

the same manner over and over again. Clowes has described the reaction that takes place when couples of zinc-copper, magnesium-copper, etc., are immersed in water. Hydrogen is given off, basic sulphates are deposited, and oxide of copper formed. Sodium peroxide has been suggested as a third group reagent by Parr, who boils the slightly acid solution of metals with a small porcelain teaspoonful of the peroxide. Iron, manganese, cobalt, and nickel are precipitated, whilst aluminium, zinc, and chromium remain soluble. Besson claims to have prepared a new oxide of phosphorus, P_2O_5 , by heating PH_3 Br. to $50^\circ C.$, in a sealed tube with $POCl_3$. It is reddish-yellow solid, behaving similarly to phosphorus. The B.P. requirements of sodium iodide, that it shall contain 99 per cent. purity, is in excess of those of the U.S.P. or P.G., where 5 per cent. of moisture is allowed. Umney seems to suggest that the B.P. standard is too high, whilst he finds commercial iodide only assays about 86 to 91 per cent. of purity. Several new tests have been suggested for nitrous acid and nitrites. Naphthylamine-sulphonic acid with ammonia gives a rose color with nitrites; resorcin has also been recommended, used with sulphuric acid, and the red color estimated quantitatively by comparison. Sulphites materially affect all tests for nitrites, but the brucine test, according to Pickard, is least affected.

Moissan and Williams have effected combinations of iron, calcium, strontium and barium with boron, forming definite borides. This was accomplished by means of the electric furnace. Thus calcium boride was obtained by fusing dry calcium borate, aluminium turnings and sugar charcoal in a carbon crucible. These borides occur as micro-crystalline powder, hard enough to scratch rubies, and having the formula MBo_4 . Dymond and Hughes have shown that dithionic as well as sulphuric acid is a product of the oxidation of sulphurous acid by permanganate of potassium. Evans suggested an improved process for making ferrous phosphate B. P., using decantation instead of washing to get rid of impurities and so avoiding oxidation. In the region of organic chemistry the alkaloids continue to attract attention, and repeated attempts at their synthetical production have been recorded. Chief among these is Fischer's synthesis of theobromine. Cytisine has been found by Gortier in *Baptista tinctoria*, as well as

a glucoside baptisin. Paul and Cownley deny the conversion of cinchonine into cinchonidine as stated by Koenigs and Husmason. The various methods for determining morphine in opium preparations have been discovered by Farr and Wright. Anisol has been recommended by Touquet as a solvent for the purpose of separating codeine from morphine, the latter being practically insoluble. Hilger and Jackenack have described a method of estimating caffeine in tea and coffee in which the base is obtained undecomposed and pure. Hyde finds that solution of bleaching powder (liquor calcis chlorinate) is superior to bromine water in producing the well-known thalleoquin test for quinine. Petit and Polonovski stated that commercial salts of so-called pilocarpine are really salts of pilocarpine and pilocarpidine, which they regard as isomers. Since then some attempt has been made to disprove this assertion. Van Rijn and others have examined carica papaya and isolated carpine. Da Silva described a new reaction for eserine and its salts, depending upon the green color obtained on evaporation of a strong nitric acid solution of the alkaloid. The green residue dissolves in dilute nitric acid giving fluorescent yellow-red solution. Santonin and its derivatives still afford numerous speculations as to its chemical composition. Trevor Laurence has accomplished the synthesis of citric acid by the condensation of ethylic oxalylacetate and bromacetate in presence of zinc. Coblentz disproved Robbins' assertion as to the identical nature of gelsemic acid and cesculin. An interesting substance provisionally named tuberculinic acid has been obtained by Schweinitz and Dorset from artificial cultures of tubercle bacillus. Camphor is the elusive guest of quite a number of chemists who are anxiously seeking to determine its constitution. An important step has been discovered in the synthetical production of this body by Perkin and Thorpe who have prepared camphoronic acid from trimethylglutamic acid.

Schaffer estimates aloin by precipitation of the aqueous solution of aloes with calcium chloride. Dietrich suggests the detection of vanillin in benzoin, etc., by extracting with equal parts of hydrochloric acid and water, and after filtration through charcoal precipitate with pyrogallol. Koebler determines menthol in oil of peppermint by boiling with alcoholic soda for one hour and titrating with sul-

phuric acid. The iodine value of beeswax has been shown by Guyer to be about 8.5. Dmstaedter and Lifschute find myristic acid, carnubic acid, carnaubyl alcohol, besides cholestirin in wool-fat. The chemistry of asafetida is found by Polasek to include ferulic acid, asaresinol tannol and its ester. A large amount of work has been done upon essential oils, those of otto and geranium coming in for special attention. Umney has described the varieties of oil of feunel. Soldaini and Berte consider the best test for essence of lemon is the rotation observed, after distilling one half of the sample, in both residue and distillate. American petroleum has been analyzed by Mabery and the numerous constituents separated. The increased uses of formaldehyde suggested a better test for estimating this preservative, so Romijn devised two new ones. The first depending on oxidation by iodine in alkaline solution and the second on the combination of formaldehyde with K. C. N.

THERAPEUTICS AND PHYSIOLOGICAL CHEMISTRY.

The progress of serum-therapy, as it is commercially termed, has already been referred to, and even those who at first regarded these serums with something like an anti vaccinator's scorn have been compelled to admit their efficacy in certain cases. Whether it is true progress on scientific lines or mere extension of empiricism, time alone can determine. The importance of early and correct diagnosis of typhoid fever has led physicians to hail the serum test, known here as Johnston's method, with enthusiasm. Unfortunately, like Ehrlich's diazor test for typhoid, by means of sulphuric acid, it is not infallible. Still the report of the American Medical Association is on the whole distinctly favorable as it is regarded as the most constant and reliable reaction. Serum for erysipelas, snake-bites, diphtheria, tetanus, etc., are also being lauded, and in regard to diphtheria antitoxin statistics have been published showing in many institutions a marked reduction in mortality, especially amongst children since the constant use of the serum. Elsaesser strongly recommends minute doses of atrophine and cocaine in diphtheria, whilst using a gargle of chlorate of potassium or oil of turpentine. The successful treatment of yellow fever by inoculation of serum is reported by Freire in Brazil. Koch is still working away