munity in the acknowledgements (thanks!). On page one he recommends the `citation()` function to users to give credit to developers (yes!), however he seems not to have used the function too often, because R Development Core Team (2007a,b) and many others are missing from the references, which cover only 4 of 1000 pages.

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Changes in R 2.6.0

by the R Core Team

User-visible changes

- `integrate()`, `nlm()`, `nlminb()`, `optim()`, `optimize()` and `uniroot()` now have `...` much earlier in their argument list. This reduces the chances of unintentional partial matching but means that the later arguments must be named in full.
- The default type for `nchar()` is now `"chars"`. This is almost always what was intended, and differs from the previous default only for non-ASCII strings in a MBCS locale. There is a new argument `allowNA`, and the default behaviour is now to throw an error on an invalid multibyte string if `type = "chars"` or `type = "width"`.
- Connections will be closed if there is no R object referring to them. A warning is issued if this is done, either at garbage collection or if all the connection slots are in use.

New features

- `abs()`, `sign()`, `sqrt()`, `floor()`, `ceiling()`, `exp()` and the gamma, trig and hyperbolic trig functions now only accept one argument even when dispatching to a `Math` group method (which may accept more than one argument for other group members).
- `abbreviate()` gains a `method` argument with a new option `"both.sides"` which can make shorter abbreviations.
- `aggregate.data.frame()` no longer changes the group variables into factors, and leaves alone the levels of those which are factors. (Inter alia grants the wish of PR#9666.)
- The default `max.names` in `all.names()` and `all.vars()` is now `-1` which means unlimited. This fixes PR#9873.
- `as.vector()` and the default methods of `as.character()`, `as.complex()`, `as.double()`, `as.expression()`, `as.integer()`, `as.logical()` and `as.raw()` no longer duplicate in most cases where the object is unchanged. (Beware: some code has been written that invalidly assumes that they do duplicate, often when using `.C/.Fortran(DUP = FALSE)`.)
- `as.complex()`, `as.double()`, `as.integer()`, `as.logical()` and `as.raw()` are now primitive and internally generic for efficiency. They no longer dispatch on S3 methods for `as.vector()` (which was never documented). `as.real()` and `as.numeric()` remain as alternative names for `as.double()`.

  `expm1()`, `log()`, `log1p()`, `log2()`, `log10()`, `gamma()`, `lgamma()`, `digamma()` and `trigamma()` are now primitive. (Note that `logb()` is not.)

  The `Math2` and `Summary` groups (`round`, `signif`, `all`, `any`, `max`, `min`, `sum`, `prod`, `range`) are now primitive.

  See under Section "**methods** Package" below for some consequences for S4 methods.
- `apropos()` now sorts by name and not by position on the search path.

- `attr()` gains an `exact = TRUE` argument to disable partial matching.
- `bxp()` now allows `xlim` to be specified. (PR#9754)
- `C(f, SAS)` now works in the same way as `C(f, treatment)`, etc.
- `chol()` is now generic.
- `dev2bitmap()` has a new option to go via PDF and so allow semi-transparent colours to be used.
- `dev.interactive()` regards devices with the displaylist enabled as interactive, and packages can register the names of their devices as interactive via `deviceIsInteractive()`.
- `download.packages()` and `available.packages()` (and functions which use them) now support in `repos` or `contriburl` either '`file:`' plus a general path (including drives on a UNC path on Windows) or a '`file:///`' URL in the same way as `url()`.
- `dQuote()` and `sQuote()` are more flexible, with rendering controlled by the new option `useFancyQuotes`. This includes the ability to have TEX-style rendering and directional quotes (the so-called "smart quotes") on Windows. The default is to use directional quotes in UTF-8 locales (as before) and in the `Rgui` console on Windows (new).
- `duplicated()` and `unique()` and their methods in **base** gain an additional argument `fromLast`.
- `fifo()` no longer has a default `description` argument.

