Errata in *Indra's Pearls*, April, 2002.

Conventions:

- Line numbers refer to the lines in the main text, counting from the top, excluding boxes and figures, but including titles, formulas, etc., on separate lines.
- Lines in boxes are counted from the beginning line of that box.
- Negative line numbers mean begin counting from the bottom, with the last line being -1.
- Words to be inserted are in frame boxes.
- Words to be deleted are in frame boxes after the corrected phrase.

Frontispiece, l.4: "Strung at each intersection" (del. the).

p.xi, l.−8: " Dave's " should be " Daves' ".

p.xv, l.−2: "the Alhambra displays nearly all".

p.xvi, l.6: "to be identified".

p.xvi, l.16: "one of the great mathematicians of his age".

p.xvii, l.−8: "in one of his papers".

p.1, l.−10: "that it is hard to".

p.2, l.−3: "could be thought of as geometrical".

p.4, footnote 2, l.6: "of axis" should be "or axis ".

p.10, Fig. 1.7: The text is opposite to the figure. Interchange the arrows on the left and right frames of the figure (but not the labels), and interchange "left" and "right" in the caption.

p.11, l.3: "this is an active way" should be "this in an active way".

p.12, l.10: "vertical)" should be "vertical)" (delete space before parenthesis).

p.14, l.3: "the distance between" (del. that).

p.15, l.15: "eggs whites" should be "egg whites".

p.18, l.−3: Starting from "Apply ..." rewrite as:
"Apply S once again to E and then all powers of T and you find the third row with entries like $T^{-2}S^2(F)$ and $T^{-1}S^2(F)$."

p.19, l.2: Rewrite "of the type $S^{-1}T^{-2}(F)$ and $S^{-1}T^{-1}(F)$" as "of the type $T^{-2}S^{-1}(F)$ and $T^{-1}S^{-1}(F)$".

p.19, l.6: Rewrite "of compositions like $S^3T^{-5}(F)$ or $S^kT^l(F)$" as "of compositions like $T^{-5}S^3(F)$ or $T^lS^k(F)$".

p.19, l.11: "in the nineteenth century".

p.20, Galois box, l.11: Replace "political intrigue" by "political turmoil".

p.20, Galois box, para. 3: Rewrite the beginning as follows:
"Sorting through Cauchy's papers shortly after his death in 1857, Camille Jordan came across a letter scribbled by Galois the night before the fatal duel, in which he outlined his discoveries and hoped that 'some men will find it profitable to sort out this mess'. Although the letter had been published, it was not widely known. Fascinated, Jordan embarked on a systematic study of Galois' work ..."

p.22, ls.−5, −1: Change "glueing" to "gluing". For consistency, this should be done at all the occurrences of this word, namely: **p.23, l.12, p.25, ls.18,21, p.34, Proj. 1.3, ls.1,3, p.215, l.4.**

p.26, Note 1.2, right, l.−3: "which is the exactly" should be "which is the exact".

p.26, Note 1.2: Replace the formulas as follows (starting just after "Thus we find"):

$$\begin{aligned} T(x,y) &= (x+1, y+2), \\ S(x,y) &= ((x+y)/\sqrt{2}, (-x+y)/\sqrt{2}), \\ S^{-1}(x,y) &= ((x-y)/\sqrt{2}, (x+y)/\sqrt{2}). \end{aligned}$$

Then we take a deep breath and work out

$$\begin{aligned} \hat{T}(x,y) &= STS^{-1}(x,y) \\ &= ST((x-y)/\sqrt{2}, (x+y)/\sqrt{2}) \\ &= S((x-y)/\sqrt{2}+1, (x+y)/\sqrt{2}+2) \\ &= (x+3/\sqrt{2}, y+1/\sqrt{2}). \end{aligned}$$

As predicted, it comes out that $\hat{T}$ is translation by the vector $(3/\sqrt{2}, 1/\sqrt{2})$, which is exactly the image of the original translation vector $(1,2)$ under the conjugating map S!

p.27, l.12 and l.15: Replace "anticlockwise" by "clockwise".

p.27, Note 1.3, right, l.3: "a composition is equal to" (del. the).

p.30, l.−16: Need comma after "shrink the seed".

p.30, l.−5, −3, −1: On each step, change the ending punctuation to "."

p.32, l.10: Should be "$S(x,y) \mapsto (x+3/2, y+3\sqrt{3}/2)$".

