Changes to
The RAND MH Message Handling System:
UCI version MH 6.8

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ABSTRACT

This document describes the changes to the UCI version of the RAND MH system from MH 6.6 to this release of MH 6.8. This document is meant to supplement, not supersede, the standard MH User's manual and MH Administrator's manual.

Comments concerning this documentation should be addressed to the mailbox **Bug–MH@ICS.UCI.EDU**, or **ucbvax!ucivax!bug-mh**.

ACKNOWLEDGEMENTS

The *MH* system described herein is based on the original RAND *MH* system. It has been extensively developed (perhaps too much so) by Marshall T. Rose and John L. Romine at the University of California, Irvine. Einar A. Stefferud, Jerry N. Sweet, and Terry P. Domae provided numerous suggestions to improve the UCI version of *MH*.

Of course, a large number of people have helped *MH* along. The list of ''*MH* immortals'' is too long to list here. For this release, numerous *MH–Workers* sent in fixes and other changes. A handful of courageous *MH–Workers* volunteered to beta-test these changes; their help is particularly appreciated.

DISCLAIMER

The Regents of the University of California wish to make it known that:

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CONVENTIONS

In this document, certain formatting conventions are adhered to:

The names of UNIX commands, such as *comp* are presented in *italics*.

Arguments to programs, such as 'msgs' and '–nobell' are delimited by single-quotes.

Text that should be typed exactly as-is, such as command lines (e.g., ''folder –pack''), are delimited by double-quotes.

UNIX pathnames and envariables, such as **/usr/uci** and **$SIGNATURE**, are presented in **bold font**.

CHANGES FOR MH 6.8

This is the current released version of *MH* as of December 14, 1992. This release includes a number of bug fixes and internal changes to make the code more portable. Two new authentication methods are provided for the POP, and support for SVR4 shared libraries is complete.

The major user-visible change in this release is the incorporation of support for multi-media mail as specified by the Multi-purpose Internet Mail Extensions (**MIME**) RFC 1341. This allows you to include things like audio, graphics, and the like, in your mail messages. A new command, *mhn*, has been provided to support **MIME** and a detailed man page is provided in *mhn* (1).

Documentation

The documentation has some general improvements, and the **READ-ME** document has been re-organized to help *MH* administrators find the appropriate configuration options for their system. The **Makefile**s in the **papers/** hierarchy have been changed to invoke *TeX* as ‘‘tex’’ (instead of ‘‘tex82’’).

The following new man pages are also available:

mhn (1) *mhn* helps the user process multi-media mail.

mhparam (1) *mhparam* lets the user extract information from the *MH* profile.

popauth (8) the APOP database administration program (see below).

popi (1) the POP initiator (see below).

slocal (1) fully documents *slocal*. The *mhook*(1) man page now documents only the *MH* receive-mail hooks.

Internal Changes

The *MH* source code is in the process of being cleaned up to make pedantic ANSI C compilers happy. Occurrences of ‘‘NULL’’ have been replaced by ‘‘0’’ where appropriate. Extra tokens after ‘‘#else’’ and ‘‘#endif’’ have been put inside comments (this is still in progress). The code should now compile cleanly on many more systems, specifically, more variants of SVR4.

The version of **tws/dtimep.c** which was included in MH 6.7.2 was incompatible with the *lex* library on some systems, and has been removed.

A bug in the handling of blind lists inside alias files has been fixed.

Post Office Protocol

There were three new options added to the POP.

APOP This option indicates that the POP daemon will support the non-standard **APOP** command which provides a challenge-based authentication system using the **MD5** message digest algorithm.

This option also causes the *popauth* program to be installed, which allows the administrator to manipulate the **APOP** authorization database.

KPOP Support for KERBEROS with POP. This code builds *popd*, *inc* and *msgchk* to support only the ‘‘kpop’’ protocol. This code is still expiremental, but is available for those sites wishing to test it.

MPOP This option indicates that the POP daemon will support the non-standard **XTND SCAN** command which provides performance enhancements when using the POP over low-speed connections.

This option also causes an interactive POP client program, *popi*, to be compiled and installed. A man page for the *popi* program is also provided. This option requires the configuration to have ‘‘bboards: pop’’.

The APOP and MPOP non-standard POP facilities are documented in *The Internet Message* (ISBN 0–13–092941–7), a book by Marshall T. Rose. For more details, see **support/pop/pop-more.txt** and the *Administrator’s Guide*. The APOP option peacefully co-exists with the standard POP, KPOP completely replaces the standard POP, and MPOP requires ‘‘bboards: pop’’.

