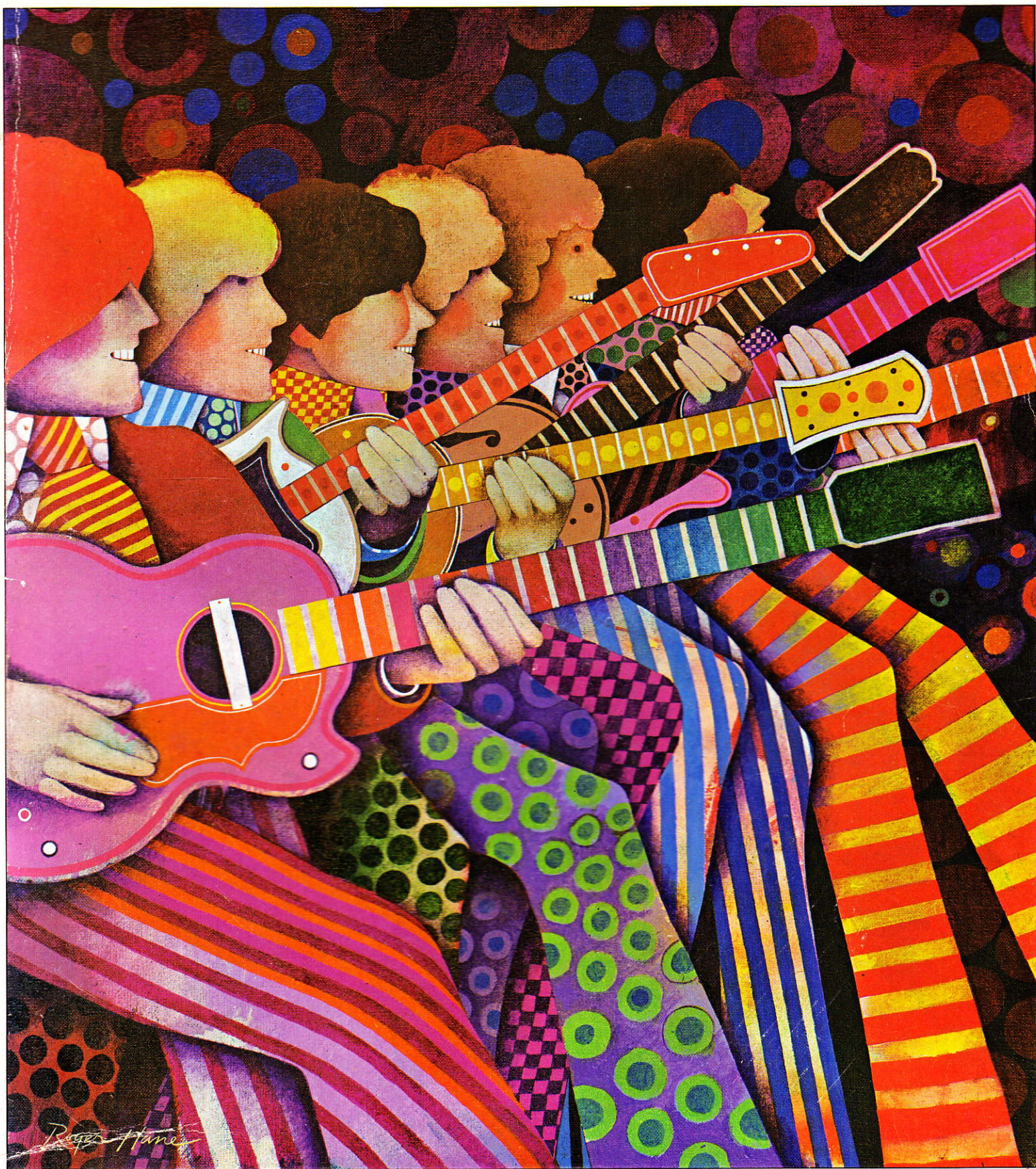


A COMPLETE GUIDE TO THE ELECTRIC BAND

PROFESSIONAL ROCK AND ROLL

15 EXPERTS TELL YOU ABOUT FORMING A BAND, GUITARS, AMPLIFIERS, LEAD SINGING, SOUND SYSTEMS, LIGHT SHOWS, WRITING AND COPYRIGHTING SONGS, TRAVELING AND PERFORMING AS THE HIT GROUPS DO.



