Thanks to John Yantis, K5JY, for these corrections:

Page 1.1, right column, "1831": Michael Faraday (English) discovered and quantified the phenomena of how a changing magnetic field produced an electric current,…

Page 1.2, right column, "1887": This experiment, together with Maxwell's work and a growing body of knowledge…

Page 1.3, right column, "1905": Albert Einstein used Maxwell's equations as the basis of his Special Theory of Relativity.

Page 1.4, left column, above and below Equation 1.5: The relationship between wavelength and frequency is:

Equation 1.5
where *c* is the speed of light, λ is wavelength, and *f* is frequency in Hertz (Hz).
[There is no need to define the terms twice.]

Page 1.4, bottom of left column and top of right column: [I would say that the personal cell phone and its numerous derivatives were made possible by a combination of <u>three</u> fundamental technical innovations – your 1) and 2), plus 3) an exponential increase in the power density, capacity, and number of possible recharge cycles of storage batteries.]

Page 2.2, caption of Figure 2.3: Notice the shorter dipole lengths on the top antenna for the VHF band being covered (50 MHz) vs. the Yagi below for the 14 and 21 MHz HF bands.

Page 2.4, right column, bottom two paragraphs: We observe that a 100% efficient 1 m^2 solar panel on the surface of the Earth will provide about 750 W, and we know that the atmosphere absorbs about ½ of the solar light before it reaches the Earth's surface. Thus we can work in reverse and calculate the total power output of the Sun!

Page 2.6, right column, first paragraph in Relationship Between Aperture and Gain: It is essential for *P* to be a ratio of power values,…

Page 2.9, right column, first sentence in Free Space Path Loss: Path loss simply defines the ratio of the transmitter's EIRP and the power received by the receiver's antenna.

Page 2.14, right column, A. under Conclusion: Using two isotropic (or any wavelength-dependent aperture antenna types, i.e. ¼ λ whip) antennas the link budget is proportional to $1/\lambda^2$ (the link loss *increases* with higher frequencies).

Page 3.14, right column, Table 3.1 and Figure 3.15: The text in the bottom-left corner of Figure 3.15 should say "Max. Gain = 2.15 dBi."]

Page 3.16, left column, first full paragraph: Antenna modeling tools such as *EZNEC* also use segmentation for equivalent calculations as shown in **Figure 3.18**.

Page 3.16, right column, fourth full paragraph (beginning "Voltage is…": If the "end" of the antenna is thought to be a capacitor (which it is!) then accelerating charges stop, before being reflected at the antenna end, and create an oscillating charge in the capacitor…

Page 3.17, bottom of right column: [There appears to be something missing here. The word "Since" isn't followed by the rest of a sentence, either on this page, or the following Page 3.18.] THIS INFORMATION HAS BEEN POSTED SEPARATELY.

Page 3.19, legend of Figure 3.26: This is analogous to the LC tank oscillator where energy oscillates between potential energy (capacitor fully charged, maximum E)…

Page 3.20, left column, second full paragraph: This explains how an antenna with no losses will radiate all the energy applied to it, but will also be storing energy.

Page 3.20, right column, first full paragraph: For our purposes, we may add the caveat that the sum of these E fields comes from the same source…

Page 3.21, right column, paragraph below Equation 3.46: Again, since power is a function of E^2 the total power at the elevation angle where the fields add is *four* times the line-of-sight (as in a free …

Page 3.24, right column, text below Equation 3.53: Rather it conforms nicely, as we would expect, to the gain ratio between the two antennas: about 2 dB.

Page 4.5, right column, under "Fields, Currents, and Voltages…": In transmission lines and antennas *both* sets are present:…

Page 4.8, left column, third paragraph: How does a guided wave traveling down a line suddenly reverse direction 180 degrees when it reaches the end of a mismatched line?

Page 4.11, right column: …the RMS voltmeter (like in **Figure 4.15**) up and down the line, and plot the measurements. In this case…

Page 4.13, right column, third paragraph in **Step 3:** If the line is lossy as you move around the circle, the "circle" will spiral inward until finally converging at the center point…

Page 4.19, right column, top: With losses, the load power limit will be somewhat less than the input power of 450 W (add reflected power from Step 2 to the 450-W incident power).

