The tugboat package*

The *TUGboat* team
(Distributed by Robin Fairbairns)

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Contents

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1 Document preambles

```
⟨ltugboatcls | ltugproccls | ltugcomn⟩\NeedsTeXFormat{LaTeX2e}[1994/12/01]
⟨*dtx⟩
\ProvidesFile                  {tugboat.dtx}
⟨/dtx⟩
⟨ltugboatcls⟩\ProvidesClass  {ltugboat}
⟨ltugproccls⟩\ProvidesClass  {ltugproc}
⟨ltugboatsty⟩\ProvidesPackage{ltugboat}
⟨ltugprocsty⟩\ProvidesPackage{ltugproc}
⟨ltugcomn⟩    \ProvidesPackage{ltugcomn}
                    [2009/05/06 v2.6
⟨ltugboatcls⟩                        TUGboat journal class%
⟨ltugproccls⟩                        TUG conference proceedings class%
⟨ltugboatsty | ltugprocsty⟩          TUG compatibility package%
⟨ltugcomn⟩                             TUGboat 'common macros' package%
⟨*dtx⟩
                                         TUG macros source file%
⟨/dtx⟩
                    ]
⟨*dtx⟩
\newif\ifoldlongtable
⟨/dtx⟩
```

2 Introduction

This file contains all the macros for typesetting *TUGboat* with both plain TeX and LaTeX 2ε.

2.1 Summary of control sequences

Abbreviations. Just a listing with indications of expansion where that may not be obvious. For full definitions, see real code below (Section 3.4).

`\AllTeX`	(LA)TEX
`\AMS`	American Mathematical Society
`\AmSTeX`	
`\aw`	A-W (abbreviation for Addison-Wesley)
`\API`	
`\AW`	Addison-Wesley
`\BibTeX`	
`\CandT`	Computers & Typesetting
`\ConTeXt`	ConTEXt
`\Cplusplus`	C++
`\DTD`	
`\DVI`	
`\DVD`	
`\DVIPDFMx`	DVIPDFMx
`\DVItoVDU`	DVItoVDU
`\ECMA`	
`\EPS`	
`\eTeX`	ε-TEX
`\ExTeX`	ε_{χ}TEX
`\Ghostscript`	
`\Hawaii`	Hawai‘i
`\HTML`	
`\ISBN`	ISBN
`\ISO`	
`\ISSN`	ISSN
`\JTeX`	
`\JoT`	The Joy of TEX
`\LaTeX`	
`\MacOSX`	Mac OS X
`\MathML`	
`\Mc`	M with raised c
`\MF`	METAFONT
`\mf`	METAFONT
`\MFB`	The Metafont book
`\MP`	METAPOST
`\mp`	MetaPost (in text only: remains ‘$\mp$’ in maths)
`\OMEGA`	Omega ‘logo’ (Ω)
`\OCP`	Omega compiled process
`\OOXML`	
`\OTP`	Omega translation process
`\mtex`	multilingual TEX
`\NTS`	New Typesetting System
`\pcMF`	pcMF
`\PCTeX`	
`\pcTeX`	
`\Pas`	Pascal

\PiCTeX	
\plain	plain (in typewriter font)
\POBox	P. O. Box
\PS	PostScript (with hyphenation)
\SC	Steering Committee
\SGML	SGML
\SliTeX	
\slMF	Metafont (slanted) — deprecated: use \textsl instead
\stTeX	TEX for the Atari ST
\SVG	
\TANGLE	
\TB	The TEXbook
\TeX	(Although nearly every package defines this, most — including plain — are missing the space-factor adjustment)
\TeXhax	
\TeXMaG	(defunct)
\TeXtures	
\TeXXeT	
\Thanh	
\TFM	TFM
\TUB	*TUGboat*
\TUG	TEX Users Group
\UNIX	
\UTF	
\VAX	
\VorTeX	
\XeT	
\XeTeX	reflected and lowered first 'E'
\XeLaTeX	with extra space before 'L'
\XML	
\WEB	
\WEAVE	
\WYSIWYG	

Macros for things that are slightly more significant.

\NoBlackBoxes	turns off marginal rules marking overfull boxes
\BlackBoxes	turns them back on
\newline	horizontal glue plus a break
\ifundefined#1	checks argument with \csname against \relax
\topsmash	smashes above baseline (from AMSTeX)
\botsmash	smashes below baseline (from AMSTeX)
\smash	smashes both (from plain)
\ulap	lap upwards

`\dlap`	lap downwards
`\xlap`	reference point at center horizontally; 0 width
`\ylap`	reference point at center vertically; 0 height, depth
`\zlap`	combination `\xlap` and `\ylap`
`\basezero`	to avoid insertion of baselineskip and lineskip glue
`\nullhrule`	empty `\hrule`
`\nullvrule`	empty `\vrule`
`\makestrut[#1;#2]`	ad hoc struts; `#1`=height, `#2`=depth
`\today`	today's date
`\SetTime`	converts `\time` to hours, minutes
`\now`	displays time in hours and minutes
`\Now`	shows current date and time
`\ifPrelimDraft`	flag to indicate status as preliminary draft
`\rtitlex`	*TUGboat* volume and number info for running head
`\midrtitle`	information for center of running head
`\HorzR@gisterRule`	pieces of registration marks ('trimmarks')
`\DownShortR@gisterRule`	
`\UpShortR@gisterRule`	
`\ttopregister`	top registration line with 'T' in center
`\tbotregister`	bottom registration line with inverted 'T' in center
`\topregister`	register actually used
`\botregister`	
`\raggedskip`	parameters used for ragged settings
`\raggedstretch`	
`\raggedparfill`	
`\raggedspaces`	
`\raggedright`	
`\raggedleft`	
`\raggedcenter`	
`\normalspaces`	
`\raggedbottom`	
`\bull`	square bullet
`\cents`	'cents' sign
`\Dag`	superscripted dagger
`\careof`	c/o
`\sfrac`	slashed fraction (arguments optionally separated by a slash)
`\cs`	control seqence name `\cs{name}`→`\name`
`\env`	environment name `\env{name}`→`\begin{name}`
`\meta`	meta-argument name `\meta{name}`→⟨*name*⟩

`\dash`	en-dash surrounded by thinspaces; only breakable AFTER
`\Dash`	em-dash, as above
`\hyph`	permit automatic hyphenation after an actual hyphen
`\slash`	'breakable' slash
`\nth`	for obtaining '1st', '2nd', 3rd, etc.
`\tubissue`	gets `\TUB` followed by volume and issue numbers
`\xEdNote`	Editor's Note:
`\Review:`	Review: (for title of book review article)
`\reviewitem`	begin data for item being reviewed
`\revauth`	with one argument, author(s) of item being reviewed
`\revtitle`	with one argument, title of ...
`\revpubinfo`	with one argument, other info pertaining to ...
`\endreviewitem`	end data for item being reviewed
`\booktitle`	with one argument, format book title in text
`\Input`	`\input` with some other bookkeeping for case where multiple articles are put together
`\TBremark`	reminder to *TUGboat* editorial staff
`\TBEnableRemarks`	enable `\TBremark`s (normally suppressed)
`\pagexref`	used to write out page numbers to screen and
`\pagexrefON`	external files
`\pagexrefOFF`	
`\xrefto`	used for symbolic cross-reference to other pages
`\xreftoON`	in *TUGboat*
`\xreftoOFF`	
`\TBdriver`	marks code which only takes effect when articles are run together in a driver file
`\signaturemark`	items for signatures
`\signaturewidth`	

3 LaTeX 2ε *TUGboat* class file

3.1 Setup and options

Check for reloading. Hmmm... Does this happen with LaTeX 2ε classes? Probably, in fact, as well that it doesn't, since the `\tugstyinit` referenced here doesn't exist; however, it's possible that we might need a similar mechanism in the future, so we retain its skeleton, without fleshing out the `\tugstyinit` bones.

22 ⟨∗ltugboatcls⟩
23 `\csname tugstyloaded@\endcsname`
24 `\def\tugstyloaded@{\tugstyinit\endinput}`

Acquire a name for this class if we don't already have one (by virtue of having been loaded by `tugproc.cls`). This name will be used in error messages and the like.

```
\providecommand{\@tugclass}{ltugboat}
```

Warnings/error messages/information messages — if we're using LaTeX 2_ε we can use the `\Class*` commands:

```
\def\TBInfo{\ClassInfo{\@tugclass}}
\def\TBError{\ClassError{\@tugclass}}
\def\TBWarning{\ClassWarning{\@tugclass}}
\def\TBWarningNL{\ClassWarningNoLine{\@tugclass}}
```

Some trivial options, just flicking switches, etc.

```
\newif\ifpreprint
\def\preprint{\preprinttrue}
\DeclareOption{draft}{%
  \AtEndOfClass{%
    \setcounter{page}{1001}%
    \BlackBoxes
    \def\MakeRegistrationMarks{}%
    \PrelimDrafttrue
    }%
}
\DeclareOption{preprint}{%
   \preprinttrue
}
\DeclareOption{final}{%
  \AtEndOfClass{%
    \NoBlackBoxes
    \PrelimDraftfalse
    }%
}
```

The rules dictate that the output should be set using a 10pt base font.

```
\DeclareOption{11pt}{%
  \TBWarning{The \@tugclass\space class only supports 10pt fonts:
    \MessageBreak option \CurrentOption\space ignored}%
}
\DeclareOption{12pt}{\csname ds@11pt\endcsname}
```

Similarly, ignore one/two-side/column

```
\DeclareOption{oneside}{\TBWarning{Option \CurrentOption\space ignored}}
\DeclareOption{twoside}{\ds@oneside}
\DeclareOption{onecolumn}{\ds@oneside}
\DeclareOption{twocolumn}{\ds@oneside}
```

There are these people who seem to think `tugproc` is an option rather than a class... (Note that it's already been filtered out if we were calling from `ltugproc`.)

```
\DeclareOption{tugproc}{%
```

```
  \TBWarning{Option \CurrentOption\space ignored: use class ltugproc
    instead of \@tugclass}%
}
```

Option `rawcite` (the default) specifies the default citation mechanism (as built-in to LaTeX); option `harvardcite` specifies the author-date citation mechanism defined in section 3.22 below.

```
\DeclareOption{rawcite}{\let\if@Harvardcite\iffalse}
\DeclareOption{harvardcite}{\let\if@Harvardcite\iftrue}
```

Option `extralabel` (the default) specifies that the publication years of two successive references with otherwise identical labels will be tagged with distinguishing letters; option `noextralabel` causes those letters to be suppressed. Note that (a) no two references will in any case have the same labels in the default (plain) `rawcite` setup, and that (b) the distinguishing letters appear in the labels themselves — the even remotely intelligent reader should be able to work out the correspondence one with the other...

```
\DeclareOption{extralabel}{\let\UseExtraLabel\@firstofone}
\DeclareOption{noextralabel}{\let\UseExtraLabel\@gobble}
```

The section-numbering style, so that we can allow the same heading layout as in the plain macros.

```
\DeclareOption{numbersec}{\let\if@numbersec\iftrue}
\DeclareOption{nonumber}{\let\if@numbersec\iffalse}
```

Any other options, we pass on to `article.cls` before we load it:

```
\DeclareOption*{\PassOptionsToClass{\CurrentOption}{article}}
```

Request default options (draft mode, standard citation, double-sided printing), process all options, and then get the base document class on top of which we reside.

```
\ExecuteOptions{draft,extralabel,numbersec,rawcite}
\ProcessOptions
\LoadClass[twoside]{article}
```

Various fonts used throughout. Some effort has been made to suppress these things with explicit sizes in the macro name (`\tensl` is an example below), but keeping in step with the documentation is one thing that restricts such a move.

```
\def\sectitlefont{\fontfamily\sfdefault\fontseries{bx}\fontshape{n}%
         \fontsize\@xviipt\stbaselineskip\selectfont}
\def\tensl{\fontseries{m}\fontshape{sl}\fontsize\@xpt\@xiipt
          \selectfont}
```

This font selection command is used *only* for the 'Editor's Note' introduction to notes; sadly it makes explicit reference to CMR, and Barbara Beeton has agreed that the reference may be constructed to use the current family such that, if no upright italic is defined, ordinary italics are used. A project for later...

```
\def\EdNoteFont{\fontfamily{cmr}\fontseries{m}\fontshape{ui}%
          \selectfont}
```

⟨/ltugboatcls⟩

If Ulrik Vieth's `mflogo.sty` is around, we'll use it. Otherwise (pro tem, at least) we'll warn the user and define the absolute minimum of machinery that *TUGboat* requires (that which was used prior to the invention of LaTeX 2$_\varepsilon$).

```
⟨*common⟩
\IfFileExists{mflogo.sty}%
  {\RequirePackage{mflogo}}%
⟨!ltugcomn⟩ {\TBWarning
⟨ltugcomn⟩  {\PackageWarning{ltugcomn}
      {Package mflogo.sty not available --\MessageBreak
        Proceeding to emulate mflogo.sty}
   \DeclareRobustCommand\logofamily{%
     \not@math@alphabet\logofamily\relax
     \fontencoding{U}\fontfamily{logo}\selectfont}
   \DeclareTextFontCommand{\textlogo}{\logofamily}
   \def\MF{\textlogo{META}\-\textlogo{FONT}\@}
   \def\MP{\textlogo{META}\-\textlogo{POST}\@}
   \DeclareFontFamily{U}{logo}{}
   \DeclareFontShape{U}{logo}{m}{n}{%
     <8><9>gen*logo%
     <10><10.95><12><14.4><17.28><20.74><24.88>logo10%
   }{}
   \DeclareFontShape{U}{logo}{m}{sl}{%
     <8><9>gen*logosl%
     <10><10.95><12><14.4><17.28><20.74><24.88>logosl10%
   }{}
   \DeclareFontShape{U}{logo}{m}{it}{%
     <->ssub*logo/m/sl%
   }{}%
  }
```

3.2 Resetting at start of paper

`\ResetCommands` `\AddToResetCommands` `\StartNewPaper`

We store a set of commands that should be executed at the start of each paper, before any paper-specific customisation. These commands (stored in the token register `\ResetCommands`) include things suc as resetting section and footnote numbers, re-establishing default settings of typesetting parameters, and so on. The user (or more typically, editor) may execute the commands by using the command `\StartNewPaper`. Things I've not yet thought of may be added to the list of commands, by

```
\newtoks\ResetCommands
\ResetCommands{%
  \setcounter{part}{0}%
  \setcounter{section}{0}%
  \setcounter{footnote}{0}%
  \authornumber\z@
}
\newcommand{\AddToResetCommands}[1]{%
  \AddToResetCommands\expandafter{\AddToResetCommands#1}%
```

```
}
```

