This is a list of all substantial corrections made to *Computers & Typesetting* from the mid-1990s until the first "Millennium edition" was published at the end of the year 2000. Corrections made to the softcover version of *The T_EXbook* 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.

Page A3, line 14 (in certain printings only)   (9/6/00)

that looks like ` or ´.

Page A8, lines 14 and 15   (9/6/00)

that is not to be ignored. Notice that `\␣` is a control sequence of the second kind, namely a control symbol, since there is a single nonletter (␣) following

---

Page A43, line −17   (8/4/98)

into your manuscript, if the `b`-key on your keyboard is broken. (An optional

---

Page A88, lines 14, 16, 18, and 21   (8/12/00)

[Insert two blank spaces between '`blank space`' and '`}`']

Page A96, lines 9 and 10   (8/6/98)

      Before 1998, some German words changed their spelling when split between lines. For example, 'backen' became 'bak-ken' and 'Bettuch' sometimes became 'Bett-

---

Page A107, line 2   (8/5/98)

      ually, you might be tempted to set `\tolerance=10000`; this allows arbitrarily bad

---

Page A115, line −19   (8/5/98)

If there's no room for such an insertion on this page, T_EX will insert it at the top of

---

Page A119, line 15   (8/5/98)

of `\dimen3`, assuming that `\dimen3` is positive.

Page A182, middle line of the displayed commutative diagram   (12/3/99)

$$0 \;\longrightarrow\; \mathcal{O}_C \;\xrightarrow{\pi}\; \pi_*\mathcal{O}_D \;\xrightarrow{\delta}\; R^1 f_* \mathcal{O}_V(-D) \;\longrightarrow\; 0$$

Page A233, line −2   (8/5/98)

could avoid this by adding `\hskip 0pt minus-1fil`; then an oversize text would

Page A277, line 1 (8/5/98)

⟨code assignment⟩ ⟶ ⟨codename⟩⟨8-bit number⟩⟨equals⟩⟨number⟩

Page A277, line −11 (8/5/98)

[Move this line, which defines ⟨at clause⟩, up to the top of the page.]

Page A289, line 24 (2/3/97)

⟨math field⟩ ⟶ ⟨filler⟩⟨math symbol⟩ | ⟨filler⟩{⟨math mode material⟩}

Page A309, line 3 (8/12/97)

8.4. $\$_3$ x_{11} `^`$_7$ 2_{12} $\$_3$ `~`$_{13}$ ␣$_{10}$ ⟦TeX⟧ b_{11} v_{11} ␣$_{10}$. The final space comes from the

---

Page A313, line 24 (9/19/00)

stands for '`\par\vfill...`', so the next three commands are

Page A313, line 27 (9/19/00)

```
{vertical mode: \par}
```

Page A318, lines 12 and 13 (8/5/98)

15.8. `\advance\dimen2 by\ifnum\dimen2<0 -\fi.5\dimen3`
`\divide\dimen2 by\dimen3 \multiply\dimen2 by\dimen3`

Page A325, line 22 (12/3/99)

```
0&\mapright{}&{\cal O}_C&\mapright\pi&
```

Page A337, line 3 from the bottom (9/6/00)

DONALD E. KNUTH, *The TEXbook* (1984)

Page A348, lines 14–16 (8/6/98)

```
 \def\@if#1{true}{\let#1=\iftrue}%
\expandafter\expandafter\expandafter
 \def\@if#1{false}{\let#1=\iffalse}%
```

Page A356, line 21 (8/6/98)

`\def\AA{\leavevmode\setbox0=\hbox{!}\dimen@=\ht0 \advance\dimen@ by-1ex`

Page A356, lines 9–21 from the bottom (8/6/98)

```
\def\S{\mathhexbox278} \def\P{\mathhexbox27B} \def\Orb{\mathhexbox20D}
\def\oalign#1{\leavevmode\vtop{\baselineskip0pt \lineskip.25ex
  \ialign{##\crcr#1\crcr}}} \def\o@lign{\lineskiplimit=0pt \oalign}
\def\ooalign{\lineskiplimit=-\maxdimen \oalign} % chars over each other
{\catcode`p=12 \catcode`t=12 \gdef\\#1pt{#1}} \let\getf@ctor=\\
\def\sh@ft#1{\dimen@=#1 \kern\expandafter\getf@ctor\the\fontdimen1\font
  \dimen@} % kern by #1 times the current slant
\def\d#1{{\o@lign{\relax#1\crcr\hidewidth\sh@ft{-1ex}.\hidewidth}}}
\def\b#1{{\o@lign{\relax#1\crcr\hidewidth\sh@ft{-3ex}%
    \vbox to.2ex{\hbox{\char'26}\vss}\hidewidth}}}
\def\c#1{{\setbox0=\hbox{#1}\ifdim\ht0=1ex \accent'30 #1%
  \else\ooalign{\unhbox0\crcr\hidewidth\char'30\hidewidth}\fi}}
\def\copyright{{\ooalign{\hfil\raise.07ex\hbox{c}\hfil\crcr\Orb}}}
```

