The Hybrid Music System for the BBC Microcomputer

USER GUIDE

Contents

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1 Introduction

The Music 5000 Synthesiser, Music 4000 Keyboard and AMPLE operating software are the major components of the Hybrid Music System for the BBC Microcomputer, the most powerful, versatile and easy-to-use low-cost computer music system available today.

To the facilities of the Music 5000, the Music 4000 adds:

* polyphonic keyboard performance with an enormous range of pre- and user-defined digital instrument sounds and special effects

* multi-track keyboard recording, with complete arrangement and editing facilities, including staff and AMPLE music notation

* easy-to-use and versatile 'step-time' music input in staff or AMPLE music notation, with full display and immediate editing

* keyboard performance integrated into all operations, including instrument editing and mixing.

This guide is designed for both completely new users approaching the system from the keyboard performance side, and existing users who have some experience of AMPLE and the Music 5000.

New users should start by reading chapters 1 and 2 of the Music 5000 User Guide. As you progress through this guide, you will find direct references to the Music 5000 User Guide which you can either skip over, or follow up for detailed information on the subject. You can also use the Music 5000 User Guide index to locate specific subjects. Remember that the Music 5000 User Guide contains a Glossary of Terms that you may find useful.

Experienced users will be able to skip over much of the information on general operating detail, since this follows the established AMPLE pattern.

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2 Keyboard playing

before you begin

You should have a system set up as described in the Music 5000 and Music 4000 Installation Guides, including a Studio 5000-4 system disc created from the issue disc supplied with your Music 4000 Keyboard. You should also have read the introduction to this Guide. Turn on your computer system, Music 5000 and amplifier, and continue.

starting the system

Put the Studio 5000-4 system disc in drive 0 (usually the top drive) and press <u>SHIFT BREAK.</u> After the system has loaded, you will see the Studio 5000 Main Menu.

keyboard playing

A set of general keyboard instrument sounds are supplied on the system disc, ready for you to play. To load them, press f9, then when the 'Music 4000 Example Files' menu appears, press <u>RETURN</u> to select the first option, 'Keyboard - general sounds'.

After a moment, the keyboard panel will appear, with a flashing block cursor on 'Simpleins', the name of the instrument currently in use. If you now play on the keyboard, you will hear the plain, pure sound of 'Simpleins'.

The footswitch acts like a piano sustain pedal. While the footswitch is pressed, the sound of each key will be sustained (held-on) after the key is released, until the footswitch is released.

selecting instruments

Tap the SHIFT key to display the names of all currently-available instruments. Some names are instantly recognisable, such as 'honkytonk', some are suggestive but not obvious, such as 'arcopiano', and others are descriptive or abstract, such as 'starbrite'.

To select an instrument, you use the <u>SHIFT</u> up/down/left/right <u>keys.</u> Press and hold down the <u>SHIFT</u> key - the flashing block cursor appears on 'Simpleins' (the current instrument) near the bottom of the list. While holding <u>SHIFT</u>, use the <u>up</u>, <u>down</u>, <u>left</u> and <u>right</u> keys to move the

Keyboard playing

cursor to the name of the instrument you want (you can do this very
easily using your right thumb on the right SHIFT key). When you
release SHIFT, the new name appears in the panel area at the top of
the screen, and the instrument is ready to play on the keyboard.

Some instruments have a sound that decays away to silence while the key
is held down. These include 'percussive' type instruments whose physical
counterparts are played with mallets: 'Vibglock' for example. You can
either play these in normal keyboard style, or with the footswitch held
down to reproduce the natural effect of successive notes overlapping. In
this mode, short keypresses act like mallet hits, and a momentary lift
of the footswitch acts as a 'damper', silencing all notes.

more instruments

The special instrument set contains more complex sounds, many of which
are sound effects rather than conventional musical sounds. To load it,
press TAB to enter command mode (a '%' prompt appears in place of the
instrument list), and again press f9 to call up the jukebox. Press the
down key to move the purple menu cursor down to 'Keyboard -special
sounds', and then press RETURN to select this option. When loading has
completed, you can select instruments just as before.

Most instruments use two synthesiser channels per voice, so up to eight
voices can be played simultaneously (the synthesiser has a total of
sixteen channels). More complex instruments use four or more channels
per voice, so the number of voices is reduced to four or less, and a few
use all sixteen channels together for a very powerful single-voice
sound.

If an instrument uses more than the standard two channels, the number is
shown at the end of its name, and when it's in use, the top line of the
keyboard panel shows the number of voices available. For example, '
zizzysyn8' uses eight channels and provides two voices.

Some instruments have fixed pitch (for example, Cymbal), and so sound
the same on all keys.

keyboard effects

The lower part of the keyboard panel contains controls for the six
preset keyboard effects. Each effect modifies the operation of the
keyboard in some way, according to the value of its number or ON/OFF
control. Initially, they are all set for normal operation.

You can think of the keyboard panel as a control panel with physical
knobs and switches. The flashing block cursor is your 'hand' - you

move it to the control you want to adjust by pressing the cursor keys. When you are at a control, you 'grip' it by pressing and holding SHIFT, and use the cursor keys to move it up or down.

So, to change the TRANS setting, you would press <u>down</u> to move the cursor to it from the instrument name, and then use <u>SHIFT up</u> and <u>SHIFT down</u> to adjust its value. <u>SHIFT left</u> and <u>SHIFT right</u> adjust in steps of ten, for more rapid changes. To change an ON/OFF control such as Expand, you use <u>SHIFT up</u> for ON, and <u>SHIFT down</u> for OFF.

TRANS is the transpose control. It moves the pitch of the keyboard up or down in semitone units, from a normal value of 0. Here are some example settings:

1	sound a semitone higher, for example, transpose from the key of C to the key of C sharp.
12	play an octave higher
-24	play two octaves lower

Scale sets the overall pitch scaling, letting you expand or compress the pitch span of the keyboard for exotic effects. The control number is the interval between adjacent keys in sixteenth-semitone units, so the initial value of 16 gives the normal chromatic musical interval. Try the following settings:

40	ten-octave span for sound effects
32	whole tone scale
8	quarter tone scale
1	thirty-second-tone scale. Try playing groups of adjacent keys as chords, on a pure instrument like Vibglock.
0	all keys play the same pitch
-16	reversed pitches (inverted intervals). Try playing a familiar tune or two-hand keyboard piece!

Reduce reduces the volume of successive voices by the amount set. The initial value of 0 leaves all voices at the same volume. This is mainly intended for use with Expand, as described below.

