

• 1 • MARCH — APRIL, 1954  
PRICE 50¢

# Music

## AT HOME

THE GUIDE TO HI-FI REPRODUCTION FROM RECORDS, TAPE, AND FM RADIO



### MUSIC

How to Plan Record Concerts  
Your Record Shopping Guide  
A Conductor's Views on Recording  
We Taped a Children's Program

### EQUIPMENT

A New Development in Speakers  
What You Should Know about FM

### INSTALLATION

Hi-Fi for Your Home, Part 1  
Planning Speaker Systems

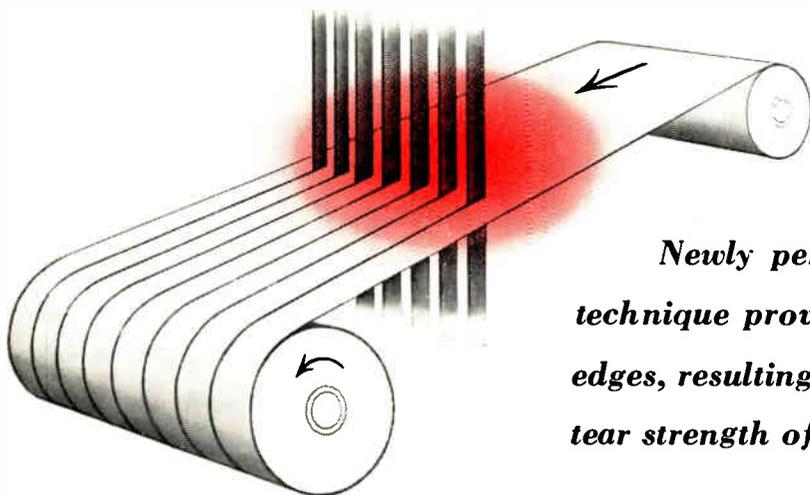
### OPERATION

When Things Go Wrong  
Where and When to Tune FM

*Published by*  
**MILTON B. SLEEPER**

# NEW HOT-SLITTING PROCESS

GIVES **audiotape** TRADE MARK EXTRA STRENGTH



*Newly perfected thermal-slitting technique provides smoother, cleaner edges, resulting in increased break and tear strength of plastic base Audiotape*

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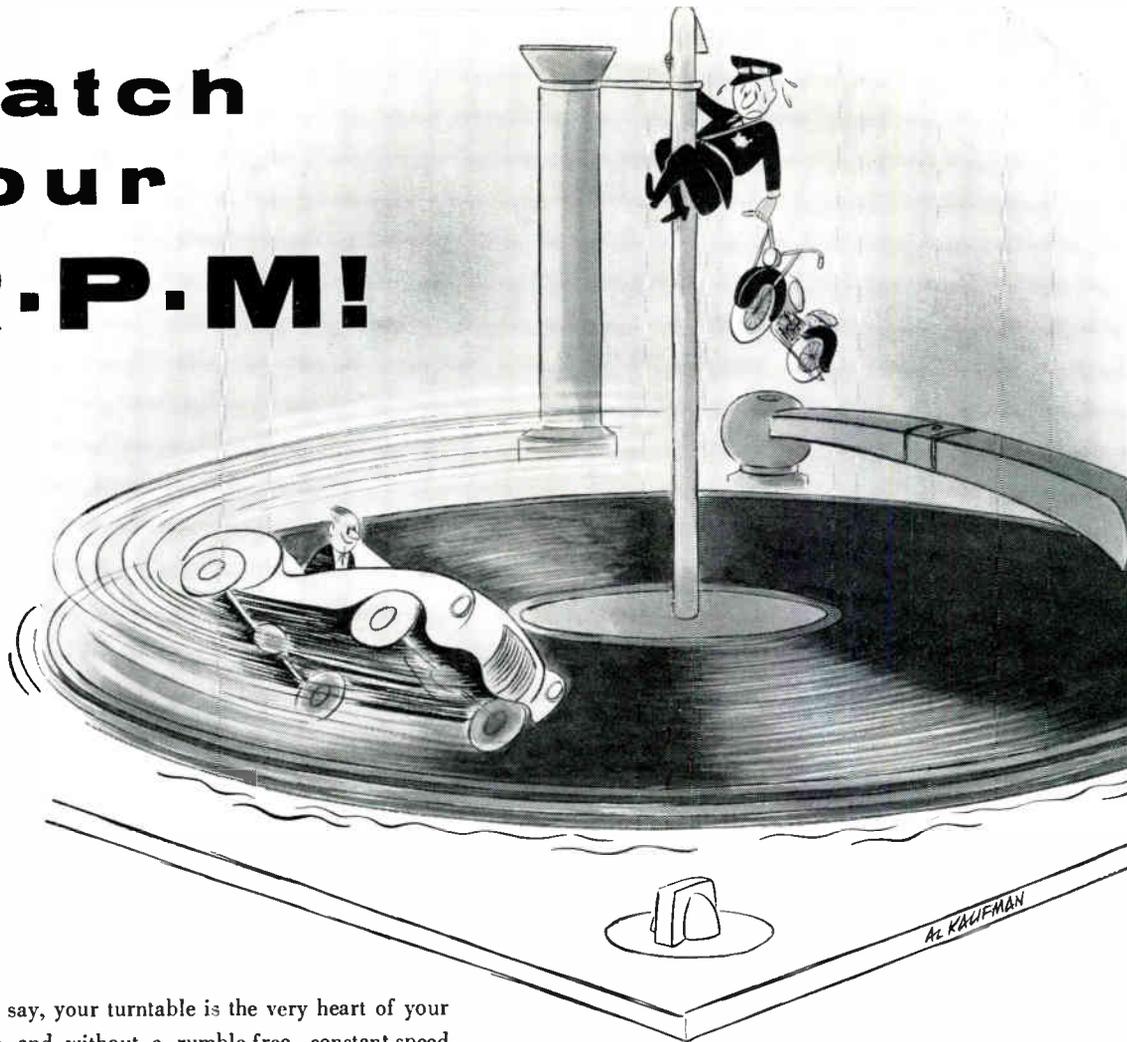
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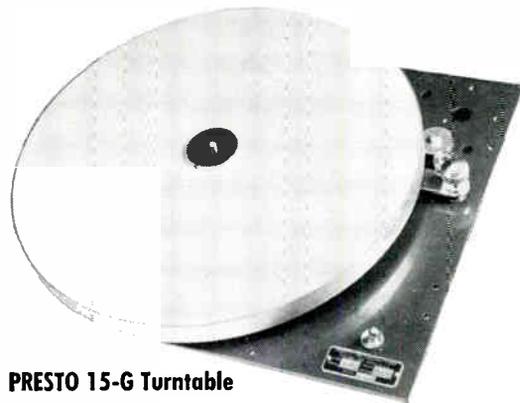
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# Music AT HOME

THE GUIDE TO HI-FI REPRODUCTION FROM RECORDS, TAPE AND FM RADIO



Photo by Marie Tassone

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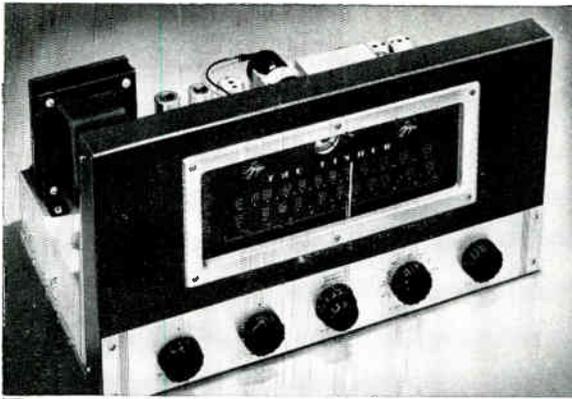
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**COVER PHOTO:** It was no trouble to get little Terry Stevens to sit still and listen to an FM program while her photograph was taken for our front cover. You can see her again on page 29, for she goes to school in Monterey, Mass.



**New!**  
*And  
Terrific!*

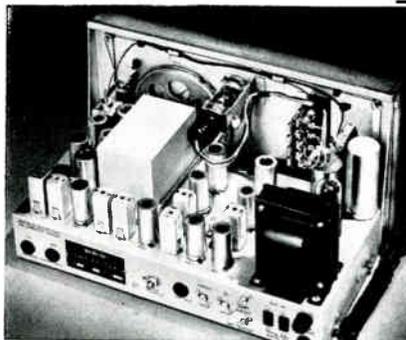
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## Hi-Fi Notes

**Our Record Programs:** One of the distinctive and distinctively different things about MUSIC AT HOME is that it does not carry record reviews. And why should it? Every other publication that has even a minor department related to hi-fi has at least a column of record reviews. With reviews available in such a profusion of magazines and newspapers, there is little reason for MUSIC AT HOME to contribute further duplication in that activity.

The most important assistance needed by people who enjoy fine reproduction of recorded music—and assistance never made available by any other publication—is in relating compositions into the form of programs so planned that each selection compliments and supplements the others. In that way, a total harmony is achieved.

That, of course, is the basis for planning public concerts and recitals. There, the programs are usually limited by the capabilities of the artists, or the facilities of orchestras. Records afford greater flexibility, since there may be good reason for combining the work of different artists or orchestras under different conductors, or for introducing soloists in programs such as could not be offered in public for practical reasons.