File Locking

The file locking code has been cleaned up to support three kinds of kernel-level file locking. As appropriate for your system, include the LOCKF, FCNTL or FLOCK option. For more details, see *mh-tailor* (5).

Configuration Directives

A number of new configuration directives have been added or changed. The full details are given in the **READ-ME**.

cp:	The command used to install new files if not ‘‘cp’’.
ln:	The command used to link files together in the source tree if not ‘‘ln’’.
mts:	Full support for ZMAILER has been added.
popdir:	The directory where *popd* will be installed if not **/usr/etc**.
regtest:	Set to ‘‘on’’ to prevent the hostname and compile date from being included in *MH* binaries.
sharedlib:	You may now specify ‘‘sun4’’ or ‘‘sys5’’ (for SVR4) shared libraries.
signal:	Specifies the base type of the function returned by *signal* (). This was previously defined with ‘‘options TYPESIG’’.

Several ‘-D’ options to *cc* have been added or changed:

APOP	Authenticated POP (see above).
AUX	Support for A/UX systems.
DBMPWD	The DBM option has been renamed DBMPWD.
HESIOD	Support for the HESIOD name server.
KPOP	KERBEROS POP (see above).
LOCALE	Support for local characters sets; uses the *setlocal* () function.
MAILGROUP	Makes *inc* set-group-id. You may need this option if your **/usr/spool/mail** is not world-writeable.
MIME	Multi-media mail.
MPOP	Mobile POP (see above).
MSGID	Enables *slocal* to detect and surpress duplicate messages.
OSF1	Support for DEC OSF1 systems. May be incomplete.
RENAME	Include this option if your system has a *rename* () system call.
SVR4	Support for System 5 Release 4 or newer systems.
TYPESIG	This option has been dropped. See ‘signal’ above.
UNISTD	Include this option if your system has the include file **<unistd.h>**.
VSPRINTF	Include this option if your system has the *vsprintf* () library routine; otherwise, *_doprnt* () will be used.
YEARMOD	Forces the *mh-format* ‘year’ function to return 2-digit values. Use this option during a brief transition period if you have local *mh-format* files which need to be converted to support 4-digit years.

FUNCTIONAL CHANGES

In addition to the configuration changes mentioned above, a number of functional changes have been made to the system. Many programs have new features added and a few new programs have are provided. Each command’s manual page gives complete information about the its operation. Here is a short summary of the changes.

MH Sequences

A larger number of user-defined sequences are available. Previously, this number had been 10. On 32-bit systems, 26 user-defined sequences are available.

Profile Components

MH programs will now complain if the **.mh_profile** does not end in a newline. Also, one enhancement and one new profile component are provided:

Aliasfile:	Multiple filenames may now be given.
Inbox:	New; the default folder (for *inc*, etc.) if not ‘‘inbox’’.

Format Strings

A few minor bugs were fixed in format string handling, and a few new features were added. See *mh-format* (5) for complete details.

Addresses	An attempt is made to decipher X.400 RFC 987-style addresses.
Comments	Comments may be added to *mh-format* files; a comment begins with the 2-character sequence ‘‘%;’’, and ends with an un-escaped newline.
%(modulo n)	The ‘modulo’ function escape has been added.
%(year{date})	The date parser has been enhanced to understand more illegal date formats; ‘year’ now returns a 4-digit number.

User Interface Programs

A number of *MH* commands have minor changes:

ali	The output with ‘–user –list’ was changed to match the output with ‘–nouser –list’.
burst	Will no longer drop the last message of a digest.
inc	Accepts the ‘–apop’ switch for authenticated POP (see above); will attempt to detect write errors (e.g., no space left on device) when incorporating mail; no longer replaces newline characters with NULLs.
folder	The ‘–noprint’ option was broken and has been dropped.
forw	Supports ‘–mime’ to use MIME-style multi-part messages.
mhl	Will no longer put an extra space at the end of the ‘%{text}’ in a formatfield.
mhn	New; manipulates multi-media (MIME) messages; a detailed man page is provided.
mhparam	New; reads the *MH* profile (and context) and writes the values of the specified components on the standard output; useful in programmatic constructs.
msgchk	Supports ‘–apop’ (see above).
packmbox	New; packs an *MH* folder into a UUCP-style mailbox.
popi	New; a client-side POP initiator; available only if you built *MH* with the MPOP option (see above).
refile	A bug where the ‘rmmproc’ did not remove all specified message files has been fixed.
scan	The ‘–file’ option is fully supported and will no longer complain about empty folders.
send	Supports ‘–mime’ and ‘–split’ to split large messages into multiple partial messages using MIME.