p.32, l.11: Should be "`genS = [1.5,1.5*sqrt(3)]`".

p.32, Box 3, l.9: Should be "`genS =[1.5,1.5*sqrt(3)];`".

p.35, Fig. 1.17 cap., l.4: Change "map ST^2R" to "map TS^2R".

p.45, l.−14: "From the formulas in Box 5:" should be "From the formulas in Box 5 and Note 2.2:".

p.47, footnote, l.1: "In the course or" should be "in the course of".

p.47, l.−9: "$x * (y + z))$" should be "$x * (y + z)$" (delete final parenthesis).

p.55, l.16: "There are a few calculations".

p.63, l.3: Rewrite starting from "Figure 2.3 ..." as follows:
"Figure 2.3 shows a fox being moved about by the powers of the map $T(z) = 0.8(\cos 30° + i \sin 30°)\, z$. In this section, we will work with an earthier transformation $T(z) = (1 + 0.4i)\, z$. This expands by a factor ... "

p.66, l.−7: Should be "The rotated green and yellow latitude and longitude circles in Figure 3.4 project to new green and yellow circles in the plane." In other words, the yellow circles are the longitudes.

p.67, Fig. 3.4 cap., l.7: Should be "the green latitude and the yellow longitude lines." The current phrasing suggests the colours are reversed.

p.69, Fig. 3.6 cap., l.−3: "the map in Figure 3.5 after turning" (del. it).

p.71, Möbius box, l.2: Change "Later, he became" to "Late in his career, he became".

p.71, Möbius box, l.11: "he considered to figures" should be "he considered two figures".

p.71, Möbius box, l.21: "what are now know" should be "what are now known".

p.71, Möbius box, l.−5: "involve making" (del. and).

p.71, Möbius box, l.−5: Rewrite from "Möbius" as
"Möbius classified topologically all possible two-dimensional surfaces. You will likely have come across the strange surface called a Möbius band."

p.78, l.2: "one which does not move" (del. is).

p.78, Note 3.3, right, l.4: "may have be" should be "may have been".

p.80, l.5: "It is easy to decide".

p.99, Fig. 4.2 cap., l.−3: "disks nesting down on" (del. in).

p.100, Schottky box, l.4: "seems to have".

p.100, Schottky box, l.9: "pointed them out" (del. first out).

p.103, l.1: "rather than disjoint" (del. are).

p.104, l.5: "contain an inverse" (del. one an).

p.105, Cayley box, l.5: Change "influencial" to "influential".

p.107, l.13: Change "varies" to "vary".

p.107, l.23: "their shape is rather more" (del. a).

p.113, l.16: "as many words as are".

p.123, l.−14: "an infinite sequences" should be "an infinite sequence" (no "s").

p.127, footnote 1, l.1: "closely related to".

p.129, Note 5.4, right, l.9: "so a set of things" (del. is).

p.132, l.9: "why is P the" (del. the second is).

p.138, Note 5.7, left, l.13: "look at all possible ways".

p.149, l.24: 10^3 should be 10^{-3}.

p.151, l.−19: "to execute it you will have to run `fac` on smaller n's".

p.162, Fig. 6.5 cap., l.10: "Dr. Stickler are" should be "Dr. Sticklers are".

p.175, l.8: "$M(C)$ in each of" (del. on).

p.177, l.6: "C_a and C_b" should be "C_A and C_B".

p.178, l.5: "one of the large yellow disks".

p.179, l.3: "met in Recipe I on p. 85" (clarify reference).

p.179, Fuchs box, l.5: "of systems of" should be "systems of" (no first "of").

p.193, Proj. 6.2, l.3: "set up" should be one word "setup".

p.193, Proj. 6.2, l.3: "is a remarkable".

p.193, l.−10: "tangent to C." should be "tangent to C_a."

p.197, l.15: "can be created".

p.197, l.−1: Change to: "inside each image disk you see three smaller image disks tangent to the original image disk" (delete the notation D).

p.221, Proj. 7.1, l.12: "If there were another ideal triangle" (del. other).

p.223, Proj. 7.9, l.2: "It is not quite so easy".

p.247, l.12: "to be a bit less".

p.247, l.−2: Should be "$t_a = 1.888 + 0.05i$ pretends to be" (instead of 1.887).

p.253, Note 8.4, right, l.3: $2R\sin\pi/N$ (Not $2R\sin\pi/-N$).