Page A364, line 9 (8/9/98)

```
\def\makefootline{\baselineskip=24pt \lineskiplimit=0pt
    \line{\the\footline}}
```

Page A364, line 4 from the bottom (8/6/98)

```
\def\fmtversion{3.1415926} % identifies the current format
```

Page A447, bottom line (6/3/98)

— JOHN SMITH, *The Printer's Grammar* (1755)

Page A450, lines 11–13 (4/12/98)

between 'e' and 'n' there are five relevant values in this case (2 from $_0h_0e_2n_0$, 0 from $_0h_0e_0n_0a_4$, 0 from $_0h_0e_0n_5a_0t_0$, 1 from $_1n_0a_0$, and 0 from $_0n_2a_0t_0$); the maximum of these is 2. The result of all the maximizations is

Page A453, line 6 (8/5/98)

tion dictionary, except that plain TeX blocks hyphens after the very first letter or be-

Page A458, left column (9/6/00)

$\leq$, 45, 135, 368–369; *see also* `\le`.
$\neq$, 45, 135, 368–369; *see also* `\ne`.
$\geq$, 45, 135, 368–369; *see also* `\ge`.

Page A458, right column (7/5/99)

↑ and ↓, 135, 343, 368–369, 429;
al-Khwârizmî, abu 'Abd Allâh Muḥammad ibn Mûsâ, 53.

Page A464, right column (8/6/98)

      *`\edef`, *215–216*, 275, *328*, *373–374*.

Page A466, right column (8/8/98)

      `\getfactor`, *356*, <u>*375*</u>, *398*.

Page A467, right column (8/5/98)

      *`\hfilneg`, 72, 100, 283, 285, 290, 397.

Page A469, left column (8/5/98)

      italic type, 13–14, 100, 127, 165, 409, 428, 430.

Page A469–A477, passim (5/13/98)

Add page 272 to the index entries for `\lastskip`, `\pagedepth`, `\pagefilllstretch`, `\pagefillstretch`, `\pagefilstretch`, `\pagegoal`, `\pageshrink`, `\pagestretch`, `\pagetotal`, `\parshape`, `\prevdepth`, and `\spacefactor`.

Also change '369' to '370' in the index entries for `\lbrack`, `\lq`, `\rbrack`, `\rq`, `\sb`, and `\sp`.

Also change 'Luckombe, Philip' to 'Smith, John'.

Page A472, right column (8/6/98)

      *`\noexpand`, <u>209</u>, <u>213</u>, 215, 216, *377*, *424*.

Page A473, left column (8/6/98)

      `\Orb` (○), <u>356</u>.

Page Bix, line 16 (1/16/00)

      ■ "Word hy-phen-a-tion by com-put-er" by Franklin Mark Liang, Stan-

---

Page Bxiv, line 13 (4/19/96)

preprocessor converts these into numeric constants that are 256 or more. This

---

Page Bxiv, line −1 (4/19/96)

This file contains one line per string, starting with string number 256, then number 257,

---

Page Bxv, lines 10 and 11 (4/19/96)

In this case, occurrences of `""` in the `WEB` program will be replaced by 256; occurrences of `"This longer string"` will be replaced by 257. The symbol `@$` stands for the numeric

---

Page B2, line −10 (3/8/95)

    define *banner* ≡ ´`This␣is␣TeX,␣Version␣3.14159`´   { printed when TeX starts }

Page B169, line 13   (9/22/95)

something in a "muskip" register, or to one of the three parameters \thinmuskip, \medmuskip,

Page B221, line 9   (3/4/95)

   define *non_address* = 0   { a spurious *bchar_label* }

Page B221, line 17   (3/4/95)

font_params: **array**[*internal_font_number*] **of** *font_index*;   { how many font parameters are present }

Page B256, insert new line 12 before the bottom   (3/7/95)

   glue_temp: *real*;   { glue value before rounding }

Page B258, line 11 before the bottom becomes four lines   (3/7/95)

625.   **define** *billion* ≡ *float_constant*(1000000000)
define *vet_glue*(#) ≡ *glue_temp* ← #;
   if *glue_temp* > *billion* **then** *glue_temp* ← *billion*
   else if *glue_temp* < −*billion* **then** *glue_temp* ← −*billion*
⟨ Move right or output leaders 625 ⟩ ≡

Page B258, lines 3–6 from the bottom   (3/7/95)

     begin *vet_glue*(*float*(*glue_set*(*this_box*)) ∗ *stretch*(*g*));
     rule_wd ← *rule_wd* + *round*(*glue_temp*);
     end;
    end
   else if *shrink_order*(*g*) = *g_order* **then**
    begin *vet_glue*(*float*(*glue_set*(*this_box*)) ∗ *shrink*(*g*));
    rule_wd ← *rule_wd* − *round*(*glue_temp*);

Page B260, line 13 from the bottom   (6/26/93)

   doing_leaders ← *outer_doing_leaders*; *dvi_v* ← *save_v*; *dvi_h* ← *save_h*; *cur_v* ← *base_line*;

