iron filings, some of the latter will be found sticking to it and will not readily fall off so long as the current continues to flow. If the current is cut off, the filings fall away at once and will not again attach themselves to the wire until the current is restored. The reason for this is that when an electric current flows through a wire there is always a field of magnetic force surrounding it. The lines of magnetic force are at right angles to the flow of current, and this magnetic field is a necessary accompaniment of the latter. We may cover the wire with paper, rubber, glass, or any non-conductor we please, but the magnetic field is always there and its presence can be demonstrated. If we stand facing the end of a conductor carrying a current that is flowing *from* the observer, the direction of the magnetic field is clockwise; this, at least, is what is assumed, and most of the phenomena can be explained on this assumption. We may go further and assume that every conductor is surrounded by these lines, but in a state of rest and cannot be set in motion except by an electric current. It will still further help explanation if we picture these lines in our minds as a number of wooden discs or wheels threaded on the conductor, without any limitation as to diameter, and ready to rotate when a current passes in or near the conductor.

When we place two conductors side by side we must also assume that these discs are touching at their periphery, so if one set moves, the other set is set in motion, but the direction of rotation will be opposite. If we send a current through one of the conductors, the discs will start rotating and continue so as long as the current flows. This causes the discs on the adjacent conductor to rotate but in the opposite direction, and the effect of setting these lines in motion is to induce a current of electricity to flow in the conductor, which is also in the opposite direction to the first current. The object of this illustration is to show that a flow of current in a conductor induces a current in other closed conductors