acids of the oil. The first indigo blue developed by the action of the sulphuric acid is due to the yellow coloring matter which is characterized as a lipochrome. The yellow color can be extracted from the saponified oil by ether. Palm oil and the yolk of eggs contain it in large quantity, butter fat small amounts, cottonseed oil traces, and the other vegetable oils none.

The fatty acids of cod liver oil, freed from the yellow coloring matter, dissolved in 20 pts. of chloroform and treated with an equal volume of sulphuric acid, produce a deep brownish red mixture with a deep green reflection. To apply the test, decant the colorless chloroform after ½ hr. and pour a few drops of the sulphuric acid in a few c.c. of glacial acetic acid. At first there is but little color developed, but on standing 1–2 hrs. a red violet color with a dirty green reflection results.

Cholesterin (melting point 146°) was found in each of the cod liver oils. Animal fats contain cholesterin, vegetable oils phytosterin.

The hot saturated alcoholic solution of cholesterin solidifies on cooling to a mass of crystalline plates which, under the microscope, appear as thin rhombic plates, frequently containing a re-entrant angle.

The phytosterin of vegetable oils, however, deposits from the hot alcoholic solution, in long needlelike crystals, arranged in star shaped bundles. If slowly crystallized the crystals may appear as elongated six-sided plates.

To separate cholesterin from cod liver oil take about 10 grms. of the oil and saponify with 10 grms. of KOH and 20 c.c. of dilute alcohol. After saponification dilute with water to about 600–700 c.c., shake with about 500 c.c. of ether, allow to separate, decant and evaporate the ether. The residue, if impure, is saponified with a little alcoholic potash and again extracted with ether. The ether solution is washed with water to remove any soap. Evaporate the ether, take up the residue with alcohol, concentrate to 1–2 c.c., allow to crystallize and determine the melting point of the purified crystals. A melting point of less than 146° would indicate the admixture of vegetable oil with the cod liver oil. (*Zeit. anal. Chem.*, **26**, *557*.) J. F. G.

INDUSTRIAL CHEMISTRY.

Free Carbonic Acid in Potable Water and its Effect on Leaden Pipes. E. REICHARDT.

Experiments show that it is only water containing free carbonic acid that attacks lead pipes. The view that lead pipes conducting such water become encrusted gradually, and thereby capable of resisting corrosion, has yet to be proved. Observation shows that, except with hard waters holding much lime, there is no deposit in the lead pipes, even after years of use. A water containing free CO_2 and proportionally rich in alkaline carbonates, in a pipe used 300 years, has caused a deposit of phosphatic lead oxychloride scarcely ½ mm. thick, the pipe being in a good state of preservation. As to the occurrence of water containing free carbonic acid, different mountain springs usually do not contain more than that necessary for solution of the monocarbonate present, often scarcely sufficient to form bicarbonate, but sometimes more, especially in waters holding much lime in solution.

Experiments thus far show that these spring waters do not attack lead except to the extent of minutest traces.

As compared with the infrequent occurrence of free carbonic acid in spring waters, river waters much more frequently contain it, though in far smaller quantity. It has thus far been proven that waters containing bicarbonates either in very small or in considerable quantities, do not attack lead, and even free carbonic acid, in small quantities, is without effect in presence of much lime and magnesia. On the contrary, the less mineral content, or the "softer" a water is, the more readily is lead dissolved.

Distilled or carbonic acid free water dissolves lead slowly with separation of oxyhydrate; distilled water holding carbonic acid in solution dissolves lead in much larger quantity, with separation of basic lead carbonate, a separation which can be very complete.

Water, to be conducted through lead pipes, should, under all circumstances, be examined for free carbonic acid and the amount determined. Its action on lead plates should also be noted.

The method preferred for free carbonic acid is Pettenkofer's—by means of rosalic acid, with which a change of color is produced not interfered with by simple or bi-carbonates.

Pettenkofer recommends 1 part rosalic acid in 500 parts alcohol, adding baryta water until the solution acquires a red tinge In proportion to the quantity of free carbonic acid present this solution loses its color or becomes yellow. If carbonates only are present the color becomes red to violet, and this is easily observable and determinable by neutralizing the free carbonic acid to the point where bicarbonate is formed.

It has been found that water containing free carbonic acid loses its solvent action on lead as soon as the formation of bicarbonate is effected; even with distilled water this takes place when the free carbonic acid has been neutralized by soda to bicarbonate.

1 cc. rosalic acid to 1 litre of water has been used in all experiments. (*Archiv. de Pharm.*, **14**, *1049.*) D. W.

Abstracts of American Patents Relating to Chemistry.

(*From the Official Bulletin of the U. S. Patent Office.*)

February 21st, 1888.

378,095.—Apparatus for the manufacture of gas. A. C. Humphreys.

378,113.—Process of refining cotton seed oil. G. W. Scollay.

The oil is treated with a metallic chloride and an alkali.

378,114.—Process of refining cotton seed oil. G. W. Scollay.

The oil is treated with ochre and an alkali.

378,136.—Process of producing aluminum. J. S. Howard and F. M. Hill.