When something as completely new and original as the MUSIC AT HOME Record Programs is first offered, it must be understood that they are only in an initial form, and subject to improvement and refinement as times goes on.

Looking forward, because our Record Programs will be a continuing feature, the possibilities of this innovation are highly intriguing. Their usefulness and flexibility are as unlimited as music itself, and their value to readers can be made as extensive as the interests and purposes of all the different tastes of people who enjoy listening to music.

If you consider the programs in this issue as experimental models, to be modified, refined, and redesigned in accordance with the suggestions of our readers, then you can expect this innovation to become a truly outstanding feature. We believe that the more you think about this idea, the more enthusiastic you will become.

**Jonathan Schiller:** You will meet Jonathan Schiller in this issue, for he contributed several of the record concert programs. During his undergraduate days at Amherst, when the college had a poor music department, he organized and gave to interested fellow students a non-credit course on music via recordings. He did this so that he could learn some-

## Hi-Fi Notes

(Continued from page 4)

thing about good music himself. Since then, except for four years as a graduate student in music at Harvard, he has spent most of his time helping others to enjoy good music as a lecturer before adult audiences, and as a college teacher of courses in music literature and music history. During the spring and summer of 1952, he was sent by the State Department on a tour of the U. S. Information Centers in Western Germany where, with the aid of recordings, he spread the good word about contemporary American music.

For the past several years, Jonathan Schiller has furnished many analytical notes for classical LPs issued by RCA Victor, Decca, Concert Hall, Handel Society, and Musical Masterworks Society. He is currently at work on a book on recorded chamber music. Needless to say, his hobby is records, and he owns an extensive library. In order to get to the bottom of every groove, he has invested in a magnificent hi-fi installation which, he claims, is the best in New York city!

**Fred Reynolds:** The program of popular music was contributed by Fred Reynolds. He was reluctant to tackle this assignment for, as he told us, tastes differ widely in different parts of the Country and, in undertaking to please one part of our readership, he might make another part quite dissatisfied. We had to promise that we'd take the risk, and forward all comments to him, favorable or otherwise.

Fred Reynolds has been a record collector ever since someone rumored to him one day back at Peddie School in Heights-town, New Jersey, that by writing a column for the school paper he could receive free records. Being assistant editor of the sheet, it wasn't too difficult in those days.

That started him out on a career of writing about records, and gave him a love for music that otherwise he might not have acquired. Now, Fred Reynolds has become a well-known disk-jockey on WGN Chicago, and the reviewer of popular and jazz music for the Chicago Tribune.

It can be stated quite truthfully that Reynolds is a study in hi-fidelity, as speakers and records overflow his home in Wilmette, Illinois. But all of this is very all right with his wife and three children, so it couldn't be nicer. We hope to keep him as a regular contributor.

**Herman Neuman:** Just at the time we asked Herman Neuman to put together two record programs for this issue, he was in the midst of preparations for the annual Music Festival staged by the Municipal Broadcasting System of the City of New York. That is one of his major responsibilities, since he is musical

(Concluded on page 64)

# A New Tape Library makes its debut . . .

and offers you a new  
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this thrilling medium



Because tape-recorded music is *permanent* and *wear-proof*, high fidelity music lovers are turning to tape for program quality music that sounds as if it were "off the line."

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Borodin: Polovtsian Dances
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Schumann: Manfred Overture  
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## Records, Tape and FM Radio

**Recording Companies:** Only 100 records were made by 469 of the companies listed as record manufacturers in 1953, while 22 companies did 96% of the year's total business.

**Maintaining Hi-Fi Performance:** It is only to be expected that a fine audio system exaggerates any fault that may develop either through an actual failure or need of normal maintenance. And just because equipment is good, it cannot be assumed that it will never need attention. Until recently, simple means have not been available for checking performance periodically. Much interest has been attracted, therefore, by the Dubbings test tapes for checking recorders. Two types are intended for 7½ and 15-in. speeds. With a very simple procedure which does not require the use of measuring instruments, one tape tests for wow and flutter, head alignment, frequency response, signal-to-noise ratio, signal level, and tape speed.

Here, incidentally, is a definite start in new business for servicemen, or for hi-fi dealers who are developing service departments. Many critical listeners who recognize defects in their equipment promptly do not have the time or inclination to investigate and correct troubles.

**FM Music Listeners:** During an important musical broadcast from Niagara Falls station WHLD-FM, a technical failure interrupted the program. Phone calls poured in at the station switchboard and at the Niagara Falls Gazette office to the total of 2,600! Also, newspapers in Buffalo asked for information that they could give to listeners who were swamping them with phone calls, too.

**Critical Comment:** Nicholas Rosa, discussing the performance of factory-built equipment more distinguished by advertising claims than fine audio quality: "That kind of hi-fi is low-fi but louder."

**Letter Perfect:** Because tapes can be cut and spliced so readily, recording studios are coming to require virtually perfect performances. In recording "I Can't get Started" (Livingston) by Barbara Carroll, there were nine takes before the final tape was made. There's nothing unusual about that. Sometimes two to three hours are spent to get five minutes of music in the course of recording the work of a large orchestra.

(Concluded on page 7)

*Music at Home*

## Records, Tape, FM Radio

(Continued from page 6)

**In Case You Missed It:** This hasn't anything to do with hi-fi. It is a quotation from a Warner & Swazey advertisement, headed "Beware of the Quack Quacks". In case you missed it, we think you will be glad to read it here:

Once upon a time a farmer had a fine flock of ducks. He fed them well, and in return they laid many eggs. The more they laid, the better he could afford to feed them. The more he fed them, the better they produced. They were the best-fed ducks in the world and he was one of the most prosperous owner-managers.

Then one day a strange duck flew in and joined the flock. He was against giving the farmer any eggs — "We should get everything we produce; the farmer contributes nothing." "But who would travel to town for our feed," asked the other ducks, "who would provide fences against dogs?"

"Capitalist-lover," sneered the strange duck.

And he was persuasive. In time he had all the ducks unhappy and half believing him. Egg production was slowed down.

That meant the farmer couldn't buy as much feed. Then the hungry ducks couldn't lay as well.

The agitator blamed the less feed on "the selfish" farmer, and still fewer eggs were laid. Finally there were not enough eggs to justify trips to town for feed. There was only one thing left for the saddened, poor farmer to do . . . he took the flock to town for slaughtering. But the strange duck had fled.

In town he found he hadn't had ducks at all. Every one of them had been a goose.

**Taped at Florence:** With music becoming available on tape that has not been cut for records, there is reason to expect that tape libraries will grow to dimensions of considerable importance. Audiosphere has made a start in that direction with binaural and monaural tapes of the May Festival staged at the Teatro Comunale in Florence. It is beginning to appear the future of prerecorded tape lies in the field of super-quality reproduction of the very finest original music.

Also, of course, tape is the logical means for binaural reproduction of selections running 30 minutes or more. And the binaural Audiosphere tapes are really wonderful to hear.

**Needed — a Second Phonograph:** Even some of the long-hairs who go to the barber only once every springtime are buying inexpensive record-players now. How come? They are parents of children ranging from grammar school to college age. Letting them have a record-player of their own is the best way to keep them away from hi-fi equipment. It's much cheaper than replacing broken styli and scratched records. Moreover, this is probably the best way to teach them respect for expensive gear.

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**Specifications.** Rated output: 24 watts. Frequency response:  $\pm 0.75$  db, 20 to 40,000 cps at rated output. Harmonic distortion: less than 1% at rated output. Intermodulation: less than 0.5% at normal listening level, less than 2% at rated

output (60 cps and 7 kc tones; 4:1 ratio). Hum and noise: 80 db below rated output. Speaker out. imp.: 8 and 16 ohms. 4 inputs: 1 magnetic phono, 1 high-imp. mike, 1 tuner, 1 aux. (for crystal phono, tape, TV, etc.). Controls: Off-on-volume; Bass (calibrated from +16 to -16 db); Treble (+16 to -16 db); Input-Equalizer Selector (Aux, Tuner, Mic, Flat, AES, and NARTB). Controls at top of chassis: G.E.-Pickering input switch; also bias, output balance, hum balance controls (screw-driver type). Tubes: 3-12AX7, 2-6L6; 5U4G rect. Entire chassis is beautifully finished in satin-gold. Size: 8 x 14 x 9" deep. Complete with tubes, connectors, instructions; with control shaft extenders and removable lucite panel. For 110-130 v., 50-60 cy. AC. Shpg. wt., 30 lbs.

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A super-value, true high fidelity phono system, ready for custom installation. Includes color-coded cables, plugs, hardware and instructions for quick, easy hookup. The complete system includes: the "Golden Knight" amplifier (described above); the famous Electro-Voice SP12-B 12" Radax Speaker (with built-in "Whizzer" high-frequency radiator); the precision-built Garrard RC-80 3-speed record changer, and the General Electric RPX-050 triple-play cartridge with dual-tip sapphire stylus. These top-quality matched components form a superb high fidelity installation at a truly modest price. For 110-120 volts. 60 cycle AC. Shpg. wt., 60 lbs.

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# FACTS

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**BULLETIN 185.** Tells about E-V REGENCY folded horn enclosure with built-in corner for 15" coaxial speakers or separate 2- and 3-way speaker systems. Has full data on E-V BARONET corner enclosure for 8" speakers.

**BULLETIN 172.** Chart for building complete high fidelity Residence Entertainment Center, with ideal reproducer system. Includes space for all audio components, radio-phonograph, television receiver, etc.

