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33 KEYBOA

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36 OTTO LU

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 electro-ex...
 barriers.

52 ANDRÉ P

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 from quali...
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68 KEYBOARD CLINIC: ROLAND S-550

An exhaustive investigation of the S-550's resources, with helpful advice on recording, looping, creating and using subtones, and much more.



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GET THE MOST OUT OF YOUR ROLAND S-50/550/330

- RECORDING & LOOPING
- CREATING SUBTONES
- DISK TRICKS
- DRAWING WAVES

Wave Bank

BY TED GREENWALD

Once had the pleasure of trading technological horror stories with a well-known sampling expert. At the end of a day-long marathon of software incompatibilities and hard-disk crashes, I mentioned a notorious and now-defunct sampler, one of the great defeats on the bloody battlefield of electronic musical instrument manufacturing.

"That sampler," he stated flatly, "is a pig."

"All samplers are pigs," I countered.

"Ah, but that one," he mused, a sardonic smile spreading across his face, "is a *prize* pig."

Let me make one thing clear: We were not discussing the S-50, S-550, or S-330, Roland's intercompatible mid-priced samplers (which in this article we will refer to collectively as "the S-550"). Quite the contrary. A prize pig is soft and pink, laden with folds of fat that obscure the creature's frame and make it difficult to tell the hindquarters from the front end.

The S-550, on the other hand, is a lean, mean sampling machine, its muscular architecture rippling against a streamlined point-and-click user interface. If all samplers are pigs, the Roland S-550 is less a prize pig than a raging, snarling wild boar.

All of which is a roundabout way of saying that although the S-550 has its share of flaws—like just about every other sampler on the market—it is nonetheless one powerful beastie. Taming it can take a lot of time and patience, but the rewards are well worth the effort.

With that in mind, let's roll up our sleeves, wade into the mud, and prepare to wallow amidst the features and capabilities the machine offers. This article doesn't cover all S-550 features, or even all of the obscure ones. Rather, we will take a look at the most useful features, along with techniques for putting them to use. For the sake of clarity, SMALL CAPS are used to indicate designations in the S-550's video display. Most of what follows applies equally to the S-550 and S-330; the latter differs primarily in having half as much memory and no SCSI option for hard-disk access. The S-50 keyboard differs from the 550 in numerous ways—

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for example, it has no filters, doesn't require a mouse, and is only four-part multitimbral with many fewer choices for voice allocation. While many of the tips below also apply to the S-550, some of the operations will be handled differently.

OF MICE & MONITORS

The S-550 is distinguished from other units in its price range by ports for two optional devices: a mouse and a video monitor. The mouse/monitor scheme is a bit of brilliant design laced with a liberal amount of over engineering—the latter being that you can't get at much of what the S-550 has to offer without them. The sooner you start using them, the sooner you'll be able to put the instrument's strengths to good use.

- If you take your S-550 to sessions, consider buying a miniature portable TV, preferably one with an RCA video-input jack.

- If you have a TV that offers only an RF input, you'll need a converter box in order to connect the S-550. Radio Shack makes one, the Archer 15-1273A RF Modulator.

- If you ever find yourself accidentally about to **SAVE**, **LOAD**, or otherwise execute a command that would mangle some piece of data that you'd rather not mess around with, be aware that it is possible to back out. In virtually all cases, this is accomplished by pressing the right-hand mouse button. (The button labels in the menu bar will be marked **EXIT** when this is an option.) Practice doing this until it's second nature; it comes in mighty handy from time to time.

PLAY MODE

When you're making music (as opposed to creating sounds and keyboard layouts), play mode is where the action is. This mode offers eight parts (labelled A through H), with one patch assignable to each. Each part is also allotted a number of voices (out of the available 16) and a MIDI channel to which they will respond. You can set a part's relative volume level and its individual audio output. By setting a part's **OUTPUT** to **T** in the play mode screen, you can set the audio output for each tone in the current patch from the **tone parameter** page in **EDIT** mode. This way, samples associated with a given part can be sent to any

audio output.

- The **PLAY** mode's menu offers three display modes that can come in handy from time to time. The **STANDARD** display lists the patches in memory, eight at a time, so you don't have to scroll through them by reassigning one of

for others. The **STANDARD** display is the best choice when you're doing recording, as the S-550 will respond faster to MIDI data when this display is being used.

