

# A Profitable Sideline—

## P.A. RENTALS

By OLIVER BERLINER

*Branch out for year-round income. Public address work offers new opportunities for both sales and service.*

THE radio-television service shop interested in a money-making sideline should give some thought to public-address system rentals. These could easily grow into a worthwhile venture which could lead to permanent installations and equipment sales. Here is how to go about getting started in this lucrative field.

The first thing to do is analyze the needs of the community and the extent of your competition. The latter point you will have to determine for yourself but the potential market can be discussed here.

A great deal of all sound rental service work is performed evenings and weekends. For example, there are school and club dances, public dances, private parties, banquets, meetings, sporting events, stage attractions, ground breakings, civic events, etc.—all of which are elements of the vast potential in this field.

To a certain extent, the type of work you do will determine the type of equipment you will use so for this reason alone it is essential that you analyze the activities and needs of your potential customers.

### Equipment and Systems

Although every technician knows that an amplifier is, essentially, simpler than a television set or a radio and that he will probably have no difficulty in repairing one, unfortunately the average technician's knowledge drops off abruptly at this point. Do not think that because one is an expert in television repairs, he is equally capable of designing, installing, and operating a sound system. Public address work is an art in itself and requires a great deal of trial and error, knowledge of room noise levels and acoustics, and a knowledge of equipment features and limitations before one is able to do satisfactory work at the right price and with a minimum of equipment, effort, and time.

Devote some time to studying manu-

facturers' catalogues as a great deal of knowledge can thus be obtained at no cost and little effort. For example, *University Loudspeakers* publishes "Technilog" and *Masco* offers its "Sound Surveyer"—both of which provide invaluable information on loudspeaker characteristics and usage. Similarly, other manufacturers of sound equipment have handy tables, pamphlets, and manuals available at nominal or no cost.

In order to keep the amount of equipment at a minimum, a proper selection of components, determined by the needs of the community, must be made. Two principal types of jobs present themselves—one in which the customer merely rents the equipment and operates it himself and the other in which you install and operate the equipment.

You should be prepared to allow the customer to operate some of the equipment himself for many affairs do not warrant the services and expense of a paid operator. Under these circumstances the customer should be prepared to come and pick up the equipment, receive brief instructions on how to set it up and operate it, and bring it back at the required time.

A number of manufacturers make this type of portable outfit and you should select one capable of handling from 15 to 30 watts of normal audio power output. Perhaps an outfit incorporating a record player would be desirable. At first buy just one of these outfits, adding more units as business expands. One or two microphones with a floor stand for each should be included in the system. The rental can be upped in cases where the customer requires two microphones instead of one.

A portable sound system having two 12-inch PM speakers should be used. The speakers should be self-supporting and also be capable of being hung on a wall. The microphone connectors should be so different from the loud-

speaker plugs that their hookup becomes obvious to the layman and no mixup can occur. All controls and connectors on the amplifier should be properly labeled.

The list of suggested components comprising a small, basic public address system rental outfit is given in Table 1. This outfit will provide two complete sound systems. If all the equipment is combined into a single installation you would be able to feed six loudspeakers with 45 to 60 watts of power, using three microphones and two record players, all separately controlled.

Let us examine the characteristics of the components more closely. The author has used virtually every principal brand of microphone with every high quality feature and has found that for price, ruggedness, compactness, reliability, feedback reduction, output level, good looks, and ease of operation, the straight pressure (dynamic) microphone can't be beat. An important feature of this type of unit is that it takes the breathing and banging of the layman and is foolproof in use. The author recently attended a gigantic stage show in Hollywood where a group of top movie stars appeared. The show was almost ruined by the fact that these professionals were speaking into the wrong part of a new type microphone recently released by a major manufacturer.

The high impedance microphone system is often lower in price than its low impedance equivalent, principally because no input transformer is required. The limitation, of course, is that cable lengths in excess of 20 to 25 feet will result in drastic reduction of high-frequency response. Although the beginner may wish to start out with a high-impedance unit, he will soon find, as business increases and installations become larger and more complicated, that he will have to convert to low impedance microphones—a change that will cost between \$8 and \$15 per microphone, not counting the cost of changing to low impedance cables, input transformers, connectors, and the corresponding "down time" of the equipment. Try the *Electro-Voice* 630 or *Turner* 22D microphone.

The portable sound system needs are described in Table 1. Look over the features of units like the *Newcomb* TR-25AM.

The three-section microphone floor stand specified is useful as a banquet table stand and also where a microphone must be placed close to the floor. It of course functions as a regular floor stand when required. The boom attachment is excellent where the stand has to be a few feet from the performer, but where the microphone must be very close to him. The *Atlas* BB-1 or similar units meet this requirement inexpensively.

For the regular p.a. work that you will do involving one or two microphones, you will want to use a 25 to 30 watt basic amplifier with preamplifiers. Any one of the principal brands will

The same principles apply in music. Binaural phones allow you to move your mikes very much further away than for a proper one-channel standard set-up. Good standard recording mike placement is in most cases far too close via binaural. Too close for two ears.