3.3 Helpful shorthand (common code with Plain styles)

`\makeescape`, ..., `\makecomment` allow users to change the category code of a single character a little more easily. These require that the character be addressed as a control sequence: e.g., `\makeescape\/` will make '/' an escape character.

```
⟨*!latex⟩
\def\makeescape#1{\catcode`#1=0 }
\def\makebgroup#1{\catcode`#1=1 }
\def\makeegroup#1{\catcode`#1=2 }
\def\makemath  #1{\catcode`#1=3 }
⟨/!latex⟩
⟨*latex⟩
\def\makeescape#1{\catcode`#1=\z@}
\def\makebgroup#1{\catcode`#1=\@ne}
\def\makeegroup#1{\catcode`#1=\tw@}
\def\makemath  #1{\catcode`#1=\thr@@}
⟨/latex⟩
\def\makealign #1{\catcode`#1=4 }
\def\makeeol   #1{\catcode`#1=5 }
\def\makeparm  #1{\catcode`#1=6 }
\def\makesup   #1{\catcode`#1=7 }
\def\makesub   #1{\catcode`#1=8 }
\def\makeignore#1{\catcode`#1=9 }
\def\makespace #1{\catcode`#1=10 }
\def\makeletter#1{\catcode`#1=11 }
\chardef\other=12
\let\makeother\@makeother
\def\makeactive#1{\catcode`#1=13 }
\def\makecomment#1{\catcode`#1=14 }
```

`\savecat#1` and `\restorecat#1` will save and restore the category of a given character. These are useful in cases where one doesn't wish to localize the settings and therefore be required to globally define or set things.

```
\def\savecat#1{%
  \expandafter\xdef\csname\string#1savedcat\endcsname{\the\catcode`#1}}
\def\restorecat#1{\catcode`#1=\csname\string#1savedcat\endcsname}
⟨!latex⟩\savecat\@
⟨!latex⟩\makeletter\@
```

`\SaveCS#1` and `\RestoreCS#1` save and restore 'meanings' of control sequences. Again this is useful in cases where one doesn't want to localize or where global definitions clobber a control sequence which is needed later with its 'old' definition.

```
\def\SaveCS#1{\expandafter\let\csname saved@@#1\expandafter\endcsname
  \csname#1\endcsname}
\def\RestoreCS#1{\expandafter\let\csname#1\expandafter\endcsname
  \csname saved@@#1\endcsname}
```

To distinguish between macro files loaded

```
\def\plaintubstyle{plain}
\def\latextubstyle{latex}
```

Control sequences that were first defined in LaTeX 2_ε of 1995/06/01 (or later), but which we merrily use. Only define if necessary:

```
\providecommand\hb@xt@{\hbox to}
\providecommand\textsuperscript[1]{\ensuremath{\m@th
                                    ^{\mbox{\fontsize\sf@size\z@
                                        \selectfont #1}}}}
```

(Note that that definition of `\textsuperscript` isn't robust, but probably doesn't need to be... What's more, it doesn't appear in the mythical 2.09 version of the package.)

3.4 Abbreviations and logos

Font used for the METAFONT logo, etc.

```
\def\AllTeX{(\La\kern-.075em)\kern-.075em\TeX}
\def\AMS{American Mathematical Society}
\def\AmS{$\mathcal{A}$\kern-.1667em\lower.5ex\hbox
    {$\mathcal{M}$}\kern-.125em$\mathcal{S}$}
\def\AmSLaTeX{\AmS-\LaTeX}
\def\AmSTeX{\AmS-\TeX}
\def\ANSI{\acro{ANSI}}
\def\API{\acro{API}}
\def\ASCII{\acro{ASCII}}
\def\aw{A\kern.1em-W}
\def\AW{Addison\kern.1em-\penalty\z@\hskip\z@skip Wesley}
%
% make \BibTeX work in slanted contexts too; it's common in titles, and
% especially burdensome to hack in .bib files.
\def\BibTeX{%
  \ifdim \fontdimen1\font>0pt
     B{\SMC\SMC IB}%
  \else
     \textsc{Bib}\kern-.08em
  \fi
  \TeX}
%
\def\CandT{\textsl{Computers \& Typesetting}}
```

We place our `\kern` after `\-` so that it disappears if the hyphenation is taken:

```
\newcommand\ConTeXt{C\kern-.0333emon\-\kern-.0667em\TeX\kern-.0333emt}
\newcommand\Cplusplus{C\plusplus}
\newcommand\plusplus{\raisebox{.7ex}{$_{++}$}}
\def\CSS{\acro{CSS}}
\def\CTAN{\acro{CTAN}}
\def\DTD{\acro{DTD}}
\def\DVD{\acro{DVD}}
```

```
\def\DVI{\acro{DVI}}
\def\DVIPDFMx{\acro{DVIPDFM}$x$}
\def\DVItoVDU{DVIto\kern-.12em VDU}
\def\ECMA{\acro{ECMA}}
\def\EPS{\acro{EPS}}
\DeclareRobustCommand\eTeX{\ensuremath{\varepsilon}-\kern-.125em\TeX}
\DeclareRobustCommand\ExTeX{%
  \ensuremath{\textstyle\varepsilon_{\kern-0.15em\cal{X}}}\kern-.2em\TeX}
\def\FAQ{\acro{FAQ}}
\def\FTP{\acro{FTP}}
\def\Ghostscript{Ghost\-script}
\def\GNU{\acro{GNU}}
\def\GUI{\acro{GUI}}
\def\Hawaii{Hawai‘i}
\def\HTML{\acro{HTML}}
\def\HTTP{\acro{HTTP}}
\def\IEEE{\acro{IEEE}}
\def\ISBN{\acro{ISBN}}
\def\ISO{\acro{ISO}}
\def\ISSN{\acro{ISSN}}
\def\JPEG{\acro{JPEG}}
\def\JTeX{\leavevmode\hbox{\lower.5ex\hbox{J}\kern-.18em\TeX}}
\def\JoT{\textsl{The Joy of \TeX}}
\def\LAMSTeX{L\raise.42ex\hbox{\kern-.3em
                  $\m@th$\fontsize\sf@size\z@\selectfont
                  $\m@th\mathcal{A}$}%
    \kern-.2em\lower.376ex\hbox{$\m@th\mathcal{M}$}\kern-.125em
    {$\m@th\mathcal{S}$}-\TeX}
% This code
% is hacked from its definition of \cs{LaTeX}; it allows slants (for
% example) to propagate into the raised (small) ‘A’:
%    \begin{macrocode}
\newcommand{\La}%
   {L\kern-.36em
        {\setbox0\hbox{T}%
         \vbox to\ht0{\hbox{$\m@th$%
                           \csname S@\f@size\endcsname
                           \fontsize\sf@size\z@
                           \math@fontsfalse\selectfont
                           A}%
                     \vss}%
        }}
```

We started with the intention that we wouldn't redefine `\LaTeX` when we're running under it, so as not to trample on an existing definition. However, this proves less than satisfactory; a single logo may be OK for the run of documents, but for *TUGboat*, we find that something noticeably better is necessary; see section 3.11.

```
⟨!latex⟩\def\LaTeX{\La\kern-.15em\TeX}
\def\MacOSX{Mac\,\acro{OS\,X}}
```

```
\def\MathML{Math\acro{ML}}
\def\Mc{\setbox\TestBox=\hbox{M}M\vbox
   to\ht\TestBox{\hbox{c}\vfil}} %  for Robert McGaffey
```

If we're running under LaTeX 2_ε, we're using (at least pro tem) Ulrik Vieth's `mflogo.sty` if it's present. Otherwise, we're using a short extract of Vieth's stuff. Either way, we don't need to specify `\MF` or `\MP`

```
\def\mf{\textsc{Metafont}}
\def\MFB{\textsl{The \MF book}}
\let\TB@@mp\mp
\DeclareRobustCommand\mp{\ifmmode\TB@@mp\else MetaPost\fi}
%
% In order that the \cs{OMEGA} command will switch to using the TS1
% variant of the capital Omega character if \texttt{textcomp.sty} is
% loaded, we define it in terms of the \cs{textohm} command.  Note
% that this requires us to interpose a level of indirection, rather
% than to use \cs{let}\dots
%
%    \begin{macrocode}
\DeclareTextSymbol{\textohm}{OT1}{'012}
\DeclareTextSymbolDefault{\textohm}{OT1}
\newcommand\OMEGA{\textohm}
\DeclareRobustCommand{\OCP}{\OMEGA\acro{CP}}
\def\OOXML{\acro{OOXML}}
\DeclareRobustCommand{\OTP}{\OMEGA\acro{TP}}
\def\mtex{T\kern-.1667em\lower.424ex\hbox{\^E}\kern-.125emX\@}
```

Revised definition of `\NTS` based on that used by Phil Taylor.

```
\DeclareRobustCommand\NTS{\ensuremath{\mathcal{N}\mkern-4mu
  \raisebox{-0.5ex}{$\mathcal{T}$}\mkern-2mu \mathcal{S}}}
\def\Pas{Pascal}
\def\pcMF{\leavevmode\raise.5ex\hbox{p\kern-.3\p@ c}MF\@}
\def\PCTeX{PC\thinspace\TeX}
\def\pcTeX{\leavevmode\raise.5ex\hbox{p\kern-.3\p@ c}\TeX}
\def\PDF{\acro{PDF}}
\def\PiC{P\kern-.12em\lower.5ex\hbox{I}\kern-.075emC\@}
\def\PiCTeX{\PiC\kern-.11em\TeX}
\def\PGF{\acro{PGF}}
\def\plain{\texttt{plain}}
\def\PNG{\acro{PNG}}
\def\POBox{P.\thinspace O.~Box }
\def\PS{{Post\-Script}}
\def\PSTricks{\acro{PST}ricks}
\def\RTF{\acro{RTF}}
\def\SC{Steering Committee}
\def\SGML{\acro{SGML}}
\def\SliTeX{\textrm{S\kern-.06em\textsc{l\kern-.035emi}%
                     \kern-.06em\TeX}}
\def\slMF{\textsl{\MF}} % should never be used
\def\stTeX{\textsc{st}\kern-0.13em\TeX}
```

```
\def\STIX{\acro{STIX}}
\def\SVG{\acro{SVG}}
\def\TANGLE{\texttt{TANGLE}\@}
\def\TB{\textsl{The \TeX book}}
\def\TIFF{\acro{TIFF}}
\def\TP{\textsl{\TeX}: \textsl{The Program}}
\DeclareRobustCommand\TeX{T\kern-.1667em\lower.424ex\hbox{E}\kern-.125emX\@}
\def\TeXhax{\TeX hax}
\def\TeXMaG{\TeX M\kern-.1667em\lower.5ex\hbox{A}%
   \kern-.2267emG\@}
\def\TeXtures{\textit{Textures}}
\let\Textures=\TeXtures
\def\TeXXeT{\TeX-{}-\XeT}
\def\TFM{\acro{TFM}}
\def\Thanh{H\‘an~Th\^e\llap{\raise 0.5ex\hbox{\’{}}}~Th\‘anh}
\def\TikZ{Ti{\em k}Z}
\def\ttn{\textsl{TTN}\@}
\def\TTN{\textsl{\TeX{} and TUG News}}
\let\texttub\textsl              % redefined in other situations
\def\TUB{\texttub{TUGboat}}
\def\TUG{\TeX\ \UG}
\def\tug{\acro{TUG}}
\def\UG{Users Group}
\def\UNIX{\acro{UNIX}}
\def\UTF{\acro{UTF}}
\def\VAX{V\kern-.12em A\kern-.1em X\@}
\def\VorTeX{V\kern-2.7\p@\lower.5ex\hbox{O\kern-1.4\p@ R}\kern-2.6\p@\TeX}
\def\XeT{X\kern-.125em\lower.424ex\hbox{E}\kern-.1667emT\@}
\def\XML{\acro{XML}}
\def\WEB{\texttt{WEB}\@}
\def\WEAVE{\texttt{WEAVE}\@}
\def\WYSIWYG{\acro{WYSIWYG}}
```

XeTEX requires reflecting the first E, hence we complain if the graphics package is not present. (For plain documents, this can be loaded via Eplain.) Also, at Barbara's suggestion, if the current font is slanted, we rotate by 180 instead of reflecting so there is at least a chance to look ok. (The magic values here seem more or less ok for `cmsl` and `cmti`.)

```
\def\tubreflect#1{%
  \@ifundefined{reflectbox}{%
    \TBerror{A graphics package must be loaded for \string\XeTeX}%
  }{%
    \ifdim \fontdimen1\font>0pt
      \raise 1.75ex \hbox{\kern.1em\rotatebox{180}{#1}}\kern-.1em
    \else
      \reflectbox{#1}%
    \fi
  }%
}
\def\tubhideheight#1{\setbox0=\hbox{#1}\ht0=0pt \dp0=0pt \box0 }
```

```
\DeclareRobustCommand\Xe[1]{\leavevmode
  \tubhideheight{\hbox{X%
    \setbox0=\hbox{\TeX}\setbox1=\hbox{E}%
    \lower\dp0\hbox{\raise\dp1\hbox{\kern-.125em\tubreflect{E}}}%
    \kern-.1667em #1}}}
\def\XeTeX{\Xe\TeX}
\def\XeLaTeX{\Xe{\,\LaTeX}}
%
\def\XHTML{\acro{XHTML}}
\def\XSLT{\acro{XSLT}}
```

3.5 General typesetting rules

```
\newlinechar=`\^^J
\normallineskiplimit=\p@
\clubpenalty=10000
\widowpenalty=10000
\def\NoParIndent{\parindent=\z@}
\newdimen\normalparindent
\normalparindent=20\p@
\def\NormalParIndent{\global\parindent=\normalparindent}
\NormalParIndent
\def\BlackBoxes{\overfullrule=5\p@}
\def\NoBlackBoxes{\overfullrule=\z@}
\def\newline{\hskip\z@\@plus\pagewd\break}
```

Hyphen control: first, we save the hyphenpenalties in `\allowhyphens`. This allows us to permit hyphens temporarily in things like `\netaddresses`, which typically occur when `\raggedright` is set, but which need to be allowed to break at their artificial discretionaries.

```
\edef\allowhyphens{\noexpand\hyphenpenalty\the\hyphenpenalty\relax
  \noexpand\exhyphenpenalty\the\exhyphenpenalty\relax}
\def\nohyphens{\hyphenpenalty\@M\exhyphenpenalty\@M}
```

3.6 Utility registers and definitions

We define a few scratch registers (and the like) for transient use; they're all paired: an internal one (`\T@st*`) and an external one (`\Test*`).

Comment: Exercise for an idle day: find whether all these are necessary, or whether we can use the LaTeX temporaries for some (or all) of the `\T@st*` ones.

