On the Validity of Interpretations of Potentiometrically Measured Soil pH

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Recently the authors (Jenny, et al., 5) have developed a theory which relates pH measurements observed in colloidal systems to a hitherto unrecognized junction potential. The theory, as applied to the specific case of pH measurement with the usual glass electrode-saturated calomel electrode assembly, is outlined briefly below.

The cell is:

\[
\begin{align*}
\text{Ag} & \mid \text{AgCl} \mid \text{HCl} \mid \text{glass membrane} \mid \text{Test system} \mid \text{Hg}_2\text{Cl}_2 \mid \text{Hg (Cell I)}
\end{align*}
\]

The pH of the test system such as a nutrient solution suspension is conventionally written as:

\[
pH = \frac{F (E - E_0)}{2.303 \text{ RT}}
\]

E is the potential of a cell of the type (Pt) H\textsubscript{2}O; solution x; KCl (sat.); reference electrode, and E\textsubscript{0} is a constant depending on the nature of the solution.