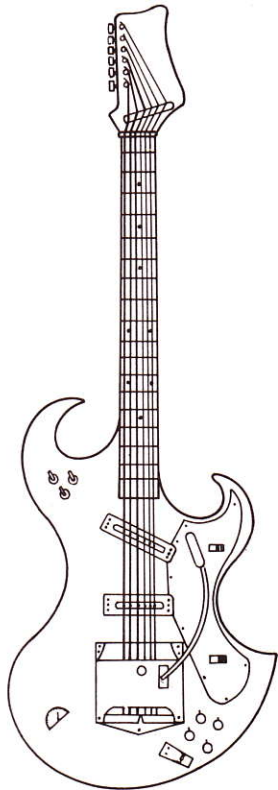
non-professional players, or the professionals who have not yet attained fame. Some of the most widely respected players I know have some of the raggediest guitars I have ever seen—but they keep them adjusted to perfection.

Case: The guitar's case should be one in which the instrument fits securely and which affords maximum protection from weather, temperature and abuse.***

When in doubt as to which guitar to buy, consider what your favorite well-known player uses, or consult people in the following order: 1 the best player you can find to talk to; 2 your local repairman; 3 your guitar teacher (if he's not also a salesman); 4 yourself and your own judgment, and 5 your dealer.

Accessories

There's a trend toward an increasing array of accessory equipment for the rock player to use for producing various electronic effects.



GUITAR WITH ACCESSORIES

Reverberation: One of the most widely used effects is reverberation, which creates the effect of playing in a big auditorium. Most recognized

*** See article "On the Road".

groups prefer not to use reverb in stage appearances, striving instead for a more real, live sound. Good amps are available with or without reverb. For the amp without built-in reverb there are also good auxiliary units which can be used in conjunction with any amplifier.

Tape Echo: Tape Echo is used to produce a shimmering, less mechanical effect than 'spring type' reverb. The sound is first recorded on a tape, then played back immediately—the effect being a delayed reproduction of sound. The longer the delay between recording and playback, the more pronounced is the repetition of the sound. If this delay is increased enough, the effect is a true echo, so that a note or chord is repeated over and over until it gradually diminishes and disappears.

Tremolo: Another effect incorporated into many of today's amplifiers is tremolo, a fluctuation in volume which can be controlled in speed and depth. Tremolo, if used sparingly, is an interesting effect, especially on sustained notes or chords.

Vibrato: Some amplifiers feature vibrato, a variable fluctuation in pitch, produced electronically. Most players find that vibrato is more effectively produced by bending the strings in playing rather than producing it in a robot manner by the amplifier.

Vibrato Tailpiece: Vibrato tailpieces seem to be quite a fine idea. It's unfortunate, however, that there are none that work well. Their purpose, of course, is to raise and lower the pitch of all the strings together. A successful device has yet to be discovered and, therefore, the better players not only avoid the use of the vibrato tailpieces but prefer not to have them on their guitars at all. These gadgets, by their nature, cause the guitar to untune in several ways:

- a. The string tension, when changed by this tailpiece, is not increased or decreased evenly on all strings, causing chords in anything but the neutral position to be noticeably out of tune.
- b. Since it is a non-fixed tailpiece and is delicately balanced between the pull of the strings and a counteracting spring in the tailpiece, the tuning of one string will affect all the others, making it more difficult to tune the guitar initially and to keep it in tune subsequently.
- c. Friction in the mechanism itself sel-

THE SOUND SYSTEM

by Chris Huston

Until fairly recently most groups disregarded carrying their own sound system, usually in favor of making do with whatever was available at the gig. Today it's quite another thing. The vocal arrangements in current Rock are as important as the instrument backing. Also the advent of such huge guitar amplifiers as the Fender Dual Showman, the Vox Super Beatle and the Baldwin Exterminator require roaring vocal power to compete. To any self-respecting group a sound system of their own is a must.

It would be a good idea at this point to describe in today's terms what is meant by a sound system: It is an electronic

system (sometimes called a Public Address (P.A.) System), designed specifically for the amplification of voices. The basic components usually are microphones, a microphone mixer (when two or more mikes are used), a power amplifier and speakers. There are infinite variations and designs.

The Mixer

As its name indicates, the mixer is designed to mix or combine sounds from different sources, many microphones, tape machines or other signals. Volume and tone controls (when available) for each input or channel maintain their independent control. Usually four or five inputs are sufficient for any group's mike needs.