Comment: (bb) All these registers are used in the plain version, `tugboat.sty`.

```
\newbox\T@stBox                 \newbox\TestBox
\newcount\T@stCount             \newcount\TestCount
\newdimen\T@stDimen             \newdimen\TestDimen
\newif\ifT@stIf                 \newif\ifTestIf
```

Control sequence existence test, stolen from TEXbook exercise 7.7 (note that this provides functionality that in some sense duplicates something within LATEX).

```
\def\ifundefined#1{\expandafter\ifx\csname#1\endcsname\relax }
```

LATEX conventions which are also useful here.

```
⟨*!latex⟩
  \let\@@input\input
  \def\iinput#1{\@@input#1 }
  \def\@inputcheck{\if\@nextchar\bgroup
    \expandafter\iinput\else\expandafter\@@input\fi}
  \def\input{\futurelet\@nextchar\@inputcheck}
⟨/!latex⟩
```

Smashes repeated from AMS-TEX; plain TEX implements only full `\smash`.

```
\newif\iftop@           \newif\ifbot@
\def\topsmash{\top@true\bot@false\smash@}
\def\botsmash{\top@false\bot@true\smash@}
\def\smash{\top@true\bot@true\smash@}
\def\smash@{\relax\ifmmode\def\next{\mathpalette\mathsm@sh}%
        \else\let\next\makesm@sh\fi \next }
\def\finsm@sh{\iftop@\ht\z@\z@\fi\ifbot@\dp\z@\z@\fi\box\z@}
```

Vertical 'laps'; cf. `\llap` and `\rlap`

```
\long\def\ulap#1{\vbox to \z@{\vss#1}}
\long\def\dlap#1{\vbox to \z@{#1\vss}}
```

And centered horizontal and vertical 'laps'

```
\def\xlap#1{\hb@xt@\z@{\hss#1\hss}}
\long\def\ylap#1{\vbox to \z@{\vss#1\vss}}
\long\def\zlap#1{\ylap{\xlap{#1}}}
```

Avoid unwanted vertical glue when making up pages.

```
\def\basezero{\baselineskip\z@skip \lineskip\z@skip}
```

Empty rules for special occasions

```
\def\nullhrule{\hrule \@height\z@ \@depth\z@ \@width\z@ }
\def\nullvrule{\vrule \@height\z@ \@depth\z@ \@width\z@ }
```

Support ad-hoc strut construction.

```
\def\makestrut[#1;#2]{\vrule \@height#1 \@depth#2 \@width\z@ }
```

Construct box for figure pasteup, etc.; height = #1, width = #2, rule thickness = #3

```
\def\drawoutlinebox[#1;#2;#3]{\T@stDimen=#3
        \vbox to#1{\hrule \@height\T@stDimen \@depth\z@
            \vss\hb@xt@#2{\vrule \@width\T@stDimen
                \hfil\makestrut[#1;\z@]%
                \vrule \@width\T@stDimen}\vss
            \hrule \@height\T@stDimen \@depth\z@}}
```

Today's date, to be printed on drafts. Based on TEXbook, p.406.

```
⟨*!latex⟩
\def\today{\number\day\space \ifcase\month\or
        Jan \or Feb \or Mar \or Apr \or May \or Jun \or
        Jul \or Aug \or Sep \or Oct \or Nov \or Dec \fi
        \number\year}
⟨/!latex⟩
```

Current time; this may be system dependent!

```
\newcount\hours
\newcount\minutes
\def\SetTime{\hours=\time
        \global\divide\hours by 60
        \minutes=\hours
        \multiply\minutes by 60
        \advance\minutes by-\time
        \global\multiply\minutes by-1 }
\SetTime
\def\now{\number\hours:\ifnum\minutes<10 0\fi\number\minutes}
\def\Now{\today\ \now}
\newif\ifPrelimDraft
\def\midrtitle{\ifPrelimDraft {\textsl{preliminary draft, \Now}}\fi}
```

3.7 Ragged right and friends

\raggedskip
\raggedstretch
\raggedparfill
\raggedspaces

Plain TEX's definition of \raggedright doesn't permit any stretch, and results in too many overfull boxes. We also turn off hyphenation. This code lies somewhere between that of Plain TEX and of LATEX.

```
\newdimen\raggedskip    \raggedskip=\z@
\newdimen\raggedstretch \raggedstretch=5em    % ems of font set now (10pt)
\newskip\raggedparfill  \raggedparfill=\z@\@plus 1fil
\def\raggedspaces{\spaceskip=.3333em \relax \xspaceskip=.5em \relax }
```

\raggedright
\raggedleft
\raggedcenter
\normalspaces

Some applications may have to add stretch, in order to avoid all overfull boxes. We define the following uses of the above skips, etc.

```
\def\raggedright{%
  \nohyphens
  \rightskip=\raggedskip\@plus\raggedstretch \raggedspaces
  \parfillskip=\raggedparfill
}
\def\raggedleft{%
  \nohyphens
  \leftskip=\raggedskip\@plus\raggedstretch \raggedspaces
  \parfillskip=\z@skip
}
\def\raggedcenter{%
  \nohyphens
  \leftskip=\raggedskip\@plus\raggedstretch
  \rightskip=\leftskip \raggedspaces
```

```
  \parindent=\z@ \parfillskip=\z@skip
}
\def\normalspaces{\spaceskip\z@skip \xspaceskip\z@skip}
```

Miscellaneous useful stuff. Note that LaTeX 2$_\varepsilon$ defines a robust `\,`, but that we provide a new definition of `~` by redefining its robust underpinnings[1] (based on the version in AMS-TeX — the LaTeX 2$_\varepsilon$ version has `\leavevmode` and doesn't care about surrounding space).

```
\DeclareRobustCommand{\nobreakspace}{%
  \unskip\nobreak\ \ignorespaces}
```

Plain TeX defines `\newbox` as `\outer`. We solemnly preserve the following, which removes the `\outer`ness; of course, we carefully exclude it from what we generate... (`\outer`ness is a spawn of the devil, is it not? Barbara Beeton responded to the previous sentence "`\outer`ness has its place: it avoids register buildup, hence running out of memory". In another context, David Carlisle remarked that an error control mechanism that causes more confusing errors than it prevents is rather a poor one. This is perhaps not the place to conduct a serious debate...)

```
\def\boxcs#1{\box\csname#1\endcsname}
\def\setboxcs#1{\setbox\csname#1\endcsname}
\def\newboxcs#1{\expandafter\newbox\csname#1\endcsname}
\let\gobble\@gobble
\def\vellipsis{%
  \leavevmode\kern0.5em
  \raise\p@\vbox{\baselineskip6\p@\vskip7\p@\hbox{.}\hbox{.}\hbox{.}}
  }
\def\bull{\vrule \@height 1ex \@width .8ex \@depth -.2ex }
\def\cents{{\rm\raise.2ex\rlap{\kern.05em$\scriptstyle/$}c}}
\def\careof{\leavevmode\hbox{\raise.75ex\hbox{c}\kern-.15em
                /\kern-.125em\smash{\lower.3ex\hbox{o}}} \ignorespaces}
\def\Dag{\raise .6ex\hbox{$\scriptstyle\dagger$}}
%
\DeclareRobustCommand\sfrac[1]{\@ifnextchar/{\@sfrac{#1}}%
                                          {\@sfrac{#1}/}}
\def\@sfrac#1/#2{\leavevmode\kern.1em\raise.5ex
         \hbox{$\m@th\mbox{\fontsize\sf@size\z@
                           \selectfont#1}$}\kern-.1em
         /\kern-.15em\lower.25ex
          \hbox{$\m@th\mbox{\fontsize\sf@size\z@
                            \selectfont#2}$}}
%
% don't stay bold in description items, bold italic is too weird.
\DeclareRobustCommand\meta[1]{%
  \ensuremath{\langle}%
  \ifmmode \mbox{\mdseries\emph{#1}}% if in math
  \else {\mdseries\emph{#1}}%
```

[1] `\DeclareRobustCommand` doesn't mind redefinition, fortunately

```
  \fi
  \ensuremath{\rangle}%
}
%
\DeclareRobustCommand\cs[1]{\texttt{\char`\\#1}}
%
\DeclareRobustCommand\env[1]{%
  \cs{begin}\texttt{\char`\{#1\char`\}}}
%
\def\thinskip{\hskip 0.16667em\relax}
```

We play a merry game with dashes, providing all conceivable options of breakability before and after.

```
\def\endash{--}
\def\emdash{\endash-}
\def\d@sh#1#2{\unskip#1\thinskip#2\thinskip\ignorespaces}
\def\dash{\d@sh\nobreak\endash}
\def\Dash{\d@sh\nobreak\emdash}
\def\ldash{\d@sh\empty{\hbox{\endash}\nobreak}}
\def\rdash{\d@sh\nobreak\endash}
\def\Ldash{\d@sh\empty{\hbox{\emdash}\nobreak}}
\def\Rdash{\d@sh\nobreak\emdash}
```

Hacks to permit automatic hyphenation after an actual hyphen, or after a slash.

```
\def\hyph{-\penalty\z@\hskip\z@skip }
\def\slash{/\penalty\z@\hskip\z@skip }
```

Adapted from `comp.text.tex` posting by Donald Arseneau, 26 May 93. LaTeX 2_ε-isation added by Robin Fairbairns. Destroys both the `TestCount`s.

```
\def\nth#1{%
    \def\reserved@a##1##2\@nil{\ifcat##1n%
           0%
          \let\reserved@b\ensuremath
      \else##1##2%
          \let\reserved@b\relax
      \fi}%
    \TestCount=\reserved@a#1\@nil\relax
    \ifnum\TestCount <0 \multiply\TestCount by\m@ne \fi % subdue negatives
    \T@stCount=\TestCount
    \divide\T@stCount by 100 \multiply\T@stCount by 100
    \advance\TestCount by-\T@stCount     % n mod 100
    \ifnum\TestCount >20 \T@stCount=\TestCount
      \divide\T@stCount by 10 \multiply\T@stCount by 10
      \advance\TestCount by-\T@stCount   % n mod 10
    \fi
     \reserved@b{#1}%
       \textsuperscript{\ifcase\TestCount th%    0th
                        \or   st%                1st
                        \or   nd%                2nd
```

```
                        \or   rd%               3rd
                        \else th%               nth
                        \fi}%
}
```

3.8 Reviews

Format information on reviewed items for book review articles. For the LaTeX 2$_\varepsilon$ version, we follow Fairbairns' maxim, and define something that can even look like a LaTeX macro...

```
\def\Review{\@ifnextchar:{\@Review}{\@Review:}}
\def\@Review:{\@ifnextchar[%]
  {\@Rev}%
  {\@Rev[Book review]}}
\def\@Rev[#1]#2{{\ignorespaces#1\unskip:\enspace\ignorespaces
                                    \slshape\mdseries#2}}
\def\reviewitem{\addvspace{\BelowTitleSkip}%
  \def\revauth##1{\def\therevauth{##1, }\ignorespaces}%
  \def\revtitle##1{\def\therevtitle{{\slshape##1}. }\ignorespaces}%
  \def\revpubinfo##1{\def\therevpubinfo{##1.}\ignorespaces}%
}
\def\endreviewitem{{\noindent\interlinepenalty=10000
  \therevauth\therevtitle\therevpubinfo\endgraf}%
  \vskip\medskipamount
}
\def\booktitle#1{{\slshape#1\/}}
```

3.9 Dates, volume and issue numbers, etc.

Dates and other items which identify the volume and issue. `\issueseqno` is a sequential issue number starting from the first issue published; volume 15,4 has `\issueseqno=45`.

```
            \vol 19, 1.
    To use: \issdate March 1998.
            \issueseqno=58
```

Starting with volume 23 (nominal 2002), we have `\issyear` instead of `\issdate`, because issues don't have months any more.

For production, these are set in a separate file, `tugboat.dates`, which is issue-specific.

Comment: I would like to make the code read a file `tugboat.dates` in the current directory or its parent. This is easy except under 'odd' operating systems (VMS is an example that springs to mind, RISCos may be even worse) whose syntax is out of the ordinary.

```
\newcount\issueseqno            \issueseqno=-1
\def\v@lx{\gdef\volx{Volume~\volno~(\volyr), No.~\issno}}
\def\volyr{}
```

```
\def\volno{}
\def\vol #1,#2.{\gdef\volno{#1\unskip}%
        \gdef\issno{\ignorespaces#2\unskip}%
        \setbox\TestBox=\hbox{\volyr}%
        \ifdim \wd\TestBox > .2em \v@lx \fi }
\def\issyear #1.{\gdef\issdt{#1}\gdef\volyr{#1}%
        \gdef\bigissdt{#1}%
        \setbox\TestBox=\hbox{\volno}%
        \ifdim \wd\TestBox > .2em \v@lx \fi }
\def\issdate #1#2 #3.{\gdef\issdt{#1#2 #3}\gdef\volyr{#3}%
        \gdef\bigissdt{#1{\smc\uppercase{#2}} #3}%
        \setbox\TestBox=\hbox{\volno}%
        \ifdim \wd\TestBox > .2em \v@lx \fi }
\vol 0, 0.
\issdate Thermidor, 2060.
```

(The curious should know that *Thermidor* was one of the French revolutionary month names. . .)

For LaTeX use, define a version of the issue declaration that can take or leave the old plain syntax

```
⟨!latex⟩\def\tubissue#1(#2)%
⟨*latex⟩
\def\tubissue#1{\@ifnextchar(%)
  {\@tubissue@b{#1}}
  {\@tubissue@a{#1}}}
\def\@tubissue@b#1(#2){\@tubissue@a{#1}{#2}}
\def\@tubissue@a#1#2%
⟨/latex⟩
  {\TUB~#1, no.~#2}
```

TUGboat conventions include the sequential issue number in the file name. Permit this to be incorporated into file names automatically. If issue number = 11, `\Input filnam` will read `tb11filnam.tex`

```
\def\infil@{\jobname}
\def\Input #1 {\ifnum\issueseqno<0
    \def\infil@{#1}%
  \else
    \def\infil@{tb\number\issueseqno#1}
  \fi
  \edef\jobname{\infil@}\@readFLN
  \@@input \infil@\relax
  \if@RMKopen
    \immediate\closeout\@TBremarkfile\@RMKopenfalse
  \fi
}
```

`\TBremark`s are things that need to be drawn to the attention of the editors; the conscientious author will include such things in the article file. By default, remarks are suppressed, but their appearance may be enabled by the

`\TBEnableRemarks` command, which can be included in the configuration file `ltugboat.cfg` (or `ltugproc.cfg`, if that's what we're at).

```
\newif\if@RMKopen        \@RMKopenfalse
\newwrite\@TBremarkfile
\def\@TBremark#1{%
  \if@RMKopen
  \else
    \@RMKopentrue\immediate\openout\@TBremarkfile=\infil@.rmk
  \fi
  \toks@={#1}%
  \immediate\write\@TBremarkfile{^^J\the\toks@}%
  \immediate\write16{^^JTBremark:: \the\toks@^^J}%
}
```

We initialise `\TBremark` to ignore its argument (this used to involve a `\TBremarkOFF` which was cunningly defined exactly the same as `\gobble`)

```
\let\TBremark=\gobble
```

`\TBEnableRemarks` simply involves setting `\TBremark` to use the functional `\@TBremark` defined above.

```
\def\TBEnableRemarks{\let\TBremark\@TBremark}
```

For marking locations in articles that pertain to remarks in another file of editorial comments

```
\def\TUBedit#1{}
```

For using different filenames in the production process than those supplied by authors

```
\def\TUBfilename#1#2{\expandafter\def\csname file@@#1\endcsname{#2}}
\newread\@altfilenames
\def\@readFLN{\immediate\openin\@altfilenames=\jobname.fln
  \ifeof\@altfilenames\let\@result\relax\else
  \def\@result{\@@input\jobname.fln }\fi
  \immediate\closein\@altfilenames
  \@result}
\@readFLN
\everyjob=\expandafter{\the\everyjob\@readFLN}
\InputIfFileExists{\jobname.fln}%
     {\TBInfo{Reading alternative file file \jobname.fln}}{}
```

The following needs to work entirely in TEX's mouth

```
\def\@tubfilename#1{\expandafter\ifx\csname file@@#1\endcsname\relax
  #1\else\csname file@@#1\endcsname\fi}
\def\fileinput#1{\@@input\@tubfilename{#1} }
```