Page B261, insert new line after line 7   (3/7/95)

   glue_temp: *real*;   { glue value before rounding }

Page B262, lines 3–6 from the bottom   (3/7/95)

     begin *vet_glue*(*float*(*glue_set*(*this_box*)) ∗ *stretch*(*g*));
     rule_ht ← *rule_ht* + *round*(*glue_temp*);
     end;
    end
   else if *shrink_order*(*g*) = *g_order* **then**
    begin *vet_glue*(*float*(*glue_set*(*this_box*)) ∗ *shrink*(*g*));
    rule_ht ← *rule_ht* − *round*(*glue_temp*);

Page B264, line 22   (6/26/93)

$doing\_leaders \leftarrow outer\_doing\_leaders$; $dvi\_v \leftarrow save\_v$; $dvi\_h \leftarrow save\_h$; $cur\_h \leftarrow left\_edge$;

Page B297, line 11   (3/7/95)

$width(p) \leftarrow mu\_mult(width(p))$; $subtype(p) \leftarrow explicit$;

Page B309, line 7   (9/22/95)

if $cur\_style < text\_style$ **then**   { display style }

Page B356, line −5   (3/4/95)

$hang\_after = 1$, and $hang\_indent = 0$. Note that if $hang\_indent = 0$, the value of $hang\_after$ is

---

Page B388, bottom line   (3/4/95)

if $bchar\_label[hf] \neq non\_address$ **then**   { put left boundary at beginning of new line }

Page B406, line 10   (5/1/98)

$q \leftarrow p$;   { now node q represents $p_1 \ldots p_{l-1}$ }

Page B503, line 12   (3/4/95)

of the following procedure. (Exception: The tabskip glue isn't trapped while preambles are being scanned.)

Page B529, line 12   (3/4/95)

$undump(0)(fmem\_ptr - 1)(bchar\_label[k])$;
$undump(min\_quarterword)(non\_char)(font\_bchar[k])$;

Page B531, line 2   (11/23/98)

from appearing again.

Page B531, line 14   (11/23/98)

$print\_int(year)$; $print\_char(".")$; $print\_int(month)$; $print\_char(".")$; $print\_int(day)$;

Page B534, insert new material between lines −16 and −15   (3/20/95)

while $input\_ptr > 0$ **do**
   if $state = token\_list$ **then** end_token_list **else** $end\_file\_reading$;

Page B534, line −2   (3/20/95)

$temp\_ptr \leftarrow cond\_ptr$; $cond\_ptr \leftarrow link(cond\_ptr)$; $free\_node(temp\_ptr, if\_node\_size)$;

Page B535, line 9 $\hfill$ (3/20/95)

begin init for $c \leftarrow$ *top_mark_code* **to** *split_bot_mark_code* **do**
$\quad$ **if** *cur_mark*$[c] \neq$ *null* **then** *delete_token_ref* (*cur_mark*$[c]$);
store_fmt_file; **return**; **tini**

Page B581, Zabala entry $\hfill$ (8/19/00)

Zabala Salelles, Ignacio Andrés: 2.

Page C17, lines 12 and 13 $\hfill$ (9/6/00)

draw $z_4\{\text{curl}\,0\} \mathrel{..} z_2\{z_3 - z_4\} \mathrel{..} \{\text{curl}\,0\}\,z_3$;
draw $z_4\{\text{curl}\,2\} \mathrel{..} z_2\{z_3 - z_4\} \mathrel{..} \{\text{curl}\,2\}\,z_3$

Page C23, line −7 $\hfill$ (8/5/98)

$x_1 = ss = w - x_5; \quad y_3 - y_1 = ygap$

Page C69, line 17 $\hfill$ (9/6/00)

`"abra"`, while p_1 is '$(0,0) \mathrel{..} (3,3)$' and p_2 is '$(0,0) \mathrel{..} (3,3) \mathrel{..}$ cycle'.

Page C94, line −11 $\hfill$ (3/4/95)

put are assumed to have square pixels. But if, for example, the **mode_def** sets

---

Page C107, line 15 $\hfill$ (3/4/95)

labels$(1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b, \textbf{range}\ 1\ \textbf{thru}\ 36)$; **endchar**;

Page C123, lines 21 and 22 $\hfill$ (12/19/95)

▶ **EXERCISE 14.3**
Use a *rotated* quarter-circle to produce '⌒' in font position '`c`'.

Page C129, lines 6–17 $\hfill$ (8/5/98)

$\langle$path primary$\rangle \longrightarrow \langle$pair primary$\rangle \mid \langle$path variable$\rangle$
$\quad \mid\ (\ \langle$path expression$\rangle\ )$
$\quad \mid$ `reverse` $\langle$path primary$\rangle$
$\quad \mid$ `subpath` $\langle$pair expression$\rangle$ `of` $\langle$path primary$\rangle$
$\langle$path secondary$\rangle \longrightarrow \langle$pair secondary$\rangle \mid \langle$path primary$\rangle$
$\quad \mid \langle$path secondary$\rangle\langle$transformer$\rangle$
$\langle$path tertiary$\rangle \longrightarrow \langle$pair tertiary$\rangle \mid \langle$path secondary$\rangle$
$\langle$path expression$\rangle \longrightarrow \langle$pair expression$\rangle \mid \langle$path tertiary$\rangle$
$\quad \mid \langle$path subexpression$\rangle\langle$direction specifier$\rangle$
$\quad \mid \langle$path subexpression$\rangle\langle$path join$\rangle$ `cycle`
$\langle$path subexpression$\rangle \longrightarrow \langle$path expression$\rangle$
$\quad \mid \langle$path subexpression$\rangle\langle$path join$\rangle\langle$path tertiary$\rangle$

Page C134, line 8   (3/4/95)

---

of p; if $t \leq 0$, precontrol t of p is z_0. In particular, if t is an integer, postcontrol t of p

---

Page C139, illustration   (8/5/98)

[Remove the labels `2r`, `2`, and `2l` below their dots.]