The ore is boiled with hydrochloric acid, and, after cooling, mixed with Spanish white or lime. The free acid is then evaporated off, and the mass heated to about 600° to volatilize the ferric chloride. The resulting product is charged in a lime lined crucible mixed with lime, charcoal, fluorspar, cryolite and sodium bisulphate, and the charge covered with stannous chloride and sodium chloride. The alloy produced is removed and melted in lead or bismuth, the aluminium and impurities skimmed off, and purified by heating on a bed of porous material.

378,230.—Process of treating liquids in evaporating pans. P. Casamajor.

378,231.—Process of treating cinchona bark. P. Casamajor.

The ground bark is separately treated with an acid and an alkali. The resulting solutions are mixed and the precipitate separated.

378,232.—Process of treating saccharine solutions. P. Casamajor.

378,233.—Treatment of cinchona bark. P. Casamajor.

The process consists in treating the barks successively with an acid, and with an alkali or alkaline carbonate, then precipitating the acids from the alkaline solution, and the alkaloids from the acid solution, and mixing the precipitates.

378,246.—Refining Canadian and similar petroleum oils. H. Frasch.

The oil is distilled with oxide of lead.

378,278.—Combining metals with aluminum. W. A. Baldwin.

378,326.—Apparatus for mingling and combining gases. A. C. Lewis

February 28th, 1888.

378,490.—Process of manufacturing water gas. R. Boeklen.

378,583.—Insecticide. F. Fenstel.

An antiphylloxera consisting of tannic acid, ammonium sulphate, and potassium silicate.

378,673.—Apparatus for making sulphurous acid. C. E. Getchell.

378,681.—Apparatus for bleaching by electrolysis. E. Hermite and C. F. Cooper.

378,684.—Apparatus for manufacturing salt. H. A. Hogel and O. L. F. Browne.

378,774.—Process of treating sludge acid. H. de Grousilliers.

After floating off the petroleum and tarry impurities, sodium or potassium sulphate is added to the sludge acid. The resulting bisulphate is then dried and distilled.

March 6th, 1888.

378,940.—Apparatus for manufacturing gaseous fuel or illuminating gas. E. H. Shaw.

379,024.—Process of preparing glue stock. T. P. Milligan.

379,034.—Method of preparing and treating starch. J. C. Schuman.

379,090.—Process of refining oil. R. J. Wilson.

Intensely heated air is forced through the oil, and after the greater portion of the volatilized oil has been separated from the air, the air and uncondensed gases are utilized for illuminating or heating purposes.

379,150.—Dyeing animal textile fabrics with naphthazarin. R. Bohn.

The fabrics are treated with a chromium mordant and then dyed.

W. R.

ABSTRACTS.

GENERAL AND INORGANIC CHEMISTRY.

Curious Association of Hydrocarbons with Rock Salt in Nature. F. M. Lyte.

The frequent association of salt and bitumen or petroleum in the same deposits, has often struck me as likely to lead to the development of some probable theory as to the formation of these hydrocarbons.

Almost all specimens of rock salt, when struck or rubbed, give off more or less the characteristic odor of bitumen. Beds of rock salt are often colored brown by the bitumen they contain, and petroleum, on its emergence is nearly always associated with brine.

Deposits of rock salt are, as a rule, dry and anhydrous, though salt itself has a considerable attraction for moisture.

But more than this, those salts of potassium and magnesium, often occurring with it, are still more greedy of water.

If the seemingly probable theory that all formations of rock salt are due to the evaporation of sea water be correct, then these deliquescent and hygrometric chlorides would almost always have been the last part deposited in every bed of rock salt, and though owing to their great solubility, they may have been denuded and washed or melted away perhaps long afterwards, it is probable that they generally formed the final layer at first. These would, by their affinity for water, both during their formation and subsequently, tend to withdraw that liquid from all surrounding substances.

Now, most organic matter may be looked upon as a hydrocarbon combined with the elements of water. Withdraw the water and the hydrocarbon remains.

Metallic iron, if present, might modify the reaction. Is it not, then, a probable theory that most natural deposits of hydrocarbons owe their origin to this absorption of water, acting through the lapse of ages on organic matter, often aided by heat and pressure? If such be admitted it would account for the frequent association of salt with hydrocarbons. (*Chem. News*, **58**, *87*.) W. P. M.

On a few Crystallized Seleniates. L. Michel.

The author has realized the preparations of several seleniates by the dry process and by double decomposition.

The chloride of the metal to be combined with selenic acid is melted with sodium seleniate; the melted mass is cooled slowly and then treated with water.

Barium Seleniate.—If to the mixture of sodium seleniate and barium chloride some sodium chloride is added large crystals are obtained. The sp. gr. is 4.45. The crystals are insoluble in water and in cold and strong nitric acid. HCl dissolves them when warm with evolution of Cl. The analysis gives:

S_2O_3	45.23
(BaO)	54.42 *
	99.65

The crystals are rectangular octaedra, belonging to the system of the right prism with rhomboidal base; the optical properties observed were similar to those of the natural barytine. (*Bul. Soc. Chim.*, **49**, *29*.) M. L.

On a New Oxacid of Sulphur. M. Villiers.

The author has studied the compounds resulting from the action of SO_2 on the hyposulphites and describes one of these compounds in this paper; the others he proposes to study later.