Shure makes a new mike mixer which is very good in both design and performance; the model number is Shure M 68. List price, \$125.00. It's a transistorized unit which has many features. You mix both high and low impedance mikes at the same time. Also there's no decrease in volume as the mixer has its own pre-amplifier circuit to prevent any losses.

The output of the mixer goes directly to the power amplifier. And in some cases it's built as part of the main amp. But on systems where echo and/or reverberation are being used, the combined signal from the mixer unit goes to the reverb/echo and then to the power amp.

Echo and Reverberation

There's a big difference between echo and reverberation that seems to escape some musicians. Reverb is accomplished by delaying part of the sound (by sending it along a spring-like mechanical device); it arrives a little behind the main signal and hence reinforces or fattens the original. A more versatile unit is the tape echo. As the name implies echo is created with a continuous loop of recording tape. Part of the signal goes directly through; the other part is recorded and played back instantly. On the more complex units it's possible to determine how fast the playback will come, how much signal will go directly through and how much will be delayed, and how many times the echo will repeat. If the echo is repeated just once and only slightly behind the original you have a true reverb effect from an echo machine.

The most popular Reverberation unit is the Fisher K-10 at a cost of \$79.00. It's used in many

recording studios. Different units of similar design are used in many brand name guitar amps. Tape-Echo units are available from prices between \$80.00 and \$300.00. Fender, Binson and Watkins are all reliable models from which to choose.

Power Amplifier

What starts as a weak signal feeding into the mixer must be multiplied many times over before it can effectively drive large speakers or horns. The power amplifier does just that.

For a few years there have been a few complete Public Address Systems on the market. For the most these consist of an amp/mixer and one or two column speakers, sometimes microphones. The hang-up with these units is the low output of the amplifier. While they're sufficient for a small group, they're totally useless to professionals. Today's groups require a complete sound system that will carry the vocalist above the heaviest backbeat, and/or the funkier guitar. The system must fill a huge gymnasium or hall which was never designed to acoustically aid anything more than a man on a soap-box or a drill-sergeant. To overcome these problems takes well-designed equipment, a practical knowledge of acoustics, and sometimes brute power!

For the new group two things which have to be taken into account are cost and space.

A small group need never use a huge system like Mitch Ryder's which cost \$4,000. It consists of 3 power amps, mixer/amp, reverb unit and 6 cinema-type speakers. Mitch needs it when he plays huge arenas and theatres with a ten-piece band behind him.

For a smaller group with a regular lineup of 2 guitars, bass and drums, many smaller systems are more than sufficient. For them, Bogen amplifiers are great. They provide inputs for up to four mikes and the output will feed any type of speaker system. The Bogen CHB-50 is a 50-watt output unit with facilities for two high impedance mikes and two auxiliary inputs which can be used for mikes. Model #CHB-100 is a 100-watt job with the same input facilities as the smaller unit but twice the output.

A good power amplifier can run to \$280.00. The McIntosh MI-75 is an industrial 75 watt amp of fantastic performance. Mitch Ryder's system uses these. Dyna-kit makes a power amp (the Mark

III) which you can buy as a kit at a cost of \$79.95. The output of this unit is 60 watts.

Microphones

It's usually a matter of personal preference what type and style mikes are used. Shure has always been reliable as have Electro-Voice and Norelco. A few words on this may help you in your choice. The Shure models #545 and 55S, priced \$53.97 and \$51.00 respectively, are by far the most popular of the Shure range. The performance of these mikes is comparable to that of many higher-priced units. Both also have high anti-feedback specs.

Norelco has a few mikes which deserve consideration. Their small mike (model #D-58E) is a noise-cancellation unit which is only effective when the sound is within 8 or 9 inches from the mike. Beyond that, sound won't be caught. This type of mike is great for a drummer. It won't pick up his cymbals or the rest of his kit which usually sounds louder than he. The mike sells for \$43.00. Another Norelco mike popular on stage and in recording studios is the dynamic D 19E/200 at \$58.00. The Electro-Voice 664 cost \$51.00 and is a favorite. Its design is a slight variation of the uni-directional 666 which cost \$153.00.