**BULLETIN 173.** Construction drawing details and mounting information on how to build the famous E-V PATRICIAN folded horn corner enclosure for today's outstanding 4-way reproducer system.

**BULLETIN 174.** How to build BARONET corner enclosure for 8" speaker.

**BULLETIN 175.** Construction drawing on E-V ARISTOCRAT corner enclosure for 12" speaker systems.

**BULLETIN 176.** Building E-V REGENCY enclosure for 2-way and 3-way systems.

**BULLETIN 196.** Explains about E-V PATRICIAN 4-way audio reproducer in custom-crafted corner enclosure—Hi-Fi experts say; "finest of all."

**BULLETIN 199.** Tells about the magnificent new GEORGIAN 4-way reproducer in folded horn enclosure.

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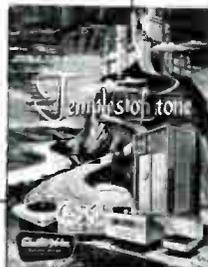
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# MUSIC for YOUR HOME

JUDGING from comments pouring in from all quarters, the most important things to report in this issue of MUSIC AT HOME have to do with this Magazine itself. But first, to the thousands of people who have subscribed to this new publication even before the first issue appeared — my very sincere thanks for your enthusiastic support of this undertaking!

The advance announcements described a magazine devoted to helping its readers get more pleasure, more satisfaction from music on records, tape, and FM radio. That was more than a promise. It expressed the conviction, born of long experience, that everyone enjoys musical entertainment at home, and the more realistic the quality of reproduction, the more enjoyable the music — whether the original was a symphony orchestra, a hot trombone, a hillbilly band, or a crooner giving out with the blues.

Music can make a more important contribution to the home than any other form of entertainment. It has a special appeal for each member of the family, from the little tot who, with uncertain steps, responds to the rhythm of tunes for children, to the grandparents for whom music recreates happy events of days gone by. And for those of ages in between, there is music for dancing, for relaxation, and for the pure joy of listening.

THIS assumes, of course, that what is heard from the loud-speaker is an accurate recreation of the original music. We have come to call this hi-fi reproduction. There is no exact definition of this term, nor have the engineers agreed on any way to identify it technically.

So we say that hi-fi means realism, the kind of tone quality you would hear if, by some magic, you could summon your favorite artists and musicians to perform in your own living room. The realism of hi-fi reproduction is often referred to as *presence effect* because the music is so compelling that you find yourself giving it your undivided attention. Thus, when you listen to hi-fi, you can no more carry on a conversation than you would want to in a concert hall, or to play cards at the theatre.

"Well," you may say, "this is very interesting, but how do I find out which records give that kind of music? I don't know how to make tape recordings, or what to record. I have never listened to an FM station. How would I go about selecting the equipment? Where can I get such equipment as I can afford, and what will I do with it after I get it home?"

The purpose of MUSIC AT HOME is to answer all those questions and many others you will want to ask as you become more and more interested in this fascinating subject.

From issue to issue, MUSIC AT HOME will provide you with the information you need, presented simply, interestingly, understandably, in words and illustrations. In short, you will find this a "how-to" magazine, devoted to helping you to have the best in music from records, tape, and FM radio; to select the most suitable equipment for your particular purposes; and to install and use it to best advantage.

If you want to delve into the more technical, professional aspects of music and equipment, MUSIC AT HOME will help you there, too. Several excellent books treat music as the long-hair subject that it is to some people, and we'll be glad to recommend them to you. Or, if you want to get technical enough to hold your own with the wild-eyed kilocycle hunters, we can give you a list of other books that will prepare you to meet them on their own grounds.

But in the Magazine itself, we shall keep strictly to articles and special features that are informative in a straightforward way, planned for people who are interested in learning more, rather than for those who have learned most of what there is to know already.

Above all, MUSIC AT HOME will be pitched in the key of let's-have-fun-but-not-be-too-serious-about-it!

Now, I'd like to ask a personal favor of you, the readers. This magazine is published as a service to you. It would be ideal if we could talk to you in person, and learn in detail about your particular interests in music and hi-fi equipment. Then we would know exactly what kind of articles you want and don't want in MUSIC AT HOME. From these discussions, we could formulate a composite picture of your thinking.

Since our readers are spread throughout the forty-eight states, and new ones are being added every day from other countries, we must rely on you to express your ideas in letters. We want your opinions. Most of all, we want your criticisms of what you find in MUSIC AT HOME, and your suggestions as to improvements that can be incorporated in future issues. While bouquets are always welcome, the brickbats are more helpful to us in serving you! And whatever you say, you can be certain that your comments will be read with thoughtful attention, and your views recorded for the guidance of our editorial department in our work of planning future issues.

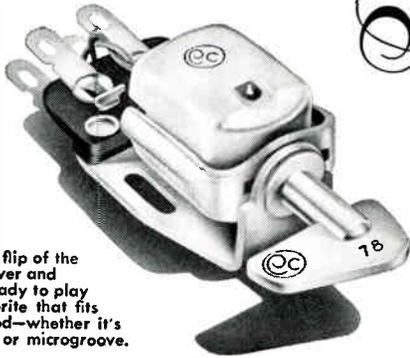


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## PLAN YOUR MUSIC

*The compositions you hear at public concerts are selected with the greatest care, not only for your entertainment but as contributions to your knowledge and appreciation of music. The same purposes will be served if you play your records as planned musical programs. Here, for the first time, selections are expertly combined to make up record concerts to please people of different tastes*

LISTENING to good music — any kind of music from a fine hi-fi system — is enjoyable. But there are many times when the music you play means much more if the selections are very carefully chosen in advance to suit the mood and purpose of a particular occasion.

When, for example, you invite a friend or a group to share the entertainment which your hi-fi system affords, you should be certain of having on hand the particular kind of music in which your friends are interested. Some may be impressed by show-off records that serve to demonstrate the range or volume capabilities of your system, but a little of that is plenty for guests who had looked forward to a pleasant evening with the works of their favorite composers and artists.

Worst of all is to promise your friends a special treat of fine reproduction and then, after they arrive, to ask them: "Well, now, what would you like to hear?" Chances are that they will ask for records you don't have. After you have said repeatedly, "No, I don't have that, but wouldn't you like to hear this?" they will stop telling you what they would prefer to hear, and resign themselves to hearing whatever you select, whether they like it or not. And that is a sure way to make certain your friends will not accept a similar invitation from you again.

Rather, a concert at home can and should be planned as carefully as any public performance. In the latter case, you have an opportunity to study a printed announcement in advance. If it appeals to you, you go, confident that the selections to be played will have been selected expertly, and so related as to make up an enjoyable, worthwhile evening.

Listening to records chosen at random is an easy way to spend an idle evening, but there is much more to be gained from planned programs if you are seriously interested in

developing your knowledge of music, and your appreciation of the best in compositions, composers, conductors, and artists.

What is the best? Let us say that you want the best of whatever kind of music interests you, or those you plan to entertain. It is not unusual to hear people say: "I enjoy both classical and jazz music." There is no rule that says one kind of music must be considered acceptable, and all others must be rejected. There is no reason to criticize the taste of the person who prefers a string quartet to a full orchestra, or the person whose taste runs to the nostalgic airs in the list of old standard favorites.

No two experts think together along the same groove — and that is good, as you will see from the program plans offered on the following pages. These have been made up by Herman Neuman, musical director of New York City's Municipal Broadcasting System; Jonathan Schiller, author, teacher, and authority on recorded music; and Fred Reynolds, reviewer of popular and jazz records for the *Chicago Tribune*, and disk jockey at WGN.

In forthcoming issues of Music AT HOME, a wide variety of programs planned to suit the different tastes and preferences of our readers will be offered by experts who specialize in particular types of music. Try this planned-program idea in your home. See how it works out as a contribution to your own appreciation of music, and to the entertainment of your guests. We believe you will find it so successful that you will want to try your own hand at making up other programs to please yourself, your family, and your friends.

Letters telling of your experiences, and requests for particular types of programs will be most welcome. Interesting comments and discussions of this subject will be published in the Notes and Comments department.

# Concert of Orchestral Music

**T**HIS program of orchestral music is planned for those who enjoy music, but feel that they do not yet know their way around it. You might encounter it in any concert hall. All of these works appear with regularity year after year on symphony orchestra programs throughout the country. Aside from the Ravel and the Copland, each is one of the standard compositions of orchestral music. The entire program makes good and easy listening.

1. **Bach**—Toccat and Fugue in D minor—Leopold Stokowski and Symphony Orchestra.

**Side 2, Band 1 Victor LRM-7033**

2. **Beethoven**—Symphony No. 1 in C major—Bruno Walter and the New York Philharmonic Symphony Orchestra.

**Columbia ML-2027**

3. **Tchaikovsky**—Romeo and Juliet—Vladimir Golschmann and the St. Louis Symphony Orchestra.

**Side 1, Capitol P-8225**

4. **Prokofiev**—Peter and the Wolf—Alec Guinness narrator, and Boston Pops Orchestra conducted by Arthur Fiedler.

**Columbia ML-2203**

5. **Copland**—El Salón México—Leonard Bernstein and the Columbia Symphony Orchestra.

**Columbia ML-2203**

## ENCORES

6. **Ravel**—Pavanne pour une Infante Défunte—Ernest Ansermet and the Orchestra de la Suisse Romande.