Spread positions the voices in the stereo field. Its two numbers are:

left number	position of first voice: -3 (left) to 3 (right)
right number	offset of each successive voice, for example, 1 gives one to the right, and -1 gives one to the left. Positions are reflected back at the limits of -3 and 3. The range is -6 to 6.

The initial setting of '0 0' puts all voices in the centre. A wide range of stereo effects is available, including:

-3 0 all voices full left

Keyboard playing

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-3  1  voices spread from left to right
-3  2  voices spread from left to right and back again
-3  6  voices alternating right and left
 0  3  voices positioned centre, right, center, left etc.
 0  4  arbitrary spread
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Expand is a powerful mode that transforms each keypress into a
programmable pitch, arpeggio, chord, sequence or echo pattern, using
the key's pitch and duration. To engage expand mode, you set the
ON/OFF control to ON. To program the pattern, you:

```
* press and hold the footswitch
* play up to eight notes, either in sequence or as a chord
* release the footswitch
```

If you play a sequence (that is, single notes only) its replay speed
is determined by the time interval of the last two presses.

Now when you press a key, the pattern plays, transposed from middle C
to the pitch of the key, with each note taking the duration of the
keypress. Here are some of the effects available, with the type of
pattern required for each:

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effect                  pattern

transpose from mid C    a single keypress, at the new key note
echo                    repeated taps on middle C, one for each echo
transposed chord        chord, played in key of C
compound timbre         chord of harmonic pitches, e.g. octaves
                         across the keyboard, or octave plus fifth
arpeggio                arpeggio sequence
tune                    tune sequence, using short keypresses on play
complex texture         widely-scattered pitch sequence
normal                  none - just tap the footswitch
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You will find that many of these can be combined, since they are all
variations on the same principle. Here are three examples to get you
started (set 'ON Expand' first):

1 Arpeggios

Select the 'Vibglock' instrument. With the footswitch down, start at the
C below middle C, and enter the rising pattern: CEGBCEGC. Play the last
two notes rapidly, but not together. Now lift the footswitch and play
slow, sustained notes. Try setting '-3 1 Spread' for a stereo sweep.

2 Chords

Select the 'Organ' instrument. With the footswitch down, play a large

chord across the whole keyboard, for example, C E G B C G E C, going
up from the bottom key.

3 Echoes

Select the 'Upright' instrument, and set '10 Reduce'. Enter eight slow
taps on middle C as the pattern. You could try '-3 6 Spread' for
alternating echoes, and other pitches in the pattern for a musical echo.
With a smaller number of echoes, say four, the echo will be able to
store a larger number of delayed notes.

Split makes each white note in the octave play a particular voice,
rather than the corresponding pitch. All the C's play voice 1, all D's
play voice 2, and so on. The keys's octave position still controls
pitch, so, for example, two adjacent C's still play an octave apart.

Split is designed for special keyboard applications where a mix is
used instead of a single instrument, including collections of sound
effects, and individually-tuned pitches. The use of mixes is
described later on in this chapter, for advanced users.

editing instruments

You can adjust the sound parameters of the current instrument on a
synthesiser-like panel, called-up by pressing the space bar. The
instrument panel cursor works in the same way as on the keyboard panel -
you move to a control with the cursor keys, and adjust it with the SHIFT
cursor keys. The keyboard is active throughout, so you can hear the
effect of your changes immediately.

The various instrument panel controls are fully explained in the
chapter 'Making instruments' in the Music 5000 User Guide, but for
now, feel free to experiment guided by the names of the controls.

To return to the keyboard panel, storing the instrument with the
changes you've made, you press the space bar once more.

preset instruments

Some instruments have names with upper-case initials, and always appear
at the bottom of the list. These preset instruments are always available
and cannot be changed. If you edit one of these, the changed instrument
will be stored as a new one called 'newword', which will then appear on
the instrument list for selection like any other.

new instruments

You can store a changed instrument under a new name, so that it
becomes a new instrument independent of the original. You do this
from the instrument panel, by using a command.

To enter a command from the instrument panel, you press the TAB key to
go to command mode. A '%' prompt and flashing line cursor appear at the
bottom, where you can type commands without disturbing the panel.. At
any time, you can press TAB to return to edit mode, where you work on
the panel normally.

To change the name of the instrument you enter, for example,

   "myins"NAME or the equivalent, "myins_f2_

and press RETURN. The name you choose should be up to nine lower-case
letters, and the word NAME must be in upper case. The new name is then
shown after 'making' at the top of the screen.

You now return to edit mode by pressing TAB. Now when you press the
space bar to return to the keyboard screen, the settings of the
instrument panel will be stored as a new instrument under the name you
chose, and it will appear on the list with the others.

restoring settings

You can restore the settings of an instrument so that the changes you
made are not stored on return to the keyboard panel. To get the original
instrument settings back, you press TAB to go to command mode, and
enter, for example,

   "stringsyn"GET   or the equivalent   "stringsyn_f1_

with the name of the instrument in quotes. This name is shown at the
top of the screen as a reminder. Press TAB to return to edit mode.

Though the screen settings are restored, the sound will carry on with
the old setting until you press _f1 play_ to execute the new settings.

saving and loading instruments

To save the complete set of instruments to disc, so that you can carry on using them after loading another set or switching the computer off, you use the Studio 5000 'Main Menu' that you saw when the system first started.

To call-up the Main Menu, press <u>TAB</u> for command mode, followed by <u>f0</u>. Move the cursor down to 'Save program' by pressing <u>down</u>, and then press <u>RETURN.</u> In response to the filename request, enter a simple name of not more that seven characters, and press <u>RETURN.</u>

To return to the keyboard panel, select the 'Keyboard' option, and press <u>TAB</u> to go to edit mode.

You can reload the saved set of instruments at any time, replacing the one in memory, using the 'Load program' option in the same way.

keyboard panel access

You began this session by selecting one of the keyboard options on the jukebox. This was equivalent to

    * 'Load program' to load the example instrument program and effects
    * 'Keyboard' to call-up the keyboard panel
    <u>* TAB</u> <u>f2</u> to enter edit mode and engage panel operation

When using other parts of the system, you may find it useful to carry out these steps manually. For example, you can call up a simple keyboard panel with just the preset instruments and no effects by selecting 'New program', then 'Keyboard'.

keyboard panel commands

Two further commands are useful at the keyboard panel, entered in command mode as before.

DELETE removes the named instrument entirely, for example:

    "myins" DELETE

RENAME changes the name of an existing instrument, for example:

    "newword" "superins" RENAME

If you delete or change the name of the currently-selected instrument, you should re-enter the keyboard panel through the 'Keyboard' option on the Main Menu.

