The heart of our streamlined `strcat` function is the "string copy" idiom:

idiom
```
while (*p++ = *s2++)
  ;
```

If we ignore the two ++ operators, the expression inside the parentheses simplifies to an ordinary assignment:

```
*p = *s2
```

This expression copies a character from where `s2` points to where `p` points. After the assignment, both `p` and `s2` are incremented, thanks to the ++ operators. Repeatedly executing this expression has the effect of copying a series of characters from where `s2` points to where `p` points.

But what causes the loop to terminate? Since the primary operator inside the parentheses is assignment, the `while` statement tests the value of the assignment—the character that was copied. All characters except the null character test true, so the loop won't terminate until the null character has been copied. And since the loop terminates *after* the assignment, we don't need a separate statement to put a null character at the end of the new string.

13.7 Arrays of Strings

Let's now turn to a question that we'll often encounter: what's the best way to store an array of strings? The obvious solution is to create a two-dimensional array of characters, then store the strings in the array, one per row. Consider the following example:

```
char planets[][8] = {"Mercury", "Venus", "Earth",
                     "Mars", "Jupiter", "Saturn",
                     "Uranus", "Neptune", "Pluto"};
```

(In 2006, the International Astronomical Union demoted Pluto from "planet" to "dwarf planet," but I've left it in the `planets` array for old times' sake.) Note that we're allowed to omit the number of rows in the `planets` array—since that's obvious from the number of elements in the initializer—but C requires that we specify the number of columns.

The figure at the top of the next page shows what the `planets` array will look like. Not all our strings were long enough to fill an entire row of the array, so C padded them with null characters. There's a bit of wasted space in this array, since only three planets have names long enough to require eight characters (including the terminating null character). The `remind.c` program (Section 13.5) is a glaring example of this kind of waste. It stores reminders in rows of a two-dimensional character array, with 60 characters set aside for each reminder. In our example, the reminders ranged from 18 to 37 characters in length, so the amount of wasted space was considerable.