Bugs in *Computers & Typesetting*

6 July 2003

This is a list of all substantial corrections made to *Computers & Typesetting* since the publication of the Millennium Edition at the close of the year 2000. (More precisely, it lists errors corrected since the 16th printing of Volume A, the 7th printing of Volume B, the 6th printing of Volume C, the 4th printing of Volume D, and the 5th printing of Volume E.) Corrections made to the softcover version of *The TeXbook* are the same as corrections to Volume A. Corrections to the softcover version of *The Metafontbook* are the same as corrections to Volume C. Changes to the mini-indexes and master indexes of Volumes B, D, and E are not shown here unless they are not obviously derivable from what has been shown. Some (or all) of these errors have been corrected in the most recent printings.

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Page A16, line 7 from the bottom (6/30/01)

Ten-point type is different from magnified five-point type.

Page A17, line 7 (6/30/01)

fications that grow in geometric ratios—something like equal-tempered tuning

Page A51, lines 18–20 (6/30/01)

ff yields ff; fi yields fi; fi yields fl; ffi yields ffi; ff yields ffl;
" yields "; " yields "; ! yields !; ? yields ?;
-- yields --; --- yields —.

Page A52, line 7 from the bottom (6/30/01)

\ae, \AE æ, Æ (Latin ligature and Scandinavian letter AE)

Page A71, line 15 (6/30/01)

One of the interesting things that can happen when glue stretches and

Page A180, line 20 (6/30/01)

Challenge number 5: \[ k = 1.38065 \times 10^{-16} \text{ erg K}^{-1}. \]

Page A254, line 12 from the bottom becomes two lines (4/09/01)

\[ \text{\textbackslash output=} \text{\textbackslash unvbox255} \]
\[ \text{\textbackslash ifnum=} \text{\textbackslash outputpenalty<10000} \]
\[ \text{\textbackslash penalty=} \text{\textbackslash outputpenalty\textbackslash fi} \]

Page A292, lines 13–16 (6/30/01)

\[ \text{\textbackslash mathchoice=} \{\text{\textbackslash math mode material}\} \{\text{\textbackslash filler}\} \{\text{\textbackslash math mode material}\} \{\text{\textbackslash filler}\} \{\text{\textbackslash math mode material}\} \{\text{\textbackslash filler}\} \{\text{\textbackslash math mode material}\}. \] Four math lists, which are defined as in the second alternative of a \{\text{\textbackslash math field}\}, are recorded in a “choice item” that is appended to the current list.

Page A306, line 7 (6/30/01)

instead of a shelfful. In fact, the latter idea—to insert an italic correction—is prefer-
\def\appendroman#1#2#3{\expandafter\def\expandafter\csname\expandafter\gobble\string#2\romannumeral#3\endcsname}{#1}

\def\{\if\space\next\ % assume that \next is unexpandable

18.31. $k = 1.38065 \times 10^{-16} \text{erg}\,\text{K}^{-1}$.

\loggingall{\tracingcommands=2 \tracingstats=2 \tracingpages=1 \tracingoutput=1 \tracinglostchars=1 \tracingmacros=2 \tracingparagraphs=1 \tracingrestores=1 \showboxbreadth=\maxdimen \showboxdepth=\maxdimen \errorstopmode}

\def\tracingall{\tracingonline=1 \loggingall}

\def\fmtversion{3.14159265} % identifies the current format

Connecticut Yankee come out with only nine or ten bad hyphens:


If a suitable starting letter is found, let it be in font $f$. Hyphenation is abandoned unless the \texttt{hyphenchar} of $f$ is a number between 0 and 255, inclusive. If this test is passed, \TeX{} continues to scan forward until coming to something that’s not one of the following three “admissible items”: (1) a character in font $f$ whose \texttt{lccode} is nonzero; (2) a ligature formed entirely from characters of type (1); (3) an implicit kern. The first inadmissible item terminates this part of the process; the trial word consists of all the letters found in admissible items. Notice that all of these letters are in font $f$.

