neutralizing I use commercial zinc oxide, which contains a trifling amount of manganese, but under the conditions in which it is used this apparently does not go into solution. To test this point, I made a number of duplicate analyses, neutralizing one of each pair with zinc oxide and the other with barium carbonate; in all cases the results agreed well. It is not necessary to filter the solution, the iron precipitate settles very rapidly and completely, and if a little of the precipitate goes with the solution, it makes no difference. I think the trouble Mr. Auchy mentions in getting good results with steels low in manganese when a large excess of zinc oxide is used, is due to not having sufficient manganese present, as it is difficult to make a very small precipitate clot together so as to give a clear solution in which the color of the end reaction shows distinctly. I have often tried adding a very large excess of zinc oxide, but have never found it to interfere, provided the manganese was within the limits given above.

The method is very rapid, a determination of manganese in spiegel can easily be made in half an hour; ores usually take a little longer, as they are more difficult to dissolve.

PROBABLE PRODUCTION OF PERMANGANATE BY DIRECT COMBUSTION OF METALLIC MANGANESE.[1]

By George C. Stone.

Received January 11, 1896.

WHEN casting at a Spiegel furnace, a good deal of iron and manganese is always burned at the tap hole, giving a very hot flame and clouds of reddish fume, the hotter the furnace and the higher the percentage of manganese in the iron, the more sparks and fume. To protect themselves from these sparks the men often put a sheet iron screen over the run and tap holes. One day some water was accidentally spilled on this screen immediately after casting. It at once took the deep purple color of a permanganate solution; unfortunately the screen was upset and the solution spilled before I could secure any of it for further examination. At the time the furnace was working very hot, making a high grade spiegel and a basic cinder.

DISCUSSION.

Dr. Rosell called attention to the fact that potassium permanganate when heated to a red heat would decompose, and that the

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[1] Read before the New York Section.

other permanganates behave in the same way. In fact the permanganates can only be made in the wet way. On the other hand, manganates are generally produced in the dry way, and they will stand a very high temperature.

If, therefore, a substance, after having been heated to the temperature of the blast furnace, would dissolve in pure water with the well known rich purple color of a permanganate solution, it seems almost certain that such a substance could not be a permanganate, but it could be a solution of a ferrate. It is, of course, also possible that the water used to dissolve the substance in question was not pure, but accidentally contained some acid, whereby, on dissolving, the manganate was converted into permanganate.

THE MANUFACTURE OF ACETONE AND OF ACETONE-CHLOROFORM FROM ACETIC ACID.[1]

BY EDWARD R. SQUIBB.

Received January 25, 1896.

JUST one year ago, January 11th, 1895, the writer read a paper before this Society upon "Improvement in the Manufacture of Acetone," and this paper was published in the Journal for March, 1895, page 187. The improvement claimed consisted in the use of acetic acid, instead of acetates, and in the use of a rotary still for the decomposition. The results given were obtained from a model apparatus on a table.

During the year that has elapsed since that paper was read, a large rotary still, twelve feet in length by two feet in diameter, has been set up, and this has decomposed in 126 hours about 1,700 pounds of absolute acetic acid, giving about ninety per cent. of the theoretical yield of acetone against about eighty per cent. in the small apparatus.

But the patentees of the processes for making acetone from acetates object to the use of this process and apparatus as being in conflict with their patents.

The acetone produced was converted into chloroform by the Watts (Seimerling) proportions of material in an apparatus described by the writer in 1857,[2] and used for many years in making chloroform from alcohol, and this is also objected to.

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[1] Read before the New York Section, January 10, 1896.

[2] *Ephemeris*, 4, [1], 71.