Keyboard playing

advanced use

If you are familiar with Notepad, you will recognise that keyboard panels can be created and stored as words just like instruments, and that you can add extra effects and sound controls (for example, M5TUNE for an overall tuning) using text mode. KEYB is the name of the initial keyboard panel, either the instrument-only version, or the instrument-plus-effects versions when an effects-using instrument program is loaded. KEYB can be entered as a command, and used with GET.

You do not have to enter Notepad via the keyboard panel in order to use the keyboard while editing an instrument. You can either use the keyboard panel (or KEYB) initially just to set up voices and then GET the instrument manually, or use it not at all, setting the voices up by the command method. In the latter case, you may want to use KEYS to set a limit on the number of voices that the keyboard tries to use, for example, 1 KEYS for single-voice playing.

After selecting an instrument on the keyboard panel, or setting up the simple keyboard by entering KEYB, you can switch to the Mixing Desk and adjust the parameters as normal. You can play the keyboard as normal while on the Mixing Desk, but switch to command mode to get the best response on big chords. The keyboard panel can use mixes instead of instruments - just start off with the name of a mix instead of the instrument. Again, the number of channels per voice is indicated by a number suffix, so do not use names like 'mix1' for alternative mixes.

On the Mixing Desk, you can play along with accompanying parts of a complete piece on any unused voices in the mix. The 'over' control should be set ON for keyboard priority in this case, and you should also set KEYS to the number of voices available.

3 Recording

As you play the keyboard, information about which keys are pressed is sent to the synthesiser, which then plays the corresponding notes. The principle of recording is to store this information so that the performance can be replayed. However, the point of recording is not precise reproduction, but the natural entry of musical material which can then be processed, edited, and rearranged, if needed, to build a complete piece. This is what we shall be dealing with in this chapter.

the Recorder screen

Before starting this session, select 'New program' from the Main Menu, to clear out any program currently in the computer.

To call-up the Recorder, simply select it from the main menu. Like all other AMPLE screens, you swap between command mode, where you can type commands at the '%' prompt, and edit mode, where you carry out main operations, by pressing the TAB key. In command mode, the cursor is a small flashing line at the '%' prompt, and in edit mode it is a horizontal purple band.

You can return to the Main Menu at any time by pressing <u>f0</u> in command mode.
The edit mode works like the Main Menu - you use the <u>up</u> and <u>down</u> keys to move the purple cursor to the option you want. The vertical list of options has four 'operations' at the top - 'Perform', 'Record', 'Play original' and 'Play final' - followed by various 'settings' which we shall discuss later.

To start any one of the four operations, you move the cursor to it and press <u>RETURN.</u> The cursor changes to red, until you press the space bar to stop the operation. You can try this now - each operation will just play a metronome beep until you stop it.

Recording

simple recording

Start by selecting 'Perform'. You can now play the keyboard (currently
set to play single notes with a simple sound) along with the
metronome. Try out a simple tune that we can use as an example, and
when you've finished, press the space bar to stop the metronome.

Initially, this metronome is an essential guide for recording. The
high bleep marks the start of each bar - at the moment, a four-beat

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bar is in use, so every fourth bleep is a high one.

To record a tune, you simply select 'Record'. The metronome starts
immediately, but plays a two-bar count-in before recording starts, so
you should start playing on the third high bleep. Play your tune, and
then press the space bar to stop recording.

Now, to replay the recording, select 'Play original', and again press
the space bar when it finishes. If you make a mistake, you can restart
recording immediately by just pressing RETURN.

The last operation, 'Play final', also replays the recording, but with
any slight deviations in timing corrected.   This it does by shifting
each note and rest to the nearest small sub-division of the beat, called
a quantum. Listen closely to the 'Play final' form, and you will hear
that the quantised form is very similar to the original because a small
quantum size is currently in use.

When you stop 'Play final' after the end of the tune, you will see an
indication of the number of bars recorded.

changing tempo

You can replay the recording faster or slower by changing the tempo
setting. You alter any Recorder setting number just as you do a
Notepad sound control, using SHIFT up to increase and SHIFT down to
decrease:

    * move the cursor to the setting
    * press the SHIFT key
    * while holding SHIFT down, press up and down until the desired
      value is shown
    * release SHIFT

The tempo setting is the number of crotchet (48-unit) beats per minute.
Try increasing the tempo from the initial 125, and then select 'Play
final' to hear the tune at the higher speed. You could produce the same
result by replaying at the normal 125, but having recorded at a lower
setting, say 80. This trick lets you produce final music that you could
not play at its full speed. The freedom to

set a different value for each operation is available on all Recorder settings, not just tempo, as we shall see later.

When adjusting a number setting, you can also use the <u>SHIFT right</u> and <u>SHIFT left,</u> to increase and decrease in larger steps - particularly useful for wide-ranging settings like tempo.

The 'Metro:' setting is the volume of the metronome, ranging from 0 (silence) to 15 (maximum). You can adjust it in the same way as the tempo, for example, reducing it to 0 to replay a recording without the metronome sounding.

voices and instruments

(If you are in doubt as to the meanings of 'voice' and 'instrument', see the Music 5000 User Guide Glossary.)

Initially just one voice is supplied, so only one note can be played at a time. To get more voices, you just increase the 'Voices:' setting before selecting 'Perform' or 'Record'. (Only one is provided initially, because later on some will be used by other parts.)

Just below 'Voices:' is 'Instru:', which carries the name of the instrument in use. You can replace the plain 'Simpleins' sound by any available instrument, including presets such as 'Upright', 'Organ' or ' Vibglock', and any additional ones you may have loaded. The instrument selection is not recorded with the music, so, like the tempo, you can choose a different one for playback.

To select a new instrument, move to 'Instru' and press <u>SHIFT</u>. A line cursor appears, inviting you to type in the new instrument name followed by <u>RETURN.</u> You can return to the old instrument name (which appears above as a reminder) at this point, by just pressing <u>RETURN</u>, first removing any typing with <u>DELETE.</u>

Remember that you can get a list of instruments with the command:

    "CHANS"FIND

storing as a word

To store the final form of the recorded music as an AMPLE word, you press TAB to switch to command mode, and enter

    MAKE

(You can either type it and press <u>RETURN,</u> or just press <u>f3</u>.) The word is made with the name 'newword' (since we have not yet specified a name of our own) and the AMPLE notation is displayed as it goes.

Only the actual musical score information is stored in the word - the recorded notes and rests, plus automatically-inserted sharps, flats, barlines etc. The tempo and instrument are not included, so that they can be set independently, on the Mixing Desk for example.