A current of SO_2 is made to pass into a flask containing crystals of sodium hyposulphite with a small portion of water cooled by ice water; the gas is passed till no absorption occurs. If crystals remain undissolved more water is added and the current of SO_2 kept up. The liquid is allowed to stand two or three days, and then it absorbs SO_2 again. The liquid is evaporated in vacuo and the crystals formed correspond to the composition S_4O_8Na. *

---

* O=8.

Dissolved in water they become $S_4O_8NaH_2O_2$. (*Bul. Soc. Chim.*, **49**, *671.*) M. L.

Preparation of Hydriodic Acid. A. Etard.

The author describes an apparatus by which iodine can be introduced by fractions into a mixture of phosphorus and water. It consists of a small glass balloon having the neck bent and joined to a bent tube passing through the cork of a large balloon in which the reaction occurs: The joint between the tube and the neck of the iodine reservoir is a rubber ring; rotation of the iodine vessel permits the haloid to fall into the water. According to Lothar Meyer the production of PH_4I, together with HI, is prevented by introducing the phosphorus into the water mixed with iodine in excess. In the latter case the phosphorus must be placed in the rotating flask. (*Bul. Soc. Chim.*, **49**, *743.*) M. L.

On a New Double Carbonate of Potassium and Sodium.

L. Hugounenq and J. Morel.

The authors have obtained a new salt by evaporating slowly at 12° or 15° a solution of sodium carbonate containing potassium carbonate, in presence of an excess of potassium iodide mixed with sodium phosphate and sodium chloride. The mother liquor taken during crystallization contained per litre:

Potassium iodide	495.86	grms.
Potassium carbonate	10.34	"
Sodium carbonate	177.30	
Disodic phosphate	42.00	"
Sodium chloride	58.30	"

The analysis of the crystals produced answers to the formula,

$$CO_3KNa.6H_2O+CO_3Na_26H_2O.$$

Crystallographic determinations are given. (*Bul. Soc. Chim.* **49**, *740.*) M. L.

On the Toxic Character of Bismuth. Dalche and Villejean.

The authors state that bismuth although given in large quantities has never been observed to be toxic, but they assume that it is because the metal is not absorbed.

They have secured its absorption by hypodermic injection and have observed phenomena similar to those of mercurial poisoning, *e.g.* abundant salivation, disturbance of the renal functions, the urine becoming black and depositing a sediment containing bismuth: there is also development of enteritis with diarrhœa.

Bismuth applied upon wounds produces similar effects. (*Arch. de Pharm.*, **2**, *56*.) M. L.

Influence of Temperature on the Composition of Hydrated Calcium Sulphate. W. A. SHENSTONE and J. T. CUNDALL.

Both in dry and moist air, this salt is less stable than has been supposed. Experiment shows that the rate of dissociation is a slow one, but that it is much slower in its earlier stages than afterwards. One specimen of powdered selenite heated to 100° C. lost only .07% in weight at the end of 6 hours; beyond that time, however, the rate of loss was very greatly increased.

The experiments did not afford support to the idea that hydrates of calcium sulphate exist other than $CaSO_4 . 2H_2O$. (*J. Chem. Soc.*, **53**, *544*.) W. P. M.

Electrolytic Method of Liquefying Gases. H. N. WARREN.

A glass combustion bent at right angles, closed at each end, and having platinum plates fused into one extremity, is used. For the preparation of liquid HCl, for instance, a strong solution of the acid is introduced into the plate end of the tube, and the remaining limb is plunged into freezing mixture. Upon connection with a battery, the evolved gas liquefies in the cool end. (*Chem. News*, **58**, *127*.) W. P. M.

On a Fermentable Carbohydrate. E. GRIMAUX.

The author had in view the application of the Gorup-Besanez process of oxidation of mannite to glycerine by platinum black, with the purpose of obtaining glycerine aldehyde, $C_3H_6O_3$, and its transformation into a fermentable glucose, or even to attempt its direct fermentation. His conclusions are: that oxidized glycerine gives glyceric aldehyde susceptible of alcoholic fermentation. He insists, 1st, that it is the first example of the synthesis of a fermentable sugar, having the same general reactions as glucoses, and 2d, that the definition of fermentable sugar must be modified, as they are not necessarily hydrates of carbon, containing C_6 or C_{12} (*Bul. Soc. Chim.*, **49**, *251.*) M. L.

ABSTRACTS.

ORGANIC CHEMISTRY.

On the Sugars of Hesperidine and Isohesperidine. C. TANRET.

The author has found in the peel of bitter orange, besides hesperidine, another crystallized principle having 5 more mols. of water, which he calls isohesperidine. The object of this note is the study of the sugars yielded by the decomposition of these two glucosides. These glucosides give by decomposition a mixture of glucose and isodulcite in the proportion of 2:1. The quantity of sugar yielded was from 50 to 55 per cent. of the glucoside employed. The other product of decomposition, the so-called *hesperitine* has the formula $C_{32}H_{14}O_{12}$, (Hoffmann, Tiermann, Will), and the hesperetine of the two above cited glucosides melts at 222°. The author, finding that the decomposition is produced with fixation of water, proposes to change the formula of these glucosides. Instead of $C_{44}H_{26}O_{24}$ it would be $C_{100}H_{60}O_{54}$ (hesperidine) $C_{100}H_{60}O_{54}(H_2O_2)_5$ (isohesperidine,) and the equation of decomposition is

$$\underset{\text{hesperidine}}{C_{100}H_{60}O_{54}}+3H_2O_2=\underset{\text{hesperetine}}{(C_{32}H_{14}O_{12})_2}+\underset{\text{glucose}}{(C_{12}H_{12}O_{12})_2}+ {}^{*}$$

$$\underset{\text{isodulcite.}}{C_{12}H_{14}O_{12}}$$

(*Bul. Soc. Chim.*, **49**, *23.*) M. L.