  `fifo("")` is now implemented, and works in the same way as `file("")`.
- `file.edit()` and `file.show()` now tilde-expand file paths on all interfaces (they used to on some and not others).
- The `find()` argument is now named `numeric` and not `numeric.`: the latter was needed to avoid warnings about name clashes many years ago, but partial matching was used.
- `stats:::.getXlevels()` confines attention to factors since some users expected R to treat `unclass(`*a_factor*`)` as a numeric vector.
- `grep()`, `strsplit()` and friends now warn if incompatible sets of options are used, instead of silently using the documented priority.
- `gsub()/sub()` with `perl = TRUE` now preserves attributes from the argument `x` on the result.
- `is.finite()` and `is.infinite()` are now S3 and S4 generic.
- `jpeg()`, `png()`, `bmp()` (Windows), `dev2bitmap()` and `bitmap()` have a new argument `units` to specify the units of `width` and `height`.
- `levels()` is now generic (`levels<-()` has been for a long time).
- Loading serialized raw objects with `load()` is now considerably faster.
- New primitive `nzchar()` as a faster alternative to `nchar(x) > 0` (and avoids having to convert to wide chars in a MBCS locale and hence consider validity).
- The way `old.packages()` and hence `update.packages()` handle packages with different versions in multiple package repositories has been changed. The first package encountered was selected, now the one with highest version number.
- `optim(method = "L-BFGS-B")` now accepts zero-length parameters, like the other methods. Also, `method = "SANN"` no longer attempts to optimize in this case.
- New options `showWarnCalls` and `showErrorCalls` to give a concise traceback on warnings and errors. `showErrorCalls = TRUE` is the default for non-interactive sessions. Option `showNCalls` controls how abbreviated the call sequence is.
- New options `warnPartialMatchDollar`, `warnPartialMatchArgs` and `warnPartialMatchAttr` to help detect the unintended use of partial matching in `$`, argument matching and `attr()` respectively.
- A device named as a character string in `options(device =)` is now looked for in the **grDevices** name space if it is not visible from the global environment.
- `pmatch(x, y, duplicates.ok = TRUE)` now uses hashing and so is much faster for large `x` and `y` when most matches are exact.
- `qr()` is now generic.
- It is now a warning to have an non-integer object for `.Random.seed`: this indicates a user had been playing with it, and it has always been documented that users should only save and restore it.
- New higher-order functions `Reduce()`, `Filter()` and `Map()`.

- `regexpr()` and `gregexpr()` gain an `ignore.case` argument for consistency with `grep()`. (This does change the positional matching of arguments, but no instances of positional matching beyond the second were found.)
- `relist()` utility, an S3 generic with several methods, providing an `inverse` for `unlist()`; thanks to a code proposal from Andrew Clausen.
- `require()` now returns invisibly.
- The interface to `reshape()` has been revised, allowing some simplified forms that did not work before, and somewhat improved error handling. A new argument `sep` has been introduced to replace simple usages of `split` (the old features are retained).
- `rmultinom()` uses a high-precision accumulator where available, and so is more likely to give the same result on different platforms (although it is still possible to get different results, and the result may differ from previous versions of R).
- `row()` and `col()` now work on matrix-like objects such as data frames, not just matrices.
- `Rprof()` allows smaller values of `interval` on machines that support it: for example modern Linux systems support `interval = 0.001`.
- `sample()` now requires its first argument `x` to be numeric (in the sense of `is.numeric()`) as well as of length 1 and ≥ 1 before it is regarded as shorthand for `1:x`.
- `sessionInfo()` now provides details about package name spaces that are loaded but not attached. The output of `sessionInfo()` has been improved to make it easier to read when it is inadvertently wrapped after being pasted into an email message.
- `setRepositories()` has a new argument `ind` to allow selections to be made programmatically.
- `showMethods()` has a "smart" default for `inherited` such that `showMethods(`*genfun*`, incl = TRUE)` becomes a useful short cut.
- `sprintf()` no longer has a output string length limit.
- `storage.mode<-()` is now primitive, and hence makes fewer copies of an object (none if the mode is unchanged). It is a little less general than `mode<-()`, which remains available. (See also the entry under Deprecated & defunct below.)
- `sweep()` gains an argument `check.margin = TRUE` which warns about mismatched dimensions.
- The mathematical annotation facility (`plotmath()`) now recognises a `symbol()` function which forces the font to be a symbol font. This allows access to all characters in the Adobe Symbol encoding within `plotmath` expressions.
- For OSes that cannot unset environment variables, `Sys.unsetenv()` sets the value to `""`, with a warning.
- New function `Sys.which()`, an interface to `which` on Unix-alikes and an emulation on Windows.
- On Unix-alikes, `system(, intern = TRUE)` reports on very long lines that may be truncated, giving the line number of the content being read.
- `termplot()` has a default for `ask` that uses `dev.interactive()`.