Page 4.20, left column, text following Equation 4.28: …we need to multiply the RMS voltage (520+260 from the settled condition in Figure 4.30) by 1.414 to get 1,103 V.

Page 4.21, left column, paragraph below Equation 4.30: The voltage and current are always in-phase for waves moving toward the load and always 180 degrees out-of-phase for waves moving toward the source.

Page 4.29, right column, under Data from EZNEC for Open Wire Lines: The previous section is presented…

Page 4.30, left column, first full paragraph: In practice, the simple 4-wire straight model for open wire line gives excellent results over the HF band.

Page 4.31, left column, paragraph above Open Wire Line Loss for Different Metal Wire Types: However, wire size is critical for *any* separation since it affects line loss more than spacing, when spacing is more than about 3 inches.

Page 4.32, left column, first full paragraph: However, as the wire spacing increases, radiation losses become far more important.

Page 4.32, right column, paragraph above Additional Line Loss Due to VSWR: This equation is for perfectly matched two-wire lines that are at least ¼ *λ* long, but…

Page 4.33, left column, top partial paragraph: Calculation of the additional loss of an open wire line due to an expected VSWR value should be done to assure the design will not have excessive total loss.

Page 5.2, bottom of right column: It can be hard to tell that Equation 5.2 begins with $Z_1 = V_1$ □□I_1.

Page 5.6, left column, first full sentence: The result is a relatively low efficiency antenna system, but…

Page 5.8, right column, text below Phase Shifters Using “TEE” or π Networks: For more complex designs, I include the relevant equations since Reference 1 is out of print!

Page 7.15, caption for Figure 7.28: Elevation pattern of two elements spaced ¼ *λ* and fed in quadrature showing the maximum gain azimuth angle (180 degrees).

Page 7.18, left column, second full paragraph: For example, the two-element array inherently provides two switchable directions.

Page 7.18, right column, first full paragraph: In the first sentence, 1.78 dBi should be 4.77 dBi and the two numbers of 4.78 dBi should be 4.77 dBi.

Page 7.18, right column, second full paragraph: The efficiency will also be complicated by a ground system that is almost certainly compromised.

Page 7.18, right column, first paragraph under Ground Losses: Assuming 1.6666 W antenna output, this implies that an antenna only 1.6% efficient would require an antenna input power of 100 W. Wasting 98.3333 W of 100 W is much more cost effective than the above extravagant solution.

Page 8.4, bottom of left column: The correct spacing among “stacked” Yagi-Uda antennas can be determined with fair accuracy by calculating the equivalent aperture (as in Figure 8.6) and then making sure the antennas are…

Page 8.6, right column, item 5): Using traditional trap methods limits the available aperture of the parasitic element to…

Page 8.6, right column, paragraph below item 5): Therefore, the goal will be to achieve 5 dBd over the five amateur bands (14 – 30 MHz) and also to provide a bi-directional pattern on 10.1 MHz.

Page 8.7, bottom of right column, plus Figure 8.14 at the top of Page 8.7: **Figure 8.14** should show an 8-foot boom (about 2.5 meters) with 3 elements.

Page 9.5, right column, paragraph under Calculation of Effeciency of Small Loops Using *EZNEC*: Therefore, when using *EZNEC*, it is necessary to substitute a square loop for the circular loop.

Page 9.8, left column, bottom paragraph: CP antennas inherently reject opposite polarized signals, so they will…

Page 9.12, bottom of right column: With the nearly universal use of PC boards in radio construction and the general trend toward higher operating frequencies, it was inevitable that antennas would soon be fabricated onto the PC board.

Page 9.13, bottom of left column: The ground plane is simply included on the PC board's top layer, thus making the shortcomings of fiberglass moot.

Page 9.16, left column, under MIMO Antennas: Consider the system in **Figure 9.34**. The transmit power is divided between two antennas located some distance apart.

Page 10.2, left column, text below Equation 10.1: where E/m^2 is the energy being radiated per square meter, h is Planck's constant…

Page A.2, left column text below Equation A.3: The actual calculation to solve this problem *does* involve knowledge of integral calculus.