Users of the full AMPLE system will recognise that 'newword' is a completely standard user word, which you can:

    * play by entering the word name as a command
    * display and edit in staff or AMPLE notation
    * use as part of a complete piece
    * save on disc

as described in the Music 5000 User Guide for words created using Notepad and the Staff Editor. For example, to view the music in Staff Notation, return to the Main Menu by pressing <u>f0</u>, select 'Staff editor' and enter:

     "newword"GET

short cuts

You can make operation swifter by storing the commands you use often on function keys. For example, you could replace the rarely-used SHOW and MEM on <u>f5</u> and <u>f6</u> as follows:

    *KEY5|"CHANS"FIND|M   % display the list of instrument names

    *KEY6|IMAKE|I   % make the word from edit mode (II = TAB)

Also, remember that you can use a dot to abbreviate a word name, to save typing. For example,

    Vibglock   can be abbreviated toVibg.
    Upright   can be abbreviated toUp.

setting a name

Initially, the name to be used for the word (the 'making' name shown at the top) is set automatically, but you can set it yourself with the NAME command (on f2), for example:

   "tune"NAME or "tune<u>f2</u>

To return to automatic name setting, enter

   ""NAME   or "<u>f2</u>

If you don't want the fixed two-bar count-in, you can turn the 'Count-in:' setting to 'OFF'. 'Record' then gives you an indefinite count-in by not starting recording until you play the first note, so you can begin at any time. This doesn't stop you recording some silence at the start if you want to - to do this, simply select 'Record' and tap the footswitch when you want the recording to actually start.

ON/OFF settings like this one are adjusted like numbers, using <u>SHIFT up </u>for ON and <u>SHIFT down </u>for OFF.

The final version of the recording normally stops after the last note, without any redundant silence at the end, but you can include silence after the last note by marking the desired end point with a footswitch tap, before pressing the space bar to stop. In any event, the Recorder always makes up full bars at the start and end.

multi-part recording

If you have created multi-part pieces with the Staff Editor or Notepad, you will know that this is simply a matter of entering the parts as separate words called 'party, 'part2' etc. The command RUN (or its Main Menu equivalent) then plays all the parts together. You can use the Recorder in exactly the same way.

A 'starter' program is provided on the original System Disc for this session. To load it, make sure you are in command mode and press f9. When the jukebox menu appears, select 'Recorder - advanced mix'. This contains a mix for six parts of music, plus a selection of alternative instruments, but no music.

(Note for users of non-shadow RAM computers, e.g. standard Model B: the advanced mix leaves insufficient memory for the Staff Editor to be used. If you intend to use the Staff Editor on the recording, select 'Recorder - basic mix' instead. The basic mix is identical except

17

that fewer alternative instruments are provided.)

To use the mix instruments for recording, rather than 'Simpleins', set '
Instru:' to blank by moving to it and pressing <u>SHIFT</u>, space bar, then
<u>RETURN.</u>

Now we are ready to record. The 'Player:' setting is the number of the
part being recorded (for simple recording, we used player 0). To record
part 1 of your piece, set 'Player:' to '1' and carry on as before:

   * optionally, select 'Perform' to try the tune on the instrument
   * select 'Record' and start playing on the third high bleep
   * optionally, select 'Play final' to hear the quantised form
   * press TAB f3 to make the word

To record a second part, move 'Player:' up to '2', and repeat. You will
hear part 1 play back as part 2 is recorded. 'Play original' and 'Play
final' also play the previous parts along with the new one. In general,
you can record up to eight parts like this, but for now stick to two
single-voice ones. Also, keep them short - full parts are best recorded
in sections, as we shall see later.

Each time you set 'Player:', the 'making' name changes to suit, so the
words are automatically named 'part1', 'part2' etc.

At any point, you can play on the keyboard without recording by using '
Perform', and if on a 'Play final' hearing, you don't like the recorded
part, simply re-record it before storing with MAKE.

To play back the parts together as the full piece, make sure you are
in command mode, and enter

     RUN

or press <u>f0</u> to return to the Main Menu, and select 'Run program'.

creating a mix

At the moment, your piece has the instruments of the example mix.

To make your own selection of instruments with volume and stereo position
of each voice, you use the Mixing Desk as described in the Music 5000
User Guide. Recall the Main Menu by pressing <u>f0</u> in command mode, and
select 'Mixing Desk'.

You will see the instruments you have used, plus others ready for further
parts. To change an instrument, press <u>TAB</u> to enter edit mode, and:

   * move the cursor band to the instrument
   * press <u>SHIFT</u> - list of alternatives will appear
   * while holding <u>SHIFT</u>, move the small cursor to another instrument
   * release <u>SHIFT</u>

You can try out the sound by playing on the keyboard. You can also
set the tempo and overall tuning for the piece at this point.

To store the altered mix, so it will be used for recording, enter MAKE (
<u>f3</u>) in command mode.

re-recording

You can re-record a part at any time, by just setting 'Players:' to
the number of the part before recording. Until you enter MAKE, the
old version will still exist in word form, for you to retain should
you wish.

Once you have created a mix, it will automatically be used for backing
parts played by the Recorder, so your re-recording session will have the
advantage of the final sounds. If you prefer to use your choice of
instruments from the very start of recording, you can follow this
procedure:

   * record and MAKE dummy (empty) versions of each of the parts
   * set up and MAKE the mix on the Mixing Desk
   * record the real versions of each of the parts

Any other way of making a mix is also acceptable, for example you
could load a previously prepared mix from disc.

Currently, each part uses its mix instrument even when given over to the
keyboard for recording. You could use an instrument in place of the
part's instrument by giving the keyboard an instrument of its own using
'Instru:'.

Note that RUN plays the piece at the tempo set on the Mixing Desk, but
on the Recorder screen this is overridden by the 'Tempo:' setting.

At any time you can erase all the stored parts and the mix (the complete
user data) by selecting 'New program' from the Main Menu, or entering
the command NEW. You may then want to reload the example mix.

recording chords

Recording a part with chords is simple, remembering that you must set the
'Voices:' for the number of simultaneous notes required. Part 6 has three
voices, with the 'Upright' instrument, ready for recording chords - just
set 'Player: 6', 'Voices: 3', and proceed as before.

  When re-recording a chord part, remember to set 'Voices:' accordingly.

When you get on to recording multi-voice (polyphonic) parts, take care to
remember what a 'part' actually is, so that each one can be recorded and
replayed separately from the others. For example, piano music written on
two staves (left and right hand) may contain any number of parts. To
separate them you have to read the music carefully - a part may even
cross between the staves!

using many voices

If you play a part with piano-style use of sustain, you will probably use
more voices than the number of notes in the biggest chord, but never more
than the limit set by 'Voices:'. The more voices you choose to use for
the part, the fuller will be the sustain effect.