Page C143, top two lines   (3/4/95)

In order to have some transform variables to work with, it's necessary to 'hide' some declarations and commands before giving the next `exprs`:

Page C147, lines 14, 16, and 19   (9/6/00)

[Change '**savepen**' to '*savepen*'.]

Page C147, line 2 from the bottom   (9/6/00)

FONT's **penrazor** stands for '**makepen** $((-.5, 0)$ -- $(.5, 0)$ -- cycle)', and **pensquare**

Page C171, line 19   (8/5/98)

(⟨path tertiary⟩) and (⟨pair tertiary⟩).   A pair expression is not considered to

---

Page C172, line 14   (8/5/98)

---

been evaluated and changed to numeric tokens before being substituted for s.

Page C175, line 23   (1/11/88)

---

expand into a sequence of tokens.   (The language SIMULA67 demonstrated that it is

---

Page C206, minor changes to lines -19 to -5 (3/4/95)

```
Path at line 15, before subdivision into octants:
(1.53745,9.05345)..controls (1.53745,4.00511) and (5.75409,-0.00049)
 ..(10.85147,-0.00049)..controls (16.2217,-0.00049) and (20.46255,4.51297)
 ..(20.46255,9.94655)..controls (20.46255,14.99713) and (16.23842,19.00049)
 ..(11.13652,19.00049)..controls (5.77066,19.00049) and (1.53745,14.48491)
 ..cycle

Cycle spec at line 15, after subdivision:
(1.53745,9.05345) % beginning in octant 'SSE'
   ..controls (1.53745,6.58786) and (2.54324,4.371)
 ..(4.16621,2.74803) % segment 0
% entering octant 'ESE'
   ..controls (5.8663,1.04794) and (8.24362,-0.00049)
 ..(10.85147,-0.00049) % segment 0
% entering octant 'ENE'
```

... and so on; there are lots more numbers! What does this all mean? Well, the first segment of the curve, from $(1.53745, 9.05345)$ to $(10.85147, -0.00049)$, has been

Page C207, minor changes to lines 1–23 (3/4/95)

```
Cycle spec at line 15, after subdivision and autorounding:
(2,9.05348) % beginning in octant 'SSE'
   ..controls (2,6.50526) and (3.02194,4.22272)
 ..(4.6577,2.58696) % segment 0
% entering octant 'ESE'
   ..controls (6.2624,0.98225) and (8.45786,0)
 ..(10.85873,0) % segment 0
% entering octant 'ENE'
```

Point $(1.53745, 9.05345)$, where there was a vertical tangent, has been rounded to $(2, 9.05348)$; point $(10.85147, -.00049)$, where there was a horizontal tangent, has been rounded to $(10.85873, 0)$; the intermediate control points have been adjusted accordingly. (Rounding of x coordinates has been done separately from y coordinates.) Finally, with *autorounding* $= 2$, additional adjustments are made so that the $45°$ transition point will occur at what METAFONT thinks is a good spot:

```
Cycle spec at line 15, after subdivision and double autorounding:
(2,9.05348) % beginning in octant 'SSE'
   ..controls (2,6.6761) and (3.07103,4.42897)
 ..(4.78537,2.71463) % segment 0
% entering octant 'ESE'
   ..controls (6.46927,1.03073) and (8.62749,0)
 ..(10.85873,0) % segment 0
% entering octant 'ENE'
```

(Notice that $4.78537 + 2.71463 = 7.50000$; when the slope is -1 at a transition point

Page C210, line -7 (8/5/98)

| ⟨numeric token primary⟩

Page C210, line -2 (8/5/98)

⟨numeric token primary⟩ $\longrightarrow$ ⟨numeric token⟩ **/** ⟨numeric token⟩

Page C211, line 16 (8/5/98)

| ⟨numeric token primary not followed by **+** or **-** or a numeric token⟩

Page C213, lines 17–27   (8/5/98)