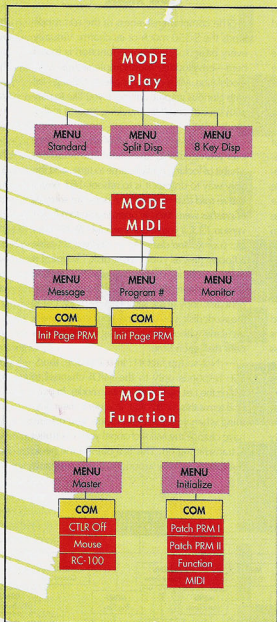
- There are some benefits to using your sampler as a drum machine, not the least of which are all the fancy real-time effects, not supported by most drum machines, that you can wreak upon the samples. For instance, you can give cymbals a long decay time but a short release, making it possible to control the length of the crash dynamically according to the duration of the note that triggers it. Along similar lines, you can pitch-bend a hi-hat as it plays a steady pattern, or apply **LFO** filter modulation so that the snare's timbre changes periodically.

- The flexibility of the S-550's keyboard/output/MIDI channel assignment scheme makes it a wonderful tool for building sample collages, organizing sound effects, and other sample-intensive applications. By assigning a given tone (or subtone) to more than one part, you can trigger it from various keys, send it to various audio outputs, and even address it from various MIDI channels to suit the demands of the production. You can put together multisampled patches to fit specific musical passages—say, a polymeric percussion break where all of the sounds fit comfortably under two hands and are sent to your mixer in a stereo spread, or a place where all of the samples play back two octaves lower than usual when you play a minor triad in the middle of the keyboard. Each such passage can then be performed in one pass on a given MIDI channel. (The unpleasant alternative is to figure out which tone is assigned to which part, and play each passage piecemeal, one MIDI note at a time.)

Voice Allocation. Sixteen voices may sound like a lot, but with eight parts available, they're usually in great demand. For this reason and, to some extent, because of the microprocessor's limited speed in activating voices, the primary concern in **PLAY** mode is having enough voices on hand to play all of the MIDI notes you're pumping into the instrument. If you notice notes cutting off unexpectedly (as the voice gets robbed for a new note) or not playing at all, you've got a problem.

- The first line of defense against running out of voices is to eliminate the possibility that a part is using two voices for each note played.

The menu trees for the S-550's Play Mode, MIDI Mode, and Function Mode.



the parts. Occasionally you may want a visual indication of the MIDI activity of various parts, in which case **8 KEY** display is your best choice. The **SPLIT** display is the most generally useful, since it shows you what tones are active during a given musical passage. This is handy when you need to delete unused tones to make room

ROLAND S-550/330 CLINIC

This happens with patches whose **KEY MODE** parameter is set to anything other than **NORMAL**—that is, those in which two voices are layered. You may actually need the extra layer; certainly, patches designed to take advantage of two voices often sound better that way. But often, in a pinch, you can do without the second voice. Enter **EDIT** mode, select **PATCH PRIM** (parameters) from the menu, and make sure each patch you're using is set to **NORMAL**. If you run across one that isn't, try setting it that way and see if it sounds acceptable.

- Know your voice allocation settings! The words **VAL** (last-note priority) or **VAF** (first-note priority) on the play screen indicate that voices will be assigned to various parts dynamically, as they are needed. Generally, these are the most useful settings.

One of the patch parameters is a choice of rotary or fixed voice assignment mode. This parameter affects how the S-550 responds to repetitions of the same note. When rotary mode is used, something like a repeating hi-hat note will use a new voice for every repetition of the note, which can cause notes to be stolen from other parts sooner. Because of this, fixed assignment is ordinarily preferable. Rotary mode should be used only for parts like cymbal rolls, where you don't want repetitions of a single note to cut one another off.

The settings v1 through v22 assign fixed numbers of voices to each part. These voices will always be reserved for the part, regardless of the MIDI notes addressed to other parts. These settings provide the quickest response of voices to incoming MIDI notes, so if the music you're making involves particularly quick successions of notes, be sure to use them.

Since v1 through v22 allocate increasingly smaller numbers of voices to each part, making good use of them often involves completely re-

organizing the **PLAY** screen to put the various patches into the musically appropriate parts.

Unfortunately, there's no way around this.

- Particularly demanding musical figures can cause voices to cut each other off or fail to sound altogether. This usually happens in up-tempo drum- or percussion-intensive music. To fix the problem, hard-allocate the voices by using a setting other than **VAL** or **VAF**.

EDIT MODE

The comprehensiveness of the **EDIT** mode lends the S-550 much of its charm. Virtually every basic sound-shaping function is found here—enveloping, multisample settings, LFO modulation, MIDI controller effects, filtering—all with glorious graphic editing. If you like to play with sound, you'll be mucking around in this mode a lot.