This technique can be used to add a rich reverberant quality to single-
voice tunes played on decaying sounds such as Vibglock and Upright -
simply select two or more voices and keep the footswitch down throughout
recording. 'Voices:' controls the degree of the effect on replay and
MAKE.

saving the piece

You can save the complete piece at this stage with the 'Save program'
option on the Main Menu (or by entering the SAVE command directly). To
reload the piece, use the 'Load program option', or the LOAD command, and
to play it enter RUN, or select 'Run program' on the Main Menu.

controlling backing parts

The 'Backing:' line includes an overall ON/OFF control, and digits for
the parts that are to play when the backing is ON. Initially, the backing
is ON, and parts 1, 2, 3 and 4 are selected. This doesn't stop you
recording and playing back on parts 5-8, but you won't hear them as
backing parts while recording others.

SHIFT up and SHIFT down set the overall ON/OFF control, and SHIFT 1 to
SHIFT 8 toggle the state of the eight individual parts. For example,

to turn part 2 off, you press SHIFT 2. To turn it on again, press
SHIFT 2 once more.

The more backing parts you use and the busier they are, the less power
the computer can spend on the recording, so for the best results, turn
off those parts that are not required. You will rarely need more than
three backing parts anyway.

percussion parts

Drum parts are recorded in exactly the same way as any other. The
example mix has suitable instruments on parts band 5, ready for you to
record on.

A good choice of backing parts for rock and pop music is just the
percussion and bass, so you could start a recording with these, then
set the backing to '1 45   ' for the others.

bars

The 'Bar' setting determines the number of beats in the bar. It can be
set to suit any time signature, for example, 3/4 (Bar: 3), 6/8 (Bar:
6), or 7/8 (Bar: 7).

The 'Bar' setting affects the following:

    * the metronome, which emphasises the first beat of each bar as a
      guide, but has no effect on the recording itself.
    * the final form, in the removal of empty whole bars from the end
    * the 'Play final' indication of the number of bars
    * the BAR setting and position of bar lines in the final word

If you set 'Bar' to zero, then bars are not used at all, with the
following results:

    * the metronome marks the beat only
    * recording goes up to the last filled beat, not bar
    * the 'Play final' figure is the number of beats, not bars
    * MAKE does not include a BAR setting and bar lines in the word

You might use 'Bar: 0' for music with changing time signature or none at
all. The bar lines in the final word are only really for editing
purposes, so if you don't need them for this, you might decide to save
memory by setting 'Bar: 0' before doing MAKE, having still recorded with
a bar setting to suit the time signature.

If you want a full number of bars in the word, but intend to MAKE it
with a zero bar setting, you should use a final footswitch tap to make

sure you get a full bar at the end. To check the results, use 'Play
final' with 'Bar: 0' to display the number of beats in the recording.

beat and quantum

Both the 'Beat:' and 'Quantum:' settings are lengths in AMPLE duration
units, of which there are conventionally 48 to the crotchet. Lengths for
all the normal note values (24, 48, 96 etc) and their triplet equivalents
(16, 32, 64 etc) are available, with the SHIFT cursor keys moving up and
down this set. (See the Music 5000 User Guide, Chapter 11, under ',' for
a full explanation of the values).

The beat length corresponds to the bottom number of the time
signature, so for example, you would set it to 24 (and 'Bar:' to 3)
for a signature of 3/8. It has no direct effect on the final sound.

The quantum is the smallest unit in which the length of notes and rests
will be represented, so its setting does affect the final sound. The
initial value of 12 can be decreased to let more timing detail through,
or increased (up to the length of the beat) to bring notes and rests into
stricter alignment, for example if your most accurate rendition of a tune
still has notes falling 'off the beat'.

The lower the 'Quantum:' setting, the more complicated the editable form
of the music will be. The 'style' of the AMPLE notation is also
influenced by the 'Beat:' setting. In particular, you can set 'Beat:' to
equal 'Quantum:' (before MAKE) to eliminate ',' settings in favour of
strings of '/' symbols for long notes.

The 'Quantum:' setting can also be used for deliberate musical effect.
For example, you could record a fast note pattern (possibly at slow
speed) and MAKE it with a large quantum size, so that only a few notes
are selected from it. This could be combined with versions with different
quantum sizes, and therefore different note selections.

key signature

The 'Key sig:' setting allows you to choose the key signature in which
the music will be written, for ease of editing. The whole range of
standard signatures from seven sharps to seven flats is available,
selected as you'd expect by the SHIFT cursor keys, and displayed in AMPLE
notation. Operation is entirely automatic, so all you do is choose the
required signature before MAKE.

Note that whatever the key signature used, the sounding results are
the same. If you are not interested in the appearance of the scored
music, the only reason for setting a key signature is to avoid the
consumption of memory by sharps and flats on all the black notes.

including text

The setting at the bottom of the screen is 'Text:', holding a single
line which is included at the start of the final word. Initially, it
contains just 'SCORE', to set all music variables to defined values at
the start of the word, but you can add any of the music effects, and
modifications, such as 'Len', that are available when entering music in
Notepad or the Staff Editor.

To change the 'Text' line, you move to it and press <u>SHIFT</u>, and a line
cursor appears for you to enter the new line. The old line is shown
immediately above, so you can use <u>COPY</u> to save re-typing.

If you have used a large quantum, removing the short 'rests' between the
notes of the original recording, you will often want to include a 'Len'
instruction to restore a detached style of playing. The following text
line does this:

    SCORE -3 Len

Where natural inter-note gaps do remain in the final version, a '-ve
Len' instruction would ensure that all notes are detached. Similarly,
you can include a '24 Len' instruction (for example) to enforce a
staccato effect on any notes that are not already short.

If you want a totally blank text line, enter just a single space.
Leaving SCORE out like this allows you to treat the word as a sub-
section to which music effects can be applied at the section level (see
the Music 5000 User Guide).

Remember that you can set all settings back to initial values at any time
using the CLEAR command (f4). This clears the just-recorded part from
the Recorder, but has no effect on the user program - the stored parts
and mix.

recording sections

The piece-building power of AMPLE encourages you to create all but the
smallest multi-part pieces in sections - natural vertical divisions such
as verses and choruses. This lets you:

    * edit and rearrange the music much more easily
    * avoid wasting work and memory on repeats of the same material
    * build parts that are too long to record in one go.

We identify each section of the piece's material by a lower case letter,
 and the 'Sections:' line holds the letter of the section being

worked on by the Recorder. So, to record section 'a' of a piece, you move to 'Sections:' and press

   SHIFT a RETURN

before beginning with the first part. Now, when you store successive parts as words, they go under the names 'part1a', 'part2a' etc.