Support Programs

fmtdump	Can now read a format file, or a format string given on the command line.
popauth	New; manages the APOP authorization database (see above).

sendmail The *sendmail* replacement will be installed only if your ‘mts’ setting uses the ‘/smtp’ option.

slocal A new man page for *slocal* is available; the new ‘mbox’ action is available to write a file in *packf* format; a bug where extra ‘>’ characters were written to MMDF-style maildrops has been fixed; if compiled with the MSGID option, can detect and suppress reception of duplicate messages.

viamail New; bundles a directory (like *shar*) and sends it through multi-media mail.

CHANGES FOR MH 6.7.2

The MH.6.7.2 patch release is a maintenance release. This is the current released version of *MH* as of February 1, 1992.

This release now supports the NCR Tower running SYS5R4. The WP changes installed in MH.6.7.0 have been removed.

Shared Libraries

Support for SYS 5 shared libraries is in progress.

Support for Sun OS 4.0 shared libraries had been improved. The *MH* library has been modified to move initialized data into a data definition file. The shared library will now consist of a **libmh.so** and **libmh.sa** file. The shared library version number will no longer track the *MH* patch release number, and its numbering begins with version '1.1' with this release.

Replacement SendMail

Since many standard system programs expect to post mail by invoking **/usr/lib/sendmail**, a minimal replacement *SendMail* is provided in this release. This replacement is meant to be installed on (e.g., diskless) client workstations which post mail using SMTP, and do not run a message transport system. It will call *post* to post mail; be sure you have configured *MH* with the '/smtp' mts option. This sendmail replacement is installed in your *MH* etc directory, and you should link **/usr/lib/sendmail** to it.

Format Strings

A manual page for the *fmtdump* format string disassembler is supplied, and some new format functions were added:

folder — In *scan*, this component escape contains the name of the current folder. It is not defined for other *MH* commands.

getenv — This function escape returns the value of an environment variable.

There will be some additional changes in these routines in the next patch release.

Other Bug Fixes and Enhancements

In addition to some other minor enhancements, some bugs were fixed which in general were not user–visible:

Blind lists — Users may now specify RFC822 address groups in their alias files. These groups are implemented by *MH* as blind lists.

date parsing — A number of sites have brain-damaged versions of **lex**. *MH* will now come with the date parser already run through lex.

mark — A bug dealing with *mark* and the sequence named 'cur' is fixed. This was previously a problem for mh-e users.

MH.doc — The *MH* nroff version of the manual no longer contains teletype escape sequences.

scan — Can now handle headers as long as 512 bytes.

Signals — *MH* programs will no longer catch the **HUP** and **TERM** signals while waiting for a subprocess. This was causing hung processes when your terminal line was was dropped unexpectedly.

Signature — If your signature is not defined, *MH* will use the value of the gecos field of your **/etc/passwd** entry as your signature.

version.sh — A bug in the **awk** script in **config/version.sh** was fixed.

CHANGES FOR MH 6.7.1a

The MH.6.7.1a patch was made available on January 25, 1991 for limited distribution only. (This release had some known bugs, and so was not widely distributed.) This release incorporates several new features of particular note to users of sequences and format strings, as well as some general documentation improvements. There are a few minor enhancements and internal bug fixes also. Complete documentation of these changes is given in the individual manual pages, and the **READ-ME** file.

Message Sequences

A new manual page, *mh–sequence* (5), has been added. This manual page attempts to completely document the syntax and semantics of *MH* message sequence specifications.

A powerful new feature is the ability to specify message ranges with user-defined sequences. The specification ‘‘name:n’’ may be used, and it designates up to the first ‘n’ messages (or last ‘n’ messages for ‘-n’) which are elements of the user-defined sequence ‘name’.

The message specifications ‘‘name:next’’ and ‘‘name:prev’’ may also be used, and they designate the next or previous message (relative to the current message) which is an element of the user-defined sequence ‘name’. The specifications ‘‘name:first’’ and ‘‘name:last’’ are equivalent to ‘‘name:1’’ and ‘‘name:–1’’, respectively. The specification ‘‘name:cur’’ is not allowed (use just ‘‘cur’’ instead).