**London LL-696**

7. **Johann Strauss**—Tales from the Vienna Woods—Clemens Krauss and the Vienna Philharmonic Orchestra.

**London LD-9030**

1. "Toccat and Fugue in D minor," originally written for organ, was one of the first of Leopold Stokowski's successful transcriptions of Bach. Its first public performance some twenty years ago created a sensation, for no one had ever heard Bach like this. In its orchestral version, it has done a great deal toward making Bach known and loved by masses of music lovers. The Toccata is brilliant and fiery, with its rushing scale passages and full chords, while the Fugue, of polyphonic mold, is a glowing texture of tone.



2. Beethoven's "First Symphony," written at the end of the 18th century has a certain freshness, a quaint beauty, and much charm. It sounds like innocent music indeed, but when it was first heard, listeners labelled it "the confused explosions of the outrageous effrontery of a young man" and a work full of "barbaric dissonances." It is music that overflows with echoes of Haydn and Mozart, but there are certain pages — notably the first movement with its urgent, propulsive rhythm, and the third movement — that could have been written only by Beethoven.

3. The list of composers who have been inspired by Shakespeare is endless. Among them, Tchaikovsky is one of the very few whose music speaks with the elemental passion and strife that grip us as do Shakespeare's words. Perhaps some of the passion of this music may have been due to actual experience, for when the composer wrote "Romeo and Juliet" at the age of twenty-nine, he was going through the only real love affair of his life. The work was Tchaikovsky's first authentic orchestral masterpiece, and has become one of his most popular.



4. The late Serge Prokofiev was Soviet Russia's greatest composer. About two decades ago, he completed an orchestral fairy tale for children which was first performed at a children's concert in Moscow on May 2, 1936. The cardinal virtue of "Peter and the Wolf," as numerous concert performances of it have revealed, is that, like all great fairy tales, it is fresh and absorbing to all alert minds at any age, six or sixty. It has more than the surface charm of an average story intended for children. Alec Guinness, distinguished British star of stage and screen, will tell you all about it.



5. "El Salón México," a delightfully spirited and picturesque composition, is the result of a visit Aaron Copland, eminent American composer, made to Mexico in the fall of 1932. "Any composer who goes outside his native land wants to return bearing musical souvenirs," Mr. Copland said. "It wasn't until 1933 that I began to assemble mine into the form of an orchestral work." El Salón México is the name of a popular dance hall that flourished in Mexico City at the time of Copland's first visit and, using that as a point of departure, the composer set out to write a piece that would describe the spirit of the Mexican people.



6. The Ravel "Pavanne" is one of the French composer's earliest popular works. It is a reincarnation and elaboration of a stately Spanish dance form which was popular in the 16th and 17th centuries. Notice how the main theme keeps returning time after time, as a refrain.



7. Of all the Johann Strauss waltzes, none is more popular than "Tales From the Vienna Woods." None is more elaborate, yet more perfect either. The piece is much more of a concert waltz than music designed for dancing. In a way, this is a complement to the "Blue Danube Waltz." The latter celebrates the waters of Vienna, the former sings of its earth. — *Jonathan Schiller.*

# Evening of Operatic Music

**D**o you happen to recall those memorable Sunday night concerts at the Metropolitan Opera House when a great many of the artists appeared in excerpts from the opera repertoire? By means of present day recordings, we can outdo the great Met in this regard, and here is a sample program.

Play it on an evening when you are in the mood for operatic music, but not quite prepared to hear the score of a single opera from beginning to end. For such an occasion, six records have been chosen, and two encores.

1. **Mozart**—Excerpts from *The Marriage of Figaro*—Overture: London Symphony Orchestra conducted by Josef Krips. **London LLP-356**  
Arias: *Voi Che Sapete*, *Dove Sono*, Elizabeth Schwarzkopf. **Angel 35021**
2. **Verdi**—Excerpts from *Rigoletto*—Arias: *Pari siamo*, *Caro Nome*, Leonard Warren, Erna Berger.  
**Side 1, band 2 and 4 Victor LM-1004**
3. **Puccini**—*La Boheme*, Act III—*Albanese*, McKnight, Pearce, Valentino, and NBC Symphony Orchestra conducted by Toscanini. **Side 3 Victor LM-6006**
4. **Wagner**—*Liebesnacht* from *Tristan and Isolde*—Kirsten Flagstad and Set Svanholm. **Side 2 Victor LM-1151**
5. **Moussorgsky**—*Coronation Scene* from *Boris Godounov*—Christov and French forces, conducted by Dobrowen. **Victor LHMV-1052**

## ENCORES

6. **Bizet**—*Carmen Suite*—NBC Symphony Orchestra conducted by Arturo Toscanini. **Side 1 Victor LRM-7013**
7. **Gershwin**—*I Got Plenty O'Nuttin* from *Porgy and Bess*—Lawrence Winters. **Side 1, Band 4 Columbia AAL-31**

1. For all its social satire, Beaumarchais' play, which was the basis for Mozart's opera "The Marriage of Figaro" was almost an 18th century equivalent of the drawing room comedies of Noel Coward which delight theatre audiences today. Under the circumstances, terseness and wit are prime requisites for its overture. The music that Mozart composed fills the bill perfectly.

One of the loveliest European importations to score a tremendous success here recently was the beautiful lyric soprano, Elizabeth Schwarzkopf, who has been the toast of Europe for some time. In the aria, "Voi Che Sapete," Miss Schwarzkopf impersonates the adolescent lover, Cherubino, who is describing to the Countess his idea of the vague emotions of love. In the "Dove Sono," Miss Schwarzkopf portrays the unhappy Countess who, realizing her husband's infidelities, bemoans her lost days of happiness.



2. When Rossini, the famous opera composer came to know *Rigoletto*, he exclaimed, "In this music, I at last recognize Verdi's genius." He could not have uttered a truer word, for *Rigoletto* has been a staple commodity of

opera houses all over the world and an especial favorite with operagoers everywhere. From this opera, Leonard Warren sings the great aria, "Pari Siamo," which reveals the reflective and tender sides of *Rigoletto*'s character. Erna Berger is heard in the well-known aria "Caro Nome" in which, as Gilda, she declares her love for the Duke, who is disguised as a poor, struggling student.



3. "La Boheme" is the best and the most popular of Puccini's operas. We shall hear the entire third act (the finest of the four) in which the two pairs of lovers, Mimi and Rodolfo, Musetta and Marcello, are temporarily at odds. This act contains some of the most beautiful music ever to flow from Puccini's pen.



4. No program of operatic music would be complete without something by Richard Wagner. The greatest present-day interpreter of his incandescent music is Kirsten Flagstad, who is heard with Set Svanholm in the ecstatic love music from Act II of "Tristan and Isolde." Sitting in a concealed arbor, these two pour out their undying love for each other.



5. The greatest Russian opera of all times is Moussorgsky's powerful *Boris Godounov*, which is overwhelming musically and dramatically in its impact. It is a work truly Russian to the core in which the Russian people are the hero. They are given great prominence throughout the opera by means of individualized choruses. Here is the most famous of them, the *Coronation Scene*, which takes place in the great square. The music depicts the festivities at the time of Boris' coronation as Czar.



6. French opera is represented by Bizet's "Carmen," a work which has won nearly universal approval the world over. In the light of its tremendous popularity, it is hard to believe that *Carmen* was a failure at its first performance some eighty years ago in Paris. This performance of excerpts from the score by Maestro Toscanini and the NBC Symphony Orchestra adds an extra dimension to the music for, under the Maestro's direction, the music glows with a beauty and fire rarely given to it in the opera house.



7. Let's not forget American opera on this program. By all odds, the most successful native opera has been Gershwin's great "Porgy and Bess." Here is operatic music that is down to earth, easy and enjoyable to listen to, and packed with wonderful, singable melodies. One of the best of them is "I Got Plenty O'Nuttin," Porgy's declaration of his "great wealth." — *Jonathan Schiller*.

# SCANDINAVIAN PROGRAM

**M**USIC AT HOME opens up a vista of infinite possibilities for the discerning host and hostess. Music and good food usually spell success for that extra-special evening with congenial friends who will enjoy the performance of a hi-fi system. It should be planned around a definite theme, however, so that the *toute ensemble* will show evidence of careful thought above and beyond the call of social duty. So why not get away from the run-of-the-mill kind of musical evening? How about a hands-across-the-sea program, and give your guests an opportunity to hear music from one of the friendly foreign countries. Here, then, is a program of Scandinavian music, which provides the perfect accompaniment for Smörgasbord!

While the hostess dedicates herself to the artistic preparation and presentation of Scandinavian delectables, there is time for the host to get out the records to be played, and to double-check his hi-fi equipment. About that last item: if all is well, let well enough alone thereafter. There is nothing as distracting to a hostess when she is making last-minute preparations for her guests as the host who worries her with uncertainty about his audio equipment. The peaceful pursuit of program-making should be enough to keep the host out of such mischief.

The compositions listed here are suggested as those which, played together, most effectively set the musical scene for a dinner which features all the delightful food of Scandinavian origin.

