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system. To compare the advantages of the three phase as against the two phase systems and of the two principal frequencies is the aim of this paper.

We shall take up first the question of phases.

Whatever the generation and distribution, the transmission of power is always accomplished by three phase. This arrangement allows of most economical transmission of power with a given drop in the line. While the transmission of power is invariably accomplished by three phase, the generation and distribution is often by two phase.

Modern engineering practice shows, however, the abandonment of the two phase generator in connection with hydro-electric power houses, where power is to be transmitted and consequently transformed from two to three phase. The common belief of the simplicity of the two phase generator and switchboard is more imaginary than real and came about as a result of clinging to the more familiar two phase generator which at the time just preceding the era of generation for transmission purposes was the standard apparatus, answering best the needs of small central stations with a lighting load, the amount of power forming a very small proportion of the total load.

It must be admitted that a two phase system for distribution purposes is somewhat simpler to operate than a three phase system. The two phases may be controlled independently for single phase lighting circuits without any appreciable effect of one phase on the other.

In the case of motor connections on two phase circuits, all that is necessary is to connect the two transformers with the primary coils to the line, and the secondary coils to the motor. No special attention is required as to polarities of transformers. The impedance of transformers need not be the same for proper division of load, as is essential in connections of three phase installations.

It was this at first sight simplicity which appealed to the engineer in laying out the first hydro-electric power houses, and even at the present time some engineers persist in their preference for the two phase generators, and at the receiving end go through another transformation from three to two phase in order to supply two phase current at the distributing end.

Let us take up the generating plant first and see which of the two systems, three or two phase, is more efficient as well as more economical.

POWER HOUSE: It is pretty well known that for a given capacity, speed and voltage, at a given frequency, the three phase generator will prove the more efficient machine. Manufacturers standardizing apparatus use the same frames and punchings for the two