Subject:
The way of expressing the energy mass equivalence by means of the equation \( E = mc^2 \).

Deficiencies:
According to an old custom in mathematics a linear relationship between a independent variable \( x \) and a dependent variable \( y \) is written in the form
\[
y = ax + b,
\]
and not
\[
y = b + ax.
\]
If the relation is quadratic we write
\[
y = ax^2 + bx + c,
\]
rather than
\[
y = xb + c + x^2a.
\]
The convention helps us to grasp rapidly the content of the equation. The custom of writing the constant in front of the independent variable is established also in physics.

When reading the equation
\[
E_{\text{kin}} = \frac{m}{2}v^2
\]
we immediately understand that there is a quadratic relationship between velocity and kinetic energy. The equation suggests to think of a process in which the velocity may change, whereas the mass \( m \) is rather perceived as a constant. Otherwise we would write the relation as
\[
E_{\text{kin}} = \frac{v^2}{2}m.
\]
Similarly we write
\[
U = R \cdot I \text{ and not } U = I \cdot R, \text{ or}
\]
\[
Q = C \cdot U \text{ and not } Q = U \cdot C, \text{ or}
\]
\[
E = h \cdot f \text{ and not } E = f \cdot h, \text{ or}
\]
\[
Q = I \cdot t \text{ and not } Q = t \cdot I.
\]
In each of these cases the quantity that is considered a variable in a process is placed on the right side. The quantity that is hold constant stands left of it.

According to this convention, the equation
\[
E = mc^2
\]
would be read: the energy is proportional to the square of the velocity of the light, the coefficient of proportionality being the mass. Actually the equation means something quite different: the greater the mass of a particle or body, the more energy it has, where the coefficient of proportionality is \( c^2 \).
From this point of view it would be more convenient to write the equation as:

\[ E = c^2 m . \]

But even in this form the expression has a flaw. Why should we write a coefficient of proportionality in such a camouflaged form?

**Origin:**

*Einstein* has written the equation in this form, and nobody has thought of changing it. One might speculate about the reasons. Perhaps because in

\[ E_{\text{kin}} = \frac{m}{2} v^2 \]

we also write first mass and then velocity.

**Disposal:**

Write the equation as you are used to write this type of equations:

\[ E = k \cdot m . \]

Here \( k \) is a universal constant.

*Friedrich Herrmann, Karlsruhe Institute of Technology*