$\langle$path primary$\rangle \longrightarrow \langle$pair primary$\rangle \mid \langle$path variable$\rangle \mid \langle$path argument$\rangle$
    $\mid$ ($\langle$path expression$\rangle$)
    $\mid$ `begingroup` $\langle$statement list$\rangle\langle$path expression$\rangle$ `endgroup`
    $\mid$ `makepath` $\langle$pen primary$\rangle \mid$ `makepath` $\langle$future pen primary$\rangle$
    $\mid$ `reverse` $\langle$path primary$\rangle$
    $\mid$ `subpath` $\langle$pair expression$\rangle$ `of` $\langle$path primary$\rangle$
$\langle$path secondary$\rangle \longrightarrow \langle$pair secondary$\rangle \mid \langle$path primary$\rangle$
    $\mid \langle$path secondary$\rangle\langle$transformer$\rangle$
$\langle$path tertiary$\rangle \longrightarrow \langle$pair tertiary$\rangle \mid \langle$path secondary$\rangle$
$\langle$path subexpression$\rangle \longrightarrow \langle$path expression$\rangle$
    $\mid \langle$path subexpression$\rangle\langle$path join$\rangle\langle$path tertiary$\rangle$

Page C213, line −4   (8/5/98)

$\langle$path expression$\rangle \longrightarrow \langle$pair expression$\rangle \mid \langle$path tertiary$\rangle$

Page C234, line 6   (9/6/00)

line $z_1 \mathbin{..} z_5$ that bisects $z_4 \mathbin{..} z_2$, so it starts out in a south-by-southwesterly direction;

Page C246, line 5 of answer 14.15   (8/5/98)

/ length(postcontrol t of p − point t of p) **enddef**;

Page C246, line 10 of answer 14.15   (8/5/98)

/ length(precontrol t of p − point t of p) **enddef**;

Page C252, line −6   (8/5/98)

$h + o$ and *bot* $y_4 = -o$, so nothing needs to be done there. We should, however, say

---

Page C257, large display on line 5   (3/4/95)

$$\left\{\begin{array}{l} \texttt{boolean} \\ \texttt{numeric} \\ \texttt{pair} \\ \texttt{path} \\ \texttt{pen} \\ \texttt{picture} \\ \texttt{string} \\ \texttt{transform} \end{array}\right\} \langle\text{expression}\rangle; \left\{\begin{array}{c} \langle\text{boolean}\rangle \\ \langle\text{numeric}\rangle \\ \langle\text{pair}\rangle \\ \langle\text{string}\rangle \\ \langle\text{transform}\rangle \end{array}\right\} \left\{\begin{array}{c} \texttt{<} \\ \texttt{<=} \\ \texttt{=} \\ \texttt{<>} \\ \texttt{>=} \\ \texttt{>} \end{array}\right\} \left\{\begin{array}{c} \langle\text{boolean}\rangle \\ \langle\text{numeric}\rangle \\ \langle\text{pair}\rangle \\ \langle\text{string}\rangle \\ \langle\text{transform}\rangle \end{array}\right\};$$

Page C261, line −15   (8/5/98)

■ *Hacks:* `gobble`, `gobbled`, `killtext`; `capsule_def`; `numtok`.

Page C286, line 15 (8/5/98)

---

isn't entirely expanded by **expandafter**; only METAFONT's first step in loop expansion

---

Page C299, line 2 (12/6/99)

$$t[u_1, \ldots, u_n] \;=\; \sum_{k=1}^{n} \binom{n-1}{k-1} (1-t)^{n-k} t^{k-1} u_k,$$

Page C299, swap lines 11 and 12 (8/5/98)

```
def lbrack = hide(delimiters []) lookahead [ enddef;
let [[[ = [; let ]]] = ]; let [ = lbrack;
```

Page C306, line 1 (11/4/98)

```
 ligtable oct"013": "i" =: oct"016", "l" =: oct"017",   % ffi and ffl
```

Page C311, line 2 (8/5/98)

---

fine := $4 - eps$, and *breadth_*$[1] := 4 - eps$. (A small amount *eps* has been subtracted

---

Page C323, line −3 (8/5/98)

---

statement occurs, the special string '`"title "` & ⟨title⟩' is output. (This is how the

---

Page C332, lines 22–24 (8/5/98)

---

be replicated so that the final proofs will be *rep* times bigger than usual, and
the pattern will be clipped slightly at the edges so that discrete pixels can be
seen plainly.

Page C341, line 23 (10/10/96)

```
\def\:{\setbox0=\hbox{\noboundary\char\n\noboundary}}%
```

Page C346, left column (9/6/00)

... (bounded join), 18–19, 127, 248, 262.
... (truncation of displayed context), 44.

Page C346, and throughout the index (3/7/95)

(Many index entries for rules of syntax in chapters 25–26 should have been underlined)

Page C350, left column (4/24/00)

Evetts, Leonard Charles, 153.

Page C351, right column   (9/22/97)

`*intersectiontimes`, <u>*136*</u>, *178*, 213, *265*, *294*, *298*.

Page C353, right column   (8/5/98)

⟨numeric token atom⟩, *delete this entry.*
⟨numeric token primary⟩, 72, <u>210</u>.

Page C354, left column   (7/26/98)

Orwell, George (= Blair, Eric Arthur), 85.

Page C355, right column   (3/7/95)

`rt`, *23*, *77*, 80, *103*, 147, 151, <u>273</u>.