Write out (both to a file and to the log) the starting page number of an article, to be used for cross references and in contents. `\pagexref` is used for articles fully processed in the *TUGboat* run. `\PageXref` is used for 'extra' pages, where an item is submitted as camera copy, and only running heads (at most) are run.

```
⟨*!latex⟩
\def\pagexrefON#1{%
        \write-1{\def\expandafter\noexpand\csname#1\endcsname{\number\pageno}}%
        \write\ppoutfile{%
                \def\expandafter\noexpand\csname#1\endcsname{\number\pageno}}%
        }
\def\PageXrefON#1{%
        \immediate\write-1{\def\expandafter
                        \noexpand\csname#1\endcsname{\number\pageno}}%
        \immediate\write\ppoutfile{\def\expandafter
                        \noexpand\csname#1\endcsname{\number\pageno}}}
⟨/!latex⟩
⟨*latex⟩
\def\pagexrefON#1{%
        \write-1{\def\expandafter\noexpand\csname#1\endcsname{\number\c@page}}%
        \write\ppoutfile{%
                \def\expandafter\noexpand\csname#1\endcsname{\number\c@page}}%
        }
\def\PageXrefON#1{%
        \immediate\write-1{\def\expandafter
                        \noexpand\csname#1\endcsname{\number\c@page}}%
        \immediate\write\ppoutfile{\def\expandafter
                        \noexpand\csname#1\endcsname{\number\c@page}}}
⟨/latex⟩
\def\pagexrefOFF#1{}
\let\pagexref=\pagexrefOFF
\def\PageXrefOFF#1{}
\let\PageXref=\PageXrefOFF
\def\xreftoON#1{%
  \ifundefined{#1}%
    ???\TBremark{Need cross reference for #1.}%
  \else\csname#1\endcsname\fi}
\def\xreftoOFF#1{???}
\let\xrefto=\xreftoOFF
```

`\TBdriver` 'marks code for use when articles are run together in a driver file'. Since we don't yet have a definition of that arrangement, we don't have a definition of `\TBdriver`. Its argument (which one presumes was intended as the code for this unusual state) is just gobbled.

```
\let\TBdriver\gobble
```

Some hyphenation exceptions:

```
\hyphenation{Del-a-ware Dijk-stra Duane Eijk-hout
  Flor-i-da Free-BSD Ghost-script Ghost-view
  Hara-lam-bous Jac-kow-ski Karls-ruhe
  Mac-OS Ma-la-ya-lam Math-Sci-Net
  Net-BSD Open-BSD Open-Office
  Pfa-Edit Post-Script Rich-ard Skoup South-all
  Vieth VM-ware Win-Edt
  acro-nym ap-pen-dix asyn-chro-nous
```

```
  bit-map bit-mapped bit-maps buf-fer buf-fers bool-ean
  col-umns com-put-able com-put-abil-ity cus-tom-iz-able
  data-base data-bases
   de-allo-cate de-allo-cates de-allo-cated de-allo-ca-tion
   de-riv-a-tive de-riv-a-tives de-riv-a-ble der-i-va-tion
  es-sence
  fall-ing
  half-way
  in-fra-struc-ture
  key-note
  long-est
  ma-gyar man-u-script man-u-scripts mne-mon-ic mne-mon-ics
   mono-space mono-spaced
  name-space name-spaces
  off-line over-view
  pal-ettes par-a-digm par-a-dig-mat-ic par-a-digms
   pipe-line pipe-lines
   plug-in plug-ins pres-ent-ly pro-gram-mable
  re-allo-cate re-allo-cates re-allo-cated
  set-ups se-vere-ly spell-ing spell-ings stand-alone strong-est
   sub-ex-pres-sion syn-chro-ni-city syn-chro-nous
  text-height text-length text-width
   time-stamp time-stamped
  vis-ual vis-ual-ly
  which-ever white-space white-spaces wide-spread wrap-around
}
⟨!latex⟩\restorecat\@
⟨/common⟩
⟨*classtail⟩
\PrelimDrafttrue
```

3.10 Page dimensions, glue, penalties etc

```
\textheight 54pc
\textwidth 39pc
\columnsep 1.5pc
\columnwidth 18.75pc
\parindent \normalparindent
\parskip \z@ % \@plus\p@
\leftmargini 2em
\leftmarginv .5em
\leftmarginvi .5em
\oddsidemargin \z@
\evensidemargin \z@
\topmargin -2.5pc
\headheight 12\p@
\headsep 20\p@
\marginparwidth 48\p@
\marginparsep 10\p@
\partopsep=\z@
```

```
\topsep=3\p@\@plus\p@\@minus\p@
\parsep=3\p@\@plus\p@\@minus\p@
\itemsep=\parsep
\twocolumn
\newdimen\pagewd        \pagewd=39pc
\newdimen\trimwd        \trimwd=\pagewd
\newdimen\trimlgt       \trimlgt=11in
\newdimen\headmargin    \headmargin=3.5pc
```

In LaTeX 2_ε, `twoside` option is forced on when `article.cls` is loaded.

3.11 Messing about with the LaTeX logo

Barbara Beeton's pleas for LaTeX logos that look right in any font shape provoked me to generate the following stuff that is configurable.

Here's the command for the user to define hir own new version. The arguments are font family, series and shape, and then the two kern values used in placing the raised 'A' of LaTeX.

```
\newcommand\DeclareLaTeXLogo[5]{\expandafter\def
  \csname @LaTeX@#1/#2/#3\endcsname{{#4}{#5}}}
```

The default values are as used in the source of LaTeX itself:

```
\def\@LaTeX@default{{.36}{.15}}
```

More are defined in the initial version, for bold CM sans (which is used as `\SecTitleFont`), and CM italic medium and bold, and Bitstream Charter (which Nelson Beebe likes to use):

```
\DeclareLaTeXLogo{cmss}{bx}n{.3}{.15}
\DeclareLaTeXLogo{cmr}m{it}{.3}{.27}
\DeclareLaTeXLogo{cmr}{bx}{it}{.3}{.27}
\DeclareLaTeXLogo{bch}{m}{n}{.2}{.08}
\DeclareLaTeXLogo{bch}{m}{it}{.2}{.08}
```

Redefine `\LaTeX` to choose the parameters for the current font, or to use the default value otherwise:

```
\DeclareRobustCommand\LaTeX{\expandafter\let\expandafter\reserved@a
  \csname @LaTeX@\f@family/\f@series/\f@shape\endcsname
  \ifx\reserved@a\relax\let\reserved@a\@LaTeX@default\fi
  \expandafter\@LaTeX\reserved@a}
```

Here's the body of what was originally `\LaTeX`, pulled out with its roots dripping onto the smoking ruin of original LaTeX, and then bits stuck in on the side.

`\@LaTeX@default` provides parameters as one finds in the original; other versions are added as needed.

```
\newcommand\@LaTeX[2]{L\kern-#1em
        {\sbox\z@ T%
         \vbox to\ht0{\hbox{$\m@th$%
                           \csname S@\f@size\endcsname
                           \fontsize\sf@size\z@
```

```
                              \math@fontsfalse\selectfont
                              A}%
                        \vss}%
        }%
        \kern-#2em%
        \TeX}
```

3.12 Authors, contributors, addresses, signatures

Each article may have several authors (of course), so we permit an `\author` command for each of them. The names are then stored in a set of `\csname`s called `\author1`, `\author2`, ... Similarly, there are several `\address<n>` and `\netaddress<n>` and `\PersonalURL<n>` commands set up for each article.

Comment: I would like to make provision for several authors at the same address, but (short of preempting the `*` marker, which it would be nice to retain so as to preserve compatibility with the `plain` style) I'm not sure how one would signal it.

```
\def\theauthor#1{\csname theauthor#1\endcsname}
\def\theaddress#1{\csname theaddress#1\endcsname}
\def\thenetaddress#1{\csname thenetaddress#1\endcsname}
\def\thePersonalURL#1{\csname thePersonalURL#1\endcsname}
```

The standard way of listing authors is to iterate from 1 to `\count@` and to pick the author names as we go.

```
⟨!latex⟩\newcount\@tempcnta
\def\@defaultauthorlist{%
  \@getauthorlist\@firstofone
}
```

`\@getauthorlist` processes the author list, passing every bit of stuff that needs to be typeset to its argument.

```
\def\@getauthorlist#1{%
  \count@\authornumber
  \advance\count@ by -2
  \@tempcnta0
```

Loop to output the first $n-2$ of the n authors (the loop does nothing if there are two or fewer authors)

```
  \loop
    \ifnum\count@>0
      \advance\@tempcnta by \@ne
      #1{\ignorespaces\theauthor{\number\@tempcnta}\unskip, }%
      \advance\count@ by \m@ne
  \repeat
  \count@\authornumber
  \advance\count@ by -\@tempcnta
  \ifnum\authornumber>0
```

If there are two or more authors, we output the penultimate author's name here, followed by 'and'

```
    \ifnum\count@>1
      \count@\authornumber
      \advance\count@ by \m@ne
      #1{\ignorespaces\theauthor{\number\count@}\unskip\ and }%
    \fi
```

Finally (if there were any authors at all) output the last author's name:

```
    #1{\ignorespaces\theauthor{\number\authornumber}\unskip}
  \fi
}
```

Signature blocks. The author can (in principle) define a different sort of signature block using `\signature`, though this could well cause the editorial group to have collective kittens (unless it had been discussed in advance...)

```
\def\signature#1{\def\@signature{#1}}
\def\@signature{\@defaultsignature}
```

`\@defaultsignature` loops through all the authors, outputting the details we have about that author, or (if we're in a sub-article) outputs the contributor's name and closes the group opened by `\contributor`. It is (as its name implies) the default body for `\makesignature`

```
\def\@defaultsignature{{%
    \let\thanks\@gobble
    \ifnum\authornumber<0
```

if `\authornumber`< 0, we are in a contributor's section

```
      \medskip
      \frenchspacing
      \signaturemark
      \theauthor{\number\authornumber}\\
      \theaddress{\number\authornumber}\\
      \allowhyphens
      \thenetaddress{\number\authornumber}\\
      \thePersonalURL{\number\authornumber}\\
    \else
```

`\authornumber`≥ 0, so we are in the body of an ordinary article

```
      \count@=0
      \loop
        \ifnum\count@<\authornumber
          \medskip
          \advance\count@ by \@ne
          \signaturemark
          \theauthor{\number\count@}\\
          \theaddress{\number\count@}\\
          {%
            \allowhyphens
            \thenetaddress{\number\count@}\\
```

```
            \thePersonalURL{\number\count@}\\
          }%
      \repeat
    \fi
  }%
}
\newdimen\signaturewidth   \signaturewidth=12pc
```

The optional argument to `\makesignature` is useful in some circumstances (e.g., multi-contributor articles)

```
\newcommand\makesignature[1][\medskipamount]{%
```

check the value the user has put in `\signaturewidth`: it may be at most `1.5pc` short of `\columnwidth`

```
  \@tempdima\signaturewidth
  \advance\@tempdima 1.5pc
  \ifdim \@tempdima>\columnwidth
    \signaturewidth \columnwidth
    \advance\signaturewidth -1.5pc
  \fi
  \par
  \penalty9000
  \vspace{#1}%
  \rightline{%
    \vbox{\hsize\signaturewidth \ninepoint \raggedright
      \parindent \z@ \everypar={\hangindent 1pc }
      \parskip \z@skip
      \def\|{\unskip\hfil\break}%
      \def\\{\endgraf}%
      \def\phone{\rm Phone: }
      \rm\@signature}%
  }%
  \ifnum\authornumber<0 \endgroup\fi
}
\def\signaturemark{\leavevmode\llap{$\diamond$\enspace}}
```

The code used to define the following:

```
{\makeactive\@
 \gdef\signatureat{\makeactive\@\def@{\char"40\discretionary{}{}{}}}
 \makeactive\%
 \gdef\signaturepercent{\makeactive\%\def%{\char"25\discretionary{}{}{}}}
}
```

However, they were never used within the class (or within `ltugproc.cls`). They have therefore been deleted; the identically defined `\netaddrat` and `\netaddrpercent` may be used in the unlikely event that they're needed elsewhere.

Now all the awful machinery of author definitions. `\authornumber` records the number of authors we have recorded to date.

```
\newcount\authornumber
\authornumber=0
```

`\author` 'allocates' another author name (by bumping `\authornumber`) and also sets up the address and netaddress for this author to produce a warning and to prevent oddities if they're invoked. This last assumes that invocation will be in the context of `\signature` (`ltugboat.cls`) or `\maketitle` (`ltugproc.cls`); in both cases, invocation is followed by a line break (tabular line break `\\` in `ltugproc`, `\endgraf` in `\makesignature` in `ltugboat`).

```
\def\author{%
  \global\advance\authornumber\@ne
  \TB@author
}
```

`\contributor` is for a small part of a multiple-part article; it begins a group that will be ended in `\makesignature`

```
\def\contributor{%
  \begingroup
  \authornumber\m@ne
  \TB@author
}
```

Both 'types' of author fall through here to set up the author name and to initialise author-related things. `\EDITORno*` commands allow the editor to record that there's good reason for an *address* or *netaddress* not to be there (the *personalURL* is optional anyway).

```
\def\TB@author#1{%
  \expandafter\def\csname theauthor\number\authornumber\endcsname
      {\ignorespaces#1\unskip}%
  \expandafter\def\csname theaddress\number\authornumber\endcsname
    {\TBWarningNL{Address for #1\space missing}\@gobble}%
  \expandafter\def\csname thenetaddress\number\authornumber\endcsname
    {\TBWarningNL{Net address for #1\space missing}\@gobble}%
  \expandafter\let\csname thePersonalURL\number\authornumber\endcsname
    \@gobble
  }
\def\EDITORnoaddress{%
  \expandafter\let\csname theaddress\number\authornumber\endcsname
    \@gobble
}
\def\EDITORnonetaddress{%
  \expandafter\let\csname thenetaddress\number\authornumber\endcsname
    \@gobble
}
```

`\address` simply copies its argument into the `\theaddress<n>` for this author.

```
\def\address#1{%
  \expandafter\def\csname theaddress\number\authornumber\endcsname
      {\leavevmode\ignorespaces#1\unskip}}
```

`\network` is for use within the optional argument of `\netaddress`; it defines the *name* of the network the user is on.

Comment: I think this is a fantasy, since everyone (in practice, nowadays) quotes an internet address. In principle, there are people who will quote `X.400` addresses (but they're few and far between) and I have (during 1995!) seen an address with an `UUCP` bang-path component on `comp.text.tex`, but *really*!

```
\def\network#1{\def\@network{#1: }}
```

`\netaddress` begins a group, executes an optional argument (which should not, presumably, contain global commands) and then relays to `\@relay@netaddress` with both `@` and `%` made active (so that they can be discretionary points in the address). If we're using LaTeX 2_ε, we use the default-argument form of `\newcommand`; otherwise we write it out in all its horribleness.

```
\newcommand\netaddress[1][\relax]{%
  \begingroup
  \def\@network{}%
```

Unfortunately, because of the catcode hackery, we have still to do one stage of relaying within our own code, even if we're using LaTeX 2_ε.

```
  #1\@sanitize\makespace\ \makeactive\@
  \makeactive\.\makeactive\%\@relay@netaddress}%
```

`\@relay@netaddress` finishes the job. It sets `\thenetaddress` for this author to contain the network name followed by the address. As a result of our kerfuffle above, `@` and `%` are active at the point we're entered. We ensure they're active when `\thenetaddress` gets expanded, too. (***WOT?!***)

```
\def\@relay@netaddress#1{%
  \ProtectNetChars
  \expandafter\protected@xdef
      \csname thenetaddress\number\authornumber\endcsname
    {\protect\leavevmode\textrm{\@network}%
     {\protect\NetAddrChars\net
      \ignorespaces#1\unskip}}%
  \endgroup
  }
```

`\personalURL` is in essence the same as `\netaddress`, apart from (1) the lack of the eccentric optional argument, and (2) the activation of '`/`'.

