Errata for
The Feynman Lectures on Physics Volume II
New Millennium Edition (submitted 9/13/2019)

The errors in this list appear in *The Feynman Lectures on Physics: New Millennium Edition* and earlier editions; errors validated by Caltech will be corrected in future printings of the *New Millennium Edition* or in future editions.

Errors are listed in the order of their appearance in the book. Each listing consists of the errant text followed by a brief description of the error, followed by corrected text.

last updated: 9/15/2019 4:56 AM

Michael A. Gottlieb
Playa Tamarindo, Guanacaste
Costa Rica
mg@feynmanlectures.info

II:1-10, par 5

… among the many phenomena studied by the Greeks there were two very strange ones: that if you rubbed a piece of amber you could lift up little pieces of papyrus, and that there was a strange rock from the island of Magnesia which attracted iron.

Magnesia is not an island.

… among the many phenomena studied by the Greeks there were two very strange ones: that if you rubbed a piece of amber you could lift up little pieces of papyrus, and that there was a strange rock from the land of Magnesia which attracted iron.

II:7-9, par 4

But $\boldsymbol{E}$ is also the gradient of ϕ:

Sign error.

But $\boldsymbol{E}$ is also the gradient of $-\phi$:

II:8-7, par 7

In nuclear physics research, such as is carried on with Van de Graaff generator…

Grammarical error (“with…generator’” vs. “with…generators”).

In nuclear physics research, such as is carried on with Van de Graaff generators…

II:9-5, par 2

By a “cell” we mean a region with a limit area…

Grammarical error (“limit area” vs. “limited area”).

By a “cell” we mean a region with a limited area…

II:9-6, par 5

Notice that the curve (d) in Fig. 9-8 for the actual distribution of temperature in the cloud is not as steep as curve (c), which applies to wet air.

Incorrect sense (“not as steep as” vs. “steeper than”). This error arose because in Feynman's blackboard figure the vertical axis was altitude and the horizontal axis was temperature, opposite the book figure.

Notice that the curve (d) in Fig. 9-8 for the actual distribution of temperature in the cloud is steeper than curve (c), which applies to wet air.

II:11-7, par 3

This means that N is 381 times higher in the liquid than it is in the gas so, that…

Misplaced comma.

This means that N is 381 times higher in the liquid than it is in the gas, so that…

II:12-2, par 4

The constant of proportionality K, a property of the material, is called the thermal conductivity.

$$\boldsymbol{h} = -K\,\nabla T. \tag{12.7}$$

The full-stop should be a colon so the sentence ends with Eq. (12.7) (":" vs. ".").

The constant of proportionality K, a property of the material, is called the thermal conductivity:

$$\boldsymbol{h} = -K\,\nabla T. \tag{12.7}$$

II:12-3, Fig 12-1

In part (b) of the figure the *'K' should be* κ (kappa).

II:12-3, par 2

Now since the heat flow $\boldsymbol{h}$ corresponds to the electric field $\boldsymbol{E}$, the quantity G that we want to find corresponds to the flux of the electric field from a unit length (in other words, to the electric charge per unit length over ε_0).

Inacurate statement: *G* is the total amount of heat from the pipe (not per unit length) .

Now since the heat flow $\boldsymbol{h}$ corresponds to the electric field $\boldsymbol{E}$, the quantity G that we want to find corresponds to the flux of the electric field, i.e., the electric charge over ε_0.

II:12-3, par 3, unnumbered Eq

$$Q = \frac{2\pi\varepsilon_0 L(\phi_1 - \phi_2)}{\ln(b/a)}$$

The dielectric constant κ is missing, and Q/ε_0 corresponds to *G*.

$$\frac{Q}{\varepsilon_0} = \frac{2\pi\kappa L(\phi_1 - \phi_2)}{\ln(b/a)}$$

II:17-5, par 3

…(the so-called synchrotron radiation discussed in Chapter 36, Vol. I).

Incorrect reference.

…(the so-called synchrotron radiation discussed in Chapter 34, Vol. I).

II:17-9, par 3

Using Eq. (17.21) for the force, the rate of doing work is…

Incorrect reference.