Page C361, lines 14–15   (4/29/97)

```
    email: {\tt TUG@tug.org}
    internet: {\tt http://www.tug.org/}
    }
```

Page C361, bottom five lines   (4/29/97)

Don't delay, subscribe today! That address again is
T_EX *Users Group*
email: `TUG@tug.org`
internet: `http://www.tug.org/`
DONALD E. KNUTH, *The $T_EX$book* (1996)

Page Dix, line ix   (8/19/00)

■ "Interfacing with graphic objects" by Ignacio Andrés Zabala Salelles,

---
Page D71, line 11 of section 178   (9/13/00)

{ previous mem_end, lo_mem_max, and hi_mem_min }

Page D132, line 6 of section 291   (9/13/00)

$$= v_n + w_n\theta_0 - u_n\big(v_1 + w_1\theta_0 - u_1(v_2 + \cdots - u_{n-2}(v_{n-1} + w_{n-1}\theta_0 - u_{n-1}\theta_0)\ldots)\big),$$

Page D213, line 7   (9/14/00)

$(-y+\epsilon, x+y+\epsilon\delta)$. We should therefore round as if our skewed coordinates were $(x+\epsilon+\epsilon\delta, y-\epsilon)$

Page D349, line 4 of section 784   (9/14/00)

procedure $pack\_job\_name(s : str\_number)$; { $s = $ `".log"`, `".gf"`, `".tfm"`, or $base\_extension$ }

Page D451, line 11   (9/14/00)

1040.   The value of *cur_mod* controls the *verbosity* in the *print_exp* routine: If it's *show_code*,

---

Page D464, bottom line   (9/14/00)

long_help_seen: *boolean*;   { has the long **errmessage** help been used? }

Page D551, Zabala entry   (8/19/00)

Zabala Salelles, Ignacio Andrés: 812.

Page Exiii, lines 3 and 4 from the bottom   (7/17/98)

        ■ "Metamarks: Preliminary studies for a Pandora's Box of shapes" by Neenie Billawala, Stanford Computer Science report 1256 (Stanford, California,

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Page E87, bottom line   (6/4/98)

                        — JOHN SMITH, *The Printer's Grammar* (1755)

Page E95, line 16   (8/8/98)

  $-- z_{1r} -- z_{1l} --$ **subpath** $(t, 0)$ **of** $(z_{3l}\{z_9 - z_3\} .. z_{5r})$

Page E95, line 11 from the bottom   (8/8/98)

  $-- z_{1r} -- z_{1l} --$ **subpath** $(t, 0)$ **of** $(z_{3r}\{z_9 - z_3\} .. z_{5r})$

Page E95, line 8 from the bottom   (3/6/95)

cmchar `"Extensible vertical arrow--extension module"`;

Page E97, line 8 from the bottom   (3/6/95)

cmchar `"Extensible double vertical arrow--extension module"`;

Page E113, line 9   (3/6/95)

$x_5 = .5[x_4, x_6]$; $x_4 - x_6 = 1.2u$; *lft* $x_{5r} = $ hround$(.5w - .5curve)$;

Page E113, line 10 from the bottom   (3/6/95)

$x_5 = .5[x_4, x_6]$; $x_4 - x_6 = 4.8u$; *lft* $x_{5r} = $ hround$(.5w - .5max\_size)$;

Page E115, line 9   (3/6/95)

$x_5 = .5[x_4, x_6]$; $x_4 - x_6 = 1.2u$; *lft* $x_{5r} = $ hround$(.5w - .5curve)$;

Page E115, line 12 from the bottom   (3/6/95)

$x_5 = .5[x_4, x_6]$; $x_4 - x_6 = 4.8u$; *lft* $x_{5r} = $ hround$(.5w - .5max\_size)$;

Page E147, lines 11–14 from the bottom   (7/7/97)

$pos_3(.8[hair, stem], 0)$; $pos_4(vair, -90)$; $pos_5(hair, -180)$;
$pos_6(vair, -270)$; $pos_7(stem, -360)$; $pos_8(vair, -450)$; $pos_9(hair, -540)$;
$x_0 = x_1 = x_9$;   *lft* x_{0l} = hround$(1.5u - .5hair)$; $x_2 = x_4 = x_6 = x_8 = .5w - .25u$;
rt x_{3r} = hround$(w - 1.75u)$;   *rt* x_{7r} = hround$(w - u)$;

Page E147, line 8 from the bottom   (7/7/97)

$y_5 = .5[y_4, y_6]$;   *top* $y_{6r} - $ *bot* $y_{4r} = vstem + eps$;   *bot* $y_8 = -oo$; $y_7 = y_9 = .55[y_6, y_8]$;

Page E165, line 6   (2/8/97)

$y_1 + .5hair = h$; $x_1 = x_2 + .75u$; $pos_1(hair + dw, \text{angle}(2(x_1 - x_2), y_1 - y_2) + 90)$;

Page E165, line 10   (2/8/97)

$x_3 = .5[x_2, x_4]$; $x_7 - .25u = .5[x_6, x_8]$;   *rt* x_{8r} = hround$(w - .5u)$;

Page E187, line 9   (3/6/95)

---

lft $x_{1l} = $ *lft* x_{2l} = hround$(.5w - .5shaved\_stem)$;   *top* $y_1 = h$;   *bot* $y_2 = 0$;

Page E189, line 8   (3/6/95)

