DISCUSSION ON "CONDITIONS FOR CONTINUOUS SERVICE OVER LINES OPERATED IN PARALLEL."

RALPH D. MERSHON: There is one point which the speaker would like to have taken up, because of its bearing upon a previous discussion at Niagara Falls. The speaker refers to reverse-relay devices; they are interesting things to talk about, but does anyone know of a reverse-relay device that will work under all conditions?

P. H. THOMAS (by letter): Absolutely continuous service may be realized in theory and ultimately will undoubtedly be closely approached in practice. At the present time, however, no such perfect devices are available.

The usual arrangement of overload circuit-breakers at the generator end of two transmission lines in parallel and reverse-current relay circuit-breakers at the other ends does not operate properly in all cases when there are generators at both ends of the line. A theoretically satisfactory arrangement can be constructed, however, which will open the right line at both ends in all cases of short circuits by operating at all points at which the lines are paralleled, the relays controlling the circuit-breakers jointly from current transformers connected in the two lines. These currents must be so directed that during an equal division of load between the lines (or division in any desired proportion if so desired) the influence of one line shall just neutralize the influence of the other line. When with this arrangement current is reversed in one of the transmission lines, the influence of two lines is in the same direction in the relay and can be made to open the defective line.

Another method appears to the writer to have a number of advantages. In endeavoring to maintain continuous service with apparatus now available, the system having duplicate parts all through may be operated as two systems entirely independent electrically, each so arranged as to carry approximately one-half load. Each of these systems should of course extend into all important sub-stations. In case of trouble to one line causing a drop of pressure, half of the load of the system will be dropped. Immediately this should be thrown to the other system, which must of course be able to carry the double load for a short time. If the attendants are properly instructed this may be done without special orders from headquarters, thus avoiding a very important loss of time. All parts of the dead system which are uninjured may then be immediately paralleled with the live system, enabling it to carry the full load easily.