\*char, 43–45, 76, 86, 155, 283, 286.


orphans, see widow words.
all of those changes. I now believe that the final bug was discovered and removed on 20 December 2002. The finder’s fee has converged to $327.68.

\begin{verbatim}
define banner \equiv This_is_TeX_Version_3.141592 \{ printed when \TeX{} starts \}
\end{verbatim}

Incidentally, Pascal’s standard round function can be problematical, because it disagrees with the IEEE floating-point standard. Many implementors have therefore chosen to substitute their own home-grown rounding procedure.

statements will be meaningful. We insert the label ‘exit’ just before the ‘end’ of a procedure in

\begin{verbatim}
\begin{update_terminal}; \{ now the user sees the prompt for sure \}
\end{verbatim}

The following procedures don’t allow spaces to be part of file names; but some users seem to like names that are spaced-out. System-dependent changes to allow such things should probably be made with reluctance, and only when an entire file name that includes spaces is “quoted” somehow.

\begin{verbatim}
cur_glue: real; \{ glue seen so far \}
cur_g: scaled; \{ rounded equivalent of cur_glue times the glue ratio \}
\begin{verbatim}
begin cur_g ← 0; cur_glue ← float_constant(0);
this_box ← temp_ptr; g_order ← glue_order(this_box); g_sign ← glue_sign(this_box);
\end{verbatim}
\end{verbatim}

\begin{verbatim}
begin g ← glue_ptr(p); rule_wd ← width(g) − cur_g;
\end{verbatim}

\begin{verbatim}
begin cur_glue ← cur_glue + stretch(g); vet_glue(float(glue_set(this_box)) * cur_glue);
cur_g ← round(glue_temp);
\end{verbatim}

\begin{verbatim}
\texttt{begin cur_glue \leftarrow cur_glue - shrink(g); vet_glue(float(glue_set(this_box)) \ast cur_glue);
cur_g \leftarrow round(glue_temp);
}
\end{verbatim}

\begin{verbatim}
\texttt{rule_wd \leftarrow rule_wd + cur_g;
}
\end{verbatim}

\begin{verbatim}
\texttt{else begin lx \leftarrow lr \div (lq + 1);
}
\end{verbatim}

\begin{verbatim}
\texttt{cur_glue: real; \{ glue seen so far\}
cur_g: scaled; \{ rounded equivalent of cur_glue times the glue ratio\}
\texttt{begin cur_g \leftarrow 0; cur_glue \leftarrow float_constant(0);
\texttt{this_box \leftarrow temp_ptr; g_order \leftarrow glue_order(this_box); g_sign \leftarrow glue_sign(this_box);
}
\end{verbatim}

\begin{verbatim}
\texttt{begin g \leftarrow glue_ptr(p); rule_ht \leftarrow width(g) - cur_g;
}
\end{verbatim}

\begin{verbatim}
\texttt{begin cur_glue \leftarrow cur_glue + stretch(g); vet_glue(float(glue_set(this_box)) \ast cur_glue);
cur_g \leftarrow round(glue_temp);
}
\end{verbatim}

\begin{verbatim}
\texttt{begin cur_glue \leftarrow cur_glue - shrink(g); vet_glue(float(glue_set(this_box)) \ast cur_glue);
cur_g \leftarrow round(glue_temp);
}
\end{verbatim}

\begin{verbatim}
\texttt{rule_ht \leftarrow rule_ht + cur_g;
}
\end{verbatim}

\begin{verbatim}
\texttt{else begin lx \leftarrow lr \div (lq + 1);
}
\end{verbatim}

\begin{verbatim}
\texttt{begin if (scanner_status = aligning) \lor (cur_align = null) then
}
\end{verbatim}

\begin{verbatim}
\texttt{between 'fl' and 'y', then m = 2, t = 2, and y_1 will be a ligature node for 'fl' followed by an
}
\end{verbatim}
Page B386, line 11 (4/08/01)

\( q_i(2), q_i(6): \) begin \( \text{cur} \leftarrow \text{rem\_byte}(q); \) \{ \text{\texttt{=;}; \texttt{=;}} \}

Page B472, new paragraph to follow line 10 (12/20/02)

A devious user might force an \texttt{endv} command to occur just about anywhere; we must defeat such hacks.

Page B472, replacement for what used to be line 13 (12/20/02)

\begin{verbatim}
begin base_ptr ← input_ptr; input_stack[base_ptr] ← cur_input;
while (input_stack[base_ptr].index_field ≠ v_template) ∧
    (input_stack[base_ptr].loc_field = null) ∧
    (input_stack[base_ptr].state_field = token_list) do decr(base_ptr);
if (input_stack[base_ptr].index_field ≠ v_template) ∨
    (input_stack[base_ptr].loc_field ≠ null) ∨
    (input_stack[base_ptr].state_field ≠ token_list) then
    fatal_error("(interwoven_alignment_preambles_are_not_allowed)");
if cur_group = align_group then
end
\end{verbatim}

Page B475, line 12 (7/01/01)

\texttt{end}; \{ now we are in vertical mode, working on the list that will contain the display \}

Page C11, line 11 (10/11/01)

the area below the bar to the area above it equal to \((\sqrt{5} + 1)/2 \approx 1.61803\), the

Page C29, illustration for exercise 4.11 (9/09/01)

[points 2 and 5 should not be labeled twice]

Page C156, line 15 from the bottom (9/09/01)

be the values they had upon entry to the group.)