We could imagine needing an `\URL` command in general. If so, we must remember that the code here would naturally permit a break between the last two characters of `http://`, and some sort of special action must be taken to ensure that it doesn't happen.

```
\def\personalURL{\begingroup
  \@sanitize\makespace\ \makeactive\@
  \makeactive\.\makeactive\%\makeactive\/\@personalURL}%
\def\@personalURL#1{%
  \ProtectNetChars
```

```
  \expandafter\protected@xdef
    \csname thePersonalURL\number\authornumber\endcsname{%
      \protect\leavevmode
      {%
        \protect\URLchars\net
        \ignorespaces#1\unskip
      }%
    }%
  \endgroup
  }
```

Define the activation mechanism for '`@`', '`%`', '`.`' and '`/`', for use in the above. Note that, since the code has '`%`' active, we have '`*`' as a comment character, which has a tendency to make things look peculiar...

```
{%
  \makecomment\*
  \makeactive\@
  \gdef\netaddrat{\makeactive\@*
    \def@{\discretionary{\char"40}{}{\char"40}}}
  \makeactive\%
  \gdef\netaddrpercent{\makeactive\%*
    \def%{\discretionary{\char"25}{}{\char"25}}}
  \makeactive\.
  \gdef\netaddrdot{\makeactive\.*
    \def.{\discretionary{\char"2E}{}{\char"2E}}}
```

`\NetAddrChars` is what *we* use (we're constrained to retain the old interface to this stuff, but it *is* clunky...). Since URLs are a new idea, we are at liberty not to define a separate `\netaddrslash` command, and we only have `\URLchars`.

```
  \gdef\NetAddrChars{\netaddrat \netaddrpercent \netaddrdot}
  \makeactive\/
  \gdef\URLchars{*
    \NetAddrChars
    \makeactive\/*
    \def/{\discretionary{\char"2F}{}{\char"2F}}}
```

`\ProtectNetChars` includes protecting '`/`', since this does no harm in the case of net addresses (where it's not going to be active) and we thereby gain by not having yet another csname.

```
  \gdef\ProtectNetChars{*
    \def@{\protect@}*
    \def%{\protect%}*
    \def.{\protect.}*
    \def/{\protect/}*
    }
}
```

LaTeX 2_ε (in its wisdom) suppresses `\DeclareOldFontCommand` when in compatibility mode, so that in that circumstance we need to use a declaration copied

from `latex209.def` rather than the way we would normally do the thing (using the command LaTeX 2ε defines for the job).

```
\if@compatibility
  \DeclareRobustCommand\net{\normalfont\ttfamily\mathgroup\symtypewriter}
\else
  \DeclareOldFontCommand{\net}{\ttfamily\upshape\mdseries}{\mathtt}
\fi
\def\authorlist#1{\def\@author{#1}}
\def\@author{\@defaultauthorlist}
```

`\if@articletitle` `\maketitle` `\@r@maketitle`

`\maketitle` takes an optional "*"; if present, the operation is not defining the title of a paper, merely that of a "business" section (such as the participants at a meeting) that has no credited author or other title. In this case, the command flushes out the latest `\sectitle` (or whatever) but does nothing else.

Provide machinery to skip extra space, even one or more full columns, above the top of an article to leave space to paste up a previous article that has finished on the same page. This is a fall back to accommodate the fact that multiple articles cannot yet be run together easily with LaTeX 2ε.

```
\newif\if@articletitle
\def\maketitle{\@ifstar
  {\@articletitlefalse\@r@maketitle}%
  {\@articletitletrue\@r@maketitle}%
}
\def\@r@maketitle{\par
 \ifdim\PreTitleDrop > \z@
   \loop
   \ifdim \PreTitleDrop > \textheight
     \vbox{}\vfil\eject
     \advance\PreTitleDrop by -\textheight
   \repeat
   \vbox to \PreTitleDrop{}
   \global\PreTitleDrop=\z@
 \fi
 \begingroup
 \setcounter{footnote}{0}
 \def\thefootnote{\fnsymbol{footnote}}
 \@maketitle
 \@thanks
 \endgroup
 \setcounter{footnote}{0}
 \gdef\@thanks{}
 }
```

3.13 Section titles

The following macros are used to set the large *TUGboat* section heads (e.g. "General Delivery", "Fonts", etc.)

Define the distance between articles which are run together:

```
\def\secsep{\vskip 5\baselineskip}
```

Note that `\stbaselineskip` is used in the definition of `\sectitlefont`, in LaTeX 2_ε, so that it has (at least) to be defined before `\sectitlefont` is used (we do the whole job).

```
\newdimen\stbaselineskip        \stbaselineskip=18\p@
\newdimen\stfontheight
\settoheight{\stfontheight}{\sectitlefont O}
```

Declaring section titles; the conditional `\ifSecTitle` records the occurence of a `\sectitle` command. If (when) a subsequent `\maketitle` occurs, the section title box will get flushed out; as a result of this, one could in principle have a set of `\sectitle` commands in a semi-fixed steering file, and inclusions of files inserted only as and when papers have appeared. Only the last `\sectitle` will actually be executed.

```
\newif\ifSecTitle
\SecTitlefalse
\newif\ifWideSecTitle
\newcommand\sectitle{%
  \SecTitletrue
  \@ifstar
    {\WideSecTitletrue\def\s@ctitle}%
    {\WideSecTitlefalse\def\s@ctitle}%
}
```

`\PreTitleDrop` records the amount of column-space we need to eject before we start any given paper. It gets zeroed after that ejection has happened.

```
\newdimen\PreTitleDrop   \PreTitleDrop=\z@
```

The other parameters used in `\@sectitle`; I don't think there's the slightest requirement for them to be registers (since they're constant values, AFAIK), but converting them to macros would remove the essentially useless functionality of being able to change them using assignment, which I'm not about to struggle with just now...

`\AboveTitleSkip` and `\BelowTitleSkip` are what you'ld expect; `\strulethickness` is the value to use for `\fboxrule` when setting the title.

```
\newskip\AboveTitleSkip  \AboveTitleSkip=12\p@
\newskip\BelowTitleSkip  \BelowTitleSkip=8\p@
\newdimen\strulethickness       \strulethickness=.6\p@
```

`\@sectitle` actually generates the section title (in a rather generous box). It gets called from `\maketitle` under conditional `\ifSecTitle`; by the time `\@sectitle` takes control, we already have `\SecTitlefalse`. This implementation uses LaTeX's `\framebox` command, on the grounds that one doesn't keep a dog and bark for oneself...

```
\def\@sectitle #1{%
  \par
  \penalty-1000
```

If we're setting a wide title, the stuff will be at the top of a page (let alone a column) but inside a box, so that the separator won't be discardable: so don't create the separator in this case.

```
  \ifWideSecTitle\else\secsep\fi
  {%
    \fboxrule\strulethickness
    \fboxsep\z@
    \noindent\framebox[\hsize]{%
      \vbox{%
        \raggedcenter
        \let\\\@sectitle@newline
        \sectitlefont
        \makestrut[2\stfontheight;\z@]%
        #1%
        \makestrut[\z@;\stfontheight]\endgraf
      }%
    }%
  }%
  \nobreak
  \vskip\baselineskip
}
```

`\@sectitle@newline` For use inside `\sectitle` as `\\`. Works similarly to `\\` in the "real world" — uses an optional argument

```
\newcommand{\@sectitle@newline}[1][\z@]{%
  \ifdim#1>\z@
    \makestrut[\z@;#1]%
  \fi
  \unskip\break
}
```

We need to trigger the making of a section title in some cases where we don't have a section title proper (for example, in material taken over from TTN).

```
\def\@makesectitle{\ifSecTitle
    \global\SecTitlefalse
    \ifWideSecTitle
      \twocolumn[\@sectitle{\s@ctitle}]%
      \global\WideSecTitlefalse
    \else
      \@sectitle{\s@ctitle}%
    \fi
  \else
    \vskip\AboveTitleSkip
    \kern\topskip
    \hrule \@height\z@ \@depth\z@ \@width 10\p@
    \kern-\topskip
    \kern-\strulethickness
    \hrule \@height\strulethickness \@depth\z@
    \kern\medskipamount
```

```
    \nobreak
  \fi
}
```

`\@maketitle` Finally, the body of `\maketitle` itself.

```
\def\@maketitle{%
  \@makesectitle
  \if@articletitle{%
    \nohyphens \interlinepenalty\@M
    \setbox0=\hbox{%
      \let\thanks\@gobble
      \let\\=\quad
      \let\and=\quad
      \ignorespaces\@author}%
    {%
      \noindent\bf\raggedright\ignorespaces\@title\endgraf
    }%
    \ifdim \wd0 < 5\p@               % omit if author is null
    \else
```

Since we have `\BelowTitleSkip` + `4pt` = `\baselineskip`, we say:

```
      \nobreak \vskip 4\p@
      {%
        \leftskip=\normalparindent
        \raggedright
        \def\and{\unskip\\}%
        \noindent\@author\endgraf
      }%
    \fi
    \nobreak
    \vskip\BelowTitleSkip
  }\fi%
  \global\@afterindentfalse
  \aftergroup\@afterheading
}
```

Dedications are ragged right, in italics.

```
\newenvironment{dedication}%
  {\raggedright\noindent\itshape\ignorespaces}%
  {\endgraf\medskip}
```

The `abstract` and `longabstract` environments both use `\section*`.

```
\renewenvironment{abstract}%
  {%
    \begin{SafeSection}%
    \section*{Abstract}%
  }%
  {\end{SafeSection}}
\newenvironment{longabstract}%
  {%
```

```
    \begin{SafeSection}%
    \section*{Abstract}%
    \bgroup\small
  }%
  {%
    \endgraf\egroup
    \end{SafeSection}%
  \vspace{.25\baselineskip}
  \begin{center}
    {$--*--$}
  \end{center}
  \vspace{.5\baselineskip}}
```

3.14 Headings

Redefine style of section headings to match plain *TUGboat*. Negative beforeskip suppresses following parindent. (So negate the stretch and shrink too).

These macros are called `\*head` in the plain styles.

Relaying via `\TB@startsection` detects inappropriate use of `\section*`. Of course, if (when) *we* use it, we need to avoid that relaying; this can be done by `\let`ting `\TB@startsection` to `\TB@safe@startsection`, within a group.

First the version for use in the default case, when class option NUMBERSEC is in effect.

```
\if@numbersec
  \def\section{\TB@startsection{{section}%
                                1%
                                \z@
                                {-8\p@ \@plus-2\p@ \@minus-2\p@}%
                                {4\p@}%
          {\normalsize\bf\raggedright\hyphenpenalty=\@M}}}
  \def\subsection{\TB@startsection{{subsection}%
                                   2%
                                   \z@
                                   {-8\p@ \@plus-2\p@ \@minus-2\p@}%
                                   {4\p@}%
          {\normalsize\bf\raggedright\hyphenpenalty=\@M}}}
  \def\subsubsection{\TB@startsection{{subsubsection}%
                                      3%
                                      \z@
                                      {-8\p@ \@plus-2\p@ \@minus-2\p@}%
                                      {4\p@}%
          {\normalsize\bf\raggedright\hyphenpenalty=\@M}}}
  \def\paragraph{\TB@startsection{{paragraph}%
                                  4%
                                  \z@
                                  {4\p@ \@plus1\p@ \@minus1\p@}%
                                  {-1em}%
                                  {\normalsize\bf}}}
```

Now the version if class option NONUMBER is in effect, i.e., if `\if@numbersec` is false.

```
\else
  \setcounter{secnumdepth}{0}
  \def\section{\TB@nolimelabel
               \TB@startsection{{section}%
                                1%
                                \z@
                                {-8\p@ \@plus-2\p@ \@minus-2\p@}%
                                {4\p@}%
         {\normalsize\bf\raggedright\hyphenpenalty=\@M}}}
  \def\subsection{\TB@nolimelabel
                  \TB@startsection{{subsection}%
                                   2%
                                   \z@
                                   {-8\p@ \@plus-2\p@ \@minus-2\p@}%
                                   {-0.5em\@plus-\fontdimen3\font}%
         {\normalsize\bf\raggedright\hyphenpenalty=\@M}}}
  \def\subsubsection{\TB@nolimelabel
                     \TB@startsection{{subsubsection}%
                                      3%
                                      \parindent
                                      {-8\p@ \@plus-2\p@ \@minus-2\p@}%
                                      {-0.5em\@plus-\fontdimen3\font}%
         {\normalsize\bf\raggedright\hyphenpenalty=\@M}}}
\fi
```

`\TB@startsection` traps `*` versions of sectioning commands, if numbering isn't in effect. Its argument is the complete set of `\@startsection` arguments.

```
\if@numbersec
  \def\TB@startsection#1{\@startsection#1}%
\else
  \def\TB@startsection#1{%
    \@ifstar
      {\TBWarning{*-form of \expandafter\string\csname\@firstofsix#1%
                  \endcsname\space
                  \MessageBreak
                  conflicts with nonumber class option}%
       \@startsection#1}%
      {\@startsection#1}%
  }
\fi
\def\@firstofsix#1#2#3#4#5#6{#1}
```

`\TB@safe@startsection` is to be used where `\section*` (etc.) appear in places where the request is OK (because it's built in to some macro we don't fiddle with).

```
\def\TB@safe@startsection#1{\@startsection#1}
```

The `SafeSection` environment allows use of `*`-forms of sectioning environments. It's not documented for the general public: it's intended as an editor's facility.

```
\newenvironment{SafeSection}%
  {\let\TB@startsection\TB@safe@startsection}%
  {}
```

And now for the exciting sectioning commands that LaTeX defines but we don't have a definition for (whatever else, we don't want Lamport's originals, which come out 'like the blare of a bugle in a lullaby'[2]).

The three inappropriate ones are subparagraph (indistinguishable from paragraph), and chapter and part. The last seemed almost to be defined in an early version of these macros, since there was a definition of `\l@part`. I've not got down to where that came from (or why). If class option NONUMBER is in effect, we also suppress `\paragraph`, since it has no parallel in the plain style.

```
\if@numbersec
  \def\subparagraph{\TB@nosection\subparagraph\paragraph}
\else
  \def\paragraph{\TB@nosection\paragraph\subsubsection}
  \def\subparagraph{\TB@nosection\subparagraph\subsubsection}
\fi
\def\chapter{\TB@nosection\chapter\section}
\def\part{\TB@nosection\part\section}
\def\TB@nosection#1#2{\TBWarning{class does not support \string#1,
    \string#2\space used instead}#2}
```

`\l@<sectioning-name>` is for table of contents (of an article).

