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DETERMINATION OF IRON.

By J. KRUTWIG AND ALB. COCHETEUX.

THE injurious influence of hydrochloric acid in the titration of solutions containing ferrous salts by means of Margueritte's process was first pointed out in 1861 by Lowen-

correct. They believe that the cause of this was that they dissolved the iron ore in the smallest possible quantity of hydrochloric acid (10 c.c. to 0.1 grm. of ore), adding then 400 c.c. water and about 30 c.c. sulphuric acid. Special experiments seem to justify this supposition. The use of sulphuric acid keeps down the discrepancies in the results,

THE GERMAN NATIONAL MONUMENT ON THE NIEDERWALD, OPPOSITE BINGEN ON THE RHINE.

FOR the last ten years a gigantic monument, in commemoration of the union of the German States caused by

THE GERMANIA STATUE ON THE NIEDERWALD AT BINGEN.—RAISING THE HEAD OF THE STATUE.

that and Lessen. The importance of the method led Fresenius and others to search for means of obviating the disturbing action of hydrochloric acid. Some time ago there appeared in the *Berichte* a memoir on the same subject by Clemens Zimmermann. He recommended an addition of manganese sulphate to the hydrochloric solution. The authors have tried this method in many determinations of iron ores, and obtained accurate results, so that they can recommend the use of manganese sulphate. It seemed remarkable, however, that determinations of iron which they had formerly made had likewise given figures analytically

so that there is no objection to the use of Margueritte's process in presence of hydrochloric acid if the following precautions are observed:

1. If possible, dissolve the ore in very little sulphuric acid.
2. Reduce by means of zinc in the hydrochloric solution.
3. Add a quantity of sulphuric acid twice as great as that of the hydrochloric acid.
4. Dilute the solution to about 300 c.c.
5. Use dilute permanganate in titration.—*Berichte Deutsch. Chem. Gesell.*

the Franco-German war, has been in course of erection on the Niederwald, opposite Bingen on the Rhine. The pedestal was finished a few years ago, and lately the castings have been completed in the well-known bronze foundry of Mr. Von Miller in Munich.

The main features of the monument are a colossal statue of Germania, and two smaller statues representing Peace and War, all modeled by Prof. Schilling. The statue of Germania was cast in pieces, which were transported separately to Ruedesheim. The parts of the statue were transported by rail from Munich to Rosengarten, from there to