To record a further section of material, change the section to 'b' and proceed as before. Recording and playing of backing parts is totally independent of section 'a'.

playing section sequences

When the 'Sections:' setting is blank, as it has been so far, the parts are made in a single un-lettered section which can be played by RUN. To play a sectioned piece, we use PLAY instead (described in the Music 5000 User Guide), specifying the players (parts) to be used, and the sequence of sections required, for example

   "123-aaaa"PLAY % repeat section 'a' four times (parts 1, 2 & 3)
   "12-abab" PLAY % play 'a then b' twice (parts 1 and 2)

You can type this as a direct command, or put in a word called RUN to replace the normal RUN:

   "RUN" ["123-aaaa"PLAY]

Now, entering RUN will play the sectioned piece.

If you need to return to the blank 'Sections:' line, you can do so by entering a single space on it.

silent part sections

We can represent a sectioned piece visually as follows:

part 1 :   a b a b   etc.
part 2 :   a b a b

This regular shape includes all of 'part1a', 'part1b', 'part2a' etc, but you are free to leave a 'hole' where a part doesn't play in a certain section, by not recording (or later DELETEing) that part section word.

overlapping repeats

Full sectioning across all parts is found in nearly all types of
music, but rock and pop music in particular also use repeated sections
in individual parts. For example a 16-bar verse may have a repeating
4-bar bass section with a non-repetitive melody on top:

```
    part 1 (bass):      <-> <-> <-> <-> etc.    or a a a a etc.
    part 2 (melody): < - - - - - - - - - - - - - b / / /
```

Recording this is simple: you put the four-bar bass in as 'part1a',
and the 16-bar melody as 'part2b' (not 'a'). Play the result with:

```
    "12-baaaa"PLAY
```

Because part 1 has the only 'a' and part 2 the only 'b', the initial '
ba' start together, and the 'b' spans all four 'a's.

What's more, we can use this as the 'Sections:' setting to get the
full bass backing for the melody recording. The whole process is:

```
    * set 'Player: 1', 'Section: a'
    * record the four-bar bass
    * set 'Player: 2', 'Section: baaaa'
    * record the 16-bar melody
```

Generally-speaking, whenever you want to add a part section (or parts
section) that overlaps an existing repeating part section, record it
under a unique section letter, and insert this letter before the
existing letter at which you want it to begin.

In playing back these overlapping part sections, obviously one part
has to be the 'master', cueing the entries of the others. PLAY always
uses the first-given player in the digit list as the master, so you
should make this the most-repetitive part, and always include it in the
set of backing parts.

alternative mixes

You are free to make alternative mixes and use them when recording for
new and backing parts. To create an alternative mix, you start with
the standard mix on the Mixing Desk, make the necessary adjustments,
and then MAKE it under another name, for example:

```
    "mix1"NAME MAKE
```

The name should always be 'mix' plus a digit.

To make the Recorder use the new mix , just add its digit at the

start of the 'Sections:' line. The orginal mix is called just 'mix' and is used whenever you don't have a digit at the start of 'Sections:', as is normally the case.

To apply alternative mixes, sub-mixes and unmixes in the final piece, you follow the same procedure.as for a non-recorded piece. See the Music 5000 User Guide for details.

Whenever you come to use MAKE on a numbered mix, you should check that the 'making' name is correct, and set it with NAME if necessary:

building mixes

It is not essential to have an existing mix when you start on a piece. If there is no word called 'mix' present, for example if you selected 'New program' and went straight into recording, then one voice of 'Simpleins' is automatically assigned to each player. As described in the Music 5000 User Guide under 'Building Pieces', you can then MAKE a mix of your own from this, to be used from then on.

To add further voices on a part, you can either use the standard command method (see 'Building Pieces'), or the Recorder itself, since after any Recorder operation, all voices are left for you to MAKE into a mix, if you so choose. For example, to put two voices on part 1:

* set 'Players: 1', 'Voices: 24
* run 'Perform' momentarily
• call-up the Mixing Desk
• MAKE the new mix

highlighting the keyboard part

You may find it useful to boost the volume of the keyboard voices when recording against backing parts. You can override the mix volume for the player being recorded on, by putting a VOL instruction on the otherwise-blank 'Instru:' line, for example 128 VOL for maximum volume. Unless the mix faders are at maximum already, this will make the voices of whichever part is being recorded stand out. You might want to create an alternative mix with all volumes reduced, just for this purpose.

Another way of highlighting the recording part is by moving it to one side of the stereo field, using PAN. For example, to move it to the far right, put 3 PAN on the 'Instru:' line.

large parts

MAKE will split a large recording into separate words if as a single
word it would be too big to edit conveniently. This is completely
automatic and does not affect replay of the part, so most of the time
you don't need to worry about it.

The main word holds the first 'page' of the music, and calls the first
of a chain of extension words, which have the same name plus a single
digit added at the end, for example:

```
"newword"    [ ...music... newword1 ]    % main word
"newword1"   [ ...music... newword2 ]    % first extension
"newword2"   [ ...music... ]             % second extension
```

When editing a word, you will know that it has an extension if you find
an unexpected name included at the end. Before using DELETE to delete a
word that might be extended, use the SHOW display to find if there are
any extension words to be deleted also.

a notation for spare structures

Finally, we can take the overlapping section technique to its extreme,
to provide separate control over each part's section by using a
different letter for each part - 'part1a', 'part2b', 'part3c' for
example. The master player can be player 8, needing no voices, and we
can call its section 'part8/'. The end result is a new structure
notation of mischievious appearance, in which / is used to mark the
passage of time between groups of simultaneous sections, themselves of
any length:

```
"81234-a/b/ba//c/ca/cb///cba"PLAY
```

4 Music input

Unlike recording, simple music input employs the music keyboard
typewriter-style, with the music appearing in notation form as it is
entered. Mistakes can be identified and corrected immediately. Recording
is sometimes described as 'real-time input' and simple music input as '
non-real-time input' or 'step-time input'

The keyboard offers direct music input to both staff notation (in the
Staff Editor) and AMPLE notation (in Notepad). In both cases, the music
keyboard works in parallel with the computer keyboard, whose function
is unaffected.

setting—up voices

Before calling-up the Staff Editor or Notepad, you should select an
instrument from the keyboard panel if you want to hear the sound while
entering music. So,

    * select Main Menu 'Keyboard'
    * press <u>TAB</u> and select an instrument
    * press <u>TAB</u>, <u>f0</u>, and select 'Staff Editor' or 'Notepad'

This gives the maximum number of voices for that instrument. The
voices remain until you play a piece with RUN, when they are
transferred to the piece's players. To get the voices back, you
should select an instrument from the keyboard panel. The READY
command also discards all voices.