We define new macros to allow easily changing the font used for toc entries (for *TUGboat*, we usually want roman, not bold), and the space between entries. Nelson Beebe's articles are almost the only ones that ever have toc's.

```
\def\TBtocsectionfont{\normalfont}
\newskip\TBtocsectionspace  \TBtocsectionspace=1.0em\@plus\p@
```

Don't ask me (RF) why `\l@part` is there; I commented it out because I couldn't understand why it had been left there for me. To be finally deleted in a future release of these macros...

```
%\def\l@part#1#2{\addpenalty{\@secpenalty}%
%  \addvspace{2.25em\@plus\p@}%
%  \begingroup
%    \@tempdima 3em \parindent\z@ \rightskip\z@ \parfillskip\z@
%    {\large \bf \leavevmode #1\hfil \hbox to\@pnumwidth{\hss #2}}\par
%    \nobreak
%  \endgroup}
%
\def\l@section#1#2{\addpenalty{\@secpenalty}%
  \addvspace{\TBtocsectionspace}%
  \@tempdima 1.5em
```

[2] Thurber, *The Wonderful O*

```
  \begingroup
    \parindent\z@ \rightskip\z@  % article style makes \rightskip > 0
    \parfillskip\z@
    \TBtocsectionfont
    \leavevmode\advance\leftskip\@tempdima\hskip-\leftskip#1\nobreak\hfil
    \nobreak\hb@xt@\@pnumwidth{\hss #2}\par
  \endgroup}
```

3.15 Appendices

Appendices (which are really just another sort of section heading) raise a problem: if the sections are unnumbered, we plainly need to restore the section numbering, which in turn allows labelling of section numbers again (`\TBnolimelabel` happens before the `\refstepcounter`, so its effects get lost ... what a clever piece of design that was). So here we go:

```
\renewcommand\appendix{\par
  \renewcommand\thesection{\@Alph\c@section}%
  \setcounter{section}{0}%
  \if@numbersec
  \else
    \setcounter{secnumdepth}{1}%
  \fi
```

Now: is this the start of an appendix environment? This can be detected by looking at `\@currenvir`; if we are, we need to relay to `\@appendix@env` to pick up the optional argument.

```
  \def\@tempa{appendix}
  \ifx\@tempa\@currenvir
    \expandafter\@appendix@env
  \fi
}
```

Here we deal with `\begin{appendix}[`⟨*app-name*⟩`]`

```
\newcommand\app@prefix@section{}
\newcommand\@appendix@env[1][Appendix]{%
  \renewcommand\@seccntformat[1]{\csname app@prefix@##1\endcsname
    \csname the##1\endcsname\quad}%
  \renewcommand\app@prefix@section{#1 }%
}
```

Ending an appendix environment is pretty trivial...

```
\let\endappendix\relax
```

3.16 References

If the sections aren't numbered, the natural tendency of the author to cross-reference (which, after all, is one of the things LaTeX is for ever being advertised as being good at) can cause headaches for the editor. (Yes it can; believe me ... there's always one.)

The following command is used by each of the sectioning commands to make a following `\ref` command bloop at the author. Even if the author then ignores the complaint, the poor old editor may find the offending `\label` rather more easily.

(Note that macro name is to be read as "*noli me* label" (I don't know the mediæval Latin for 'label').

Comment To come (perhaps): detection of the act of labelling, and an analogue of `\ifG@refundefined` for this sort of label

```
\def\TB@nolimelabel{%
  \def\@currentlabel{%
    \protect\TBWarning{%
      Invalid reference to numbered label on page \thepage
      \MessageBreak made%
    }%
    \textbf{?!?}%
  }%
}
```

3.17 Title references

This is a first cut at a mecahnism for referencing by the title of a section; it employs the delightfully simple idea Sebastian Rahtz has in the `nameref` package (which is part of `hyperref`). As it stands, it lacks some of the bells and whistles of the original, but they could be added; this is merely proof-of-concept.

The name label comes from the moveable bit of the section argument; we subvert the `\@sect` and `\@ssect` commands (the latter deals with starred section commands) to grab the relevant argument.

```
\let\TB@@sect\@sect
\let\TB@@ssect\@ssect
\def\@sect#1#2#3#4#5#6[#7]#8{%
  \def\@currentlabelname{#7}%
  \TB@@sect{#1}{#2}{#3}{#4}{#5}{#6}[{#7}]{#8}%
}
\def\@ssect#1#2#3#4#5{%
 \def\@currentlabelname{#5}%
 \TB@@ssect{#1}{#2}{#3}{#4}{#5}%
}
```

The `\newlabel` command that gets written to the `.aux` file needs to be redefined to have three components to its argument:

```
\def\label#1{{%
    \@bsphack
    \let\label\@gobble
    \let\index\@gobble
    \if@filesw
      \protected@write\@auxout{}%
        {\string\newlabel{#1}{%
```

```
            {\@currentlabel}{\thepage}{\@currentlabelname}}%
        }%
    \fi
    \@esphack
  }%
}
```

Of course, in the case of a sufficiently mad author, there will be no sectioning commands, so we need to

```
\let\@currentlabelname\@empty
```

References are pretty straightforward, but need three extra utility commands (analagous to the `\@firstof...`, etc., defined in the kernel).

```
\DeclareRobustCommand\ref[1]{\expandafter\@setref
  \csname r@#1\endcsname\@firstofthree{#1}}
\DeclareRobustCommand\pageref[1]{\expandafter\@setref
  \csname r@#1\endcsname\@secondofthree{#1}}
\DeclareRobustCommand\nameref[1]{\expandafter\@setref
  \csname r@#1\endcsname\@thirdofthree{#1}}
\long\def\@firstofthree#1#2#3{#1}
\long\def\@secondofthree#1#2#3{#2}
\long\def\@thirdofthree#1#2#3{#3}
```

3.18 Float captions

By analogy with what we've just done to section titles and the like, we now do our best to discourage hyphenation within captions. We also typeset them in `\small`.

First, let's define a dimension by which we will indent full-page captions. We'll also use this to indent abstracts in proceedings style.

`\tubfullpageindent`

```
\newdimen\tubfullpageindent  \tubfullpageindent=4.875pc
```

Ok, here is the `\@makecaption`.

```
\long\def\@makecaption#1#2{%
  \vskip\abovecaptionskip
  \sbox\@tempboxa{\small #1: #2}% try in an hbox
  \ifdim \wd\@tempboxa > \hsize
    {% caption doesn't fit on one line; set as a paragraph.
     \small \raggedright \hyphenpenalty=\@M \parindent=1em
     % indent full-width captions {figure*}, but not single-column {figure}.
     \ifdim\hsize = \textwidth
       \leftskip=\tubfullpageindent \rightskip=\leftskip
     \fi
     \noindent #1: #2\par}%
  \else
    % fits on one line; use the hbox, centered.  Do not reset its glue.
    \global\@minipagefalse
    \hb@xt@\hsize{\hfil\box\@tempboxa\hfil}%
  \fi
```

```
  \vskip\belowcaptionskip}
```

Also use `\small` for the caption labels, and put the label itself (e.g., "Figure 1") in bold.

```
\def\fnum@figure{{\small \bf \figurename\nobreakspace\thefigure}}
\def\fnum@table{{\small \bf \tablename\nobreakspace\thetable}}
```

3.19 Size changing commands

Apart from their 'normal' effects, these commands change the glue around displays.

```
\renewcommand\normalsize{%
   \@setfontsize\normalsize\@xpt\@xiipt
   \abovedisplayskip=3\p@\@plus 3\p@\@minus\p@
   \belowdisplayskip=\abovedisplayskip
   \abovedisplayshortskip=\z@\@plus 3\p@
   \belowdisplayshortskip=\p@\@plus 3\p@\@minus\p@
}

\renewcommand\small{%
   \@setfontsize\small\@ixpt{11}%
   \abovedisplayskip=2.5\p@\@plus 2.5\p@\@minus\p@
   \belowdisplayskip=\abovedisplayskip
   \abovedisplayshortskip=\z@\@plus 2\p@
   \belowdisplayshortskip=\p@\@plus 2\p@\@minus\p@
}
\renewcommand\footnotesize{%
    \@setfontsize\footnotesize\@viiipt{9.5}%
    \abovedisplayskip=3\p@\@plus 3\p@\@minus\p@
    \belowdisplayskip=\abovedisplayskip
    \abovedisplayshortskip=\z@\@plus 3\p@
    \belowdisplayshortskip=\p@\@plus 3\p@\@minus\p@
}
```

3.20 Lists and other text inclusions

```
\def\@listi{%
  \leftmargin\leftmargini\parsep=\p@\@plus\p@\@minus\p@
  \itemsep=\parsep
  \listparindent=1em
  }

\def\@listii{%
  \leftmargin\leftmarginii
  \labelwidth=\leftmarginii \advance\labelwidth-\labelsep
  \topsep=2\p@\@plus\p@\@minus\p@
  \parsep=\p@\@plus\p@\@minus\p@
  \itemsep=\parsep
  \listparindent=1em
```

```
  }

\def\@listiii{%
  \leftmargin=\leftmarginiii
  \labelwidth=\leftmarginiii \advance\labelwidth-\labelsep
  \topsep=\p@\@plus\p@\@minus\p@
  \parsep=\z@
  \itemsep=\topsep
  \listparindent=1em
  }
\def\quote{\list{}{\rightmargin.5\leftmargin}\item[]}
```

From Dominik Wujastyk's font article. First paragraph of a quotation will not be indented, and right margin is decreased for narrow columns.

```
\renewcommand{\quotation}{\list{}{\listparindent 1.5em
     \rightmargin.5\leftmargin\parsep \z@\@plus\p@}\item[]}
```

3.21 Some fun with `verbatim`

The `plain` *TUGboat* style allows `[optional]` arguments to its `\verbatim` command. This will allow the author (or editor) to specify a range of exciting features; we would definitely like the numbered verbatim style for code (that facility is reserved for a future version of this package), and the present little bit of code imposes the `\ruled` option on the built-in verbatim environment. (Note that we don't yet deal with verbatim$*$, which is in itself an option to the `plain` original.)

We start by saving various bits and bobs whose operation we're going to subvert.

```
%\let\@TB@verbatim\@verbatim
\let\@TBverbatim\verbatim
\let\@TBendverbatim\endverbatim
```

Impose an optional argument on the environment.

We start the macro with `\par` to avoid a common error: if the optional argument is `\small`, and the document has no blank line before the verbatim block, we don't want that preceding paragraph to be set with `\small`'s line spacing.

(`\obeylines` added to prevent the `\futurelet` from propagating into the body of the verbatim, thus causing lines that start with odd characters (like `#` or even \) to behave peculiarly.)

```
\def\verbatim{\par\obeylines
  \futurelet\reserved@a\@switch@sqbverbatim}
\def\@switch@sqbverbatim{\ifx\reserved@a[%]
  \expandafter\@sqbverbatim\else
  \def\reserved@b{\@sqbverbatim[]}\expandafter\reserved@b\fi}
\def\@sqbverbatim[#1]{%
```

The optional argument consists entirely of functions that modify the appearance of the environment. Following the `plain` style, we define the functions we can execute in the optional argument here.

The command `\ruled` tells us that there should be rules above and below the verbatim block.

```
\def\ruled{\let\if@ruled\iftrue}%
```

Then we just execute the ones we've got, and relay to a (hacked) copy of the built-in environment.

```
#1\@TBverbatim}
```

The built-in environment itself relays to `\@verbatim`, which we've subverted to impose our views on appearance.

```
\def\@verbatim{%
```

First, we deal with `\ruled`:

```
  \if@ruled\trivlist\item\hrule\kern5\p@\nobreak\fi
```

Now, the code out of the original verbatim environment:

```
\trivlist \item\relax
\if@minipage\else\vskip\parskip\fi
\leftskip\@totalleftmargin\rightskip\z@skip
\parindent\z@\parfillskip\@flushglue\parskip\z@skip
\@@par
\@tempswafalse
\def\par{%
  \if@tempswa
    \leavevmode \null \@@par\penalty\interlinepenalty
  \else
    \@tempswatrue
    \ifhmode\@@par\penalty\interlinepenalty\fi
  \fi}%
\obeylines \verbatim@font \@noligs
\let\do\@makeother \dospecials
\everypar \expandafter{\the\everypar \unpenalty}%
}%
```

To end the environment, we do everything in reverse order: relay via the copy we made of `\endverbatim`, and then finish off the option changes (again `\ruled` only, so far).

```
\def\endverbatim{\@TBendverbatim
  \if@ruled\kern5\p@\hrule\endtrivlist\fi}
```

`\enablemetacode` simply typesets[3] something that looks (verbatim) like:

```
    <meta-text>
```

as:

⟨*meta-text*⟩

```
{\makeactive<
  \gdef<#1>{{\reset@font\ensuremath{\langle}%
    \textit{#1}%
    \ensuremath{\rangle}}}
}
```

Finally, we define the `\if` used by the `\ruled` option

```
\let\if@ruled\iffalse
```

[3] Or will simply typeset, when we get around to implementation proper

3.22 Bibliography

This is more or less copied verbatim from Glenn Paulley's *chicago.sty* (`gnpaulle@bluebox.uwaterloo.ca`). It produces an author-year citation style bibliography, using output from the BibTeX style file based on that by Patrick Daly. It needs extra macros beyond those in standard LaTeX to function properly. The form of the bibitem entries is:

```
\bibitem[\protect\citeauthoryear{Jones, Baker, and Smith}
     {Jones et al.}{1990}{key}...
```

The available citation commands are:

`\cite{key}`	→ (Jones, Baker, and Smith 1990)
`\citeA{key}`	→ (Jones, Baker, and Smith)
`\citeNP{key}`	→ Jones, Baker, and Smith 1990
`\citeANP{key}`	→ Jones, Baker, and Smith
`\citeN{key}`	→ Jones, Baker, and Smith (1990)
`\shortcite`	→ (Jones et al. 1990)
`\citeyear`	→ (1990)
`\citeyearNP`	→ 1990

First of all (after checking that we're to use Harvard citation at all), make a copy of LaTeX's default citation mechanism.

```
\if@Harvardcite
\let\@internalcite\cite
```

Normal forms.

```
\def\cite{\def\@citeseppen{-1000}%
    \def\@cite##1##2{(##1\if@tempswa , ##2\fi)}%
    \def\citeauthoryear##1##2##3{##1, ##3}\@internalcite}
\def\citeNP{\def\@citeseppen{-1000}%
    \def\@cite##1##2{##1\if@tempswa , ##2\fi}%
    \def\citeauthoryear##1##2##3{##1, ##3}\@internalcite}
\def\citeN{\def\@citeseppen{-1000}%
    \def\@cite##1##2{##1\if@tempswa , ##2)\else{)}\fi}%
    \def\citeauthoryear##1##2##3{##1 (##3}\@citedata}
\def\citeA{\def\@citeseppen{-1000}%
    \def\@cite##1##2{(##1\if@tempswa , ##2\fi)}%
    \def\citeauthoryear##1##2##3{##1}\@internalcite}
\def\citeANP{\def\@citeseppen{-1000}%
    \def\@cite##1##2{##1\if@tempswa , ##2\fi}%
    \def\citeauthoryear##1##2##3{##1}\@internalcite}
```