- First off, an obvious bit of advice: Whenever you're editing, save often! The S-550 has a habit of locking up from time to time, and the only way to unlock it is to reboot. [Ed. Note: We're told that many of the possible sources of crashes were fixed in operating system ROM version 1.13. If you're using an older ROM, contact your Roland dealer for an update.] Set aside a floppy disk as your "work disk," keeping it in the machine whenever you're not dealing with the system disk or making a semi-permanent disk copy of the sampler's memory. Using the work disk, you can save your current work regularly without having to dig up the permanent disk each time.

- Not-so-fun fact #1: In **EDIT** mode, the S-550 responds only to the MIDI channel to which the first part is set (in **PLAY** mode). In practical terms this means that, in order to hear anything when you enter **EDIT** mode, you usually have change the MIDI channel your controller is transmitting on. This is a pain in the neck, but there's no way around it. If you routinely

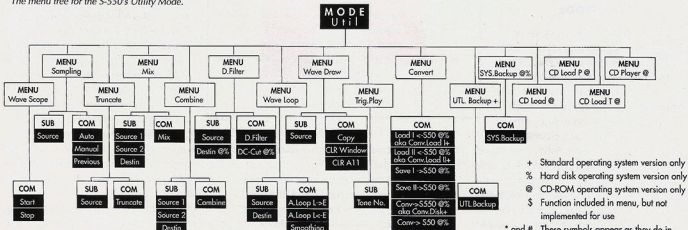
send MIDI to the sampler through a sequencer, it might be easiest to maintain a blank track, set to the first part's MIDI channel, as your "thru" track. Get in the habit of putting this track in record whenever you enter **EDIT** mode and you won't go wrong.

- Not-so-fun fact #2: If you happen to edit a patch (as opposed to a tone) while in **EDIT** mode, the S-550 will automatically assign that patch to the first part when you return to **PLAY** mode. (Don't you just hate it when a machine thinks it's smarter than you are?) If you only use the **VAL** or **VAF** voice assignment settings, it can be most convenient simply not to use the first part, making it irrelevant which patch is assigned there. However, if you need to hard-assign the voices, you'll probably end up using **PART A**, since that's where the most voices are available in settings v1 through v21—once again, there's no way to beat the machine.

- Not-so-fun fact #3: You won't hear anything in **EDIT** mode if the patch assigned to **PART A** (in **PLAY** mode) has a volume level of 0. How might this happen? Well, after you've been browsing in **PLAY** mode, it's not uncommon to enter **EDIT** mode having left an unused patch in **PART A**. Early operating system versions initialized a patch's level (on the **PATCH** parameters page) to 0, so unused patches are often found in this state. If you enter **EDIT** mode and don't hear anything, go back to **PLAY** mode and assign a lower-numbered patch to **PART A**.

- When you switch from **PLAY** mode to **EDIT** mode, the last tone played automatically becomes the current one in the display. This is very convenient when it comes to tweaking the individual samples in a patch for consistency. Play up and down the keyboard in **PLAY** mode (using the first part); when you hear something that's not quite right—an envelope release that's a little slow, a filter cutoff that's a little too bright, a volume level that's a little too high—you can switch to **EDIT** mode and the offending tone will

The menu tree for the S-550's Utility Mode.



ROLAND S-550/330 CLINIC

that articulate instruments such as bowed strings and winds in a more natural manner. Here's how: Using a tone with a particularly prominent attack portion, create a subtone. In the LOOP page, move the START POINT beyond the attack. Now, using the SPLIT page, make a patch in which the KEY MODE is set to velocity crossfade (X-FADE). The subtone should be the 1ST TONE, the original tone (with the attack) the 2ND TONE. Go to the PATCH PARAMETERS page and tweak the velocity-switch THRESHOLD so that the subtone sounds at low velocities and the original tone at high velocities. The patch itself now differentiates between the proper sound for smooth legato passages and that for hard, accented staccato notes.

Copy/Swap/Initialize. On many EDIT-mode pages, the command menu offers various COPY/SWAP/INITIALIZE functions. These can be very useful, particularly in situations when you want to use near-identical PATCH PARAMETERS with both a set of tones and a set of subtones, or when you want to give a number of tones the same envelope settings. Generally, you can copy (or initialize or swap) the settings on the current page, or throughout the entire patch (or tone).

• Initializing is fairly straightforward—executing the command replaces the current settings with the defaults. The copy and swap functions are more confusing due to the submenu options, E. SOURCE and C. SOURCE. These actually do make life easier, but you have to understand how they work. Write this down and paste it to the front panel of your sampler: E. SOURCE means "destination," C. SOURCE means "source."