1. **Edvard Grieg**—Two Symphonic Dances. **Mercury LP 10132**
2. **Knudaage Riisager**—Concertino for Trumpet and Orchestra. **Mercury MG 15041**
3. **Carl Nielsen**—Sinfonia Espansiva. **London LL 100**
4. **Hugo Alfvén**—Midsommarvaka (Midsummer Eve Festival). **Columbia AAL35 or London LL 406**

1. This melodious music by Norway's most famous composer ought to help everyone to settle down for the listening pleasures of the evening. It may also give those last-minute folks a chance to slip into those rear corner chairs not far from the Smörgasbord table. Who was it that said the last shall be first?

At any rate, the jovial dances of Grieg will set the mood. There are, of course, more than two dances on this LP recording. All are delightfully and authentically played by the excellent Danish National Orchestra, conducted by Erik Tuxen.



2. It's easy to listen to this sprightly piece by Denmark's able contemporary composer. This is brilliantly effective as performed by the English trumpet virtuoso,

George Eskdale, with the Danish State Radio Orchestra, Thomas Jensen conducting.



3. Next comes the major opus of the evening, selected to acquaint the audience with the fine music of Denmark's outstanding symphonic master, Carl Nielsen. This gifted composer was born the same year as Sibelius, in the country near Odense, birthplace of the great story teller, Hans Christian Andersen. As Erik Tuxen, conductor of this recorded performance, puts it: "Nielsen's music is very closely associated with the nature of his country, as is that of Sibelius. The Finnish master had a very inspiring background in the landscape of Finland, with its thousands of lakes, and big, mysterious forests. The music of Carl Nielsen is born out of the calm, ethereal Danish nature with its soft colors and lack of dramatic accents."

It is possible that lovers of the classics will find his music quite modern, while those addicted to the harmonies of the modern school may even consider him a bit old-fashioned. It is a matter of viewpoint. Suffice it to say that Nielsen's works are slowly finding interested listeners beyond the borders of his native Denmark. The record connoisseur will find his second, third, fourth, fifth, and sixth symphonies available on LP or 78 rpm records.



4. This brings the musical program to a point where it is time to please all concerned with a soul-satisfying finale. Let it be Swedish — a Swedish rhapsody titled Midsommarvaka, or Midsummer Eve Festival. This cheerful and melodious piece, strongly influenced by folk melodies, is the creation of the Grand Old Man among the Swedish moderns, Hugo Alfvén.

In the interests of international good will, suppose we have an American conductor and orchestra to play this composition. There is a choice on LP recordings from which, according to your preference, you can select Columbia's recording of Eugene Ormandy and the Philadelphia Orchestra, or London's Thor Johnson and the Cincinnati Orchestra.



P. S. Just in case you'd like some assistance in the culinary department for this evening of Scandinavian music, take a look at the book "Open Sandwiches, an Introduction to the Danish Culinary Art" by Asta Bang and Edith Rode, published by Bonniers, Inc., 605 Madison Avenue, New York. We saw it at the Danish Information Office, 588 Fifth Avenue. What appetizing pictures! Also, the Norwegian Information Office in Norway House, Madison Avenue, issues a free newsletter once a month. It includes some wonderful and intriguing recipes. — *Herman Neuman.*

# PROGRAM of EASTER MUSIC

FROM TIME immemorial music has played a very important role in the service of religion and some of music's most moving pages are tone-poems inspired by religious feeling. This program of Easter music includes sacred music which was designed to play a part in church worship and secular music, not part of a divine service, yet embodying the religious impulse.

1. **Bach**—Excerpts from the Easter Oratorio—Sinfonia for Orchestra, Adagio for Oboe and Strings, Duet and Chorus: Kommt, Eilet und Laufet—Vienna Chamber Orchestra, Akademie Choir and Soloists, conducted by Felix Prohaska.  
**Side 1, bands 1, 2, 3 Vanguard-Bach Guild BG507**
2. **Bach**—St. Matthew Passion—Soloists, Chorus and Orchestra conducted by Hermann Scherchen.  
**Westminster WAL 401**
3. **Wagner**—Prelude and Good Friday Spell from Parsifal—Munich State Opera Orchestra conducted by Franz Konwitschny.  
**Side 2 Urania URIP 7065**
4. **Rimsky-Korsakov**—Overture, The Russian Easter op. 36 Philadelphia Orchestra conducted by Eugene Ormandy.  
**Columbia ML-2035**

## ENCORE

5. **Bach**—Walton—Excerpts from The Wise Virgins, Sheep May Safely Graze, Praise Be to God—Vienna State Opera Orchestra conducted by Franz Litschauer.  
**Side 1, bands 5, 6 Vanguard VRS-440**

1. The greatest composer of church music in the Protestant tradition was Johann Sebastian Bach. His religious music was mostly utilitarian. Over a period of five years, while he was in charge of music at the St. Thomas Church in Leipzig, he had to supply music (almost always from his own pen) for the service on Sundays and holidays of this Lutheran church. The "Easter Oratorio," which tells of the Resurrection, is joyous music "fresh and verdant, spring-like in its innocence and reaffirmation of life." The opening duet and chorus of the third band portrays Peter and John, informed of Christ's resurrection, running to the tomb.



2. One of the most imposing of Bach's religious works in grandeur and magnitude of conception is his setting of the Passion according to St. Matthew (1729). By universal consent, this vivid presentation of a text describing the agony and sufferings of Jesus has never been surpassed by any other composer.

The entire "St. Matthew Passion" takes some three hours and forty minutes in performance — almost double the amount of time allotted for one of our suggested home concerts. No specific portions of the St. Matthew Passion have been singled out for listening, for the work should be heard in its entirety to be fully appreciated. Besides,

it is hard to choose specific sections in a recording of a long work of this kind. Regardless of where you start listening, you won't stop until you have heard the entire recording for the music is so eloquent and the recording so splendid.



3. Richard Wagner, primarily an opera composer, believed that the music drama could achieve the same spirituality as the devotional rites of the church. The highly expressive "Prelude to Parsifal" symbolizes in tone the idea of Love, Faith and Hope which permeates the whole drama. The "Good Friday Spell," an indescribably beautiful episode, occurs in Act III. Parsifal, the son of Lohengrin, who has withstood temptation as he wandered about the world, returns to the brotherhood of the Knights of the Grail on this most solemn of holidays. Noticing the supreme beauty of the fields and flowers and the benediction that appears to rest upon them, Parsifal is told that this is the magic of Good Friday, the day on which all creation rejoices in the Saviour's sacrifice and love.



4. In his autobiography, "My Musical Life," Rimsky-Korsakov tells us: "This legendary and heathen side of the Easter holiday, this transition from the gloomy and mysterious evening of Passion Saturday to the unbridled pagan-religious merry-making on the morn of Easter Sunday is what I was eager to reproduce in my 'Overture' . . . In order to appreciate my 'Overture' even ever so slightly, it is necessary that the hearer should have attended Easter morning service at least once, and at that, not in a domestic chapel, but in a cathedral thronged with people from every walk of life, with several priests conducting the cathedral service." This work is based on themes of the "Obikhod" — a collection of the best-known chants of the Russian Orthodox church.



5. Here is an instance in which a portion of the New Testament is utilized for ballet purposes. In 1940, the late Constant Lambert produced a charming ballet for "Sadler's Wells," using as its scenario the parable of the Wise and Foolish Virgins as told by St. Matthew (Chap. XXV). The music for the ballet was furnished by Sir William Walton, now Master of the King's Music, who skillfully arranged for the purpose certain movements from various cantatas and organ works of J. S. Bach. While "Sheep May Safely Graze" is heard in the ballet, the bride is decked out in her bridal raiment and the lovers pass through the portal attended by the Wise Virgins. Strains of "What God Hath Done," used as the opening number, return as the Foolish Virgins arrive only to find the door closed. "Praise Be to God" accompanies the triumphal return of the bridal procession. — *Jonathan Schiller.*

# Recital of Keyboard Music

HERE is a recital of keyboard music that you can hear only at home by means of recordings. The program itself might well be heard in a concert hall where, outside of the Mozart, it would undoubtedly be played by a single artist. In this instance, however, the music is performed by eight different artists, all of them celebrated, and each more or less of a specialist in the music that he or she performs on this program.

1. **Vivaldi-Bach**—Concerto in D major—Wanda Landowska.  
**Side 2, band 6 Victor LM 1217**
2. **Mozart**—Sonata in D, K448—Luboshutz and Nemenoff.  
**Remington 199-147**
3. **Schumann**—Carnaval—Guiomar Novaes. **Vox PL-7830**
4. **Chopin**—Scherzo in B flat minor—Artur Rubinstein.  
**Side 1, band 2 Victor LM-1132**  
Fantasie-Improptu. **Side 2, band 4 Victor LM-1153**  
Polonaise in A flat. **Side 2, band 3 Victor LM-1205**
5. **Brahms**—Four Piano Pieces, op. 119—Walter Giesecking.  
**Angel 35027**
6. **Debussy**—Reflets dans l'Eau, Poissons d'Or—Walter Giesecking.  
**Columbia ML-4773.**

## ENCORES

7. **Barber**—Four Excursions—Rudolf Firkusny.  
**Columbia ML-2174**
8. **V. Thomson**—Ragtime Bass—Maxim Schapiro.  
**Side 2, band 5 Decca DL-4083**

1. Wanda Landowska is the undisputed "first lady" of the harpsichord which was the *roi soleil* of instruments before the piano put it out of business. The harpsichord has a beautiful tone quality all of its own, and Landowska's playing of it is remarkable for its richness of imagination, nobility, and refinement. This concerto, written by Vivaldi in the closing years of the 17th century, was scored originally for violin solo and strings. The great J. S. Bach transcribed the work for harpsichord. There are three movements: the first, a sumptuous, magnificent allegro; the second, a beautiful slow movement; and a final portion overflowing with exuberant dance rhythms.