Abbreviated forms (using *et al.*)

```
\def\shortcite{\def\@citeseppen{-1000}%
    \def\@cite##1##2{(##1\if@tempswa , ##2\fi)}%
    \def\citeauthoryear##1##2##3{##2, ##3}\@internalcite}
\def\shortciteNP{\def\@citeseppen{-1000}%
    \def\@cite##1##2{##1\if@tempswa , ##2\fi}%
    \def\citeauthoryear##1##2##3{##2, ##3}\@internalcite}
```

```
\def\shortciteN{\def\@citeseppen{-1000}%
    \def\@cite##1##2{##1\if@tempswa , ##2)\else{)}\fi}%
    \def\citeauthoryear##1##2##3{##2 (##3}\@citedata}
\def\shortciteA{\def\@citeseppen{-1000}%
    \def\@cite##1##2{(##1\if@tempswa , ##2\fi)}%
    \def\citeauthoryear##1##2##3{##2}\@internalcite}
\def\shortciteANP{\def\@citeseppen{-1000}%
    \def\@cite##1##2{##1\if@tempswa , ##2\fi}%
    \def\citeauthoryear##1##2##3{##2}\@internalcite}
```

When just the year is needed:

```
\def\citeyear{\def\@citeseppen{-1000}%
    \def\@cite##1##2{(##1\if@tempswa , ##2\fi)}%
    \def\citeauthoryear##1##2##3{##3}\@citedata}
\def\citeyearNP{\def\@citeseppen{-1000}%
    \def\@cite##1##2{##1\if@tempswa , ##2\fi}%
    \def\citeauthoryear##1##2##3{##3}\@citedata}
```

Place commas in-between citations in the same `\citeyear`, `\citeyearNP`, `\citeN`, or `\shortciteN` command. Use something like `\citeN{ref1,ref2,ref3}` and `\citeN{ref4}` for a list.

```
\def\@citedata{%
        \@ifnextchar [{\@tempswatrue\@citedatax}%
                                    {\@tempswafalse\@citedatax[]}%
}

\def\@citedatax[#1]#2{%
\if@filesw\immediate\write\@auxout{\string\citation{#2}}\fi%
  \def\@citea{}\@cite{\@for\@citeb:=#2\do%
    {\@citea\def\@citea{, }\@ifundefined% by Young
       {b@\@citeb}{{\bf ?}%
       \@warning{Citation `\@citeb' on page \thepage \space undefined}}%
{\csname b@\@citeb\endcsname}}}{#1}}%
```

Don't box citations, separate with ; and a space; Make the penalty between citations negative: a good place to break.

```
\def\@citex[#1]#2{%
\if@filesw\immediate\write\@auxout{\string\citation{#2}}\fi%
  \def\@citea{}\@cite{\@for\@citeb:=#2\do%
    {\@citea\def\@citea{; }\@ifundefined% by Young
       {b@\@citeb}{{\bf ?}%
       \@warning{Citation `\@citeb' on page \thepage \space undefined}}%
{\csname b@\@citeb\endcsname}}}{#1}}%
```

No labels in the bibliography.

```
\def\@biblabel#1{}
```

Set length of hanging indentation for bibliography entries.

```
\newlength{\bibhang}
\setlength{\bibhang}{2em}
```

Indent second and subsequent lines of bibliographic entries. Stolen from openbib.sty: `\newblock` is set to `{}`.

```
\newdimen\bibindent
\bibindent=1.5em
\@ifundefined{refname}%
   {\newcommand{\refname}{References}}%
   {}%
```

For safety's sake, suppress the `\TB@startsection` warnings here...

```
\def\thebibliography#1{%
  \let\TB@startsection\TB@safe@startsection
  \section*{\refname
    \@mkboth{\uppercase{\refname}}{\uppercase{\refname}}}%
  \list{[\arabic{enumi}]}{%
    \labelwidth\z@ \labelsep\z@
    \leftmargin\bibindent
    \itemindent -\bibindent
    \listparindent \itemindent
    \parsep \z@
    \usecounter{enumi}}
  \def\newblock{}
  \BibJustification
  \sfcode`\.=1000\relax
}
```

`etal` Other bibliography odds and ends.

`\bibentry`

```
\def\etal{et\,al.\@}
\def\bibentry{%
  \smallskip
  \hangindent=\parindent
  \hangafter=1
  \noindent
  \sloppy
  \clubpenalty500 \widowpenalty500
  \frenchspacing
}
```

`\bibliography` Changes made to accommodate TUB file naming conventions

`\bibliographystyle`

```
\def\bibliography#1{%
  \if@filesw
    \immediate\write\@auxout{\string\bibdata{\@tubfilename{#1}}}%
  \fi
  \@input{\jobname.bbl}%
}
\def\bibliographystyle#1{%
  \if@filesw
    \immediate\write\@auxout{\string\bibstyle{\@tubfilename{#1}}}%
  \fi
}
```

\thebibliography
\TB@@thebibliography

If the user's asked to use LaTeX's default citation mechanism (using the `rawcite` option), we still need to play with `\TB@startsection`: this is a boring fact of life...

We also patch `\sloppy` in case there's a need for alternative justification of the body of the bibliography.

```
\else
\let\TB@@thebibliography\thebibliography
\def\thebibliography{%
  \let\TB@startsection\TB@safe@startsection
  \let\sloppy\BibJustification
  \TB@@thebibliography}
\fi
```

\BibJustification
\SetBibJustification
\TB@@sloppy

`\BibJustification` defines how the bibliography is to be justified. The Lamport default is simply "`\sloppy`", but we regularly find some sort of ragged right setting is appropriate. (`\BibJustification` is nevertheless reset to its default value at the start of a paper.)

```
\let\TB@@sloppy\sloppy
\let\BibJustification\TB@@sloppy
\newcommand{\SetBibJustification}[1]{%
  \renewcommand{\BibJustification}{#1}%
}
\ResetCommands\expandafter{\the\ResetCommands
  \let\BibJustification\TB@@sloppy
}
```

3.23 Registration marks

```
\def\HorzR@gisterRule{\vrule \@height 0.2\p@ \@depth\z@ \@width 0.5in }
\def\DownShortR@gisterRule{\vrule \@height 0.2\p@ \@depth 1pc \@width 0.2\p@ }
\def\UpShortR@gisterRule{\vrule \@height 1pc \@depth\z@ \@width 0.2\p@ }
```

"T" marks centered on top and bottom edges of paper

```
\def\ttopregister{\dlap{%
        \hb@xt@\trimwd{\HorzR@gisterRule \hfil \HorzR@gisterRule
                        \HorzR@gisterRule \hfil \HorzR@gisterRule}%
        \hb@xt@\trimwd{\hfil \DownShortR@gisterRule \hfil}}}
\def\tbotregister{\ulap{%
        \hb@xt@\trimwd{\hfil \UpShortR@gisterRule \hfil}%
        \hb@xt@\trimwd{\HorzR@gisterRule \hfil \HorzR@gisterRule
                        \HorzR@gisterRule \hfil \HorzR@gisterRule}}}
\def\topregister{\ttopregister}
\def\botregister{\tbotregister}
```

3.24 Running heads

```
\def \rtitlex{\def\texttub##1{{\normalsize\textrm{##1}}}\TUB, \volx }
\def\PrelimDraftfooter{%
  \dlap{\kern\textheight\kern3pc
        \rlap{\hb@xt@\pagewd{\midrtitle\hfil\midrtitle}}
```

```
}}

```

registration marks; these are temporarily inserted in the running head

```
\def\MakeRegistrationMarks{}
\def\UseTrimMarks{%
  \def\MakeRegistrationMarks{%
    \ulap{\rlap{%
       \vbox{\dlap{\vbox to\trimlgt{\vfil\botregister}}%
             \topregister\vskip \headmargin \vskip 10\p@}}}}%
  }

\def\@oddhead{\MakeRegistrationMarks\PrelimDraftfooter
  \normalsize\csname normalshape\endcsname\rm
  \rtitlex\qquad\midrtitle \hfil \thepage}
\def\@evenhead{\MakeRegistrationMarks\PrelimDraftfooter
  \normalsize\csname normalshape\endcsname\rm
  \thepage\hfil\midrtitle\qquad\rtitlex}
\def\@oddfoot{}
\def\@evenfoot{}
\def\ps@headings{}
\pagestyle{headings}
```

3.25 Output routine

Modified to alter `\brokenpenalty` across columns

Comment We're playing with fire here: for example, `\@outputdblcol` has changed in LaTeX 2$_\varepsilon$ for 1995/06/01 (with the use of `\hb@xt@`). *This* time there's no semantic change, but...

```
\def\@outputdblcol{\if@firstcolumn \global\@firstcolumnfalse
    \global\setbox\@leftcolumn\box\@outputbox
    \global\brokenpenalty10000
  \else \global\@firstcolumntrue
    \global\brokenpenalty100
    \setbox\@outputbox\vbox{\hb@xt@\textwidth{\hb@xt@\columnwidth
      {\box\@leftcolumn \hss}\hfil \vrule \@width\columnseprule\hfil
       \hb@xt@\columnwidth{\box\@outputbox \hss}}}\@combinedblfloats
       \@outputpage \begingroup \@dblfloatplacement \@startdblcolumn
       \@whilesw\if@fcolmade \fi{\@outputpage\@startdblcolumn}\endgroup
    \fi}
```

3.26 Font-related definitions and machinery

These are mostly for compatibility with plain `tugboat.sty`

```
\newif\ifFirstPar       \FirstParfalse
\def\smc{\sc}
\def\ninepoint{\small}
```

⟨/classtail⟩

`\SMC` *isn't* small caps — Barbara Beeton says she thinks of it as "big small caps". She says (modulo capitalisation of things...):

> For the things it's used for, regular small caps are not appropriate — they're too small. Real small caps are appropriate for author names (and are so used in continental bibliographies), section headings, running heads, and, on occasion, words to which some emphasis is to be given. `\SMC` was designed to be used for acronyms and all-caps abbreviations, which look terrible in small caps, but nearly as bad in all caps in the regular text size. The principle of using "one size smaller" than the text size is similar to the design of caps in German — where they are smaller relative to lowercase than are caps in fonts intended for English, to improve the appearance of regular text in which caps are used at the heads of all nouns, not just at the beginnings of sentences.

We define this in terms of the memory of the size currently selected that's maintained in `\@currsize`: if the user does something silly re. selecting fonts, we'll get the wrong results. The following code is adapted from an old version of `relsize.sty` by Donald Arseneau and Matt Swift. (The order of examination of `\@currsize` is to get the commonest cases out of the way first.)

```
⟨*common⟩
\DeclareRobustCommand\SMC{%
  \ifx\@currsize\normalsize\small\else
   \ifx\@currsize\small\footnotesize\else
    \ifx\@currsize\footnotesize\scriptsize\else
     \ifx\@currsize\large\normalsize\else
      \ifx\@currsize\Large\large\else
       \ifx\@currsize\LARGE\Large\else
        \ifx\@currsize\scriptsize\tiny\else
         \ifx\@currsize\tiny\tiny\else
          \ifx\@currsize\huge\LARGE\else
           \ifx\@currsize\Huge\huge\else
            \small\SMC@unknown@warning
 \fi\fi\fi\fi\fi\fi\fi\fi\fi\fi
}
\newcommand\SMC@unknown@warning{\TBWarning{\string\SMC: nonstandard
    text font size command -- using \string\small}}
\newcommand\textSMC[1]{{\SMC #1}}
```

The `\acro` command uses `\SMC` as it was originally intended. Note that, since most of these things are uppercase-only names, it fiddles with the spacefactor after inserting its text.

```
\newcommand\acro[1]{\textSMC{#1}\@}
⟨/common⟩
```

3.27 Miscellaneous definitions

`\EdNote` allows the editor to enter notes in the text of a paper. If the command is given something that appears like an optional argument, the entire text of the note is placed in square brackets. (Yes, it really is!)

```
⟨*classtail⟩
\def\xEdNote{{\EdNoteFont Editor's note:\enspace }}
\def \EdNote{\@ifnextchar[%]
  {%
    \ifvmode
      \smallskip\noindent\let\@EdNote@\@EdNote@v
    \else
      \unskip\quad\def\@EdNote@{\unskip\quad}%
    \fi
    \@EdNote
  }%
  \xEdNote
}
\long\def\@EdNote[#1]{%
  [\thinspace\xEdNote\ignorespaces
   #1%
   \unskip\thinspace]%
  \@EdNote@
}
\def\@EdNote@v{\par\smallskip}
```

Macros for Mittelbach's self-documenting style

```
\def\SelfDocumenting{%
  \setlength\textwidth{31pc}
  \onecolumn
  \parindent \z@
  \parskip 2\p@\@plus\p@\@minus\p@
  \oddsidemargin 8pc
  \evensidemargin 8pc
  \marginparwidth 8pc
  \toks@\expandafter{\@oddhead}%
  \xdef\@oddhead{\hss\hb@xt@\pagewd{\the\toks@}}%
  \toks@\expandafter{\@evenhead}%
  \xdef\@evenhead{\hss\hb@xt@\pagewd{\the\toks@}}%
  \def\ps@titlepage{}%
}
\def\ps@titlepage{}

\long\def\@makefntext#1{\parindent 1em\noindent\hb@xt@2em{}%
  \llap{\@makefnmark}\null$\mskip5mu$#1}

%% \long\def\@makefntext#1{\parindent 1em
%%   \noindent
%%   \hb@xt@2em{\hss\@makefnmark}%
%%   \hskip0.27778\fontdimen6\textfont\z@\relax
```

```
%%   #1%
%% }
```

\creditfootnote
\supportfootnote

Sometimes we want the label "Editor's Note:", sometimes not.

```
\def\creditfootnote{\nomarkfootnote\xEdNote}
\def\supportfootnote{\nomarkfootnote\relax}
```

General macro \nomarkfootnote to make a footnote without a reference mark, etc. #1 is an extra command to insert, #2 the user's text.

```
\gdef\nomarkfootnote#1#2{\begingroup
  \def\thefootnote{}%
  % no period, please, also no fnmark.
  \def\@makefntext##1{##1}%
  \footnotetext{\noindent #1#2}%
  \endgroup
}
```

3.28 Initialization

If we're going to use Harvard-style bibliographies, we set up the bibliography style: the user doesn't get any choice.

```
\if@Harvardcite
  \AtBeginDocument{%
    \bibliographystyle{ltugbib}%
  }
\fi
\authornumber\z@
\let\@signature\@defaultsignature
\InputIfFileExists{ltugboat.cfg}{\TBInfo{Loading ltugboat
                                         configuration information}}{}
```

⟨/classtail⟩

4 LaTeX 2ε Proceedings class

\@tugclass

Make the code of ltugboat.cls (when we load it) say it's really us:

```
⟨*ltugproccls⟩
\def\@tugclass{ltugproc}
```

\if@proctw@column

For the case where we're preparing the preprints, we may not have been able to prepare submissions for typesetting in two columns. In this case, therefore, we may need the option onecolumn, that will suppress the use of twocolumn setting within the article.

```
\newif\if@proctw@column  \@proctw@columntrue
\DeclareOption{onecolumn}{\@proctw@columnfalse}
```

\if@proc@sober
\if@proc@numerable

TUG'96 proceedings switched to more sober headings still; so the tug95 option establishes the original state. In the absence of any other guidance, we use the '96 for TUG'97 proceedings, but also allow numbering of sections.

```
\newif\if@proc@sober
\newif\if@proc@numerable
\DeclareOption{tug95}{%
  \@proc@soberfalse
  \@proc@numerablefalse
}
\DeclareOption{tug96}{%
  \@proc@sobertrue
  \@proc@numerablefalse
}
\DeclareOption{tug97}{%
  \@proc@sobertrue
  \@proc@numerabletrue
}
\DeclareOption{tug2002}{%
  \@proc@sobertrue
  \@proc@numerabletrue
  \let\if@proc@numbersec\iftrue
  \PassOptionsToClass{numbersec}{ltugboat}%
}
```

