

### THE LOCH LEVEN POWER PLANT.

Although little favored as a whole in the matter of hydraulic energy, Britain can now boast of one of the largest and finest hydraulic power plants in Europe. We refer to the installation of the British Aluminium Company at Kinlochleven, Argyllshire, where about 30,000 B.H.P. of hydraulic energy is turned into electric current and utilized on the spot for the production of aluminium.

The general lay-out of the plant is shown in Fig. 1, for which we are indebted to Messrs. Meik & Sons, Consulting Engineers, under whose supervision the section of work comprising dam, conduit, and pipe-lines was carried out.

The River Leven, which collects the waters of an area of

This penstock chamber forms the intake for the pressure pipe-lines which we propose to describe more especially in this article.

A general idea of the importance of the pipe-line plant will be obtained from Fig. 1, also 3, 4, and 5; the latter showing the upper two-thirds approximately of the pipe-track, from "B. Station," (see Fig. 1), upwards.

Beginning at the above-described lower penstock chamber, the pipe-track at first goes straight down the steep hill-side, with maximum incline of 27 degrees; then, for the second third, nearly level across the open "thalweg" (valley) of a side stream, and round the hillspur to "B. Station;" hence again straight down the slope, with an average incline of  $7^{\circ} 20'$ , to the power house.

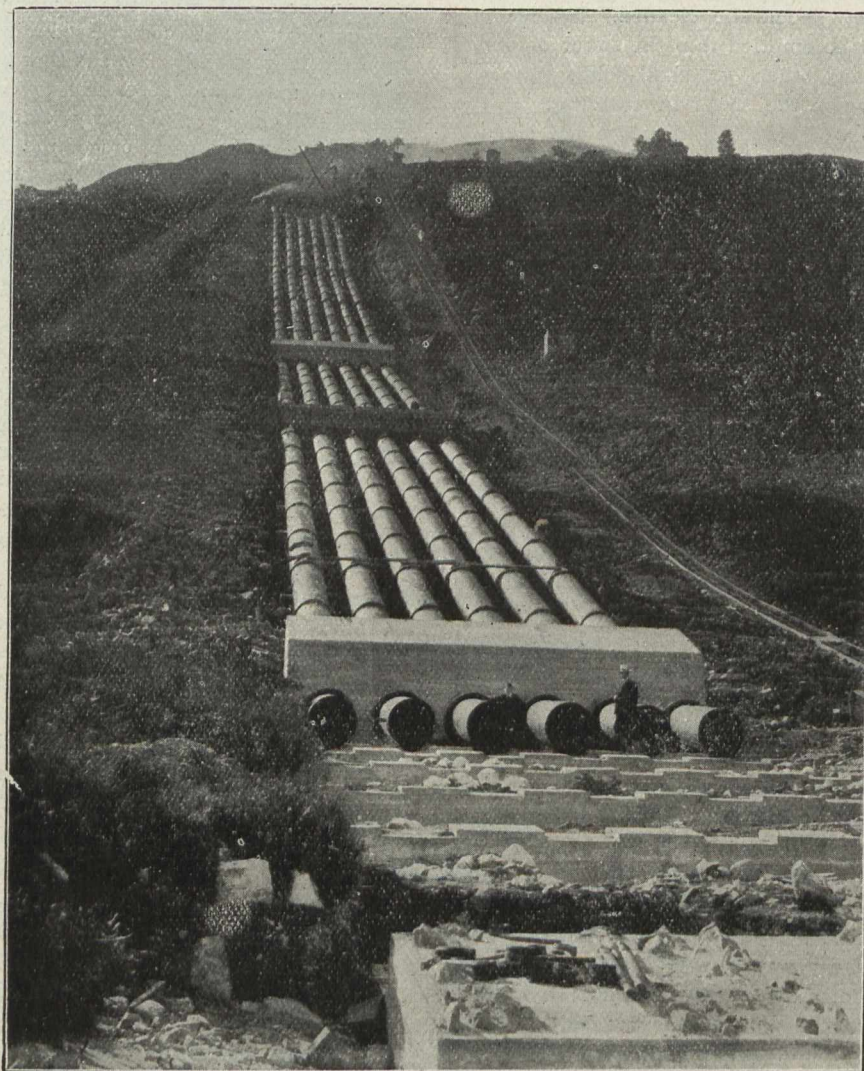


Fig. 1.

55 square miles, shows on a distance of about 4 miles a total fall of roughly 960 feet.

A concrete dam of 1,000 yards length, with a maximum height of 86 feet, creates a storage reservoir of 3,300 million cubic feet capacity from which the water flows through regulating ground sluice valves, into an open conduit of reinforced concrete,  $3\frac{1}{2}$  miles long, 8 feet wide by 8 feet deep, designed for a flow of 415 cubic feet per second, and terminating in a penstock chamber (Fig. 2), with double strainer, ice apron, and overflow with spill-way discharging into the river-bed.

The static head at disposal, reckoned from the nozzles of the turbines to the normal water level in the intake chamber, is 940 feet; and the length of the pipe-lines, measured from the intake to the main valves at the east corner of the power-house, is exactly 6,200 feet.

The power plant is at present built up for a total normal output of 28,800 B.H.P., including 9 generator sets of 3,000 B.H.P., with 10 per cent. overload capacity plus 2 exciter sets of 900 B.H.P.

The pipe-line plant had accordingly to be designed for a normal carrying capacity of round 350 cubic feet per second.