  It allows `ylim` to be set, or computed to cover all the plots to be made (the new default) or computed for each plot (the previous default).
- `uniroot(f, *)` is slightly faster for non-trivial `f()` because it computes `f(lower)` and `f(upper)` only once, and it has new optional arguments `f.lower` and `f.upper` by which the caller can pass these.
- `unlink()` is now internal, using common POSIX code on all platforms.
- `unsplit()` now works with lists of dataframes.
- The `vcov()` methods for classes `"gls"` and `"nlme"` have migrated to package **nlme**.
- `vignette()` has a new argument `all` to choose between showing vignettes in attached packages or in all installed packages.
- New function `within()`, which is like `with()`, except that it returns modified versions back of lists and data frames.
- `X11()`, `postscript()` (and hence `bitmap()`), `xfig()`, `jpeg()`, `png()` and the Windows devices `win.print()`, `win.metafile()` and `bmp()` now warn (once at first use) if semi-transparent colours are used (rather than silently treating them as fully transparent).
- New function `xspline()` to provide `base` graphics support of X-splines (cf. `grid.xspline()`).
- New function `xyTable()` does the 2D gridding "computations" used by `sunflowerplot()`.

- Rd conversion to HTML and CHM now makes use of classes, which are set in the stylesheets. Editing 'R.css' will change the styles used for `\env`, `\option`, `\pkg` etc. (CHM styles are set at compilation time.)

- The documented arguments of `%*%` have been changed to be `x` and `y`, to match S and the implicit S4 generic.

- If members of the Ops group (the arithmetic, logical and comparison operators) and `%*%` are called as functions, e.g., `` `>`(x, y) ``, positional matching is always used. (It used to be the case that positional matching was used for the default methods, but names would be matched for S3 and S4 methods and in the case of `!` the argument name differed between S3 and S4 methods.)

- Imports environments of name spaces are named (as `"imports:foo"`), and so are known e.g. to `environmentName()`.

- Package **stats4** uses lazy-loading not `SaveImage` (which is now deprecated).

- Installing help for a package now parses the '.Rd' file only once, rather than once for each type.

- PCRE has been updated to version 7.2.

- `bzip2` has been updated to version 1.0.4.

- `gettext` has been updated to version 0.16.1.

- There is now a global `CHARSXP` cache, `R_StringHash`. `CHARSXP`s are no longer duplicated and must not be modified in place. Developers should strive to only use `mkChar` (and `mkString`) for creating new `CHARSXP`s and avoid use of `allocString`. A new macro, `CallocCharBuf`, can be used to obtain a temporary char buffer for manipulating character data. This patch was written by Seth Falcon.

- The internal equivalents of `as.complex()`, `as.double()`, `as.integer()` and `as.logical()` used to handle `length - 1` arguments now accept character strings (rather than report that this is "unimplemented").

- Lazy-loading a package is now substantially more efficient (in memory saved and load time).

- Various performance improvements lead to a 45% reduction in the startup time without **methods** (and one-sixth with – **methods** now takes 75% of the startup time of a default session).

- The `[[` subsetting operator now has an argument `exact` that allows programmers to disable partial matching (which will in due course become the default). The default value is `exact = NA` which causes a warning to be issued when partial matching occurs. When `exact = TRUE`, no partial matching will be performed. When `exact = FALSE`, partial matching can occur and no warning will be issued. This patch was written by Seth Falcon.