---

* O=8.

Researches on the Optical Isomeres of Cinchonine.

E. Jungfleisch and F. Leger.

The authors recall the experiments of Pasteur in 1853 on the optical transformation of cinchonine into quinine by heat, for which fact the explanation was that these bodies must have a complete molecule formed by two active bodies, one of which rotates light to the right the other a little to the left; the result of the heating is to make one of the groups predominate, the other having been made inactive under the given conditions. The authors had in view the study of the great number of isomeres of the alkaloids of cinchona bark, Pasteur having only indicated one isomere for each group of alkaloid. They publish now their results on cinchonine.

This alkaloid was boiled with a solution of four parts of H_2SO_4, diluted with its weight of water, for 48 hours at 120°. The processes used for the separation of the alkaloid are too long to be described here. The bases separated and studied are:

1. *Cinchonibine*, $C_{38}H_{22}N_2O_2$. Insol. in ether, crystallizing in boiling alcohol; αD=+75°8, in alcoholic solution of 0.75%.

2. *Chinchonifine*, $C_{38}H_{22}N_2O_2$. Insol. in ether, crystalling from boiling alcohol in needles, forming a very soluble succinate, αD=$+195_0$, in alcoholic sol. of 0.75%.

3. *Cinchonigine*, $C_{38}H_{22}N_2O_2$. Sol. in ether, tne hydrochloride very sparingly soluble in the cold, and crystallizing very well. αD=—60°1 in alcoholic sol. of 1%.

4. *Cinchoniline*, $C_{38}H_{22}N_2O_2$. Sol. in ether, the hydrochloride in very large crystals, very soluble, the dihydriodide insoluble. αD=+53°2 in alcoholic sol. of 1%.

'The authors have found also two bases of another group:

5. *Oxycinchonine*, α $C_{38}H_{22}N_2O_4$. Insol. in ether, soluble in dilute alcohol; forming very sparingly soluble hydracid salts. αD=+182.56 in alcoholic sol. of 1%.

6. *Oxycinchonine*, β $C_{38}H_{22}N_2O_4$. Insol. in ether, soluble in dilute alcohol, forming very soluble hydracid salts and a succinate very little soluble in cold. αD=+187.14 in alcoholic sol. of 1%.

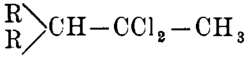
The separation of these products is described at length. (*Bul. Soc. Chim.*, **49**, *743*.) M. L.

Preparation of Tetraphenylethylene. P. DE BOISSIEU.

Dry distillation of diphenylmethane yields the above substance. The diphenylmethane, prepared by the action of benzyl chloride on benzol in presence of aluminum chloride is introduced into a balloon with a reflux condenser. The balloon carries a bromine funnel, and the bromine enters drop by drop. The operation goes on at about 150° ; when all the bromine has been added the temperature is raised to the boiling point, and kept till HBr is all driven off. The contents of the flask are introduced into a retort and distilled. The substance passing over above 360° has the properties of tetraphenylethylene as given by M. A. Behr. Nascent converts it into tetraphenylethane, whereas oxidation by chromic acid yields benzopinacone, $\begin{array}{l}(C_6H_5)_2{=}COH\\ \qquad\quad |\\ (C_6H_5)_2{=}COH\end{array}$, and then benzophenone. (*Bul. Soc. Chim.*, **49**, *681.*) M. L.

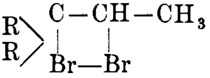
Preparation of Isoproprylacetrylenol with Methylisopropyl carbonyl. A. BEHAL.

The author had in view the study of the place of H taken by substitution in ethylene bromide, iodide or chloride. Two cases are to be considered. 1st. The bisubstituted body corresponds to an acetone, and has, near by, a tertiary carbon :



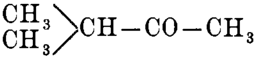
$$\begin{array}{l}R\\R\end{array}\!\!>CH-CCl_2-CH_3$$

2d. The derivative is such that one of the haloids is attached to a tertiary carbon, the other to a C group retaining one H :



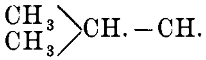
$$\begin{array}{l}R\\R\end{array}\!\!>\begin{array}{l}C-CH-CH_3\\ |\qquad |\\ Br-Br\end{array}$$

The author considers the first case. He has taken methylisopropyl carbonyl



$$\begin{array}{l}CH_3\\CH_3\end{array}\!\!>CH-CO-CH_3$$

of which he indicates the preparation by the action of isobutyryl chloride on zinc methyl; the acetone obtained boils at 93–96°. This body is treated with phosphorus perchloride, and the chloro-compound treated in sealed tubes with alcoholic potash. The properties of the body lead to the formula



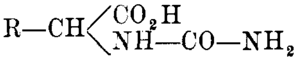
$$\left.\begin{matrix}CH_3\\CH_3\end{matrix}\right> CH.-CH.$$

(*Bul. Soc. Chim.*, **49**, *23.*) M. L.