Using Eq. (17.22) for the force, the rate of doing work is…

II:23-3, par 6

$$\oint_{\Gamma} \boldsymbol{E} \cdot ds = -\frac{d}{dt}(\text{flux of } B)$$

Vectors should be bold (*B vs.* ***B***).

$$\oint_{\Gamma} \boldsymbol{E} \cdot ds = -\frac{d}{dt}(\text{flux of } \boldsymbol{B})$$

II:24-6, Eq 24.22

$$k = \sqrt{(\pi^2/a^2) - (\omega^2/c^2)} \tag{24.22}$$

Missing prime on lefthand side (“ k ” vs “ k’ ”).

$$k' = \sqrt{(\pi^2/a^2) - (\omega^2/c^2)} \tag{24.22}$$

II:24-9, par 4

Finally, we would like to describe a device called an “unidirectional coupler,…”

Incorrect article (“an” vs “a”).

Finally, we would like to describe a device called a “unidirectional coupler,…”

II:25-2, par 2

The only real complications is the notation (we've already used up the vector symbol for three dimensions) and one slight twist of signs.

Grammatical error.

The only real complication is the notation (we've already used up the vector symbol for three dimensions) and one slight twist of signs.

II:26-2, Fig 26-2 caption

The potentials at (x,y,z) at the time t are determined by the position P' and velocity $\boldsymbol{v}'$ at the retarded time $t'-r'/c$.

Incorrect statement ("t'" vs. "t")

The potentials at (x,y,z) at the time t are determined by the position P' and velocity $\boldsymbol{v}'$ at the retarded time $t-r'/c$.

II:27-10, par 2

If we let U_0 be the energy arriving at a unit area per second, then the momentum arriving at a unit area per second is U_0/c. But the momentum is travelling at the speed c, so its density in front of the absorber must be U_0/c^2.

Energy flow is a vector, so it should be boldface, and the subscript 0 (which might be taken to mean "at rest" as per m_0 used in the preceding paragraph) is superfluous and potentially confusing. (three occurrences)

If we let $\boldsymbol{U}$ be the energy arriving at a unit area per second, then the momentum arriving at a unit area per second is $\boldsymbol{U}/c$. But the momentum is travelling at the speed c, so its density in front of the absorber must be $\boldsymbol{U}/c^2$.

II:27-10, par 4 and Eq. 27.23

Again we have the relation of energy and momentum for light. Dividing by c to get the momentum density $g = p/c,$ we get once more that

$$g = \frac{U}{c^2} \tag{27.23}$$

The statement "*g = p/c*" is dimensionally incorrect because *p* is momentum, not momentum per area per time. Energy flow and momentum density are vectors that should be boldface (see errata for II:27-10, par 2). The wording below is taken from Sands' original manuscript.

Again we have the relation of energy and momentum for light, from which the argument above shows the momentum density is

$$\boldsymbol{g} = \frac{\boldsymbol{U}}{c^2} \tag{27.23}$$

II:30-6, par 5

…or we can make a pattern like the one shown in(d),…

Missing space between "in" and "(d)".

…or we can make a pattern like the one shown in (d),…

II:31-1, par 4

Then we find that an electric field E_2 in the y-direction, with the same strength, as E_1 produces a different polarization P_2 in the y-direction.

Misplaced comma.

Then we find that an electric field E_2 in the y-direction, with the same strength as E_1, produces a different polarization P_2 in the y-direction.

II:37-8, par 1

—it is already at M_{sat}, with all the electrons lines up.

Typo ("lines" vs. "lined").

—it is already at M_{sat}, with all the electrons lined up.

II:37-10, par 2

The common form has a body-centered cubic lattice, but it can also have a face-centered cubic lattice, which is, however, stable only at temperatures above $1100\,^{\circ}\mathrm{C}$.

Wrong temperature [not Feynman's mistake – it's right on the tape].

The common form has a body-centered cubic lattice, but it can also have a face-centered cubic lattice, which is, however, stable only at temperatures above $900\,^{\circ}\mathrm{C}$.

II:38-2, par 4

…homogeneous' isotropic…

Superfluous quote (two occurrences).

…homogeneous isotropic…

II:41-3, par 5

It is usually more convenient to use the *specific viscosity*, which is η divided by the density ρ.

Incorrect terminology.

It is usually more convenient to use the *kinematic viscosity*, which is η divided by the density ρ.

II:41-5, par 5

To see why this is so, notice first that the viscosity and density appear only in the ratio η/ρ —the *specific* viscosity.

Incorrect terminology.

To see why this is so, notice first that the viscosity and density appear only in the ratio η/ρ —the *kinematic* viscosity.