- Many of the C-level warning/error messages (e.g., from subscripting) have been re-worked to give more detailed information on either the location or the cause of the problem.

- The S3 and S4 `Math` groups have been harmonized. Functions `log1p()`, `expm1()`, `log10()` and `log2()` are members of the S3 group, and `sign()`, `log1p()`, `expm1()`, `log2()`, `cummax()`, `cummin()`, `digamma()`, `trigamma()` and `trunk()` are members of the S4 group. `gammaCody()` is no longer in the S3 group. They are now all primitive.

- The initialization of the random-number stream makes use of the sub-second part of the current time where available.

  Initialization of the 1997 Knuth TAOCP generator is now done in R code, avoiding some C code whose licence status has been questioned.

- The reporting of syntax errors has been made more user-friendly.

methods Package

- Packages using **methods** have to have been installed in R 2.4.0 or later (when various internal representations were changed).

- Internally generic primitives no longer dispatch S4 methods on S3 objects.

- `load()` and restoring a workspace attempt to detect and warn on the loading of pre-2.4.0 S4 objects.

- Making functions primitive changes the semantics of S4 dispatch: these no longer dispatch on classes based on types but do dispatch whenever the function in the base name space is called.

  This applies to `as.complex()`, `as.integer()`, `as.logical()`, `as.numeric()`, `as.raw()`, `expm1()`, `log()`, `log1p()`, `log2()`, `log10()`, `gamma()`, `lgamma()`, `digamma()` and `trigamma()`, as well as the `Math2` and `Summary` groups.

Because all members of the group generics are now primitive, they are all S4 generic and setting an S4 group generic does at last apply to all members and not just those already made S4 generic.

`as.double()` and `as.real()` are identical to `as.numeric()`, and now remain so even if S4 methods are set on any of them. Since `as.numeric` is the traditional name used in S4, currently methods must be exported from a 'NAMESPACE' for `as.numeric` only.

- The S4 generic for `!` has been changed to have signature `(x)` (was `(e1)`) to match the documentation and the S3 generic. `setMethod()` will fix up methods defined for `(e1)`, with a warning.
- The `"structure"` S4 class now has methods that implement the concept of structures as described in the Blue Book—that element-by-element functions and operators leave structure intact unless they change the length. The informal behavior of R for vectors with attributes was inconsistent.
- The `implicitGeneric()` function and relatives have been added to specify how a function in a package should look when methods are defined for it. This will be used to ensure that generic versions of functions in R core are consistent. See `?implicitGeneric`.
- Error messages generated by some of the functions in the methods package provide the name of the generic to provide more contextual information.
- It is now possible to use `setGeneric(useAsDefault = FALSE)` to define a new generic with the name of a primitive function (but having no connection with the primitive).

Deprecated & defunct

- `$` on an atomic vector now gives a warning that it is "invalid". It remains deprecated, but may be removed in R $\geq$ 2.7.0.
- `storage.mode(x) <- "real"` and `storage.mode(x) <- "single"` are defunct: use instead `storage.mode(x) <- "double"` and `mode(x) <- "single"`.
- In package installation, 'SaveImage: yes' is deprecated in favour of 'LazyLoad: yes'.
- `seemsS4Object` (**methods** package) is deprecated in favour of `isS4()`.
- It is planned that `[[exact = TRUE]]` will become the default in R 2.7.0.