On the Metapyrazolones of Pinner and Lifschutz.

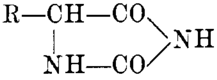
E. GRIMAUX.

MM. Pinner and Lifschütz have given the name of metapyrazolones to the bodies produced by the action of HCl on the combinations of urea with the cyanhydrines of aldehydes. According to those authors there would be formed the acid

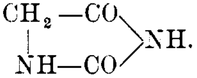


$$R-CH\left<\begin{matrix}CO_2H\\NH-CO-NH_2\end{matrix}\right.$$

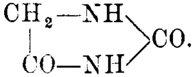
which acid losing water will give



R being an hydrocarbon radical, these bodies would be substituted products of metapyrazolone.



The authors, says M. Grimaux, thought that they had discovered a new function, for which they created a name. The pretended metapyrazolone is nothing but *hydantoine* or *glycolylurea.*



In the same way the author denies the necessity of accepting the name of metapyrazols, isomeres of metapyrazolones. (*Bul. Soc. Chim.*, **49**, *739.*) M. L.

Researches on Sulfines. G. PATEIN.

The author describes the preparation of these bodies by mixture of the theoretical quantities of the alcoholic sulphide and iodide ;

the reaction is complete after two or three days without heating. The author has prepared—1. $(CH_3)_3$ SI. 2. $(C_2H_5)_3SI$.

$$3.\ \left.\begin{matrix}(C_2H_5)_2\\(CH_3)\end{matrix}\right\}SI.\quad 4.\ \left.\begin{matrix}(CH_3)_2\\(C_2H_5)\end{matrix}\right\}SI.$$

He has also prepared these bodies by another reaction, that of an alcoholic iodide on an alcoholic solution of sodium sulphide. He thinks that the reaction occurs thus: $3(CH_3)I+Na_2S=2\ NaI+(CH_3)_3SI$. $2(CH_3)_3SI+Na_2S=2NaI+3(CH_3)_2S$. By the reaction of these iodides of sulfines with silver cyanide he obtains the sulfine cyanines $(C_2H_5)_3SCN$. AgCN ; $CH_3(C_2H_5)_2$ SCN. AgCN and the methyl compounds and ethyl-methyl compounds of identical composition. (*Bul. Soc. Chim.*, **49**, *678.*) M. L.

Hydration of Tolane. A. Behal.

Tolane or diphenylacetyn is, like phenanthrene, isomeric with anthracene. It answers to the composition $C_6H_5.C{=}C.C_6H_5$. The author has studied its hydration by means of sulphuric acid, with the intention of extending the reaction to the aromatic series. He describes his method as follows : The substance after distillation in a current of steam and crystallization from alcohol appears in lamellae, melting at 54–55°. The melting point compared with the analysis points to the presence of desoxybenzoin, that is an acetone phenylbenzyl carbonyl, $C_6H_5CO{-}CH_2C_6H_5$. (*Bul. Soc. Chim.*, **49**, *337.*) M. L.

Action of Sulphuric Acid on Cinchonine in Presence of Oxalic Acid. E. Caventon and Ch. Girard.

When cinchonine is submitted for several days to the action of oxalic acid in presence of H_2SO_4 between 125° and 130° the alkaloid is modified. The solution is precipitated by NH_3, and the precipitate treated by ether, which dissolves only a portion of it. The ethereal solution is agitated with acidulated water, the aqueous solution is precipitated by NH_3 and the precipitate is treated with benzole. The authors describe one of the two bases soluble in ether and benzol. It is also soluble in acetone, chloroform, methyl, ethyl and amyl alcohols; it fuses at 125°, turns the plane of polarized light to the left, is sparingly soluble in water, and does not seem to be altered by ebullition. Heated with potash it gives compound ammonias, quinoleic and pyridic derivatives. It forms with HCl a well crystallized salt, soluble in water; with platinic chloride it gives a fine orange yellow precipitate. The composition is similar to that of cinchonine. (*Bul. Soc. Chim.*, **49**, *88*.) M. L.

Chemical Actions of some Micro-organisms. R. WARINGTON.

The action of twenty-seven varieties has been studied in four particulars:

1. The hydrolysis of urea.
2. Action on milk.
3. Capacity for reducing nitrates.
4. Power of producing nitrification.

The article is a long and full one. (*J. Chem. Soc.*, **53**, *727*.)
W. P. M.

ABSTRACTS.

ANALYTICAL CHEMISTRY.

Two New Methods for Estimation of Sulphur in Steel. J. O. ARNOLD and H. J. HARDY.

The first is intended for rapid (less than thirty minutes) and approximate determinations (error .01 to .03 per cent.) suited to quick, rough work, and consists in treating the borings with zinc and sulphuric acid (see cut in original article), absorbing the evolved H_2S in solution of NaHO, adding lead acetate and comparing the resulting coloration with one of known strength.

In the second method (which is of much greater accuracy) the borings are treated with sulphuric acid as before, but hydrogen is supplied from a gas holder. The gases pass through a series of small test-tube-like vessels of special arrangement, each containing an amount of lead acetate solution sufficient to fix as sulphide .01% of S. in 2 grms. of steel. The reaction is self indicating. All that is required is to count the number of precipitated cylinders and estimate roughly the faint color in the last tube acted upon.