\if@proc@numbersec

If we're in a class that allows section numbering (the actual check occurs after \ProcessOptions, we can have the following:

```
\DeclareOption{numbersec}{\let\if@proc@numbersec\iftrue
  \PassOptionsToClass{numbersec}{ltugboat}%
}
\DeclareOption{nonumber}{\let\if@proc@numbersec\iffalse
  \PassOptionsToClass{nonumber}{ltugboat}%
}
```

\ifTB@title

If we have a paper for which we want to create a detached title, with an editor's note, and then set the paper separately, we use option notitle.

```
\newif\ifTB@title
\DeclareOption{title}{\TB@titletrue}
\DeclareOption{notitle}{\TB@titlefalse
  \AtBeginDocument{\stepcounter{page}}}
```

There are these people who seem to think tugproc is an option as well as a class...

```
\DeclareOption{tugproc}{%
  \ClassWarning{\@tugclass}{Option \CurrentOption\space ignored}%
}
```

All other options are simply passed to ltugboat...

```
\DeclareOption*{\PassOptionsToClass{\CurrentOption}{ltugboat}}
```

If there's a tugproc defaults file, input it now: it may tell us which year we're to perform for... (Note: this code *is* millenium-proof. It's not terribly classy for years beyond 2069, but then I'm not going to be around then—this will be an interesting task for a future TEXie...)

```
\InputIfFileExists{\@tugclass.cfg}{\ClassInfo{ltugproc}%
          {Loading ltugproc configuration information}}{}
\@ifundefined{TUGprocExtraOptions}%
  {\let\TUGprocExtraOptions\@empty}%
  {\edef\TUGprocExtraOptions{,\TUGprocExtraOptions}}
```

\tugProcYear Now work out what year it is

```
\@tempcnta\year
\ifnum\@tempcnta<2000
  \divide\@tempcnta by100
  \multiply\@tempcnta by100
  \advance\@tempcnta-\year
  \@tempcnta-\@tempcnta
\fi
```

And use that for calculating a year for us to use.

```
\edef\@tempa{\noexpand\providecommand\noexpand\tugProcYear
                {\ifnum10>\@tempcnta0\fi\the\@tempcnta}}
\@tempa
\ClassInfo{ltugproc}{Class believes year is
  \expandafter\ifnum\tugProcYear<2000 19\fi\tugProcYear
    \@gobble}
```

Check that this is a "sensible year" (one for which we have a class option defined). If not, make it a 'suitable' year, in particular, one that allows numbering sections.

```
\expandafter\ifx\csname ds@tug\tugProcYear\endcsname\relax
  \def\tugProcYear{2002}\fi
```

Now execute the default 'year' option and get on with processing. Note that this command gets ignored if the configuration file specifies a silly year.

```
\ExecuteOptions{tug\tugProcYear,title\TUGprocExtraOptions}
\ProcessOptions
\if@proc@numbersec
  \if@proc@numerable
  \else
    \ClassWarning{\@tugclass}{This year's proceedings may not have
      numbered sections}%
  \fi
\fi
```

Call ltugboat, adding whichever section numbering option is appropriate

```
\LoadClass[\if@proc@numbersec numbersec\else nonumber\fi]{ltugboat}
```

4.1 Proceedings titles

\maketitle
\ifTB@madetitle

There's no provision for 'section titles' in proceedings issues, as there are in *TUGboat* proper. Note the tedious LaTeX bug-avoidance in the \@TB@test@document macro.

```
\def\maketitle{%
  \begingroup
```

first, a bit of flim-flam to generate an initial value for \rhAuthor (unless the user's already given one with a \shortAuthor comand).

```
    \ifshortAuthor\else
      \global\let\rhAuthor\@empty
      \def\g@addto@rhAuthor##1{%
        \begingroup
          \toks@\expandafter{\rhAuthor}%
          \let\thanks\@gobble
          \protected@xdef\rhAuthor{\the\toks@##1}%
        \endgroup
      }%
      \@getauthorlist\g@addto@rhAuthor
    \fi
```

now, the real business of setting the title

```
    \ifTB@title
      \setcounter{footnote}{0}%
      \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
      \if@proctw@column
        \twocolumn[\@maketitle]%
      \else
        \onecolumn
        \global\@topnum\z@
        \@maketitle
      \fi
      \@thanks
      \thispagestyle{TBproctitle}
    \fi
  \endgroup
  \TB@madetitletrue
}
\newif\ifTB@madetitle  \TB@madetitlefalse
```

\@TB@test@document

\@TB@test@document checks to see, at entry to \maketitle, if we've had \begin{document}. See LaTeX bug report latex/2212, submitted by Robin Fairbairns, for details.

```
\def\@TB@test@document{%
  \edef\@tempa{\the\everypar}
  \def \@tempb{\@nodocument}
  \ifx \@tempa\@tempb
    \@nodocument
  \fi
```

```
}
```

\AUTHORfont \TITLEfont \addressfont \netaddrfont

Define the fonts for titles and things

```
\def\AUTHORfont {\large\rmfamily\mdseries\upshape}
\def\TITLEfont  {\Large\rmfamily\mdseries\upshape}
\def\addressfont{\small\rmfamily\mdseries\upshape}
\def\netaddrfont{\small\ttfamily\mdseries\upshape}
```

\aboveauthorskip \belowauthorskip \belowabstractskip

Some changeable skips to permit variability in page layout depending on the particular paper's page breaks.

```
\newskip\aboveauthorskip   \aboveauthorskip=18\p@ \@plus4\p@
\newskip\belowauthorskip   \belowauthorskip=\aboveauthorskip
\newskip\belowabstractskip \belowabstractskip=14\p@ \@plus3\p@ \@minus2\p@
```

\@maketitle

The body of \maketitle

```
\def\@maketitle{%
  {\parskip\z@
   \frenchspacing
   \TITLEfont\raggedright\noindent\@title\par
     \count@=0
     \loop
     \ifnum\count@<\authornumber
       \vskip\aboveauthorskip
       \advance\count@\@ne
       {\AUTHORfont\theauthor{\number\count@}\endgraf}%
       \addressfont\theaddress{\number\count@}\endgraf
       {%
         \allowhyphens
         \hangindent1.5pc
         \netaddrfont\thenetaddress{\number\count@}\endgraf
         \hangindent1.5pc
         \thePersonalURL{\number\count@}\endgraf
       }%
     \repeat
  \vskip\belowauthorskip}%
  \if@abstract
     \centerline{\bfseries Abstract}%
     \vskip.5\baselineskip\rmfamily
     \list{}{\listparindent20\p@
        \itemindent\z@ \leftmargin\tubfullpageindent
        \rightmargin\leftmargin \parsep \z@}\item[]\ignorespaces
           \the\abstract@toks
     \endlist\global\@ignoretrue
  \fi
  \vskip\belowabstractskip
  \global\@afterindentfalse\aftergroup\@afterheading
 }
```

abstract \if@abstract \abstract@toks

Save the contents of the abstract environment in the token register \abstract@toks. We need to do this, as otherwise it may get 'typeset' (previously, it got put in a

box) before \begin{document}, and experiments prove that this means our shiny new \SMC doesn't work in this situation.

If you need to understand the ins and outs of this code, look at the place I lifted it from: tabularx.dtx (in the tools bundle). The whole thing pivots on having stored the name of the 'abstract' environment in \@abstract@

```
\newtoks\abstract@toks  \abstract@toks{}
\let\if@abstract\iffalse
\def\abstract{%
```

we now warn unsuspecting users who provide an abstract environment *after* the \maketitle that would typeset it...

```
  \ifTB@madetitle
    \TBWarning{abstract environment after \string\maketitle}
  \fi
  \def\@abstract@{abstract}%
  \ifx\@currenvir\@abstract@
  \else
    \TBError{\string\abstract\space is illegal:%
      \MessageBreak
      use \string\begin{\@abstract@} instead}%
      {\@abstract@\space may only be used as an environment}
  \fi
  \global\let\if@abstract\iftrue
  {\ifnum0=`}\fi
  \@abstract@getbody}
\let\endabstract\relax
```

\@abstract@getbody gets chunks of the body (up to the next occurrence of \end) and appends them to \abstract@toks. It then uses \@abstract@findend to detect whether this \end is followed by {abstract}

```
\long\def\@abstract@getbody#1\end{%
  \global\abstract@toks\expandafter{\the\abstract@toks#1}%
  \@abstract@findend}
```

Here we've got to \end in the body of the abstract. \@abstract@findend takes the 'argument' of the \end do its argument.

```
\def\@abstract@findend#1{%
  \def\@tempa{#1}%
```

If we've found an 'end' to match the 'begin' that we started with, we're done with gathering the abstract up; otherwise we stuff the end itself into the token register and carry on.

```
  \ifx\@tempa\@abstract@
    \expandafter\@abstract@end
  \else
```

It's not \end{abstract} — check that it's not \end{document} either (which signifies that the author's forgotten about ending the abstract)

```
    \def\@tempb{document}%
```

```
    \ifx\@tempa\@tempb
      \TBError{\string\begin{\@abstract@}
          ended by \string\end{\@tempb}}%
        {You've forgotten \string\end{\@abstract@}}
    \else
       \global\abstract@toks\expandafter{\the\abstract@toks\end{#1}}%
       \expandafter\expandafter\expandafter\@abstract@getbody
    \fi
  \fi}
```

In our case, the action at the 'proper' `\end` is a lot simpler than what appears in `tabularx.dtx` ... don't be surprised!

```
\def\@abstract@end{\ifnum0='{\fi}%
  \expandafter\end\expandafter{\@abstract@}}
```

`\makesignature` `\makesignature` is improper in proceedings, so we replace it with a warning (and a no-op otherwise)

```
\renewcommand{\makesignature}{\TBWarning
         {\string\makesignature\space is invalid in proceedings issues}}
```

`\title` `\TB@title` We redefine the `\title` command, so as to set the `\rhTitle` command at the same time. While we're at it, we redefine it to have optional arguments for use as 'short' versions, thus obviating the need for users to use the `\shortTitle` command.

```
\def\rhTitle{}% avoid error if no author or title
\renewcommand\title{\@dblarg\TB@title}
\def\TB@title[#1]#2{\gdef\@title{#2}%
  \bgroup
    \let\thanks\@gobble
    \let\\\ %
    \protected@xdef\rhTitle{#1}%
  \egroup
}
```

`\shortTitle` `\ifshortAuthor` `\shortAuthor` The `\rh*` commands are versions to be used in the running head of the article. Normally, they are the same things as the author and title of the article, but in the case that there are confusions therein, the text should provide substitutes, using the `\short*` commands.

```
\def\shortTitle #1{\def\rhTitle{#1}}
\newif\ifshortAuthor
\def\shortAuthor #1{\def\rhAuthor{#1}\shortAuthortrue}
```

`\ps@TBproctitle` `\ps@TBproc` `\dopagecommands` `\setpagecommands` `\TB@definefeet` `\pfoottext` `\rfoottext` Now we define the running heads in terms of the `\rh*` commands.

```
\def\ps@TBproctitle{\let\@oddhead\MakeRegistrationMarks
  \let\@evenhead\MakeRegistrationMarks
  \TB@definefeet
}
\def\ps@TBproc{%
  \def\@oddhead{\MakeRegistrationMarks
    {%
```

```
      \hfil
      \def\\{\unskip\ \ignorespaces}%
      \rmfamily\rhTitle
    }%
  }%
  \def\@evenhead{\MakeRegistrationMarks
    {%
      \def\\{\unskip\ \ignorespaces}%
      \rmfamily\rhAuthor
      \hfil
    }%
  }%
  \TB@definefeet
}

\advance\footskip8\p@    % for deeper running feet

\def\dopagecommands{\csname @@pagecommands\number\c@page\endcsname}
\def\setpagecommands#1#2{\expandafter\def\csname @@pagecommands#1\endcsname
  {#2}}
\def\TB@definefeet{%
  \def\@oddfoot{\ifpreprint\pfoottext\hfil\Now\hfil\thepage
    \else\rfoottext\hfil\thepage\fi\dopagecommands}%
  \def\@evenfoot{\ifpreprint\thepage\hfil\Now\hfil\pfoottext
    \else\thepage\hfil\rfoottext\fi\dopagecommands}%
}

\def\pfoottext{{\smc Preprint}: Proceedings of the \volyr{} Annual Meeting}
\def\rfoottext{\normalfont\TUB, \volx\Dash
   {Proceedings of the \volyr{} Annual Meeting}}

\pagestyle{TBproc}
```

4.2 Section divisions

Neither sections nor subsections are numbered by default in the proceedings style: note that this puts a degree of stress on authors' natural tendency to reference sections, which is a matter that needs attention. The class option NUMBERSEC once again numbers the sections (and noticeably changes the layout).

```
\if@proc@numbersec
\else
  \setcounter{secnumdepth}{0}
\fi
```

Otherwise, the `\section` command is pretty straightforward. However, the `\subsection` and `\subsubsection` are run-in, and we have to remember to have negative stretch (and shrink if we should in future choose to have one) on the ⟨*afterskip*⟩ parameter of `\@startsection`, since the whole skip is going to end up getting negated. We use `\TB@startsection` to detect inappropriate forms.

```
\if@proc@numbersec
\else
  \if@proc@sober
    \def\section
           {\TB@nolimelabel
            \TB@startsection{{section}%
                             1%
                             \z@%
                             {-8\p@\@plus-2\p@\@minus-2\p@}%
                             {6\p@}%
                             {\normalsize\bfseries\raggedright}}}
  \else
    \def\section
           {\TB@nolimelabel
            \TB@startsection{{section}%
                             1%
                             \z@%
                             {-8\p@\@plus-2\p@\@minus-2\p@}%
                             {6\p@}%
                             {\large\bfseries\raggedright}}}
  \fi
  \def\subsection
           {\TB@nolimelabel
            \TB@startsection{{subsection}%
                             2%
                             \z@%
                             {6\p@\@plus 2\p@\@minus2\p@}%
                             {-5\p@\@plus -\fontdimen3\the\font}%
                             {\normalsize\bfseries}}}
  \def\subsubsection
           {\TB@nolimelabel
            \TB@startsection{{subsubsection}%
                             3%
                             \parindent%
                             \z@%
                             {-5\p@\@plus -\fontdimen3\the\font}%
                             {\normalsize\bfseries}}}
\fi
```
⟨/ltugproccls⟩

5 Plain TEX styles

⟨∗tugboatsty⟩
```
% err...
```
⟨/tugboatsty⟩
⟨∗tugprocsty⟩
```
% err...
```
⟨/tugprocsty⟩

6 The LaTeX 2ε compatibility-mode style files

```
⟨*ltugboatsty⟩
\@obsoletefile{ltugboat.cls}{ltugboat.sty}
\LoadClass{ltugboat}
⟨/ltugboatsty⟩
⟨*ltugprocsty⟩
\@obsoletefile{ltugproc.cls}{ltugproc.sty}
\LoadClass{ltugproc}
⟨/ltugprocsty⟩
```