Utilities

- `checkS3methods()` (invoked by `R CMD check`) now checks the arguments of methods for primitive members of the S3 group generics.
- `R CMD check` now does a recursive copy on the 'tests' directory.
- `R CMD check` now warns on non-ASCII '.Rd' files without an `\encoding` field, rather than just on ones that are definitely not from an ISO-8859 encoding. This agrees with the long-standing stipulation in "Writing R Extensions", and catches some packages with UTF-8 man pages.
- `R CMD check` now warns on DESCRIPTION files with a non-portable `Encoding` field, or with non-ASCII data and no `Encoding` field.
- `R CMD check` now loads all the `Suggests` and `Enhances` dependencies to reduce warnings about non-visible objects, and also emulates standard functions (such as `shell()`) on alternative R platforms.
- `R CMD check` now (by default) attempts to latex the vignettes rather than just weave and tangle them: this will give a NOTE if there are latex errors.
- `R CMD check` computations no longer ignore Rd `\usage` entries for functions for extracting or replacing parts of an object, so S3 methods should use the appropriate `\method{}` markup.
- `R CMD check` now checks for CR (as well as CRLF) line endings in C/C++/Fortran source files, and for non-LF line endings in 'Makefile[.in]' and 'Makevars[.in]' in the package 'src' directory. `R CMD build` will correct non-LF line endings in source files and in the make files mentioned.
- `Rdconv` now warns about unmatched braces rather than silently omitting sections containing them. (Suggestion by Bill Dunlap, PR#9649)

  `Rdconv` now renders (rather than ignores) `\var{}` inside `\code{}` markup in LaTeXconversion.

  `R CMD Rdconv` gains a '`--encoding`' argument to set the default encoding for conversions.
- The list of CRAN mirrors now has a new (manually maintained) column `"OK"` which flags mirrors that seem to be OK, only those are used

by `chooseCRANmirror()`. The now exported function `getCRANmirrors()` can be used to get all known mirrors or only the ones that are OK.

- `R CMD SHLIB` gains arguments '`--clean`' and '`--preclean`' to clean up intermediate files after and before building.
- `R CMD config` now knows about FC and FCFLAGS (used for F9x compilation).
- `R CMD Rdconv` now does a better job of rendering quotes in titles in HTML, and `\sQuote` and `\dQuote` into text on Windows.

C-level facilities

- New utility function `alloc3DArray` similar to `allocMatrix`.
- The entry point `R_seemsS4Object` in 'Rinternals.h' has not been needed since R 2.4.0 and has been removed. Use `IS_S4_OBJECT` instead.
- Applications embedding R can use `R_getEmbeddingDllInfo()` to obtain `DllInfo` for registering symbols present in the application itself.
- The instructions for making and using standalone `libRmath` have been moved to the R Installation and Administration manual.
- `CHAR()` now returns `(const char *)` since `CHARSXP`s should no longer be modified in place. This change allows compilers to warn or error about improper modification. Thanks to Herve Pages for the suggestion.
- `acopy_string` is a (provisional) new helper function that copies character data and returns a pointer to memory allocated using `R_alloc`. This can be used to create a copy of a string stored in a `CHARSXP` before passing the data on to a function that modifies its arguments.
- `asLogical`, `asInteger`, `asReal` and `asComplex` now accept `STRSXP` and `CHARSXP` arguments, and `asChar` accepts `CHARSXP`.
- New `R_GE_str2col()` exported via 'R_ext/GraphicsEngine.h' for external device developers.
- `doKeybd` and `doMouseevent` are now exported in 'GraphicsDevice.h'.
- `R_alloc` now has first argument of type `size_t` to support 64-bit platforms (e.g., Win64) with a 32-bit `long` type.
- The type of the last two arguments of `getMatrixDimnames` (non-API but mentioned in 'R-exts.texi' and in 'Rinternals.h') has been changed to `const char **` (from `char **`).
- `R_FINITE` now always resolves to the function call `R_finite` in packages (rather than sometimes substituting isfinite). This avoids some issues where R headers are called from C++ code using features tested on the C compiler.
- The advice to include R headers from C++ inside `extern "C"` has been changed. It is nowadays better *not* to wrap the headers, as they include other headers which on some OSes should not be wrapped.
- 'Rinternals.h' no longer includes a substantial set of C headers. All but 'ctype.h' and 'errno.h' are included by 'R.h' which is supposed to be used before 'Rinternals.h'.
- Including C system headers can be avoided by defining `NO_C_HEADERS` before including R headers. This is intended to be used from C++ code, and you will need to include C++ equivalents such as `<cmath>` before the R headers.

