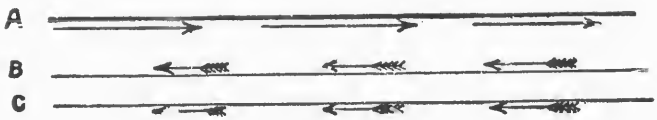

FIG 11

this line (A, Fig. 11) is a telegraph wire, with an intermittent current traversing it in the direction of the plain arrow, and this other line (B), below, is a telephone wire, it is known that currents flowing in one direction induce currents in the opposite direction; so there is an induced current in this telephone wire, in the direction of the feathered arrow. Suppose this third line (C) is another telephone wire; in it an induced current from the telegraph wire is also set up in the direction of the feathered arrow. Suppose now these two telephone wires are connected into one round circuit through the telephones (T and T,' Fig. 12), at either end of the line. Is it not quite evident that the current induced in the wires will be opposed in the instruments, and will mutually neutralize each other? Now, that is just what does occur; hence the telegraph current does not affect the telephone at all. But a current sent out from the transmitter at one end will circulate round in one direction (plain arrows) in the circuit, and the receiver at the other end will respond to it.

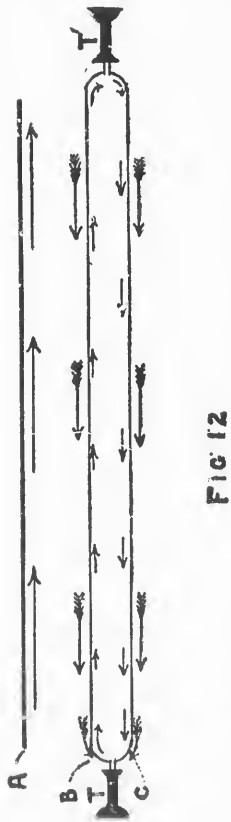

FIG 12

If it were not for the expense and inconvenience of the thing, the metallic circuit, and Mr. Gisborne's twisted metallic circuit in particular, might be considered as the solution of all telephone difficulties. Electricians are however looking for other means for getting rid of the trouble. The speaker has already stated what his own idea is in this connection; and as so much attention is now being given to the matter in all quarters, no doubt there will be some further interesting developments before long.