The procedure is a bit strange, and takes a few tries to get used to: When you want to copy

a set of parameters, first use the left-hand mouse button to select the C. SOURCE (the source of the data to be copied). Then select the E. SOURCE (the destination to be copied to). Once you've done these two things, you must exit the submenu—this is not obvious—by pressing the right-hand mouse button. Then execute the copy. If you've done everything carefully, you should find that the source's parameters have been copied to those of the destination.

Swapping works the same way, except that you don't have to pay attention to which is the source and which is the destination (after all, they get swapped either way).

• When you switch to a new tone (or patch), it automatically becomes the E. SOURCE, while the previous C. SOURCE is retained. This makes it very easy to perform such repetitious operations as copying one set of envelope parameters to all of the tones in a patch—all you have to do is switch to the next tone (or patch) and execute the copy command.

• Oddly, the command to INITIALIZE all patches at once (rather than one at a time) is in FUNCTION MODE. The only way to initialize all tones is to erase them en masse in the EDIT mode's DELETE display.

Looping. Looping is one of those nifty techniques that makes sampling practical, and the S-550 is well equipped for it. In particular, don't overlook the SCREEN TYPE and ZOOM options; switching among them can make the difference between looping clarity and utter confusion.

• SCREEN TYPE 1 displays a zoomed-out overview, showing you where the START, LOOP, and END POINTS are set relative to the entire sample. This is not generally useful for fine-tuning a loop. It can be useful for spotting rough loop points that are at about the same amplitude.

You may also want to view a sample here in order to see if there's material after the loop's END POINT that can be TRUNCATED (in UTILITY mode) in order to conserve sample memory (see memory management tips, below).

• Use SCREEN TYPE 2 when you're making a loop. It shows you how the END POINT butts up against the LOOP POINT, making it easier to create a smooth transition.

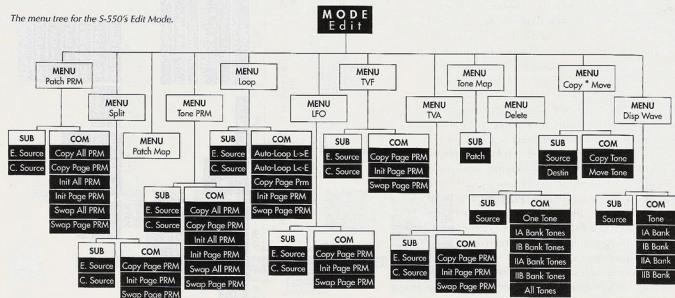
• Use SCREEN TYPE 3 when you're setting START and END POINTS. It changes depending on whether the cursor is over the START, LOOP, or END POINT, giving you a close-up of each, and is especially helpful for starting a sample without losing subtleties in the attack, or ending it without an annoying click.

• SCREEN TYPES 2 and 3 are enhanced by the ZOOM TIME and ZOOM LEVEL values, which simply zoom the display's horizontal and vertical axes in and out. In most situations, the best values are ZOOM LEVEL = 2 and ZOOM TIME = 5. The right combination of zoom values makes a waveform's shape obvious; the wrong combination makes it look like an incoherent jumble of dots.

• You may have noticed that the REVERSE setting of the LOOP MODE parameter plays samples backwards in one-shot fashion, rather than looping. It is possible to loop a sample in reverse, however. In EDIT mode, enter the COPY*MOVE page. Change the MODE parameter (usually set to NORMAL) to REVERSE, and use the COMMAND menu to copy or move the relevant tone to a new location. The sample is now reversed, and you can loop it in FORWARD mode.

Envelopes. The S-550 includes a digital amplifier called the time-variant amplifier (TVA). Modelled after the voltage-controlled amplifiers (VCAs) of old, the TVA makes it possible to control a sample's amplitude over time via an eight-

The menu tree for the S-550's Edit Mode.



ROLAND S-550/330 CLINIC

stage envelope with user-definable sustain and end points. Its design is identical to that found in the time variant filter (TVF), so the following envelope tips apply to the TVF as well.

- If a slow rate value drives the envelope's graphic display beyond the borders of its window, don't forget the display ZOOM parameter. Lower zoom values will bring the graph back into view.

- Ever wonder how to adjust the velocity response of the amplifier (and filter)? It's the level CURVE parameter, which has a default setting of 2. Setting it to 0 disables it.

- The KEY-RATE parameter slows attack and release rates (determined by RATE 1 and that leading to the LEVEL of the END point) when lower notes are played, and speeds them up when higher notes are played. This can help you mimic the envelope response of acoustic instruments.

- The VELOCITY-RATE parameter links attack time (determined by RATE 1) to the MIDI velocity of incoming notes, providing real-time control over envelope contours. Low velocities result in slow attacks, high velocities in fast attacks.