To provide a wider selection of instruments for your piece, you can load
an instrument program before starting, as described later, in the
chapter 'Managing instruments'.

(You may recognise this procedure as equivalent to setting up voices
by a command sequence, for example:

    READY (or 'Ready system' Main Menu option)
    8 VOICES Upright   % number of voices and instrument name

The keyboard carries out a similar command sequence on each
selection.)

music input on the staff

When using the Staff Editor, the music keyboard is automatically active for
entering notes, chords and rests. Whenever you press a music keyboard key,
it sounds as normal, and the corresponding note is placed on the staff just
as if you had entered it using the computer keyboard, complete with any
sharp, flat or natural it needs. Pressing the footswitch (while no keys are
down) places a rest on the staff.

To enter a chord, you press and hold down each key in turn. You could press
all the keys together, but since the notes are written in the order you
play them, you'll get the clearest results by going key-by-key from the
bottom up (or top down). This will also keep each line of notes on its own
voice, allowing you to treat them independently on the Mixing Desk.

Just as on the computer keyboard, each note and rest adopts the duration of
the following note or rest, so again you use a temporary note to 'carry'
the current note value, which you then set using the SHIFT left and SHIFT
right keys. All additional symbols such as ties, dots, clefs and barlines
are entered as before from the computer keyboard, and any mistakes made on
the music keyboard can be removed with the DELETE key.

You can also lengthen an individual note as you enter it by pressing the
footswitch while the key is down. Each press advances to the next longest
note value. Using this facility, you can enter most passages of music with
a single initial note value.

trying out tunes

To try out ideas on the keyboard without notes going on to the staff, TAB
to command mode. Here, the keyboard works exactly as it does in normal
playing.

an example session

Here is an example session to introduce you to making a piece by keyboard
music input on the staff, starting at the Main Menu:

  1 Load the 'advanced mix' example by selecting 'load program' and entering

```
          rmixl RETURN              % Model B users
    or    rmix2 RETURN              % users of other models
```

  (rmix2 gives a bigger choice of instruments.)

2 Select 'Keyboard', press <u>TAB</u> and select an instrument with <u>SHIFT up/down/left/right.</u> Try playing it on the keyboard.

3 Press <u>TAB</u>, then <u>f0</u>, then select 'Staff Editor' from the Main Menu.

4 Press <u>f4 CLEAR</u>, then <u>TAB</u> to enter edit mode.

5 Press <u>c</u> for a clef, <u>RETURN</u> for a note, and <u>left</u> to move on to it.

6 Slowly enter a tune. Use <u>SHIFT left/right</u> to change the current note value, and <u>DELETE</u> to remove wrong notes.

7 When complete, press <u>e</u> for an end line, and <u>COPY</u> to remove the brush note. Press <u>f1 play</u> to hear the tune.

8 Press <u>TAB</u>, and enter the command "part1 <u>f2</u> <u>f3</u> to make the word.

9 Repeat from step 4 for further parts, using part2 etc. for the word name. The example mix has three voices on player 4, so if you want a chord part, enter it as part 4.

10 To play the complete piece, press <u>f0</u> and select 'Run program'.

11 To save the piece, select 'Save program' and enter a name.

You could continue by using the Mixing Desk to change instrument selections, volume, stereo balance, tempo etc., as described in the Music 5000 User Guide.

key signatures on the staff

Each entered note is automatically given a sharp, flat or natural, according to its pitch and the key signature.

Each time you enter a clef and key signature at the start of a blank staff, press <u>f1 play</u> to register it for the notes to follow. Even if there is no key signature other than the clef, still 'play' it to cancel any previous key signature. A typical sequence is:

    * enter CLEAR (or press <u>f4</u>) and press <u>TAB</u>
    * press <u>c</u>   for the clef
    * press <u>+ + k</u>   for the key signature of two sharps
    * press <u>f1 play</u>   to register the key signature
    * press music keys to enter notes

If the music contains a change of key signature, you would usually divide it into sections or subsections at this point, so the new key signature appears at the start of the staff. If there are many

changes in a short passage, you can enter it in one section, but after each new signature, play the music up to and including it by pressing <u>fl   play </u>as normal.

music entry in Notepad

When in Notepad's text mode, the music keyboard enters AMPLE notation in an analogous fashion. A single key press enters a normal note, and while the key is down, further presses enter additional chord notes in brackets. A single footswitch press (with no key down) enters a rest or chord rest as appropriate. Again, in command mode, the keyboard plays normally, without entering notes.

The footswitch is also used for hold signs - to extend a note, you keep the key down and tap the footswitch once for each hold required. This gives you a choice of two styles of music entry:

   * one note at a time, using the footswitch to set any multiple of the
   basic length without recourse to the computer keyboard

   * continuous, pressing keys in time and marking each additional beat
   with a footswitch tap

The first note entered after you go into edit mode will always be given a ':' setting. To call for one in the middle of a passage, at the start of a phrase for example, press <u>TAB</u> twice.

If you are familiar with AMPLE notation, you should have no difficulty following the example session given above, substituting Notepad for the Staff Editor, and replacing steps 5, 6 and 7 with their Notepad equivalents.

Just as on the staff, each new key signature or SCORE must be played before note entry. A typical sequence might be

   SCORE K(+F)K <u>fl</u> ... music keys ...

You should use <u>RETURN</u> to start each new line, rather than let the text flow over the line end. Apart from making an uneditable mess, uncontrolled line endings will prevent the music playing on <u>fl play </u>if a chord gets split over the line end, since this is not allowed. If you feel tempted to play away on the keyboard without looking at the screen, then you should probably be using the Recorder instead!

playing on the Mixing Desk

The keyboard is also useful at the mixing stage of piece-building. At any time during mixing, notes played on the music keyboard will sound on the voice on which the cursor rests. If there is more than one voice on a player, keys are assigned from the first voice upwards, so you can play chords.

You may find it preferable to set up a mix without the music playing, using the keyboard to sound the voices instead, or leave the music playing, but use the keyboard to sound voices that are silent for long sections. If you want to actually play along with the scored parts of the music, set 'over' to ON (by pressing o) for the best performance.

You may want to use the KEYS command to set the maximum number of keys that will play, for example

    1 KEYS

if there is a single voice on the player. This will avoid 'lost notes' when you play a two-note chord in going from one key to the next.

.