The article is fully illustrated. (*Chem. News*, **58,** *41.*)

W. P. M.

Notes on the Manufacture of Chlorine, with Special Reference to the use of Magnesia in that Process, and its Economy. C. T. KINGZETT.

The chemical reactions that are concerned in the Weldon-Pechiney process are experimentally investigated and found to be:

1. $H_2O+MgCl_2=MgO+2HCl$
   $2HCl+O=H_2O+Cl_2$
2. $MgCl_2+O=MgO+Cl_2$

The decomposition of HCl vapor at a red heat by means of air is promoted by the presence of free magnesia. The author experimentally shows the possibility of using a constant and limited quantity of magnesia with a view of manufacturing chlorine from successive quantities of hydrochloric acid. He suggests the use of a substance such as brick or pumice stone, which has been previously coated or admixed with MgO or some magnesium salt, thus disposing of the great quantities of solid material handled in the Weldon-Pechiney process. (*J. Soc. Chem. Ind.*, **7,** *286.*)

W. P. M.

Estimation of Nitrites, alone or in presence of Nitrates and Chlorides. T. CUTHBERT DAY.

The solution containing the nitrite is introduced into a flask of about 75 c.c. capacity and an excess of solid NH_4Cl added until the solution is *thoroughly* saturated.

From a suitable apparatus, pure CO_2 is passed into the flask until the atmosphere therein is entirely displaced. The contents of the flask are then boiled, and the evolved gases (CO_2 and N) pass by a delivery tube into a graduated absorption tube inverted over a mercury bath, and containing mercury and a few c.c. of strong KHO solution. After complete reaction, the absorption tube is removed to a vessel full of water, the mercury allowed to fall out, and the volume of residual nitrogen measured after standing a few hours.

From the following equation it will be seen that the volume of nitrogen obtained must be *halved* in order to calculate the quantity of nitrite originally present :

$$KNO_2+NH_4Cl=KCl+2H_2O+N_2.$$

The presence of a nitrate does not affect the accuracy of the determination. (*J. Chem. Soc.*, **53**, *422.*) W. P. M.

Photochemical Estimation of Graded Tint. E. J. Mills and J. Buchanan.

Attention has been directed to the comparison of tinctorial effect upon dyed goods. The process consists in photographing on an isochromatic plate, and at one operation, equal sized pieces of tissue, exhibiting different degrees of the same tint. A negative is thus obtained from which any number of prints can be produced on "gelatino-bromide" paper, and each impression represents definitely in terms of silver, the original grade of tint. All that is necessary is to make a sufficient number of impressions to enable the silver to be determined either volumetrically or gravimetrically. (*J. Soc. Chem. Ind.*, **7**, *309.*)

W. P. M.

Adulteration of Tallow with Cottonseed Oil. Rowland Williams.

The author shows that as much as 40 per cent. of the adulterant may be added without fear of detection by ordinary observation, and that determinations of the melting point and saponification equivalent are worthless, unless taken in conjunction with other data.

The equivalent of iodine absorption is, however, so different for tallow and cottonseed oil, that the author recommends it as a means of detecting admixture.

A five per cent. addition of cottonseed oil is readily noted. (*J. Soc. Chem. Ind.*, **7**, *186.*) W. P. M.

Detections of Falsification in Butter. P. Bockairy.

The process is based upon the difference in quantities of alcohol necessary to precipitate the fatty matter, butter or other fat, in solution in crystallizable benzol. Of all fats examined pure butter is the one requiring the largest amount of alcohol before giving any precipitate. The author observes also the volume of the fatty matter precipitated, its physical appearance, etc., these appearances being different for every kind of fat observed by him. (*Bul. Soc. Chim.*, **49**, *247.*) M. L.

Alcoholic Silver Nitrate as a Reagent for Acetylene Hydrocarbons. A. Behal.

The author has found that the two reagents employed to characterize anacetylene hydrocarbons, viz., ammoniacal cupric chloride and ammoniacal silver nitrate, do not always indicate the presence of these even when abundant in a mixture. A proportion of 20 per cent. of œnanthylidene was not detected by silver nitrate, and a proportion of 10 per cent. was only doubtfully indicated by the cupric chloride. The author thinks that he has found a better reagent in an alcohol at 95° saturated with silver nitrate (the ammoniacal alcoholic solution does not give good results). He has observed precipitations with acetylene, allylene, œnanthylidene, caprylidene, dipropargyl, but not with the substituted acetylene hydrocarbons, ethylpropylacetylene, caprylidene of caprylene, or tolane. (*Bul. Soc. Chim.*, **49**, *335.*) M. L.

Determination of Starch in the Potato. A. Girard.

The author's researches have led him to conclude that 1 grain of starch of potato distended by certain reagents can absorb 0.122 iodine. On this fact he bases his process of determination. About two kilogs. of potatoes are taken in slices of 300 or 400 grms., grated, and 25 grms. of the pulp are placed in a 750 c.c. flask with 50 c.c. of HCl of $\frac{2}{1000}$ and left in contact for three hours. An ammoniacal solution of copper oxide is then added in the proportion of 100 c.c. and the solutions are left together over night ; the next day the solution is treated with excess of acetic acid. The iodine solution is made with 3.05 grms. c.p. iodine and 4 gr. c.p. KI, 10 c.c. answer to 0.25 grms. starch. The operation is at end when a drop of the solution stains starch paper.

