

10 THE ZINC AND LEAD DEPOSITS

surface ores but in the underground workings on the main Federal vein the same average is carried out.

The ores, both zinc and lead, are in no way complex, and their treatment is simply one of concentration as at the present time they are free of silver, barium, arsenic, antimony or any other complexity whatsoever, other than that of separating the lead and zinc concentrates from their silicious gangue, which is easily accomplished owing to the considerable difference in specific gravity between the two sulphides—specific gravity of galena being 7.4 to 7.6 and of zinc blende 3.9 to 4.1.

The lead and zinc sulphides are mechanically combined at places throughout the veins, but not chemically, and at places large masses of lead and zinc sulphides exist that simply need hand sorting. A small amount of carbonates both smithsonite and cerrussite is found on the surface but only traces are found on the 100 foot level of the main vein. Considerable fine grinding will have to be provided for, as a portion of the ore is disseminated through the gangue in a finely divided state. The value of the ores does not lie in the saving of all these fine particles, but this operation with the aid of the "oil flotation process" will add materially to the amount recovered.

The usual bug-bear in zinc concentration—iron—will not be a disturbing factor as there is too little of it to be of any harm. This remark refers to all development in the dis-