

an extremely valuable complex ore, which fetched several hundred pounds per ton, being exported from the farm Kruis River, in the north Middelburg District of the Transvaal, in the early eighties of the last century. The deposit occurred in the contact zone of the Bushveld Granite, but owing to its irregularity, the mine soon closed down, and has not been reopened. Several other cobalt deposits, also connected with the Bushveld granites, were opened in 1906 near the railway at Balmoral. These mines were never carried to the producing stage, but, with the attention which is now being paid to this mineral, it is probable that they will soon receive renewed attention.

Some notes by Dr. E. T. Mellor, on the field relations of these Transvaal cobalt lodes, were published in the Transactions of the Transvaal Geological Society for 1915.

8. *Lead*.—Before the introduction of breech-loading arms and fixed ammunition, lead for bullets was smelted in the Transvaal, but the introduction of fixed ammunition killed that embryo industry. Later, in 1892, argentiferous galena was mined and smelting works were erected near the present railway station of Argent, some fifty miles east of Johannesburg. Owing to the circumstances existing at that time these works were shut down in 1896. Recently they have been reopened and an up-to-date concentration plant on the flotation principle, together with modern smelting furnaces, has been erected and a regular output of lead and silver has been obtained since November, 1921. There is in this locality a small mass of intrusive granite similar to that of the Bushveld, and surrounded in a similar manner with a norite margin. In this norite highly inclined galena-bearing fissures occur. These are up to a few feet in width and carry extremely rich courses of ore. Galena also occurs widely diffused in irregular deposits in the dolomite. Formerly these deposits were only exploited in a very small way to supply some local ore reduction work on the Rand. It has recently been discovered, however, that some of these

deposits in the outcrop at least are rich in vanadium.

9. *Mercury*.—Traces of native mercury have been reported from various parts of the country, but most of these are probably due to accidental salting. In the Barberton District cinnabar occurs in the contact zone between the sedimentary formation and the granite that is intrusive in it. The quantity of cinnabar in the ore (an altered quartzite) appears almost payable. The claims containing the deposit have been held for years and a good deal of money spent in developing them, but so far no attempt actually to extract the mercury has been made.

10. *Manganese*.—Manganiferous earth of inferior quality is of frequent occurrence in the Transvaal. Pyrolusite of good grade occurs in the form of veins in the older rocks of the Cape Province and in the neighbourhood of Pretoria, but the veins are in all cases small and much mixed with gangue. At the present time a few tons per month are being mined at Pretoria for use in the cyanide works of the Rand, but otherwise no commercial attention is being paid to the mineral. In the Krugersdorp District, on the farm Elandsvlei, and on neighbouring farms, there are large lateroidal deposits of high-grade pyrolusite from which cobbled ore containing 59 to 63 per cent.  $MnO_2$  can be obtained. These deposits, which occur in areas from which the dolomite has been almost but not quite denuded, appear to be of very considerable extent, and are easily mined. Supplies of this mineral quite equal to any local demand which may spring up, will therefore be obtainable at an economic price, but it is doubtful whether it will be possible to develop a profitable export trade.

All the known details with regard to manganese in the Union appear in the article on "Manganese" in the *Journal of Industries* for January, 1919.

11. *Molybdenum*.—This occurs in Natal as molybdenite, disseminated through a horizontal sedimentary sandstone of Karroo age in the neighbourhood of certain igneous intrusions, but its extent is not yet known. It also occurs in the northern Transvaal and in Namaqualand,

