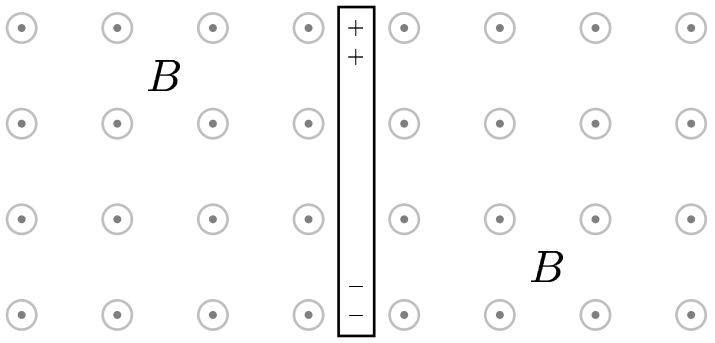
*Given:* A copper bar has a constant velocity in the plane of the paper and perpendicular to a magnetic field pointed out of the plane of the paper.




If the top of the bar becomes positive relative to the bottom of the bar, what is the direction of the velocity $\vec{v}$ of the bar?

A) from left to right ($\Rightarrow$)
B) from right to left ($\Leftarrow$)
C) from bottom to top ($\Uparrow$)
D) from top to bottom ($\Downarrow$)

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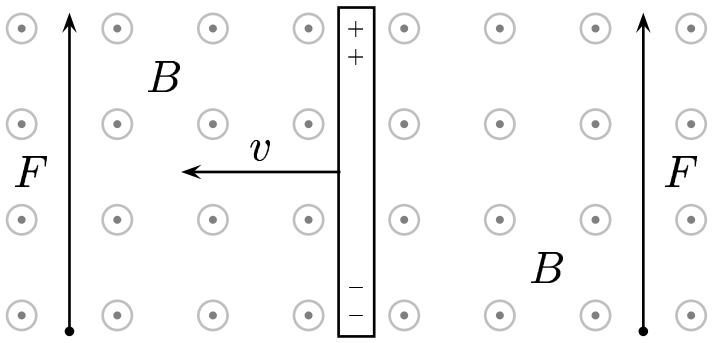
Positive charges will move in the direction of the magnetic force, while negative charges move in the opposite direction.

To produce the indicated charge separation, the positive charges in the conductor experience upward magnetic forces while the negative charges in the conductor experience downward magnetic forces leaving the charge separation shown in the figure.

Using the right-hand rule with $\vec{F} = q\,\vec{v} \times \vec{B}$, to produce this force on positive charges, the velocity $\vec{v}$ must be directed from right to left ($\Leftarrow$).




Answer **B**.