- The rates leading to the sustain and END points are exponential, so don't use up five rate/level segments creating the perfect exponential release curve. All other rates are linear.

The Time Variant Filter (TVF). The TVF is modelled after the voltage-controlled lowpass filters (VCFs) of the long-lost analog past, providing envelope control of the high-frequency content of the sound.

- Samples often get squirrely as you play up the keyboard. The KEY FOLLOW parameter can help counteract the "chipmunk effect" by progressively deemphasizing the high frequencies as a tone's pitch rises. If your sampler begins to sound like it's channeling the spirit of Alvin, experiment with negative KEY FOLLOW values. (Keep in mind that the high envelope sustain LEVEL and envelope generator DEPTH settings pump up the filter cutoff regardless of the current CUT-OFF value. If negative KEY FOLLOW values aren't effective, the envelope is probably keeping the filter open.)

- Samples that seem to have too little high-frequency content can sometimes be brightened by setting KEY FOLLOW to a positive value. This raises the filter cutoff progressively higher as you play up the keyboard. Adding a hint of RESONANCE can further emphasize the highs.

- Even with the CUT-OFF set to 127 (full up), KEY FOLLOW can add a subtle sheen not unlike the effect of an Exciter. If you'll be playing the sample mostly above its original pitch, use a positive KEY FOLLOW value; if you'll be playing below original pitch, use a negative value.

DISK MODE

Saving and loading functions are found in this mode, including specific commands dealing with memory blocks I and II, function parameters, MIDI parameters, and the like. Some disk

there's corrupted data on the disk. You'll see the DISK ERROR message on the screen. Sometimes the bad data doesn't affect anything you can hear, so listen to each tone to see whether it escaped unscathed, and note the ones that need replacing. (All of your disks are backed up, aren't they?) Sometimes the problem can be solved simply by reformatting the disk and resaving the old data to it. If you do this and the disk still won't load properly, throw it away and save the data to a new disk.

- A severe limitation of the S-550's standard operating system load is the clumsiness of its

loading options. Generally, you can load either an entire disk's worth of sound data (LOAD CHAIN, LOAD SET I, LOAD SET II, LOAD BL I, and LOAD BL II), or you can load a single tone (LOAD TONE).

What if you want to load an entire patch, consisting of several tones, and then load another one, and another? With the usual operating system, the only way is to load the tones assigned to each patch one at a time, and then load each patch's keyboard layout and so forth (via the LOAD PATCH PARAMETERS command).

In order find out which tones to load, there's little choice but to load the disks holding each of the patches you're interested in, and, consulting the EDIT mode's SPUR display, write down their names. It's also a good idea to note what keys they're assigned to (that is, each patch's split points). If you can't load a tone into its original location (because the location is already occupied), you'll need this information in order to reassign it to the proper keys.

Wouldn't it be miraculous if there were a way to avoid this rigmarole and simply load a patch—tones, key assignments, and all—with a single command? Well, there is. The miracle in question is the LOAD PATCH command, and it's unique to the S-550's hard-disk and CD-ROM systems. There are no plans to add this function to the standard operating system, so it's a good idea to get your hands on this system. It's available through Roland dealers.

MIDI MODE

MIDI mode is a potential source of both problems and solutions. The action centers on

S-550/330 SOUND SUPPLIERS & THIRD-PARTY DEVELOPERS

Club 50, 25226 234th Ave. S.E., Maple Valley, WA 98036.
(206) 432-6378.

Eye & I Productions, 930 Jungfrau Ct., Milpitas, CA 95035.
(408) 945-0139.

Interval Music Systems, 12335 Santa Monica Blvd., Los Angeles, CA 90025. (213) 478-3956.

MIDmouse Music, Box 877, Welches, OR 97067. (503) 622-4034.

Navaraphonic Productions, Box 1521, Columbia, MD 21044.
(301) 750-3813.

Norihashi, 13716 S.E. Ramona, Portland, OR 97236. (503) 760-7777.

Optical Media International, 485 Alberto Way, Los Gatos, CA 95032. (408) 395-4332.

Outright Productions, Box 2719, Agaña, Guam 96910.

Prosonus, 11126 Weddington St., North Hollywood, CA 91601.
(818) 766-5221.

PSL Productions, Box 602, Station K, Montreal, Quebec H1N 3R2, Canada. (514) 256-7936.

Steinberg/Jones, 17700 Raymer St., Suite 1001, Northridge, CA 91325. (818) 993-4091.

Tone Genics, Box 8288, Van Nuys, CA 91409. (818) 786-1177.

mode capabilities are less obvious, however, than others.