5 Managing instruments

There are two kinds of instrument definitions in AMPLE:

   Preset instruments, which

      * cannot be altered (though can be edited into user words)
      * are always available
      * have names starting with upper-case letters, e.g. Ringsyn
      * are displayed at the bottom of instrument lists

   Non-preset instruments, which

      * can be altered and deleted
      * are not always available, but loaded from disc when required
      * have names starting with lower-case letters, e.g. arcopiano
      * include predefined and user instruments

We consider a non-preset instrument to be pre-defined if it was made in
advance of use (as the examples called-up from the jukebox), or user-
defined if made there and then.

instrument programs

An instrument program is an AMPLE program consisting of instrument
definition words, for use on the keyboard or in a piece for example. The
two supplied sets of keyboard instruments and the 'advanced mix' for
recording are instrument programs, as are any instrument sets you create
for the keyboard.

In keyboard playing, you load an instrument program (possibly via the
jukebox) and the names of those instruments and the preset ones are
presented for selection on the keyboard panel.

In recording and other piece-building, you can load an instrument program
before beginning, or add instruments to a piece under development as
described below. The names of all available instruments are shown at
selection time on the Mixing Desk.

You can make your own instrument programs for either of these uses simply
by creating instruments, either from preset instruments, those in a
previously-loaded instrument program, or from scratch, and saving the
program under a suitable name.

key effects usage

The general and special keyboard instrument programs automatically call-in the extra keyboard effects module, KFX, when loaded, to make its effects available on the keyboard panel. The system knows that the instrument program 'needs' KFX because the program contains a reference to it in the word 'usekfx', which serves this purpose only. Any instrument program derived from either of the supplied keyboard ones will also contain 'usekfx' and therefore will also call it in.

You can make a non-KFX-calling version of either program by just deleting 'usekfx' before saving under a new name, for example:

```
"kins1"LOAD
"usekfx"DELETE
"ins1"SAVE
```

The new version would then be more suitable for piece-building, for example.

adding instruments

To add the instruments oil an instrument program on disc to a piece under development, you cannot simply load the instrument program, since this will wipe out the piece in memory. Instead, you must use a text file form of the instrument program, previously created using the *SP0OL command as follows

```
"insprog"LOAD        % load instrument program
*SPOOL instext       % create text file
WRITE                % send all words to it
*SPOOL               % finish up
```

You can now add the words of this separate instrument text file to a program already in memory by:

```
*EXEC instext
```

Note that text files are not AMPLE programs, so they cannot be loaded with LOAD.

redundant instruments

If you build a piece of music on top of an instrument program, such as the 'advanced mix' file used in recording, the final program will , contain all these instrument words, most of which will be unused. The same applies if you add an instrument program after starting, using the text file method. This does no harm, and indeed the additional instruments will be available for re-mixing, but the program will be bigger than necesary and may be confusing to anyone else who looks at it.

You can remove any unwanted instrument word using the DELETE command, for example:

    "stringsyn"DELETE

If the instrument is in use, it will not be deleted.

stripping-out instruments

Deleting instrument words individually can be very time-consuming. This can be automated by a text file of DELETE commands which you execute from disc as if entered at the keyboard, using the *EXEC command. For each instrument program, you keep a corresponding text file containing a DELETE command for each word, such that if you were to load the instrument program and then execute its 'delete' file, you would be left with nothing. When you execute the delete file on a piece that contains all the instrument program words, only the unused instruments will be stripped-out, leaving just the essential words.

The best way of making a delete file is using a word processor or text editor, to edit a plain list of the word names produced from the SHOW display. The process is as follows:

    create a word list in a text file, by:
        "insprog"LOAD   % load instrument program
        *SPOOL wlist   % create text file containing..
        SHOW   % names of all words
        *SPOOL

    make a list of DELETE commands from the word list
        start word processor or text editor
        load wlist
        remove extra lines at start and end
        change <cr> to "DELETE<cr>"   % <cr> = carriage return add " at
        start and "DELETE<cr> at end
        save as 'delfile'

Now, you can strip all unused 'insprog' words from the program in

Managing instruments

memory by the command

    *EXEC delfile

Take care to name your delete files carefully so it is clear which
instrument programs they refer.to, and that they are not AMPLE programs.

separating instruments

The text file method offers a convenient way of transferring individual
instrument words, or groups of them, between programs. You could use it to
compile new instrument programs out of words taken from others, or from
finished pieces. You can also keep often-used instruments singly in
separate text files for individual addition to pieces under development.

The procedure for a single instrument is:

```
    "insprog"LOAD                       % load instrument program
    *SPOOL instext                      % create text file
    "insname"TYPE                       % send just one word to it
    *SPOOL                              % finish up
```

To include further instruments in the file, add the appropriate TYPE
commands after the existing one.

To add the instrument 'insname' to the program already in memory, enter:

*EXEC insname

When storing many instruments singly on disc, it's a good idea to keep
them on a separate disc reserved for this purpose.

6 Additional facilities

The Studio 5000-4 disc supplied with the Music 4000 Keyboard has an
additional facility to print out staff notation. This works from within
the Staff Editor and prints a copy of its staff, exactly .as it appears on
the screen. To use this facility, you must have an Epson-compatible
printer (in particular, one that supports bit-image graphic mode).

simple printing

First make sure your printer is turned on and ready to print.

To print a copy of the section of the staff on the screen, make sure you
are in command mode (at the % prompt) and enter

   PRINT <u>RETURN</u>

The printer will print a copy of the screen, plus the next screenfu1 along
the staff to the right, as a single line of staff across the page.

If for any reason you need to stop the printing before it finishes, press
<u>ESCAPE.</u>

multiple printing

The paper is effectively twice the width of the screen, so a single PRINT
prints the screenful currently displayed, plus the screenful immediately
to the right (what you would see after moving right with <u>CTRL right) </u>as a
single page line. You can print a staff that is longer than two screenfuls
one page line at a time, as follows:

   press <u>CTRL up </u>to move to the start of the staff
   enter <u>TAB</u> PRINT <u>RETURN</u> TAB to print the first two screens
   press <u>CTRL right </u>twice, to move on by two screens
   enter <u>TAB</u> PRINT <u>RETURN TAB </u>to print the next two screens
   repeat the last two steps until all the music is printet.

using 'manual LF' printers

If your printer is correctly set up for use with the BBC Microcomputer, then it will be in 'auto LF' mode (probably set by an internal switch), and the staff print will work without further action.

If the printer is in 'manual LF' mode, the staff will appear compressed on a single line of the paper. To make it print properly, enter the following command before entering the first PRINT:

    *FX6

You can add this command to the !BOOT file of your system disc so tha: it is carried out automatically when you start up. For details, see 'the ! BOOT file' in the Music 5000 User Guide chapter 'Further use of AMPLE'.