

Of the chemicals and crucibles, not a thing, and the only bit of apparatus to be found was a rusty old pair of pocket scales.

I reported the state of affairs, and after some delay was sent six crucibles, and was told to do the best I could for the rest.

After a great deal of trouble (for though I am in the greatest and most civilized empire in the world, it is next to impossible to get what you want in this outlandish part of it) I managed to get a pestle and mortar, and some borax, sodium bicarbonate, etc., and set to work to make assays in the blacksmith's forge. I tried to work after the way we do with the blow-pipe and carb.-soda, etc. I had great difficulty in keeping up sufficient heat for a long enough time, but after some failures I got some fairly satisfactory results.

I got a good book on the subject, managed to build two furnaces, got a lot of crucibles, and got coke instead of coal, which contained a great deal of sulphur.

The proper way to make assays of copper ore is to first roast the ore, after having weighed it of course, then to fuse for "regulus," then to calcine the "regulus," then fuse for coarse copper, then fusing again with certain other fluxes, called "washing," and then re-fusing.

This long process gives you a button pretty free from iron, lead, antimony, etc.

From want of apparatus and fluxes I tried to skip all this and worked with two operations, roasting, and fusing with borax, sugar, carbonate of soda, saltpetre and salt.

After a good many failures I got pretty good results, but the fusing required upwards of seven hours in the furnace. The heat from the coke was very great; some common bricks that got into the furnace by mistake melted like wax.

The results, though not very correct, were good enough for the present occasion. The ores of copper we have come across are grey ore, variegated ore, peacock ore, azurite, malachite, the red oxide and the chloride.

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