- You don't have to load a disk in order to find whether the patch or tone you're looking for is on it. In the DISK mode menu, there are options to directory PATCH and directory TONE. These provide you with a list of patches and tones on whatever disk is in the drive, whether or not its contents have been loaded into RAM. (If you're using the hard-disk or CD-ROM system, you'll find the same capabilities in the submenu when you select LOAD TONE or LOAD PATCH from the DISK-mode menu.)

- Once in a while, during loading, a sound disk will reload itself three times. If this happens,

ROLAND S-550/330 CLINIC

the menu, which offers only three options.

- In order for the S-550 to respond to MIDI messages, a given part's response must be enabled in the mode's main screen, the MESSAGE display. While most MIDI functions default to ON status, a few don't, including bend range, after-touch, and volume. If you want to use a computer-based sample editor such as Passport's Alchemy or Digidesign's Sound Designer, the system-EXCLUSIVE switch must be ON.

- The S-550 can actually display incoming MIDI messages as text on the MONITOR page—an invaluable diagnostic tool for solving MIDI problems. The messages are displayed in hexadecimal rather than English, though, so you'll have to consult the owner's manual's MIDI documentation in order to make sense of them.

- The PROGRAM # page permits you to remap any S-550 patch number to any MIDI program-change number. This is handy if you're performing live with a complex MIDI rig.

UTILITY MODE

The UTILITY menu holds a number of processing functions that aren't really necessary, but which can be tremendous fun to play around with. There are two exceptions: SAMPLING and

TRUNCATE, both of which most people wouldn't want to do without. Most UTILITY-mode operations alter sample data permanently in RAM (rather than changing it only as it leaves the DAC), so work on copies rather than original samples.

- The TRIGGER PLAY function allows you to replace recorded drum sounds with S-550 samples directly, without having to convert the recorded audio into MIDI commands or CV triggers. Simply route a recorded track into the S-550's front-panel input jack (on the S-50, a separate trigger jack is provided for the purpose) and assign the tone to be used as the replacement in the TRIGGER PLAY display.

- START and END POINTS set in the LOOP display (in EDIT mode) automatically transfer into the TRUNCATE and COMBINE pages. The helpful SCREEN TYPE options make it easier to set them there.

- MIXING two full-volume samples often results in distortion. You can usually keep this under control by making sure that SOURCE1 LEVEL and SOURCE2 LEVEL values don't add up to more than 160.

- Keep in mind that MIXED samples retain their original pitch. A string sample recorded at C won't mix very well with a flute sample recorded at F#.

- The results of both the MIX and the COMBINE operations will have the length of SOURCE 1. If you assign the longer sample to SOURCE 2, it will be cut short.

- The Digital FILTER is great for creating composite sounds of the kind made famous by the Roland D-50. Isolate the high-frequency components of one sound by using the High-Pass FILTER mode setting and a relatively high FREQUENCY setting. Isolate the low-frequency components of another by using the Low-Pass filter setting. Combine the results on the MIX page.

- Once set, loops created in the UTILITY mode's WAVE LOOP page can't be changed, so there's only one reason to do it here rather than in EDIT mode's LOOP display: in order to use the SMOOTHING command. This cross-fade looping algorithm isn't great, but might be helpful if you're tearing out your hair in an effort to make the perfect loop. It works best on loop points located by the AUTO-LOOPING functions.

- In general, trying to draw a waveform from scratch is pretty pointless. You can easily use it to create PPG-style wavetable effects, however. Just draw a wave, copy it for 1/4-second or so, draw some changes in the final cycle, copy that, and so on.

If you've got a flaccid-sounding snare drum sample, you might try drawing in some attack transients at the beginning of the wave. With a little luck, you should be able to get a snare that snaps. Drawing changes the sample data permanently, so make a copy before trying these procedures.

The WAVE DRAW function is also great for re-

moving the clicks that appear in samples recorded at too high a level. In the graphic display, this kind of click usually looks like a single point that's a little too high above the general contour of the waveform. (Clicks in vinyl records are nearly impossible to eliminate entirely, but you might want to give it a shot. They tend to look like a minute jump in level that's a bit steeper than the surrounding peaks and troughs, but they're embedded in the surrounding periodic frequency, so they're hard to identify.)

In the EDIT mode's LOOP window, play the offending sample at a low pitch. Clicks are often more audible this way, and it allows you to locate them more accurately. Move the START POINT forward until the sample starts precisely on the first click. The START POINT will be transferred into the WAVE DRAW page's WINDOW ADDRESS parameter, automatically placing the waveform display in the general vicinity of the click.

Now enter UTILITY mode and select WAVE DRAW. Start at a ZOOM LEVEL of 1; that way you can see the click if it's at the very top or bottom of the waveform display. If you don't see anything funny, adjust the display for the clearest view of the waveform.