These specifications allow the user to step through a sequence with a command like ‘‘show name:next’’.

Format Strings

MH format strings now support an if-then-elseif-else clause (the ‘elseif’ is new). This will make format strings with multi-case conditions somewhat less complex.

A new format function ‘addr’ had been added. This function takes an address header name as its argument, and returns a rendering of the address contained in that header as ‘‘user@host’’ or ‘‘host!user’’.

Format widths now may be specified as a negative number. This causes the output to be right-justified within the format width.

Other Changes

Along with a few minor enhancements, some bugs were fixed which in general were not user-visible:

fmtdump This new program produces an pseudo-language representation of an *MH* format file, vaguely reminiscent of assembly language. While this output format is not explicitly documented, it can still be useful when debugging *MH* format files.

refile Now takes a ‘–[no]rmmproc’ switch. This makes it easier to avoid loops when your ‘‘rmmproc’’ calls *refile*.

slocal A problem with the UUCP-style mailboxes, the ‘RPATHS’ configuration option, and the ‘‘Return-Path:’’ header was fixed.

sortm Will ensure that no messages are lost if it is interrupted.

whatnow Will now tell you where it is leaving the draft, when interrupted in the initial edit. Previously the draft was simply unlinked.

Compilation Options

LOCKF This option causes *MH* to use the **lockf()** system call for locking (if available), instead of **flock()**.

CHANGES FOR MH 6.7.1

The MH.6.7.1 patch release is a maintenance release, and as such, provides few changes from the previous release. This is the current released version of *MH* as of December 14, 1990.

User-Visible Changes

The major change in this release is to the POP daemon (popd). In *MH* 6.7, it was changed to be able to read both UUCP and MMDF-style mailboxes. This did not work as reported. The code has now been changed to parse MMDF-style mailboxes if you are configuring MH to run with MMDF as your message transport system. Otherwise, UUCP-style mailboxes are expected.

Since there are number of client programs available for only the POP2 protocol instead of POP3, popd has been updated to support both protocols. This is a major win. If you are compiling with POP turned on, add the ‘POP2’ option to your *MH* config file, and the POP daemon will respond to POP2 or POP3 commands. If you’re using POP, there’s no reason not to include this option; it does not affect the existing support for POP3.

Internal Changes

Some bugs were fixed which in general were not user-visible:

context	Errors when writing out sequences are detected correctly.
inc	No longer inserts extra blank lines into messages.
mh-format	A nil pointer bug in the address parser was fixed.
repl, etc.	The malloc/free problem has been fixed.
rmf	A spelling error in the ‘–nointeractive’ switch has been corrected.
rcvtty	Will not print the message size if not available (i.e., zero).
send/post	Illegal signatures (those containing unquoted "."s) will be quoted.

GENERAL CHANGES FOR MH 6.7.0

The author is pleased to announce that there are very few user–visible changes to *MH* 6.7 from the previous *MH* 6.6 distribution. The majority of development was in the form of bug fixes and slight enhancements. In addition, this release is slightly faster than the previous release. With a few minor exceptions, it is backward–compatible with the previous release. *MH* 6.7.0 is the current released version of *MH* as of April 12, 1990.

The changes were made mainly to generalize the source code to be compatible with a larger range of systems and compilers. There were many small changes to add declarations for ANSI C compliance. The System 5 support has been brought up to SYS5 R3, and there is support for Sun OS 4.0.

User–Visible Changes

Here a quick summary of the changes that were made which are not backward–compatible with the previous release of *MH*:

repl The '–format' and '–noformat' switches have not been functional since *MH* 5, and have been removed. Any users who have these switches in their **.mh_profile**, will have to remove them.

sortm Previously, in most cases *sortm* would fill–in any gaps in the numbering of a folder, by renumbering the messages starting with '1'. This will no longer occur; for this behavior, use ''folder –pack''.

Using Aliases

A new profile entry 'Aliasfile:' has been added. The *ali*, *send*, and *whom* programs will look for this profile entry and treat it as they would an argument to '–alias'. This should make it easier for novice *MH* users to begin using aliases.

Reading Network News & BBoards

The UCI BBoards facility can read local BBoards, and if compiled with the 'bboards: pop' and 'pop: on' options, can also read remote BBoards using the Post Office Protocol (POP ver. 3). With this release, *MH* can instead be compiled to read the Network News (i.e., USENET) using the Network News Transfer Protocol (NNTP).