---

lft $x_{1l} = $ *lft* x_{2l} = hround$(.5w - .5shaved\_stem)$;   *top* $y_1 = h$;   *bot* $y_2 = 0$;

Page E233, line 21   (3/6/95)

---

path p;   {{**interim** *superness* := *more_super*; $p = pulled\_super\_arc_l(3, 4)(pull)$}};

Page E237, line 5   (8/6/98)

---

lft x_1 = hround $.5u$; $x_2 = w - x_1$; $y_1 = y_2 = good.y\,.7[x\_height, asc\_height]$;

Page E239, line 7 from the bottom   (3/6/95)

---

lft x_{6r} = hround u; $x_7 = 3u$; $x_8 = w - 3.5u$;   *rt* x_{9l} = hround$(w - u)$;

Page E253, line 2 from the bottom   (8/9/98)

   $.. z_{3e}\{down\} .. \{z_{5l} - z_{4l}\}z_{4e} \; \text{--} \; z_{5e} \; \text{--} \; z_{6e}$;   % stroke

---

Page E263, line 21   (5/10/98)

---

path p;   {{**interim** *superness* := *more_super*; $p = pulled\_super\_arc_l(3, 4)(pull)$}};

Page E289, line 2 from the bottom   (8/9/98)

   $.. z_{3e}\{down\} .. \{z_{5l} - z_{4l}\}z_{4e} \; \text{--} \; z_{5e} \; \text{--} \; z_{6e}$;   % stroke

---

Page E291, line 18 (3/6/95)

$x_4 = \frac{1}{3}[x_5, x_{3l}]; \ \ z_4 = z_5 + whatever * (15u, .1h);$

Page E297, line 17 (5/10/98)

path p; $\{\{$**interim** $superness := more\_super; \ \ p = pulled\_super\_arc_l(3, 4)(pull)\}\}$;

Page E303, line 17 (5/10/98)

path p; $\{\{$**interim** $superness := more\_super; \ \ p = pulled\_super\_arc_l(3, 4)(pull)\}\}$;

Page E309, line 7 from the bottom (5/8/98)

$y_{@0} = y_{@2l} - bracket - eps;$

Page E313, line 7 from the bottom (5/8/98)

$y_{@0} = y_{@2l} + bracket + eps;$

Page E319, line 8 (5/11/98)

$loop_top = $ **if** $serifs$: Vround $.77[vair, fudged.stem]$ **else**: $vair$ **fi**;

Page E373, lines 5 and 6 from the bottom (7/13/97)

$top\ y_{1r} = $ vround $.95h + oo; \ \ top\ y_{2r} = h + oo; \ \ y_3 = .5h;$
$bot\ y_{4r} = -oo; \ \ bot\ y_{5r} = $ vround $.08h - oo; \ \ y_{5l} := good.y\ y_{5l}; \ \ x_{5l} := good.x\ x_{5l};$

Page E381, lines 11 and 12 from the bottom (7/13/97)

$top\ y_{1r} = $ vround $.93h + oo; \ \ top\ y_{2r} = h + oo; \ \ y_3 = .5h;$
$bot\ y_{4r} = -oo; \ \ bot\ y_{5r} = $ vround $.07h - oo;$

Page E389, bottom two lines (8/7/98)

numeric $aa\_, bb\_, cc\_; \ \ bb\_ = b/y; \ \ cc\_ = c/y; \ \ aa\_ = a * a - bb\_ * bb\_;$
$(a * (cc\_ ++ \text{sqrt}\ aa\_) - bb\_ * cc\_)/aa\_$ **enddef**;

Page E423, line 17 (8/8/98)

$x_{13} = x_{11} - .5; \ \ top\ y_{14r} = \min(^{10}/_7 x\_height + .5bulb\_diam, h) + 1; \ \ top\ y_{11} = x\_height;$

Page E427, line 21 (8/8/98)

$x_{23} = x_{21} - .5; \ \ top\ y_{24r} = \min(^{10}/_7 x\_height + .5bulb\_diam, h) + 1; \ \ top\ y_{21} = x\_height;$

Page E431, lines 18 and 19 (8/8/98)

filldraw z_0 -- (x_0, y_{2l}) -- $z_{1l}\{right\} \ldotp\ldotp \{left\}z_{1r}$
 -- **subpath** $(t, 0)$ **of** $(z_{3r} \ldotp\ldotp \{2(x_0 - x_3), y_0 - y_3\}z_{5r})$

Page E431, line 2 from the bottom   (8/8/98)

$\texttt{-- } z_{1l}\{right\} \mathinner{.\,.} \{left\} z_{1r} \texttt{ -- } (x_0, y_{2r}) \texttt{ -- cycle};$ % arrowhead and stem

---

Page E433, lines 13 and 14   (8/8/98)

filldraw $z_0 \texttt{ -- } (x_0, y_{2l}) \texttt{ -- } z_{1l}\{left\} \mathinner{.\,.} \{right\} z_{1r}$
  $\texttt{-- }$ **subpath** $(t, 0)$ **of** $(z_{3l} \mathinner{.\,.} \{2(x_0 - x_3), y_0 - y_3\} z_{5r})$