2. Walter Giesecking, internationally famed German pianist, is heard in music by Brahms and Debussy. The latter is his great speciality. The Brahms pieces, op. 119, consist of three short intermezzi, subjective character-pieces filled with romantic fantasy, and the well-known, exciting "Rhapsody in E flat major."



3. Luboshutz and Nemenoff are one of the finest two-piano teams. These artists are also one of the oldest of such groups and, because they have played together for

so long, their work is closely integrated and beautifully proportioned. They are heard here in one of the loveliest keyboard works of Mozart in which the pianos are of equal prominence and brilliance. You will enjoy the dialoguing between the two instruments, the delicacy and refinement of the ornamental passages, the feeling for sonority in the combination and exploitation of the different registers of the two pianos.



4. Guiomar Novaes, the Brazilian pianist, is one of today's most distinguished woman pianists. She has a very special way with the "Schumann Carnaval." It is one of her finest interpretations and one of her best recordings. The piece itself is one of the most beloved works in the piano literature. The Carnaval is a collection of short pieces, each of which bears a title (be sure and read the notes on the LP jacket before listening!). Some of the movements describe such real people as Chopin and Paganini. Several are descriptions of different aspects of Schumann's own character, and a great many are just fanciful romantic concoctions dreamed up by the composer.



5. There is no more successful present day interpreter of Chopin's music than Artur Rubinstein who brings to the Polish composer's music warmth, tenderness, and deep understanding. The "Scherzo in B flat minor," the most popular of the four scherzi, is a heroic work of masculinity and power. The "Fantasie-Improptu" is one of Chopin's best known and most widely-played pieces. Its middle portion you will recognize immediately from its juke-box rebirth as "I'm Always Chasing Rainbows." The well known "Polonaise in A flat, op. 53" is an exciting piece, attaining great brilliance in its middle portion with its trumpet-like melody over the celebrated series of repeated descending octaves in the left hand.



6. Giesecking is heard here in two pieces of "water music" by Debussy, both from the French composer's "Images." The first, "Reflets dans l'Eau," a perfect example of musical impressionism, describes drowsy, flickering effects which suggest inverted images in a pool of water. The second, "Poissons d'Or," has the flash of sunlight on water and the gleam of moving fins.



7 & 8. Our encores are examples of contemporary American piano music. The Samuel Barber pieces are excursions in the small classic forms into regional American idioms, while the "Etudes" by Virgil Thomson, critic of the New York Herald-Tribune are witty, entertaining study pieces. — *Jonathan Schiller.*

# Music for Solo Instruments

VERY OFTEN, the high point of an orchestral concert for some listeners is the appearance of some soloist in a display vehicle. In this LP concert we shall hear not one but seven distinguished soloists performing upon four different solo instruments. Where but at home could you, as an impresario, arrange such an exciting concert?

1. **Handel**—Concerto No. 13 in F major, The Cuckoo and the Nightingale—Leonhardt, organ and Vienna State Chamber Orchestra conducted by Kuyler. **Oceanic 25**
2. **Mozart**—Concerto No. 9 in E flat, K. 271—Dame Myra Hess, piano and Perpignan Festival Orchestra conducted by Casals. **Columbia ML-4568**
3. **E. Bloch**—Schelomo—Nelsova, Cello and London Philharmonic Orchestra conducted by the composer. **London LS-138**
4. **de Falla**—Nights In the Gardens of Spain—Curzon, piano, and New Symphony Orchestra conducted by Jorda. **London LL-445**  
Kapell, piano and Robin Hood Dell Orchestra conducted by Steinberg. **Side 1, band 1 Victor LM-1097**

## ENCORES

6. **Ibert**—Concertino da Camera (first movement)—Abato, saxophone and Chamber Orchestra conducted by S. Shulman. **Philharmonic 103**
7. **Gershwin**—Rhapsody in Blue—Levant, piano, and Philadelphia Orchestra conducted by Ormandy. **Columbia ML-4026**

1. This concerto by the great Baroque composer, Handel, is entirely a transcription of instrumental movements written earlier. It is one of Handel's more brilliant, ingratiating concertos and is thoroughly enjoyable. The piece gets its name from the appearance of the cuckoo and the nightingale in the second movement, which is one of great charm.



2. Mozart was the first composer to establish the concerto on what we now regard as modern lines, and we can think of no finer example of his attainments than the "Piano Concerto in E flat," K. 271. Dame Myra Hess, a distinguished Mozartean in her own right, performed the work recently with the New York Philharmonic Symphony Orchestra under Bruno Walter and scored a tremendous success. This piece was written by Mozart in his very early twenties for a French virtuoso named Mlle. Jeunehomme who was visiting Salzburg. She must have been a fine musician, for this work demands both power of interpretation and brilliant technique. Dame Myra Hess reveals both in her loving performance of this music.



3. "Schelomo" is one of the finest and most moving works by the contemporary composer, Ernest Bloch. It is

also one of several in which he has attempted to describe the Jewish soul that he feels vibrating through the Bible. The piece is not a concerto in the strict sense. It is a rhapsody for violoncello and orchestra, the solo instrument representing Schelomo, the Hebrew for Solomon. The music describes the magnificence and the pessimistic, despairing philosophy of the great leader. This is an especially compelling score and, upon intimate acquaintance, will be found to be deeply rewarding.



4. Like the preceding work, "Nights in the Gardens of Spain" is not, strictly speaking, a concerto, yet the piano is beyond question the leading instrument throughout the work. The piece consists of three Nocturnes in varied and exquisite tints, for piano and orchestra. The work is an eminently Spanish creation. The first nocturne, "At Generalife" conjures up a picture of the famous gardens of Granada, situated upon a hillside overlooking the Alhambra. The music suggests visions of an ancient Moorish garden with fountains and giant cypresses. The second nocturne is "A Dance in the Distance." This is joined to the last mood picture which takes place in the Gardens of the Sierra of Cordoba — a lovely scene on the slopes of a mountain ridge. Here is atmospheric music of great effectiveness which you will enjoy a great deal.



5. A few months ago, the brilliant young American pianist, William Kapell, was killed in an airplane accident. His untimely passing has left a large void in the ranks of young native pianists for few, if any, of Kapell's colleagues possess his great interpretive gifts and technical ability. His performance of the Rachmaninoff Second Concerto was one of his smash hits. With the exception of Rachmaninoff's well known Prelude in C sharp minor, this Concerto is perhaps his most famous piece.



6. The Ibert Concertino is an interesting and out of the way modern piece. It is written for a chamber ensemble of eleven instruments and a solo alto saxophone. But don't let that frighten you for, since the turn of the present century, composers have been searching for new color resources. See how you like this snappy music which was written in 1935.



7. We know you have heard the Rhapsody in Blue before, but we feel that it deserves a place on this program because it was the first successful example of symphonic jazz (1924) and is a piece of genuine refreshing charm. You'll very much enjoy this performance of the music by the "dean" of Gershwin interpreters, Oscar Levant. — *Jonathan Schiller.*

# CONCERT of CHAMBER MUSIC

IT is indeed a shame that chamber music is the least appreciated branch of musical art, for the chamber music literature is magnificent. If you have some friends who would like to give chamber music a try, play them the following program of beautiful and easily approachable music.

1. **Beethoven**—Sonata No. 5 in F major, op. 24 Spring Sonata—Heifetz and Bay. **Side 5 Victor LM-6701**
2. **Haydn**—String Quartet in F major, op. 3, No. 5—Griller String Quartet. **London LS-65**
3. **Piston**—Sonatina for Violin and Harpsichord—Schneider and Kirkpatrick. **Side 1 Columbia ML-4495**
4. **Schumann**—Quintet in E flat for Piano and Strings, op. 44—Curzon and Budapest String Quartet. **Columbia ML-4426**

## ENCORES

5. **Tchaikovsky**—Andante Cantabile from String Quartet No. 1 in D major—Hollywood String Quartet. **Capital P-8187**
6. **Mendelssohn**—Canzonetta from String Quartet in E flat op. 12—Fine Arts String Quartet. **Side B, band 2 Mercury MG-10065**

1. We shall commence with one of the Beethoven sonatas for violin and piano, the "Spring Sonata in F major." This is the most lyrical of the nine sonatas for violin and piano and one of the loveliest. Since there is not a shadow on its bright surface, the Germans decided to give the work its nickname. Its beauties are especially apparent through Jascha Heifetz' exquisite, polished performance of it.



2. One of the finest string quartets in our country is the Griller String Quartet, now in residence at the University of California at Berkeley. They are heard in an early quartet of Haydn's whose second movement, a Serenade, is one of the most famous in quartet literature. The work is very short, in spite of its four movements, but its pages contain some beautiful touches.



3. Walter Piston, professor of music at Harvard, is one of America's most distinguished contemporary composers. He has been very interested in chamber music as a composer, and in this Sonatina has employed the harpsichord which, over two hundred years ago, yielded place to the pianoforte. Piston says: "I have long admired the harpsichord for its clarity and brilliance as well as its expressive qualities and combined with the violin; it seemed admirably suited to a contemporary chamber music style and idiom." The Sonatina is played by Alexander Schneider

and Ralph Kirkpatrick who premiered the work at Town Hall in New York City.