This capability is enabled by compiling *MH* with the 'bboards: nntp' and 'pop: on' options. Unfortunately, reading remote BBoards via the POP and reading the Network News via the NNTP are mutually exclusive options.

To support the NNTP, a new module, **uip/pshsbr.c**, is compiled and loaded into *bbc* and *msh* instead of **uip/popsbr.c**. The default BBoard is changed from ''system'' to ''general'' for the NNTP.

When reading BBoards, *bbc* will first look for local BBoards, and then contact the NNTP server to read the Network News. The location of the NNTP server should be specified with the 'nntphost:' entry in the **mtstailor** file (see the *MH* Administrator's Guide for details), or may be specified on the command line with the '–host' switch.

Format Strings

The manual page *mh–format* (5) has been rewritten to give a better explanation of how to write format strings, and how they are interpreted by *MH*. A line–by–line description of the default *repl* form file (**replcomps**) is now included in that manual page.

Some new format functions were added, and others were augmented:

trim	Strips any leading and trailing white–space from the current string value.
date2local	Will coerce the date to the local timezone.
date2gmt	Will coerce the date to GMT.
divide	Divides the current numeric value by its argument. This could be useful for building *scan* format strings which print large message sizes in ‘‘Kb’’ or ‘‘Mb’’.
friendly	If the address field cannot be parsed, this function will return the text of the address header, instead of a null string.
szone	A flag indicating whether the timezone was explicit in the date string.

PROGRAM CHANGES

In addition to the general changes mentioned above, many programs have specific new features added, either by new switches or by expanded functionality. Each command’s manual page gives complete information about its new options. Here is a short summary.

User Interface Programs

anno — Accepts a ‘–nodate’ switch which inhibits the date annotation, leaving only the body annotation.

folder — When invoked with the ‘–pack’ switch and the new ‘–verbose’ switch, *folder* will give information about the actions taken to renumber the folder.

On most systems, *folder* can now create any non–existing parent folders of a new sub–folder.

forw — When making digests, *forw* will put the issue and volume numbers in addition to the digest list name, in the digest trailer.

inc — Detects NFS write failures, and will not zero your maildrop in that event.

msh — Supports a variant of the new *sortm*.

prompter — Considers a period on a line by itself to signify end–of–file when the ‘–doteof’ switch is specified.

repl — The ‘–[no]format’ switches have not been used since *MH* 5 and have been deleted. *repl* will now find filter files in the *MH* library area.

scan — With the ‘–file msgbox’ switch, *scan* can list a *packf*’d–format file directly (without using *msh*).

Lists messages in reverse order with the ‘–reverse’ switch. This should be considered a bug.

sortm — Now has the options: ‘–textfield field’, ‘–notextfield’, ‘–limit days’, and ‘–nolimit’.

With these options, *sortm* can be instructed to sort a folder based on the contents of an arbitrary header such as ‘‘subject’’.

sortm minimizes renaming messages, and will no longer arbitrarily pack folders; for this behavior, use ‘‘folder –pack’’.

whatnow — Deletes the draft by renaming it with leading comma, instead of unlinking it.

***MH* Support Programs**

The following support programs also have changes or enhancements:

mhl — Will now accept a format string on any component, not just on addresses and dates.

popd — Will use *shadow* passwords if compiled with the **SHADOW** option. It can now also read UUCP–style maildrops directly.

rcvtty — If given no arguments, *rcvtty* will produce a **scan** listing as specified by a format string or file; a default format string is used if one is not specified.

Before the listing is written to the users terminal, the terminal’s bell is rung and a newline is output. The ‘–nobell’ and the ‘–nonewline’ options inhibit these functions.

rcvtty will obey terminal write notification set by *mesg*. With the '–biff' switch, *rcvtty* will also obey the mail notification status set by *biff*.

On **BSD43** systems, as with *write*, *rcvtty* will be installed set–group–id to the group ''tty''.

slocal Understands UUCP–style ''From '' lines and will write output files using this format if appropriate. Before invoking a delivery program, *slocal* will strip such lines unless compiled with the **RPATHS** option, in which case it will will convert such lines into ''Return–Path:'' headers.

slocal has a new result code ''N'', for use in **.maildelivery** files. With this result code, *slocal* will perform the action only if the message has not been delivered and the previous action succeeded. This allows for performing an action only if multiple conditions are true.

DOCUMENTATION

Several of the older *MH* papers have been difficult to format because they depended on an older version of PhDTeX which was not supplied. These papers have been updated, and some TeX library files are supplied in **papers/doclib/**, so that these papers may be generated on any system with TeX.