Installation

- The `test-Lapack` test is now part of `make check`.
- The `stat` system call is now required, along with `opendir` (which had long been used but not tested for). (`make check` would have failed in earlier versions without these calls.)
- `evince` is now considered as a possible PDF viewer.
- `make install-strip` now also strips the DLLs in the standard packages.
- Perl 5.8.0 (released in July 2002) or later is now required. (R 2.4.0 and later have in fact required 5.6.1 or later.)
- The C function `finite` is no longer used: we expect a C99 compiler which will have `isfinite`. (If that is missing, we test separately for `NaN`, `Inf` and `-Inf`.)
- A script/executable `texi2dvi` is now required on Unix-alikes: it is part of the texinfo distribution.
- Files 'texinfo.tex' and 'txi-en.tex' are no longer supplied in doc/manual (as the latest versions have an incompatible licence). You will need to ensure that your texinfo and/or TeX installations supply them.

- `wcstod` is now required for MBCS support.
- There are some experimental provisions for building on Cygwin.

Package Installation

- The encoding declared in the 'DESCRIPTION' file is now used as the default encoding for '.Rd' files.
- A standard for specifying package license information in the 'DESCRIPTION' `License` field was introduced, see "Writing R Extensions". In addition, files 'LICENSE' or 'LICENCE' in a package top-level source directory are now installed (so putting copies into the 'inst' subdirectory is no longer necessary).
- `install.packages()` on a Unix-alike now updates 'doc/html/packages.html' only if packages are installed to '.Library' (by that exact name).
- `R CMD INSTALL` with option '`--clean`' now runs `R CMD SHLIB` with option '`--clean`' to do the clean up (unless there is a 'src/Makefile'), and this will remove `$(OBJECTS)` (which might have been redefined in 'Makevars').

  `R CMD INSTALL` with '`--preclean`' cleans up the sources after a previous installation (as if that had used '`--clean`') before attempting to install.

  `R CMD INSTALL` will now run `R CMD SHLIB` in the 'src' directory if 'src/Makevars' is present, even if there are no source files with known extensions.
- If there is a file 'src/Makefile', 'src/Makevars' is now ignored (it could be included by 'src/Makefile' if desired), and it is preceded by 'etc/Makeconf' rather than 'R_HOME/share/make/shlib.mk'. Thus the makefiles read are 'R_HOME/etc/Makeconf', 'src/Makefile' in the package and then any personal 'Makevars' files.
- `R CMD SHLIB` used to support the use of `OBJS` in 'Makevars', but this was changed to `OBJECTS` in 2001. The undocumented alternative of `OBJS` has finally been removed.
- `R CMD check` no longer issues a warning about no data sets being present if a lazyload db is found (as determined by the presence of 'Rdata.rdb', 'Rdata.rds', and 'Rdata.rdx' in the 'data' subdirectory).

Bug fixes

- `charmatch()` and `pmatch()` used to accept non-integer values for `nomatch` even though the return value was documented to be integer. Now `nomatch` is coerced to integer (rather than the result being coerced to the type of `nomatch`).
- `match.call()` no longer "works" outside a function unless `definition` is supplied. (Under some circumstances it used to "work", matching itself.)
- The formula methods of boxplot, cdplot, pairs and spineplot now attach **stats** so that `model.frame()` is visible where they evaluate it.
- Date-time objects are no longer regarded as numeric by `is.numeric()`.
- `methods("Math")` did not work if **methods** was not attached.
- `readChar()` read an extra empty item (or more than one) beyond the end of the source; in some conditions it would terminate early when reading an item of length 0.
- Added a promise evaluation stack so interrupted promise evaluations can be restarted.
- `R.version[1:10]` now nicely prints.
- In the **methods** package, prototypes are now inherited for the `.Data` "slot"; i.e., for classes that contain one of the basic data types.
- *data_frame*`[[i, j]]` now works if `i` is character.
- `write.dcf()` no longer writes `NA` fields (PR#9796), and works correctly on empty descriptions.
- `pbeta(x, log.p = TRUE)` now has improved accuracy in many cases, and so have functions depending on it such as `pt()`, `pf()` and `pbinom()`.
- `mle()` had problems with the L-BFGS-B in the no-parameter case and consequentially also when profiling 1-parameter models (fix thanks to Ben Bolker).
- Two bugs fixed in methods that in involve the `...` argument in the generic function: previously failed to catch methods that just dropped the `...`; and use of `callGeneric()` with no arguments failed in some circumstances when `...` was a formal argument.
- `sequence()` now behaves more reasonably, although not back-compatibly for zero or negative input.

