gies, moving, not in the direction of the wire, but in circles, or rather spirals, round it. The energy corresponding to the north pole of the magnetic needle moves from right to left, round the wire as above posited; while the energy corresponding to the south pole of the magnet moves in the opposite direction, or from left to right. Hence when a delicate magnetic needle, $\boldsymbol{M m}$, is suspended above the wire $E e$, its north pole $M$, will be attracted by the current moving from left to right, with which it comes first in contact; and its south pole, for similar reasons, will be attracted by the opposite current. A needle so suspended will consequently assume the direction represented in the figure, with its north pole $M$ to the left : and if it be carried round the wire by its point of suspension, it will be always found to keep the same relative position with respect to the wire. Thus when below the wire, the needle will apparently point in the opposite direction; when on the same level, on the left hand, vertically downwards; when on the right, upwards.

Bearing in mind these relative positions of the currents and needles; in what follows we may neglect the currents, and judge from the position of the needles alone. Let us consider the case of two connecting wires placed by the side of each other, as in the figures annexed; and which wires may be supposed to represent the che-