Many of the manual pages have been revised to include documentation of new command options, and some have been expanded to give more detail. All are now slightly reformatted at installation time to make them more compatible with programs like *makewhatis*.

MH ADMINISTRATION

This section describes changes in configuring, compiling and installing *MH* 6.7 and should not be of interest to casual *MH* users. The **READ–ME** file has been considerably revised and expanded to give more detail about the configuration and compilation options which have been included in this release. Some compilation options have been removed, and many new options have been added.

All *MH* **Makefile**s have been updated to work around some incompatibilities introduced in newer versions of *make*. *MH* programs will no longer be installed with the sticky–bit turned on.

Reading this section not a substitute for carefully reading the **READ–ME** file before attempting to compile *MH*

Bug Fixes

Some bugs were fixed which in general were not user–visible:

address parser	Fixed to allow use of the ''AT'' domain, and some minor bugs were fixed pertaining to address groups.
date parser	Improved to accept more forms of illegal dates. Military timezones were removed.
dynamic memory	Many problems with corruption of the dynamic memory pool have been fixed.
locking	Will open files for write, if necessary to enable locking.
nil pointers	All reported nil pointer problems have been fixed.
replcomps	The ''In–Reply–To:'' header had quotes added around the date field to comply with RFC822.

White Pages

If *MH* is compiled with the **WP** option, *send* recognizes an address between ''<<'' and ''>>'' characters such as:

To: << rose –org psi >>

to be a name meaningful to a whitepages service. In order to expand the name, *send* must be invoked interactively (i.e., not from *push*). For each name, *send* will invoke a command called *fred* in a special mode asking to expand the name.

To get a copy of the white pages service, contact wpp–manager@psi.com.

Configuration Options

Some configuration options have been added or changed:

cc	To specify an alternate C compiler.
ccoptions	Defaults to '–O'.
bboards	May now be defined as ''on'', ''off'', ''pop'', or ''nntp''.
bbdelivery	Determines whether the bboard delivery agent and library files should be installed.
lex	To specify an alternate version of *lex*.
mailgroup	If defined, *inc* will be made set–group–id to this group.
sharedlib	For **SUN40** systems; if ''on'', makes **libmh.a** into a shared library.
slibdir	The directory where the above shared library should be installed.
sprintf	Set this to ''int'' if that's what your *sprintf* (3) library routine returns.

Compilation Options

For different configurations, several '–D' options to *cc* have been added or changed:

BERK	This disables the address and date parsing routines. If you want to do much with *mh–format* (5), don't enable this.
BSD43	Will make *rcvtty* set–group–id to the group ''tty''.
DBM	For sites with a dbm–style password file (such as with Yellow Pages), *MH* will not read the entire passwd file into a cache. At one site that runs YP on a large passwd file, using this showed a 6:1 performance improvement.
NETWORK	This option has been deleted. See **SOCKETS**.
NOIOCTLH	Tells *MH* not to include the file **sys/ioctl.h**. Use this if this file is not present on your system.
NTOHLSWAP	On systems with TCP/IP networking, *msh* will try to use the **ntohl()** macro from the file **netinet/in.h** to byte–swap the binary map files it writes.
SENDMAILBUG	Some versions of *sendmail* return a **451** (failure) reply code when they don't mean to indicate failure. This option considers that code to be equivalent to **250** (OK).
SHADOW	Causes *popd* to read the file **/etc/shadow** for encrypted passwords instead of **/etc/passwd**. Use this if you have a shadow password file (such as on newer versions of SYSTEM 5).
SOCKETS	Enable this if you are on a non–BSD system with a socket interface for TCP/IP networking compatible with 4.2BSD UNIX.
SUN40	Use on Suns running Sun OS 4.0 and later.
SYS5	This option has been updated to refer to SYS5 R3 and later systems.
SYS5DIR	Use this if your system uses ''struct dirent'' instead of ''struct direct''. This should be true for systems based on SYS5 R3 and later.
TYPESIG	Defines the base type for the *signal* system call. This defaults to ''int'', but should be defined as ''void'' if appropriate for your system.
WP	Enables support for the White Pages service.

Installation

MH will now explicitly set the protection mode on every file it installs.

Previously any existing file installed by *MH* would be backed up into the source tree, and then overwritten. Now, a few system–dependent files will not be overwritten, and your changes will have to be merged in by hand. See the **READ–ME** file for more details.