p.255, l.−19: "seem to be approaching".

p.255, l.−13: Blue printer smudge on page!

p.255, Footnote 2, l.7: "only 31" (in place of "only 33").

p.256, l.−5: "and the multiply" should be "and then multiply".

p.258, l.−10: Should be "If $c = 2$ we get the modular group".

p.259, l.7: Should be "$c = 0.05 + 0.93i$" (in place of $0.5 + 0.93i$).

p.260, l.3: "that the trace".

p.260, Fig. 8.21: The upper labels should be $-1 + \mu$ (left) and $1 + \mu$ (right), not $-1 - i\mu$ and $1 + i\mu$.

p.260, Fig. 8.21 cap., l.−1: The matrix should be $\begin{pmatrix} 2 & -i \\ -i & 0 \end{pmatrix}$ to be consistent with page 287.

p.261, Box 23, l.−1: The signs of Q in the off-diagonal entries for b have been switched. The formula should be

$$b = \begin{pmatrix} \dfrac{t_b - i\,Q}{2} & \dfrac{t_b t_{ab} - 2t_a - i\,Q\,t_{ab}}{(2t_{ab}+4)z_0} \\ \dfrac{(t_b t_{ab} - 2t_a + i\,Q\,t_{ab})\,z_0}{2t_{ab}-4} & \dfrac{t_b + i\,Q}{2} \end{pmatrix}.$$

(To see this must be correct, take the formulas for a and b on p. 261 and multiply them by hand to get the diagonal entries (The z_0's cancel so you don't need to worry about that formula). Add the diagonal entries to get the trace. Given that

$$Q^2 = 2 - trace(abAB) = 4 - t_a^2 - t_b^2 - t_{ab}^2 + t_a t_b t_{ab}$$

the only way that simplifies to t_{ab} is if the signs are flipped.

As a second check, when we set trace$(abAB) = -2$, we will have Q=2 and R=0 in the formula on p. 261. When you plug these into the formulas for z_0 and b, the only way it simplifies to the formula on p. 229 is if the signs are flipped.)

p.262, l.4: "part of the limit set".

p.263, Fig. 8.22: Should have black arrows.

p.263, l.−3: Should have $aaBab\overline{aBA}$ to be consistent with Fig. 8.22. (The words on all other lines are correct.)

p.266, l.14: "if and only if".

p.269, Fig. 9.1: Should be "$t_a \doteq 1.95859 - 0.01128i$" (insert "$i$").

p.280, l.8: "words in a group".

p.281, l.17: Change "the black and blue lines" to "the red and blue lines".

p.301, l.9: "We promised up above to explain our algorithm for tracing the cuspy Maskit boundary in Figure 9.12." (Put in reference).

p.306, l.12: "it is easy to write our newton solver" (del. one our).

p.308, Proj. 9.3, l.2: "There is an interesting" (replace "a" by "an").

p.321, l.3: Should be "11/120 to 12/131".

p.327, l.8: Should be "a different infinite word." ("word" instead of "words").

p.330, l.14: "to create a group" (delete "s").

p.344, l.9: "integer m, the sequence" (del. then).

p.344, l.22: "this limit matrix is a completely" (del. second is).

p.344, l.−7: "The transformations a and raR have a" (del. are).

p.349, l.9: "a Japanese group based in Kyoto, Osaka and Nara have".

p.349, l.19: "to requires" should be "to require".

p.352, l.−7: "try to making" should be "try to make".

p.358, l.14: "which is included in this".

p.359, l.5: "on the rightmost generator" (del. very).

p.359, l.−1: Should be "in states 2, 6, 12, 18 and" (18 instead of 10).

p.366, l.−4: "are glued together in the correct pattern" should be deleted.

p.374, l.−1: the formula should be

$$\left(\sum \frac{1}{(az+b)(cz+d)^3}\right) \Big/ \left(\sum \frac{1}{(cz+d)^4}\right)$$

p.375, l.3: "add up all the" (del. first the).

p.384, Note 12.2, l.2: "is that they preserve angles" (del. one they).

p.386, Ahlfors box, l.−3: "with his new ideas" should be "with Thurston's new ideas".

p.390, l.14: "you create a 'pleated' ".

p.392, Note 12.3, right, l.−2: The formula for the pleating horocycles should be $T_{p/q}(\mu) = s^q + s^{-q}$.

p.394 (index): "Lindenmaier" should be "Lindenmayer".