Lower the mouse until the cursor enters the waveform display. (Pressing the right-hand mouse button while the cursor is above the waveform scrolls the display's vertical axis downward; clicking below the wave scrolls it

upward.) When you find a sample point that seems to be out of place, click—don't draw, click, one point at a time—along the waveform until you've redrawn the out-of-place point into the waveform's contour.

Play the sample. If the click has disappeared, congratulations! If not, try again—you won't do too much damage as long as you only change one or two points at a time, and eventually you'll find the right spot. If you lose your place, go back to the LOOP display, verify that the START POINT is near the click, and keep that point's address in mind while you're drawing. In the WAVE DRAW display, you can always find your place by watching the CURSOR ADDRESS value as you move the mouse.

Once you eliminate the click, return to EDIT mode and use the COPY*MOVE page to copy the improved sample to another bank. That way, you can revert to the copy if you wreck the sample in your efforts to chase down more clicks. Save the copy to disk. Repeat as necessary.

- If you have reason to turn the WINDOW LOOP function on in the WAVE DRAW display, be sure to turn it off before you leave. Otherwise, the WINDOW LOOP's loop points (which are generally useless musically) will automatically become the loop points for the tone, and whatever loop you've set in EDIT mode will be lost. An exception is if you've been drawing single-cycle waves. In this case, you want to leave WINDOW

LOOP switched on.

SAMPLING TIPS

Sampling on the S-550 is pretty straightforward, but there are a few things to know. For example, while you're in the SAMPLING page, audio is available only from the mix output, so you had better have it connected to your mixer or amplifier (or use headphones) if you want to monitor your source while it's being sampled. By the time you're ready to make music, though, you'll probably want to unplug it, because sounds coming from both the mix and individual outputs have a generally undesirable choring effect. Here are a few other helpful hints:

- Keep a disk on hand that functions as a memory template for sampling. First and foremost, it should be blank. This saves you the hassle of clearing out the unit's memory, which requires both that you DELETE ALL TONES in EDIT mode and INITIALIZE patch parameters in both memory blocks (PATCH PRM1 and PATCH PRM2) in FUNCTION mode. Second, its patches should be pre-assigned to various tones. I suggest that patch 11 be set up to play tone 11, patch 12 to play tone 12, etc. That way tones 11-28, at least, will be available in PLAY mode immediately; otherwise, you'll have to assign them in the SPT display.

- The quickest way to make a bunch of

samples in one sitting is to have a digital stop-watch on hand. Time the sound you want to record, allocate that amount of sampling time, use the AUTO triggering command (with a low THRESHOLD and a reasonable PRE-TRIGGER value), do the sample, and get on to the next sound.

- Oh yeah, and don't forget to format a bunch of disks ahead of time. The S-550's formatting operation (one of the SAVE command options in DISK mode) can really slow you down.

- Don't allow the input level to stray beyond one segment into the red on the sampling display's VU meter. Even though the resulting sample's waveform will look fine in the visual display, distortion can occur. In many cases, mild digital clipping isn't audible until you play the sample back well below its original pitch; then it can sound pretty ugly. At best, it produces annoying clicks in the sample.

- On the other hand, clipping can make the attack portion of hard, percussive sounds such as snare drums sound much sharper at their original pitch. In fact, many of Roland's own snare and kick drum samples are distorted in this way. If they are transposed down, however, the distortion becomes noticeable, which limits their useful pitch range.

- Whether you're recording new samples or importing them (via LOAD TONE), it's helpful to consolidate available sampling memory in a single block. If there's, say, one second available in block A and two seconds available in block B, see if there's a one-second sample that can be moved from B to A (using EDIT mode's COPY/MOVE functions), which would give you a three-second segment in B. If you move a tone that's already part of a patch, though, don't forget to reassign it on the SPLIT page.

- If you're sampling a limited-bandwidth source such as a TV broadcast or an archived political speech, try sampling at 15kHz instead of the usual 30kHz (the parameter labelled FREQUENCY on the SAMPLING page). This doubles your sampling time (as indicated by the x2 suffix). Happily, samples recorded at both rates can be played at the same time.

MEMORY MANAGEMENT

At the usual sampling rate of 30kHz, the S-550 allocates memory in .4-second increments, each made up of 12,288 sample points. It's not possible to use precisely 1 second of sampling memory; the closest you can get is .8 sec. or 1.2 sec. Making use of every last bit of sampling time in each of the 7.2-sec. memory blocks can be critical in live performance and sequencer-intensive studio applications.