4. We listen next to some chamber music for five performers. This Quintet is the German composer's masterpiece in the sphere of chamber music, and a lovelier work would be hard to find. The Schumann Quintet is a piece that claims the highest admiration not only because of its beauty and innate power, but also because of its gorgeous beauty of sound, and the well-balanced relations between the piano and the strings.



5. Had Tchaikovsky not felt the need for a vacation during the early part of 1871, we might never have had his beautiful Andante Cantabile from the D major String Quartet. Being in difficult financial circumstances at the time, the composer hit upon the idea of a benefit concert as a means of raising the necessary money. Knowing that he could use only a small group of players, the composer wrote his first String Quartet for this concert, which took place on February 18, 1871. The Andante Cantabile, based in part on a folk song of Great Russia, formed the slow movement of this Quartet.



6. Another delightful chamber music movement is the Canzonetta from Mendelssohn's Quartet in E flat, op. 12. All the melodic charm, all the perfection of detail, all the deftness of touch we associate with Mendelssohn's music is in evidence here. The Canzonetta, a lyric mood of great charm, is another of the light fairy-like pieces which represent Mendelssohn's greatest contribution to music. — *Jonatban Schiller.*



P.S. It is quite possible that the reproduction of chamber music from records via radio and conventional phonographs has had a tendency to discourage interest in listening to it. String instruments by themselves are extremely difficult to reproduce, as pointed out in this issue by Dr. Hans Wolf in his article "Recording Techniques". Hence the criticism heard so often that "string quartets have such a squeaky quality that the performers seem to be sawing on my nerves."

Now, however, the excellent quality of the new recordings, plus the great improvements in audio equipment give a full, rich quality to the strings that is delightful to hear. In fact, an installation that does not give those pleasing tones must be considered subject to further improvement. It can be expected, therefore, that high-quality recordings and reproduction will contribute substantially to popularizing the music of the string quartets for home entertainment.

# PLAN for EASY LISTENING

THE great windfall of the long-playing records, while completely wonderful, has turned many of us into that sinister type of person who invites you to his home, sits you down in front of his television, and dares you not to watch. This Charles Addams creation is not unlike the character who throws on a stack of LP's by such talents as Teresa Brewer, Johnny Ray, and Sammy Kaye, turns up the volume, and then expects you to remain perfectly content with this kind of cacophony all night long. Compulsion is horrible. Such impersonal entertainment is less than flattering.

The records listed below comprise about an hour and a quarter of light music that might be played during or after dinner. All selections are pleasant, familiar, and never authoritative in a way to interfere with conversation. They are strictly instrumental. Play them at low volume, and let your record-changer do the work.

The plan behind the selection of these recordings was to make up a group of well balanced musical offerings. At the same time, they are recommendations.

All types of popular music, from the old to the new, from jazz to folk music, are represented. And no matter what that harrassed individual at your music store tells you, each and every one of these records is definitely available.

1. **Say It with Music**—Dave Pell Octet from **Trend LP 1003**
2. **Secret Love**—Doris Day. **Columbia 40108**
3. **Collegiate**—Joe "Fingers" Carr & Ragtime Band.  
from **Capitol LP LAL9023**
4. **The Nearness of You**—Lionel Hampton Quartet.  
**Clef LP MGC142**
5. **Wabash Cannonball**—Kay Starr. **Capitol 1660**
6. **Lady of Spain**—Eddie Fisher. **RCA Victor 20-4953**
7. **Same Old Moon**—Helen Ward. from  
**Columbia LP 6271**
8. **South Pacific** (Symphonic Scenario for Concert Orchestra)—Andre Kostelanetz & The Philadelphia Orchestra  
"Pops." **Columbia LP ML 4514**
9. **Vaya Con Dios**—Les Paul & Mary Ford. from  
**Capitol LP LAL9023**
10. **A Study in Percussion, Part 1**—Hal Rees.  
from **Capitol LP SAL9020**
11. **I Can't Believe that You're in Love With Me**—Bing Crosby & Carmen Cavallaro. **Decca 28963**
12. **My Heart Belongs to Daddy**—Ertha Kitt.  
from **RCA Victor LP LPM3187**
13. **Till We Two Are One**—Georgie Shaw. **Decca 28937**
14. **Stars Fell on Alabama**—Eddie Miller Trio.  
from **Jump LP 3**
15. **You'll Have to Swing It**—Ella Fitzgerald. **Decca 28774**
16. **Everything Is Peaches Down in Georgia**—Bob Scobey's Frisco Jazz Band with Clancy Hayes.  
**Good Time Jazz 86**
17. **Tuxedo Junction**—Glenn Miller & His Orchestra.  
**RCA Victor LP LPT 12**
18. **The Surrey with the Fringe on Top**—John Raitt.  
from **RCA Victor LP LPM3150**
19. **Bidin' My Time**—Mary Martin.  
from **Columbia LP ML4475**
20. **Tiger Rag**—Duke Ellington & His Orchestra.  
from **Brunswick LP BL58012**

In case you do not recall the records from their titles, these brief notes will help you to identify them:

1. Irving Berlin's splendid old song, played in modern jazz style by a marvelous offensive unit from the famed Les Brown band. . . . 2. An extremely popular recording from the film "Calamity Jane," showing to perfection the soft, wispy style of Doris Day. . . . 3. A wonderfully happy-go-lucky disk, that is very hi-fi. The original version of this tune was done in 1924 by Fred Waring and, through a strange set of circumstances, it gained favor anew late last fall. . . . 4. The swinging vibraharpist, with Oscar Peterson, Buddy Rich, and Ray Brown, in a relaxed improvisation on one of the most poignant ballads ever written. . . . 5. That rollicking folk tune, and Kay Starr really belts it about.

6. Probably America's most popular singer with the younger set, and a rich orchestration by Hugo Winterhalter. . . . 7. Helen Ward was the first singer with the great Benny Goodman band, and here she is again, still as good as ever. . . . 8. A classic blending of the magnificent score by Dick Rodgers and Oscar Hammerstein. . . . 9. Again, very high audio quality. The song has been so popular that it is by now a standard. . . . 10. For your hi-fi machine, gymnastics on many varieties of percussion instruments, all to the strains of "Mary Had a Little Lamb."

11. The American institution, Bing Crosby, at his topmost. This record was re-issued because the song is in "The Caine Mutiny." . . . 12. Cole Porter's unique ditty. Miss Kitt may never dream of making the team, but you know very well she could if she wanted to. . . . 13. How new vocalists are made in 1954; this record will do it for young Shaw. . . . 14. Showing that pretty music and jazz are compatible. Miller, Stanley Wrightsman, and George Van Eps offer proof. . . . 15. Mr. Paganini never had it so good. Many, including this reporter, consider Ella Fitzgerald the best there is in popular music. Here are some of the reasons.

16. Surely the most rollicking Dixieland band in the Country today, and Clancy Hayes sings in a free-wheeling style reminiscent of the old minstrels. . . . 17. One of the most famous numbers by one of our topmost dance bands. . . . 18. And from "Oklahoma," a sincerely beautiful job of singing, with a warm, easy clip-clop. . . . 19. The somewhat seductive charm of marvelous Mary Martin with a George Gershwin song from "Girl Crazy." . . . 20. His majesty, the Duke of Ellington, his great band, and a red, hot, and lowdown go on one of the most celebrated jazz exercises, recorded in 1929. — *Fred Reynolds.*



The five different jackets on this page represent the five parts of a quintet, one part of which is missing on each record, as you can see by checking the top line on the jackets. Upper left: Members of the quintet go over the score which they will play without the piano part. Thus, a pianist plus the record can make up a complete quintet

# YOU PLAY THE MISSING PART

By MARY L. SNOW

IF YOU PLAY with a regularly loyal and equally skillful chamber group, there is no doubt about it — there is nothing like having friends in for an evening of chamber music at home. But what group hasn't known the disappointment of a rain-check evening when the cellist's wife made previous plans to involve the poor fellow in a bridge game or the cello player just couldn't lug his instrument across town on a stormy night? Besides, if you are artistically inclined, how many times has the cello player sawed right through your solo part and ruined your delicate phrasings and nuances? How much time is wasted quibbling about retards and accelerandos when every member of your group seems to have a different idea of the proper tempo? Would you like to eliminate the arguments and play your part with professional musicians in your home? You can with records.

The idea of making records with one part missing for the amateur or professional chamber music player is not altogether new. Before the last war, in the days of 78's, Columbia had a sizable catalogue of ensemble works in their Add-A-Part series. Although there was great interest in this idea, there was not enough demand to justify large scale production. The old 78's were bulky, expensive, and distracting because they had to be changed every four minutes or so. If you didn't have a record changer, it was quite a feat to pop up from your chair, change the record, then hurry back to your seat, adjust your instrument, and catch the opening measure of the next record. The physical inconvenience was as bad as the mental and psychological frustrations of constant interruption.

