FURTHER CORRECTIONS.

CHAPTER 3.

Problem 23 is identical to Example 3-7.

CHAPTER 4.

EQ.H-4**:** Consistency with the written material implies that the left side of the equation should represent the *total emissive power*.

Problem 8: the frequency given should be 0.85 x 10^{15} Hz.
Problem 17: In the equation for $Y(\lambda,T)$ the $\hbar$ in the exponential, and in the definition of y should be replaced by h.
Problem 15: The answer in the back of the book should be 4.8 x 10^5 K.
Problem 24: The *real* angle subtended by the sun is 0.5 degrees. With 1^o an unreasonable temperature results.

CHAPTER 5.

Problem1: In the statement of the problem the mass of the earth should be 5.98 x 10^{24} kg.
Problem 3: The problem should read

> A photon of wavelength 180 *nm* encounters a hydrogen atom in its ground state. Will the photon be absorbed? If so, will the electron be ionized, or will it be excited to higher level?

CHAPTER 6.

Problem 1 is the same as example 6-2.

CHAPTER 7.

Problem 13: The solution in the back of the book has a type. Instead of the cube, the power should be 1/3.

CHAPTER 8.
The first (unnumbered) equation after Fig. 8-9 should read $P_i = F_i \exp(-2\kappa_i \Delta x_i)$.

Problem 9. The answer in the back of the book is wrong. The reflected wave is Re^{ikx} and the transmitted wave is Te^{-ikx} where $k^2 = 2mE/\hbar^2$. (Actually T and R take on the same values as for the problem treated in the text, with $k \rightarrow -k$.)

Problem 13: Solution in back of the book needs change. Answer to part (b) should be $e^{-\frac{4a\sqrt{mA}}{3\hbar}}$. (c) The numerical answer is 0.63.

Problem 17: The solution in the back of the book answers a different question. What is asked for are the solutions in the three regions, and these are $u(x) = 0$ for $x \le 0$; If the step ends at x = a, then the solution there must be of the form $u(x) = e^{-ikx} + R' e^{ikx}$ with $k^2 = 2mE/\hbar^2$. Since all of the wave is reflected (no flux for $x \le 0$) $|R'|^2 = 1$. In the intermediate region, if $E > V_1$ then the solution is of the form $A\, e^{iqx} + Be^{-iqx}$ witj $q^2 = 2m(E - V_1)$ (We expect to get $|A|^2 = |B|^2$ because there is as much flux going in as going out). If $E \le V_1$ then we have $Ae^{\kappa x} + Be^{-\kappa x}$ with $\kappa^2 = 2m(V_1 - E)$.

CHAPTER 9.

As a consequence of (9-43) with $q = -e$, the sign in eq. (9-46) should be positive. This also changes eq. (9-47) to one in which the second term has a positive sign. This also means that in Fig. 9-11, the lines should go up with increasing m.
Although equations (9-53) - (9-55) are correct, the lines after the splittings in Fig. 9-15 should be inverted.

Problem 15. The integrals involved here are simple, so that the exact answer can be obtained by doing the integrals. Still, the approximation works very will since the upper limit on the integral is *much smaller* than a_0. The answers are, to good approximation $\frac{4}{3}\left(\frac{r_0}{a_0}\right)^3$ and $\frac{1}{120}\left(\frac{r_0}{a_0}\right)^5$.

Problem 23. The student needs to make an assumption that the atoms in the beam are in their ground states, so that only the spin contributes to the magnetic moment.

CHAPTER 10

Problem 5: The answers in back of the book should be $\frac{1}{a}\sin\frac{\pi x_1}{2a}\sin\frac{\pi x_2}{2a}$ for the ground state, and $\frac{1}{\sqrt{2}}\frac{1}{a}\left(\sin\frac{\pi x_1}{2a}\sin\frac{2\pi x_2}{2a} + \sin\frac{2\pi x_1}{2a}\sin\frac{\pi x_2}{2a}\right)$ for the first excited state.\

Problem 11: The integrals can be done exactly : $\frac{1}{\pi}\left(\frac{\sin(m-n)\pi/2}{m-n}-\frac{\sin(m+n)\pi/2}{m+n}\right)$

CHAPTER 14

In eq. (14-17) the normalized functions are $\sqrt{\frac{2}{a}}\cos\frac{\pi x}{a};\sqrt{\frac{2}{a}}\sin\frac{\pi x}{a}$.

In eq. (14-20) the expressions for the energy shift should be multiplied by (4/*a*) to agree with eq. (14-17).

Table 14-2: The parameter κ should be defined. It is the dielectric constant in units of ε_0.

Equation (14-23) is more accurately the counter part of eq. (8-35).