- When a patch's KEY MODE is set to NORMAL, only tones assigned as 1ST TONES are used. Any 2ND TONES assigned to it don't actually play. (The

2ND TONES come into play when the KEY MODE is set to velocity-SWITCH, velocity crossfade [X-FADE], velocity-MIX, and UNISON.) If the 2ND TONES aren't doing double-duty as 1ST TONES, they can be erased without affecting the patch's sound(s).

The procedure: In EDIT mode, select the SPLIT display. With the TYPE SELECT parameter set to INFO, play the keyboard from bottom to top. As you play, write down the tones used, noting whether they're designated as 1ST TONES or 2ND TONES.

(If you're using the usual S-550 system software, this information will be labelled INFORMATION. If you're using the hard-disk or CD-ROM system, the tones will be pointed out by arrows that appear next to their names when a key is played. An arrow pointing to the right indicates a 1ST TONE. The left-pointing arrow indicates the 2ND TONE. If 2ND TONE is indicated but no 1ST TONE, the sample is functioning as both 1ST TONE and 2ND TONE.)

Identify the tones that are assigned as 2ND TONES only. Erase them by selecting DELETE from the EDIT-mode menu.

- Often, tones assigned to a patch aren't necessary for the music you're playing. In the case of a string or piano patch, they may be above or below the highest or lowest notes you're using. In a percussion patch, they may consist of instruments that you don't need. Either

way, they can be deleted.

The best way to identify unnecessary tones is to select the SPLIT display in PLAY mode, send your MIDI sequence to the sampler, and monitor the activity of each part by changing the DISPLAY parameter. It should be fairly obvious which tones are necessary and which aren't.

- In the LOOP display, check each tone's WAVE LENGTH against the END POINT. If the difference is 12,288 or more, you can truncate the sample (in UTILITY mode) and gain some memory.

- Sometimes, a sample that's been truncated to its essential length will spill over into the next .4-second increment by only a few individual sample points. In such cases, it's usually worthwhile to shave off the extra sample points and reclaim .4 seconds.

- If you're really hard up for a half-second's worth of sampling memory, you may want to try out a suggestion originally published in the in-house *Roland Users Group* magazine. It's particularly effective with drum and percussion samples:

Truncate each sample in a given bank to the shortest useful length. Then use the COMBINE function (in UTILITY mode) to link all of the samples in a bank into one long tone. During the interim stages, don't forget to compute the proper end point of each successive accretion of samples and set it properly (as S1 END) in the COMBINE display. Finally, break up the resulting

ROLAND S-550/S330 CLINIC

monster sample into its component segments by assigning it to a bunch of subtones and setting their START POINTS and END POINTS in the EDIT mode's LOOP display.

If you think this takes a ridiculous amount of time, you're right. However, it is possible to reclaim a significant amount of memory this way. The real downside is that you won't be able to use the LOAD TONE command to load an individual sound (they're all one tone now!). For that reason, this technique is best reserved for creating disks to be used in a live performance situation, where every sample point counts and the configuration of a particular set of tones and patches isn't likely to change.

ACCESSORIES

The most valuable accessory for any sampler is a hard-disk drive, and for that you need a SCSI port. Roland offers S-550/S550 owners the HD5-IF SCSI interface. This add-on board installs easily into the sampler's rear panel. S-550 and S-330 owners can contact Tone Genics (see page 74 for address), a third-party developer of S-series hardware and software.

Unfortunately, the Roland interface's design limits hard-disk users to capacities of 20, 40, 60, and 80 megabytes—the latter amounting to only 64 disks worth of samples. (The Tone

Genics interface is compatible with 40-Meg removable-cartridge hard drives, for which there's obviously no capacity limit.) Also, Roland's SCSI implementation results in hard-disk access that's not a whole lot faster than the floppy drive's load time. On the other hand, the hard-disk system offers a number of useful new features, including the LOAD patch function discussed above.

Another option is a CD-ROM drive, which makes available the immense quantities of sample data stored on read-only compact discs. CD-ROM sound libraries compatible with the S-550 are available from Roland and Optical Media (see page 74 for more information). Using this technology requires a SCSI interface and a special CD-ROM system version. (Hard-disk users interested in getting around the 80-meg limit will be happy to know that the CD-ROM system supports multiple SCSI ID numbers, making it possible to switch among a number of hard-disk drives.)

Finally, S-50 owners should know that Tone Genics offers a retrofit that supplies their instrument with eight audio outputs, catapulting them into the land of mega-channel mixing boards and outrageously lengthy mixdown sessions.

And it doesn't stop there. After all, S-550 data can be read by the new 44.1kHz, 16-bit Roland S-770—now that sampler looks more like a cheetah.