In other words, the binaural effect is consistently and accurately present via binaural phones, in terms of liveness, clarity, separation of wanted and unwanted sounds. Even such noises as that of passing busses, very distracting and painfully obvious in monaural pickup, are easily relegated to the background via binaural. I have watched a woman listening via phones to a speech where a bus roared past outside. Via the single monitoring speaker on the Magnecorder (one channel only) the speaking voice was almost drowned out. Yet the lady behind the phones was not even consciously aware of it. She lived right there and merely put that bus where she always put it *binaurally*—out of mind.

*Do these true binaural effects occur when two loudspeakers are used?* That is an acid test.

I have tried and tried and tried, comparing one-channel and two-channel sound via speakers. The answer, in my experience, is a dramatic NO.

Off-mike voices remain off-mike when reproduced via two channels on speakers—though the source of the voices can definitely be heard in space between the speakers. That is the stereophonic reconstruction of the sound-picture by your ear and mind. The liveness, however, does not change.

Confused recorded conversation is just as confused via two-track sound as via one-track—though the placement in space and the realism is heightened.

Music recorded off-mike—that is, too far away for good monaural sound—remains too far away via two-channel, though, again, the placement of the sound source may be dramatically improved. The liveness does not change.

Therefore, I deduce, there can be no appreciable binaural effect, via loudspeakers. The specific binaural phenomena are missing.

#### Space Placement

But what of the wonderful sense of placement in space that two-speaker reproduction via two channels can give? What of the magical effect when a grand piano—or a speaking voice or an orchestra—suddenly seems to “appear” in the space between the two loudspeakers—or around and behind them? That effect has been taken by many as proof that the music is binaural. I thought so, too. If you can place the sound in space between the loudspeakers, you must be getting a directional effect from the two tracks, via some degree of sound separation from the two speakers, to their respective right and left ears. So I thought.

I believe you will find that this is not the case. The space placement is thoroughly and adequately accounted for by the stereophonic space sampling of your ears—they gather enough sound clues from the two points of sampling to reconstruct the actual aspect of the sound-space as picked up. That is the entire explanation. It fully covers all the aspects of “binaural” sound you have heard of, with one minor qualification, to follow.

If, then, the more specific binaural effects of liveness—which are so dramatic via ear-phones and natural hearing—are not found, by direct comparison, in the two-speaker

set-up, then we must conclude that the ear is not concerned at all with binaurality. If there is some percentage of actual separation of the two sounds to the two ears, then it cannot be much, nor very effective. And that is that.

#### Dual Point-Source

One final note. I made a boner in my last on this subject. There is a third effect of a sort, the literal substitution of a point-source speaker for a point-source sound. I called that “stereophonic”; it is not, strictly.

Record two actors three feet from two mikes, at thirty or forty feet separation. In effect, each voice is on one track only. Doesn't carry to the other. Then play these tracks back through two speakers. Wherever you put them—there will be the voices. Point-source two-channel recording. But never will you hear either voice in space between the two speakers. Each voice is “inside” its own speaker box.

This point-source effect, has figured quite a bit in “binaural” sound recently. A table tennis game for instance. A piano at one mike and a singer close to the other. There may be some sound merging, and thus the stereophonic “in-between” effect gradually may be introduced, as well.

Emory Cook's “Mosque” two-channel organ records, termed binaural, are essentially point-source dual recordings, I'd say. The two parts of the organ were in two corners of the huge hall and mikes were placed fairly close to each, maybe 30 feet, and perhaps 90 feet or more apart. (So I hear) That, I'd suggest, is neither stereophonic nor binaural! But the effect, mind you, is gorgeous via speakers. Each speaker reproduces its own organ and they blend externally, as they did in the original hall, more or less.

All these effects may be put to excellent use. It's just a matter of getting them straight. And to point up that big difference between binaural and stereophonic. I only suggest, for your edification, that if the Lord had figured we needed more than two ears, given complete sound separation, he'd have given us more. He didn't figure on sound reproduction, I guess. We can use his way—true binaural. Or we can fake up that “curtain of sound” in front of our listening ears, via sampling at various points. To match the good Lord's system we then need N points, and economy gives us “only” two. We ought to have at least three.

But we'll never, never need three ears.

#### SPECTACULARS

##### Strauss: Ein Heldenleben.

♫ (A) Minneapolis Symphony, Dorati.

† Mercury MG 50012

♫ (B) Vienna Philharmonic, Krauss

London LL 659

It takes a long time to listen to these two mammoths and make a comparison! A lot of music. For excellence in the recorded medium I'll choose the Mercury-Dorati version, but not without comment, I underline, above, intentionally. Do we want concert-hall realism or phonograph realism?

Mercury's version is done via the now well established one-mike technique, with a Telefunken. That technique is fairly straight-forward in theory; one finds, in a good hall, that point in space where the direct over-all sound, from the source, nicely balances the liveness, the reverberation. Sometimes that point is quite critical—too far away and you're off-mike, too close and the instruments are solos instead of ensemble. They don't blend.

This record has hit the over-all sound to perfection. But the balance among the instruments—which must be adjusted to the single mike—is, shall I say, phonographically effective but