- `nls()` now allows more peculiar but reasonable ways of being called, e.g., with `data = list(`*uneven_lengths*`)` or a model without variables.
- `match.arg()` was not behaving as documented when `several.ok = TRUE` (PR#9859), gave spurious warnings when `arg` had the wrong length and was incorrectly documented (exact matches are returned even when there is more than one partial match).
- The `data.frame` method for `split<-()` was broken.
- The test for `-D__NO_MATH_INLINES` was badly broken and returned true on all non-glibc platforms and false on all glibc ones (whether they were broken or not).
- LF was missing after the last prompt when '`--quiet`' was used without '`--slave`'. Use '`--slave`' when no final LF is desired.
- Fixed bug in initialisation code in **grid** package for determining the boundaries of shapes. Problem reported by Hadley Wickham; symptom was error message: '`Polygon edge not found`'.
- `str()` is no longer slow for large `POSIXct` objects. Its output is also slightly more compact for such objects; implementation via new optional argument `give.head`.
- `strsplit(*, fixed = TRUE)`, potentially `iconv()` and internal string formatting is now faster for large strings, thanks to report PR#9902 by John Brzustowski.
- `de.restore()` gave a spurious warning for matrices (Ben Bolker)
- `plot(fn, xlim = c(a, b))` would not set `from` and `to` properly when plotting a function. The argument lists to `curve()` and `plot.function()` have been modified slightly as part of the fix.
- `julian()` was documented to work with `POSIXt` origins, but did not work with `POSIXlt` ones. (PR#9908)
- Dataset `HairEyeColor` has been corrected to agree with Friendly (2000): the change involves the breakdown of the Brown hair / Brown eye cell by Sex, and only totals over Sex are given in the original source.
- Trailing spaces are now consistently stripped from `\alias{}` entries in '`.Rd`' files, and this is now documented. (PR#9915)
- `.find.packages()`, `packageDescription()` and `sessionInfo()` assumed that attached environments named `"package:foo"` were package environments, although misguided users could use such a name in `attach()`.
- `spline()` and `splinefun()` with `method = "periodic"` could return incorrect results when `length(x)` was 2 or 3.
- `getS3method()` could fail if the method name contained a regexp metacharacter such as `"+"`.
- `help(`*a_character_vector*`)` now uses the name and not the value of the vector unless it has length exactly one, so e.g. `help(letters)` now gives help on `letters`. (Related to PR#9927)
- Ranges in `chartr()` now work better in CJK locales, thanks to Ei-ji Nakama.

Changes on CRAN

by Kurt Hornik

New contributed packages

ADaCGH Analysis and plotting of array CGH data. Allows usage of Circular Binary Segmentation, wavelet-based smoothing, ACE method (CGH Explorer), HMM, BioHMM, GLAD, CGHseg, and Price's modification of Smith & Waterman's algorithm. Most computations are parallelized. Figures are imagemaps with links to IDClight (`http://idclight.bioinfo.cnio.es`). By Ramon Diaz-Uriarte and Oscar M. Rueda. Wavelet-based aCGH smoothing code from Li Hsu and Douglas Grove, imagemap code from Barry Rowlingson.

AIS Tools to look at the data ("Ad Inidicia Spectata"). By Micah Altman.

AcceptanceSampling Creation and evaluation of Acceptance Sampling Plans. Plans can be single, double or multiple sampling plans. By Andreas Kiermeier.

Amelia Amelia II: A Program for Missing Data. Amelia II "multiply imputes" missing data in a single cross-section (such as a survey), from a time series (like variables collected for each