I point out that *high impedance* mikes should be avoided. The maximum length of cable for high impedance mikes is limited to 18 feet. The high impedance signal is very sensitive and can't travel long distances. Every foot over 18' can lessen the volume and sensitivity of your mike. All the mikes I've mentioned above are of high and low impedance so conversion is simple.

Speakers

Last, we must dig some speakers. Column speakers are very popular and very good. Within each column, a number of small speakers are so wired that the sound is dispersed evenly over a wide area thereby reducing feed-back. Electro-Voice have several models on the market from \$90.00 (model number LR-4SA) to \$180.00 (model number LR7). The latter model will handle 50 watts per column, and is 5'0" high.

Jensen makes a column which is also a 60-watt job, model number 1010, cost is \$146.79. Its height: 56 $\frac{3}{4}$ ".

Speaker systems have woofers (big speakers handling the lows) and tweeters (small speakers,

handling the highs) in specially designed cabinets that range from around \$50.00 to \$500.00 in price. Really great is the Altec A7-500 (voice of the theatre). This is a 15" woofer in a modified bass-reflex enclosure with a huge direct radiating horn to carry the highs anywhere. The price is \$328.00. But it really is worth it if you have room to carry a couple. The cabinet dimensions are 30" width, 24" depth and 54 $\frac{1}{4}$ " high. The weight, 154 lbs. Altec's 604E (\$199 without cabinet) and 605B (\$168 without cabinet) are 15 inch duplex speakers of exceptional quality. Utility cabinets can be bought for traveling purposes. I've listed only a few of the available units to give you some idea of price and size.

Having bought and managed to cart all the equipment to the gig the next problem is correct use.

In huge arenas or halls I've always found it best to try to keep the sound "together." By this I mean that it's best to keep the speakers as near to each side of the band as possible. This accomplishes two things: the band stands more chance of hearing themselves; and all the sound comes from one source. If there are echo problems in the hall, then the effect of echo from one source is not as painful as a four-second delay from various room locations.

The correct use of reverberation and echo can help a group just as misuse can completely ruin a set. In large places I don't use much, if any, reverb; and definitely not repeating echos. The Reverberator or echo should be used to add that little extra quality to voices in smaller places, clubs and the like. By using the right amount, voices sound full and professional. Misuse and overuse will cloud the whole band with repeat upon repeat upon repeat upon . . . Need I say more?

Don't forget: No matter how careful you are in the placement of amplifiers quite a lot of the instruments will be picked up by the mikes. This is unavoidable. Therefore, the best method of judging levels is to first set mike levels and then balance the guitar amplifiers to fit in. Not vice-versa. So many groups try to do miracles with microphones and wonder why there's feedback. The professional group is the one that takes the trouble to think about the subtleties of sound and then does something about it. □

AMPLIFIERS/MIXERS



SHURE M 68

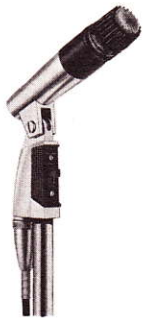


BOGEN CHB-50 CHB-100



MCINTOSH MI-75

MICROPHONES



SHURE
#545



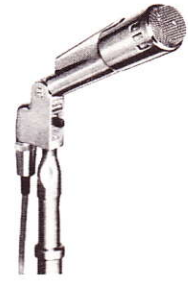
SHURE
#555



NORELCO #D-58E



NORELCO
#D 19E/200

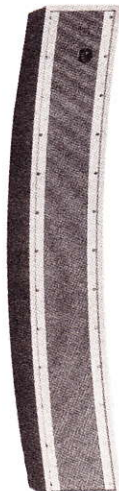


ELECTRO-VOICE
#664

SPEAKERS



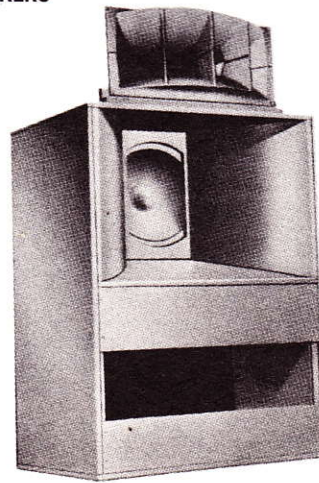
ELECTRO-VOICE
#LR-4SA



ELECTRO-VOICE
#LR-7



JENSEN
#1010



ALTEC #A7-500



ALTEC
#604E



ALTEC
#605B