It is necessary to make a correction of 0.5 per cent. for albuminoid bodies. (*C. R.*, *1887*, **104**, *1629*.) M. L.

Detection of Saccharin in Beer. A. H. ALLEN.

Concentrate the beer to one-third. Agitate with ether. Evaporate the ethereal solution to dryness. Ignite the residue with caustic or carbonated alkali, also adding a little nitre. A sulphate will be formed by the ignition, which, of course, will give the usual precipitate with barium chloride. The weight of $BaSO_4$ precipitated, multiplied by .785 will give the weight of saccharin to which it corresponds. The concentrated beer should react acid before agitating with ether, therefore, if necessary, add a little phosphoric acid. (*Analyst*, **13**, *105*.) W. P. M.

New Process for the Medico-Legal Detection of Blood. M. TERRY DE LA BELLONE.

The suspected spots are put in contact with a $\frac{1}{1000}$ solution of NaCl, and the solution (after contact with the spots for several hours) is examined with the spectroscope for a haemoglobine. The solution is then treated with a few drops of a concentrated sol. of chloral. If a precipitate forms, a portion is taken on a piece of glass and coagulated by slight heat ; the liquid that separates is removed with filtering paper. The coagulum is treated with a sol. of fuchsine, washed with water to take away the excess of fuchsine, treated with a drop of acetic acid, covered with a slide and the blood globules are examined under the microscope. The author indicates modifications of the process for blood stains on wood, iron, earth, etc. (*Arch. de Pharm.*, **3**, *115*.) M. L.

Spectroscopic Detection of Blood. G. LUCOSSIER.

The author asserts that it is not the oxyhaemoglobine that give the most sensitive spectral reaction, but the reduced hematine (haemochromogene of Hoppe-Seyler). In other words, if an oxyhaemoglobine solution will not give any absorption of light, the same solution will give a very distinct spectral reaction by being transformed into reduced haematine.

1. The blood spot is dissolved in water and oxyhaemoglobine is looked for with the spectroscope.

2. The solution is mixed with one drop of a fresh sol. of sodium hydrosulphite, which dispels the spectrum of oxyhaemoglobine.

3. One or two drops of a concentrated sol. of soda are added, haemoglobine break into globuline and reduced haematine. The author indicates as the spectral characteristics of the haematine, disappearance of the bands by heating to 50°, etc., etc. (*Bul. Soc. Chim.*, **49**, *691.*) M. L.

ABSTRACTS.

INDUSTRIAL CHEMISTRY.

Experiments on the Industrial Value of Thompson's Calorimeter. M. Scheurer-Kestner.

The apparatus is used in England for the determination of the heat of combustion of coal, etc., the matter being mixed with eight or ten times its weight of a mixture of potassium chlorate and potassium nitrate. The author finds that this quantity of oxidizing agent is too small and he employs from 11 to 14 times the weight of the combustible. The author compared this instrument with the calorimeter of Fabre and Silbermann, employing charcoal, and the result is that the figures obtained with Thompson's instrument must be increased by 15 per cent. Applying this correction the instrument gives sufficiently good results. With practice the error does not reach 1 per cent., although the results cannot be absolutely depended upon, the author having met anomalies in results that he is at a loss to explain. (*Bul. Soc. Chim.*, **49**, *685.*) M. L.

Rate at which Bleaching Powder loses its Available Chlorine. John Pattinson.

Samples of the same powder were kept at the several temperatures of 60°, 70° and 80° F. and were analyzed monthly for a period of twelve months. The original samples contained 36.10 per cent. available chlorine. At the end of a year the results were :

	Original.	60°.	70°.	80°.
Available Chlorine..........	36.10	30.10	28.30	19.10
Chlorine as Chloride.......	0.14	5.37	6.91	15.17
Total Chlorine.............	36.33	35.47	35.64	35.64

Thus the available chlorine disappears in proportion to the length of time the powder is kept, and to the degree of temperature. The total chlorine remaining nearly constant, the change is probably :

$$CaOCl_2=CaCl_2+O.$$

(*J. Soc. Chem. Ind.*, *7*, *188.*) W. P. M.

Recovery of Sulphur from Alkali Waste. A. M. Chance.

The mixture of alkali waste and water, of the consistency of thin cream, is placed in a series of vessels (see illustration in original article) and lime kiln gases (CO_2 and N) then forced through.

Calcium sulphide is broken up by the CO_2, with liberation of H_2S, which passes on to the next vessel, where it meets with a further quantity of alkali waste, and is absorbed with production of CaH_2S_2. For a time, the gases issuing from the last vessel contain neither CO_2 nor H_2S and are allowed to escape ; but finally action commences between the CO_2 and CaH_2S_2 according to the equation :

$$CO_2+CaH_2S_2+H_2O=CaCO_3+2H_2S.$$

When H_2S is observed to issue in considerable strength from any vessel of the series, that vessel is connected directly with a gas holder and the gas collected as long as it continues of sufficient richness.

