Electric Power from Small Streams

Because of their distance from power lines, many farms are unable to enjoy the benefits of electrical power supply. On the other hand, such farms are often endowed with streams which, if suitably harnessed, could supply this power for a comparatively small outlay. This article gives a full description of how a small electric power plant can be constructed on the farm.

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NEW Zealand's main national hydro-electric stations have now a large and increasing rural load. In thinly settled districts, however, there is little immediate likelihood of reticulation from this source, and the internal combustion engine burning imported oil fuel or petrol is likely to remain for many years the mainstay for farm power. Fortunately, our country districts are often richly endowed with streams, which, if suitably harnessed, could at the flick of a switch supply light, heat, and energy for many farm and domestic needs.

How, then, might one gauge the suitability of a stream for this purpose? What power is likely to be available, and what is the likely initial cost and maintenance of the installation? Some information on these points, together with illustrations of successfully operating schemes in the Nelson district, are featured in this article.

Developing Stream Power

Most farmers have sufficient ability to make at least the preliminary investigations so that the question may be settled—"Is a small electric power installation practicable on my property or not?" Later, if the work is to be carried out, the assistance of a competent electrical engineer will be indispensable, and a permit will be required from the Public Works Department. Permission must also be obtained from the local power board if the farm is in a power board area, and the county council if the lines are to be taken across a public roadway. Registration and a long-term licence obtainable from the Public Works Department cost £1 1s., with an annual rental of 2s. 6d. per kilowatt on the rated capacity, with a minimum fee of 5s. yearly. (1 kilowatt = 1000 watts, or approximately 1⅓ h.p.)

Before construction work is begun the first essential is to determine the power the stream is capable of developing. This can be found by measuring the volume of water passing a given point in a known time, together with the fall, or "head," available from the intake down to the power house. Necessarily, these measurements must be made at a period of minimum or normal flow; otherwise there will be likelihood of a power shortage in dry weather.

Measuring Water Volume

The amount of water measured in cubic feet per minute passing in the stream can be computed as follows:—