Page E433, line 2 from the bottom   (8/8/98)

$\texttt{-- } z_{1l}\{left\} \mathinner{.\,.} \{right\} z_{1r} \texttt{ -- } (x_0, y_{2r}) \texttt{ -- cycle};$ % arrowhead and stem

---

Page E463, line 15   (8/8/98)

$\texttt{--- } z_{1r} \mathinner{.\,.} z_{1l} \texttt{ --- }$ **subpath** $(t, 0)$ **of** $(z_{3r}\{z_9 - z_3\} \mathinner{.\,.} z_{5r})$

Page E463, line 3 from the bottom   (8/8/98)

$\texttt{--- } z_{1r} \mathinner{.\,.} z_{1l} \texttt{ --- }$ **subpath** $(t, 0)$ **of** $(z_{3l}\{z_9 - z_3\} \mathinner{.\,.} z_{5r})$

Page E465, line 16   (8/8/98)

$\texttt{--- } z_{1l} \mathinner{.\,.} z_{1r} \texttt{ --- }$ **subpath** $(t, 0)$ **of** $(z_{3r}\{z_9 - z_3\} \mathinner{.\,.} z_{5r})$

Page E465, line 3 from the bottom   (8/8/98)

$\texttt{--- } z_{1l} \mathinner{.\,.} z_{1r} \texttt{ --- }$ **subpath** $(t, 0)$ **of** $(z_{3l}\{z_9 - z_3\} \mathinner{.\,.} z_{5r})$

Page E467, line 18   (8/8/98)

$\texttt{--- } z_{1l} \mathinner{.\,.} z_{1r} \texttt{ --- }$ **subpath** $(t, 0)$ **of** $(z_{3r}\{z_9 - z_3\} \mathinner{.\,.} z_{5r})$

Page E467, line 3 from the bottom   (8/8/98)

$\texttt{--- } z_{11l} \mathinner{.\,.} z_{12r} \texttt{ --- }$ **subpath** $(t, 0)$ **of** $(z_{13l}\{z_{19} - z_{13}\} \mathinner{.\,.} z_{15r})$

Page E483, lines 12–14 from the bottom   (3/6/95)

beginarithchar(oct `"004"`); **pickup** *fine.nib*; **pickup** *rule.nib*;
numeric *del*; $del = dot\_size - currentbreadth$;   % *currentbreadth = fine*
$x_3 - .5del = good.x(.5w - .5del)$; $center\_on(x_3)$;
$y_3 + .5del = good.y(math\_axis + math\_spread[.5x\_height, .6x\_height] + .5del)$;

Page E485, bottom line   (6/4/98)

— JOHN SMITH, *The Printer's Grammar* (1755)

Page E489, line 4   (8/8/98)

lft $x_6 =$ hround u; $x_2 = w - x_6$; *top* $y_8 = h$; $y_8 - y_4 = x_2 - x_6$;

Page E489, line 10   (8/8/98)

lft $x_6 = $ hround u; $x_2 = w - x_6$; *top* $y_8 = h$; $y_8 - y_4 = x_2 - x_6$; *circle_points*;

Page E491, line 3 from the bottom   (3/6/95)

$spread := 2\text{ceiling}(spread\# * hppp/2) + eps$; **enddef**;

Page E507, line 15   (8/8/98)

$--- z_{1r} .. z_{1l} ---$ **subpath** $(t, 0)$ **of** $(z_{3r}\{z_9 - z_3\} .. z_{5r})$

Page E507, line 3 from the bottom   (8/8/98)

$--- z_{11r} .. z_{11l} ---$ **subpath** $(t, 0)$ **of** $(z_{13l}\{z_{19} - z_{13}\} .. z_{15r})$

Page E509, line 17   (8/8/98)

$--- z_{1l} .. z_{1r} ---$ **subpath** $(t, 0)$ **of** $(z_{3l}\{z_9 - z_3\} .. z_{5r})$

Page E509, lines 3 and 4 from the bottom   (8/8/98)

$--- z_{1l} .. z_{1r} ---$ **subpath** $(t, 0)$ **of** $(z_{3l}\{z_9 - z_3\} .. z_{5r})$

Page E511, line 17   (8/8/98)

$--- z_{1l} .. z_{1r} ---$ **subpath** $(t, 0)$ **of** $(z_{3l}\{z_9 - z_3\} .. z_{5r})$

Page E511, lines 3 and 4 from the bottom   (8/8/98)

$--- z_{1l} .. z_{1r} ---$ **subpath** $(t, 0)$ **of** $(z_{3l}\{z_9 - z_3\} .. z_{5r})$

Page E541, bottom line   (2/27/97)

labels$(1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15)$; **endchar**;

Page E568, the example of `cmtex8`   (4/18/96)

(The word '`logician`' should not be hyphenated.)

Page E574, left column   (3/6/95)

currentbreadth, 483, <u>545</u>, 546.

Page E575, right column   (9/10/98)

Holmes, Kris Ann, vi, vii.

Page E576, right column   (6/4/98)

Delete the entry for Luckombe

Page E579, left column   (6/4/98)

Smith, John, 87, 485.