Page C171, line 16 from the bottom (6/18/02)

\( \langle \text{loop} \rangle \rightarrow \langle \text{loop header} \rangle: \langle \text{loop text} \rangle \texttt{endfor} \)

Page C179, line 7 from the bottom (9/09/01)

next time \texttt{METAFONT} gets to the end of an input line, it will stop reading from the

Page C204, line 3 from the bottom (7/08/01)

slightly. If \texttt{autorounding} \textgreater 1, you get even more changes: Paths are perturbed slightly

Page C238, lines 9 and 8 from the bottom (7/08/01)

tance is length\((z_4 - z_1)\). But there's a slicker solution: Just calculate

\[
\text{abs ypart}((z_1 - z_2) \text{ rotated } -\text{angle}(z_3 - z_2))
\]

Page C286, line 25 (9/09/01)

problem; it would simply have put \texttt{ENDFOR} into the replacement text of \texttt{asts}, because
if if pair x: x>(0,0) else: false fi: A else: B fi.

be known by saying ‘if known p − q: p = q else: false fi’; transforms could be handled

--- LA ROCHEFOUCAULD, Maximes (1665)


*angle, 29, 67, 72, 107, 135, 211, 238.

La Rochefoucauld, François VI, 313.

*true, 55, 64–65, 170, 210.

corporates all of those changes. I now believe that the final bug was discovered on 22 January 2001, and removed in version 2.71828. The finder’s fee has converged to $327.68.

define banner ≡ 'This is METAfont, Version 2.71828' { printed when Metafont starts }

types; there are no ‘var’ parameters, except in the case of files or in the system-dependent paint_row procedure; there are no tag fields on variant records; there are no real variables; no procedures are declared local to other procedures.)

statements will be meaningful. We insert the label ‘exit’ just before the ‘end’ of a procedure in

begin update_terminal; { now the user sees the prompt for sure }

Notice that if 64-bit integer arithmetic were available, we could simply compute \((2^{29} \times p + q) \div (2 \times q)\). But when we are restricted to Pascal’s 32-bit arithmetic we must either resort to multiple-precision maneuvering or use a simple but slow iteration. The multiple-precision technique would be about three times faster than the code adopted here, but it would be comparatively long and tricky, involving about sixteen additional multiplications and divisions.
language or 64-bit substitute is advisable.

Once again it is a good idea to use 64-bit arithmetic if possible; otherwise \texttt{take\_scaled} will use more than 2\% of the running time when the Computer Modern fonts are being generated.

\begin{verbatim}
define subscr\_head\_loc(#) \equiv # + 1 \quad \{ \text{where value, subscr\_head, and attr\_head are} \}

(y, -x) will appear in node \( p \). Similarly, a fourth-octant transformation will have been applied after the transition, so we will have \( x\_coord(q) = -x \) and \( y\_coord(q) = y \).

\begin{verbatim}
define procrustes(#) \equiv if abs(#) \geq dmax then
    if abs(#) > max\_allowed then
        begin chopped \leftarrow 1;
            if # > 0 then # \leftarrow max\_allowed else # \leftarrow -max\_allowed;
        end
    else if chopped = 0 then chopped \leftarrow -1
\end{verbatim}

\begin{verbatim}
p \leftarrow cur\_spec; k \leftarrow 1; chopped \leftarrow 0; dmax \leftarrow half(max\_allowed);
\end{verbatim}

\begin{verbatim}
if chopped > 0 then
\end{verbatim}

where \( x'(t) \geq 0 \) we have \( \text{right\_type} = \text{first\_octant} \) or \( \text{right\_type} = \text{eighth\_octant} \); in regions where \( x'(t) \leq 0 \), we have \( \text{right\_type} = \text{fifth\_octant} \) or \( \text{right\_type} = \text{fourth\_octant} \).
hair, vair, stem, curve, ess, flare, dot_size, bar, slab,

crisp, tiny, fine;

and thin_join should not be less than fine.

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