Little difference could be detected between this and the action of the chlorine water.

Action of Acids.—A piece of the carbide was placed in concentrated pure sulphuric acid. A few small bubbles came off but the action seemed slight. On heating, the action was greatly increased and continued after the removal of the flame. A gas was given off which burned with a luminous flame.

A mixture of sulphuric acid and potassium bichromate acted most violently upon the carbide. There seemed to be a very vigorous oxidation, and several attempts at igniting the gas given off resulted in failure. There could have been very little, if any, acetylene present in it.

Strong nitric acid attacked the carbide with the formation of brown-red fumes. The gas evolved could be ignited and burned with a smoky flame.

Glacial acetic acid decomposed the carbide slowly in the cold.

It may be added that no change was observed on adding a piece of the carbide to some boiling sulphur. On allowing the mass to cool the carbide was regained in its original condition.

Action of Alkalies.—A few grams of sodium hydroxide were melted in a nickel dish and a piece of the carbide was added. There was violent action, a gas being given off which burned with a luminous flame and which was taken to be acetylene.

A small amount of sodium dioxide was also melted in a nickel dish. When the carbide was added to this it was rapidly attacked, the action being about the same as in the experiment just mentioned. An inflammable gas was evolved.

In conclusion, we would give due credit to Mr. W. R. Kenan, who carefully verified some of the experiments here recorded.

UNIVERSITY OF NORTH CAROLINA,
February, 1893.

NOTE ON THE DETERMINATION OF ZINC.

BY P. W. SHIMER, EASTON, PA.

Received January 24, 1895.

THE manganese in many zinc ores is a disturbing element in the accurate determination of metallic zinc. As is well known the usual separation of zinc from manganese is made by precipitating the zinc as sulphide in a solution which is strongly acidified with acetic acid. When the manganese is high this precipitate should be dissolved and reprecipitated to purify the zinc sulphide from a little manganese sulphide thrown down with it. To avoid this troublesome reprecipitation I have lately used the following method which does away with the disturbing influence of manganese, and gives results agreeing closely with those obtained by the usual methods.

About eight-tenths gram of the zinc ore is dissolved as usual in hydrochloric acid. In case, as often occurs, there is any insoluble manganese or zinc spinel in the residue, it is necessary to make a fusion. Evaporate the hydrochloric solution to dryness and redissolve and filter if it is desired to determine the silica. In case silica is not to be determined it need not be filtered off. Redissolve in nitric acid (1.20) and evaporate to moist dryness. Add 100 cc. strong nitric acid and precipitate the manganese as dioxide by means of potassium chlorate, as in Ford's method for manganese in iron and steel. Filter through purified asbestos by means of the filter-pump and wash, first with strong nitric acid, then with cold water. Dissolve the manganese precipitate in standardized ferrous sulphate solution and titrate the excess of ferrous sulphate with standardized permanganate solution as in Williams' method for manganese in iron and steel. In this way the manganese is promptly separated, and if desired, determined.

The filtrate from manganese is transferred to a beaker and evaporated to dryness. A little hydrochloric acid is added and again evaporated to moist dryness. On this solution the usual double basic acetate precipitation is made. The united filtrates are evaporated to a bulk of about 300 cc., heated to boiling, removed from the flame, and a rapid current of hydrogen sulphide passed through for one-half hour. The zinc sulphide is filtered off and dissolved in hydrochloric acid and the zinc precipitated, preferably as zinc ammonium phosphate. The precipitate is separated from the paper and weighed as zinc pyrophosphate. The ignition should be done cautiously at a low red heat to avoid fusion of the pyrophosphate and a probable cracking of the crucible at the moment of solidification. In case lime is to be determined in the filtrate from the zinc sulphide, it is necessary to dissolve and reprecipitate the calcium oxalate, for the first precipitate is sure to contain alkaline chlorides in very appreciable amount. The basic acetate precipitate cannot be used for the determination of alumina, since the manganese precipitate carries down a little iron with it, but apparently no determinable amount of zinc.

ON THE DETERMINATION OF CANE-SUGAR IN THE PRESENCE OF COMMERCIAL GLUCOSE.[1]

BY H. A. WEBER AND WILLIAM MCPHERSON.

IN the analysis of a great many of the saccharine products found in the markets at the present time, the chemist is confronted with the problem of determining sucrose in the presence of commercial glucose. The official methods for such determinations, either by the use of Fehling's solution alone or supplemented by the polariscope, necessitate, as is well known, the inversion of the sucrose by the action of acids. The accuracy of these methods requires, as one condition, that the acid used in inversion exert no action upon any substance present, other than sucrose, that would in any way affect the reading of the polariscope or would change the power to reduce Fehling's solution. Since commercial glucose, however, contains a greater or less amount of dextrin, and since this undergoes hydrolysis when acted upon by acids, being changed thereby into dextrose, the question arose as to whether such a change might take place during the process of inversion of any sucrose present and thus vitiate the results. The specific rotatory power of dextrin being nearly four times as great as that of dextrose, it is evident that a very slight action would introduce serious errors.

The method of procedure was, first, to determine to what extent dextrin is present in commercial glucose; second, to ascertain whether any change is produced by heating with acids as in the common process of inversion, and finally to discover some method of eliminating this error, if present.

---

[1] This paper and the one following were sent to Dr. H. W. Wiley to be read before the Association of Official Agricultural Chemists and then transmitted to the editor of this JOURNAL for publication. In consequence of a misunderstanding they were printed instead, in the Proceedings of the Eleventh Annual Convention of the above association. At the request of the authors, and with the consent of the Committee on Papers and Publications, they are now repriuted in full.—ED.