After collection, the gas may be burned directly for preparation of sulphuric acid, or the sulphur may be itself recovered by a Claus kiln, working on the principle of incomplete combustion :

$$H_2S+O=H_2O+S.$$

The process is a continuous one, and a chief point thereof is the elimination of a considerable quantity of inert, diluent gases, mainly nitrogen, which are allowed to escape, leaving the remaining gases proportionately enriched. (*J. Soc. Chem. Ind.*, **7**, *162.*)

W. P. M.

Conversion of Lime Mud into Cement. J. S. Rigby.

As a bye-product of the alkali manufacture, calcium carbonate (lime mud) is produced in a state of subdivision comparing favorably with the finest ground limestone. The author's method of converting this into cement, consists in first washing the mud as free from alkali as possible and mixing with a good clay, in such proportions as will give the finished amount the following composition :

Lime	62.
Alumina and iron oxide	10.
Silica	22.

The mixture is then dried and charged into kilns with alternate layers of coke.

The process is patented. (*J. Soc. Chem. Ind.*, **7**, *301.*)

W. P. M.

Effects of Food-preservatives on the Action of Diastase. Henry Leffman and William Beam.

One-half c. c. maltine, diluted to 5. c. c. and added to 100. c. c. starch solution was the liquid used in following table :

Antiseptic used.	Proportion.	Fehling's Solution required.
None	———	245. c. c.
Salicylic acid	1 to 500	No sugar formed.
" "	1 " 1,000	" " "
" "	1 " 20,000	245 c. c.
Boric acid	1 " 1,000	245 "
Sodium acid sulphite	1 " 1,000	245 "
Saccharin	1 " 1,000	18.5 c. c.
"	1 " 500	5.6 "
Beta-napthol	1 " 1,000	204 "
"	1 " 500	174 "
Alcohol	1 " 25	245 "

EXPERIMENTS WITH DIASTASE.

Proportion of Diastase.	Antiseptic.	Proportion of Antiseptic.	Fehling's Solution required.
1 to 500	None	———	300.5 c. c.
1 " 500	Salicylic acid	1 to 3,000	286 "
1 " 500	"	1 " 1,500	16 "
1 " 500	"	1 " 1,000	No sugar.
1 " 1,000	None	———	263 c. c.
1 " 1,000	Salicylic acid	1 to 1,000	No sugar.
1 " 2,000	None	———	238 c. c.
1 " 2,000	Salicylic acid	1 to 5,000	82 "
1 " 2,000	"	1 " 3,000	No sugar.
1 " 1,000	Boric acid	1 " 1,000	250 c. c.
1 " 1,000	Sodium acid sulphite	1 " 1,000	263 "
1 " 500	Saccharin	1 " 1,000	86.3 "
1 " 1,000	"	1 " 1,000	No sugar.
1 " 1,000	Beta-napthol	1 " 1,000	238 c. c.
1 " 1,000	Alcohol	1 " 25	250 "

The inferences are that salicylic acid is especially objectionable in a malt extract, and that saccharin is also unsuitable.

Boric acid and sodium acid sulphite seem to have but little retarding effect. (*Analyst*, **13**, *103*.) W. P. M.

A New Antiseptic Soap. JOHN THOMPSON.

The soap contains 1 to 3 per cent. of biniodide of mercury, dissolved in potassic iodide. For use, the watery solution of the soap is diluted until the quantity of the salt present reaches 1 in 2,000 or 1 in 4,000.

The advantages of iodide over the chloride of mercury are, that it is not so poisonous, is a much more powerful antiseptic, and makes a good and effective combination with soap. (*J. Soc. Chem. Ind.*, **7**, *192*.) W. P. M.

Action of Petroleum on Lead. WM. FOX.

On tanks in constant use, a deposit is formed consisting of carbonate and hydrated oxide, together with a small quantity of valerate of lead.

Experiments support the probability that the white lead, of which the powder practically consists, and a paraffin, is formed by the action of an oxidizing agent and a small quantity of valeric acid present in the petroleum. (*Chem. News*, **58**, *39.*)

W. P. M.

Note on Rave's Process for the Utilization of the Acid Tar Residues of Petroleum Manufacturers. W. P. THOMPSON.

The acid tarry material formed by refining petroleum with sulphuric acid, has, until recently, been a waste product. The *Sociètè Oléo Graisse* are at present engaged in utilizing it by Rave's process. The acid tar is kneaded with iron cuttings or filings, the iron being in slight theoretical excess. After more or less time the acid combines as metallic sulphate. Hot water is added. The sulphate dissolves, the excess of iron falls to the bottom, and the black mass melts and rises to the surface. After thorough washing this black mass is found to possess all the mechanical proportions of the best purified soft bitumen. The solution of sulphate is drawn off and allowed to crystallize. The "bitumen" is heated in a still until it assumes almost any required degree of hardness. According to the amount of heating there may be obtained : 1. An elastic substance, strongly resembling India rubber, or 2, a material hard and tough as ebonite, which is an extremely good non-conductor of electricity, is unacted upon by acids or alkalies, and is therefore well adapted for making galvanic batteries, coating acid tanks, and the like.

Upon pushing distillation to the extreme, a bright metallic looking carbon is left which is hard enough to scratch glass and is a remarkably good conductor of electricity. (*J. Soc. Chem. Ind.*, **7**, *303.*)

W. P. M.