A METHOD FOR DETERMINING ZINC IN ORES.

BY WM. P. HEADDEN.

The determination of zinc by means of a standard solution of sodium hydrogen sulphide is both satisfactory and expeditious in the hands of a skillful assayer, provided copper, manganese, etc., are absent, but the presence of these substances renders the method tedious. The method here proposed obviates the difficulties of the older method and gives satisfactory results if faithfully adhered to.

If the ore to be treated contains sulphides, it is dissolved in concentrated nitric acid (3–5 c. c. to ½ grm. of ore), with the addition of a quantity of concentrated sulphuric acid, sufficient to convert the metals into sulphates, and the solution evaporated to dryness. The decomposition is usually complete. The residue is brought into solution by means of concentrated hydrochloric acid with subsequent addition of water. The hydrochloric acid destroys any nitric acid which may be retained in the residue, and brings the difficultly soluble sulphates into solution. A liberal quantity of ammonium chloride is added to the solution and precipitation effected by excess of ammonia, or ammonia and ammonium carbonate. The precipitate is filtered off, dissolved in dilute hydrochloric acid and reprecipitated by ammonia, and again filtered ; the united filtrates and wash water will contain the whole of the zinc and copper, and need not exceed 50 c. c. in volume. The united filtrates are acidified by a *slight* excess of hydrochloric acid, a few strips of aluminum foil, or flattened wire, added and boiled for a few minutes, when the whole of the copper will be precipitated. Granulated lead may be used instead of the aluminum. The acidifying of the solution by hydrochloric acid is not necessary, provided a sufficient quantity of ammonium chloride has been added, but it will be found to be advisable. The solution from

which the copper has been precipitated may be either decanted or filtered off, 10 c. c. concentrated hydrochloric acid added, the volume of the solution brought up to 225 c. c., and the zinc determined by a standardized solution of potassic-ferro-cyanide.

NATURAL GAS IN BOULDER COUNTY.

The President, P. H. van Diest, read a paper on "Natural Gas in Boulder County," giving the results of an examination of the "Thomas' Natural Gas Well," near Louisville, Boulder County, Colo. The well was bored for the purpose of exploring the coal beds of the Laramie formation in that locality. There is a small flow of water from the well and with it a small quantity—three or four cubic feet per hour—of gas, that burns with a hot slightly luminous flame. The general conditions required for the generation and storage of natural gas in commercial quantities were enumerated, and the probability of these conditions being met in this region was discussed. The conclusion was that while the known facts in regard to the rock formations underlying northern Colorado suggest the possibility of there being large reservoirs of gas, yet the fact might be determined only by a large number of borings.