These problems were inherent and insoluble in the 78 system but with the advent of Lp's, it was inevitable that some recording company would revive Columbia's project. Classic Editions with its Music Minus One series has done just that, and offers selections where one instrument's part is missing from the recording. You can play along on your part for 20 minutes without stopping, that is, if you are skillful enough to keep up with the recording artists. There is no bluffing on tempo when you play with professionals. Just to make sure you know the tempo, a recorded metronome ticks off a full measure of beat,

*This quintet-without-the-piano is making a Music Minus One record for the new Classic Editions series. The idea of playing to the accompaniment of records in which one part is missing has been made practical by the advent of long-playing records, since each side runs 20 minutes or more. At the beginning of each selection, the pitch is sounded, and a metronome ticks off the tempo. Future releases will include trios, and concerti accompanied by small orchestras. In addition, the complete versions will be made available for purposes of comparison*



before the actual playing part of the record begins. If you are supposed to be the first instrument on the scene, you start tapping your foot to catch the beat on which you make your entry. From there on to the last bar, you can play like Casals in the privacy of your own home, and if you fall somewhat short, the fellows on the disc won't be wrinkling their noses at a sour note, a creamed arpeggio, or wrong entry. You can wax sentimental over your favorite flowing solo passages, but if you slow down on the tough parts (though there is no one to stop you from faking) you will end up a couple of beats behind your recorded companions. Perhaps the family would find it a welcome relief to listen to only one set of fluffed passages, sour notes, and only one foot pounding on the floor.

Each of the MMO recordings has been done by a select group. The string works are played by members of the New York Philharmonic Symphony, the NBC Symphony Orchestra, and the Radio City Music Hall Orchestra. Most of the wind ensemble work is done by the New Art Wind Quintet (Classic Wind Ensemble) which was organized in 1947 for the purpose of furthering the appreciation and understanding of woodwind chamber music in America. The group has performed over 300 works for the woodwind ensemble, many of which have been recorded in the regular Classic Edition series.

MMO's recordings seem to have overcome the problem of pitch. Turntable speeds are pretty rigid today, requiring original recordings that must meet certain on-pitch standards. To assure this, Classic pays particular attention to getting each recording in tune with an exact 440-A on the piano. Classic's piano is always in tune, and you will have to keep yours in tune too. In string ensemble work, the instruments tune up to the violin A which is sounded on the record before each work begins. Then there are a few seconds of silence, giving you a chance to tune your instrument before the metronome beats out its one measure. On woodwind records, an oboe A is sounded, or the particular instrument which will be missing from the recording is heard playing an A.

During recording sessions, Irving Kratka, head of Classic Editions, sits up in the control room and supervises the recording. A musician himself, he doesn't believe in fiddling with the controls once the recording begins. "Let her go" is his attitude. He listens with earphones to catch bubbles in the tape, and outside interference noises. Kratka uses a single RCA 44BX mike, an Ampex 300 tape recorder with the tape speed set at 15 inches per second, and a KX-6A Newcomb preamplifier and mixer.

Among the MMO records available at present is the Schubert

Quintet in A, Opus 114 ("Trout") with one part missing of each of the five instruments. You buy only the record with your instrument missing, and the score for your instrument. Each LP plays about 20 minutes on each side, and is priced at \$5.95. The Peters Edition score parts are \$1.25 for the piano and 75c for each of the other instruments. You can buy the Mozart Quintet in A, K581, and the Brahms Quintet for Clarinet & Strings, Opus 115, with clarinet parts missing. Just completed is the Mozart Quintet in E flat for piano and winds, K452. Like the Schubert, there is an LP for each missing instrument.

Early this spring, MMO will issue the Schumann Quintet in E flat, Opus 44, the Brahms Piano Quintet in F Minor, Opus 34, the Mendelssohn Piano Trios, Opus 49 & 66 and Ravel's Quartet in F Major.

To satisfy the appetites of the rapidly growing recorder enthusiasts, Classic offers a number of discs from the Erich Katz collection with either the soprano or alto recorders missing.

Planned for fall release are two Schubert trios and six popular Beethoven trios. Future issues will include the release of numerous concerti with the orchestral part in piano reduction. The cost of hiring a symphony orchestra would be prohibitive, and Classic feels that the major interest in concerto work will be among students and amateurs who want the feel of an accompaniment. However, some thought is being given to a small orchestra of 14 or 15 pieces for MMO recordings of compositions such as

*Continued on page 63*



*Irving Kratka, who heads Classic Editions, monitors the tape, but leaves the controls strictly alone during the recording sessions*

# HOPES and ASPIRATIONS

A discussion of the plans and purposes of articles on music and related subjects to appear in forthcoming issues, and a plea for your participation in shaping the future course of this department

By DAVID HALL

MOST editorials written for the first issues of newly established magazines take the form of statements or definitions of policy. This discussion of the Music Department of MUSIC AT HOME can be described more correctly as a statement of hopes and aspirations.

Almost without exception, the existing magazines published in this Country fall into three basic categories which might be identified as 1) scholarly or educational in their contents, 2) trade or engineering journals, and 3) magazines for the technically-minded hobbyists and students. In all this, the music-loving layman and his family have come out least well — especially those who have arrived at their enthusiasm for music by way of long-playing records.

This is where MUSIC AT HOME comes into the picture. The purpose of our Music Department is to help our readers get the background knowledge of music and its reproduction that adds so much to its enjoyment, presented in such a non-technical way as to be interesting as well as readily understandable.

It is our most earnest hope that MUSIC AT HOME in the course of its growth will become known as the magazine that is most useful in helping people to have the best music and the finest reproduction of that music in their homes.

Think what "music at home" actually implies in an educational as well as an esthetic sense. Consider what day-to-day living with the world's great composers, conductors, artists, and orchestras can add to Junior's interest in continuing his piano practice . . . to Big Sister's serious participation in her high school band . . . to the whole family's social relationships with others to whom music at home means so much!

Many a music appreciation group has sprung up around one family's record collection. And many a string quartet has been formed by neighbors who, from the same source, have discovered a common interest in music.

But we shall not limit our editorial concern to serious music. Popular tunes have their proper places in American homes, and folk songs, too. That does not imply the acceptance of jukebox reproduction, but rather its rejection, in favor of the fine quality afforded by hi-fi installations. All this is a restatement of our basic editorial policy: "Music is for everyone, and the better the equipment, the greater the entertainment."

When we say that music is for everyone, we are identifying the readers whom we want to serve through the medium of MUSIC AT HOME. Thus, we want to learn from our readers what they want *their magazine* to be, for we shall have to use more than a little guesswork during the first few months of publication.

This much we do have well in mind: that is to present our own editorial thinking in the most direct and effective terms which will serve as links between those who compose and play music, and those who listen to it. Among the articles in future issues you'll find those which take you behind the scenes in composers' workshops and recording studios. Others will tell you something of the ins and outs of the music publishing and record business. And, for the benefit of parents whose children are musically gifted, we shall explore the problems of professional careers. For that information we shall draw on the experience of performing artists, teachers, concert managers, and representatives of that organization most deeply concerned with technological unemployment, the American Federation of Musicians. Perhaps, also, you would like to know something about the first steps that lead to opportunities in radio and recording studios.

While we are on the subject of technical developments and their effect on the musicians, we'd like to point out that never before have there been so many readily-available aids for listeners and amateur performers in the field of music as there are now in tape recorders, FM radios, and phonographs. One of the major services that MUSIC AT HOME plans to render is to show how the fullest advantage can be taken of these aids, both singly and in combination. Articles on this subject will deal with such topics as the use of the tape recorder in music practice, the possibilities of a record lending department for public libraries, and the availability of "good music" programs from FM stations.

It goes without saying that making music and listening to it in the home has its neighborhood and community ramifications. For that reason, MUSIC AT HOME will bring you ideas from varied sources concerning the relationship of the community to local symphony and opera projects, and summer music activities.

We'd like to have our say, directly and indirectly, about the important rôle of the public press in relation to music, and about the critics who can be a force for hapless destruction or great good, depending on their knowledge, taste, sense of historic and social perspective, and their feeling of responsibility to their readers.

As we progress, we shall publish a timetable of music festivals and other special events at home and abroad. Another section will deal with the best books about music — not just those published recently, but standard works, currently available, which are of value to those who want to learn more from reading, as well as listening.

We've observed the beginnings of tape libraries that do real credit to this recording medium, both as to the source of the music and the audio quality they make available. Early attempts were disappointing because of the undertaking to price tapes competitively with LP records. At the present state of the art, that is not practical. Fine tape copies are expensive to produce, and must be priced accordingly. We shall report on this development in detail, particularly because some of the best tapes provide music that is not available on records.

In this issue, you will find the initial version of our Record Shopping Guide. This is the last two-month's listing of new LP releases, arranged in classifications, so that you can locate quickly the particular type of music in which you are interested. Obviously, it would be impractical for any magazine to review each record in this Shopping Guide. Our undertaking is to keep you informed as to what becomes available between issues of MUSIC AT HOME. Then you can decide what records you want to hear and buy from your dealer. The Shopping Guide is not intended to compete with the catalogs, of course, but to serve as a useful supplement. The possibility of including EP's is under consideration. We'd like to have your views about that.

Finally, we want to say that the Music Department of MUSIC AT HOME represents, in a very tangible form, our conviction that there is growing up in this Country an enormous and increasing number of people who, regardless of their formal knowledge of music, share a common enjoyment of the entertainment and stimulation it provides. MUSIC AT HOME is open to everyone as a medium of expression by way of letters and articles, and as a means of furnishing information that will contribute to the cause of creating, performing, and enjoying music from records, tape, and FM radio. We hope you will find our efforts worthy of your attention and support.

# YOUR L-P RECORD SHOPPING GUIDE

The bimonthly list of new L-P releases, divided under nine classification headings. An asterisk indicates a premier recording

## ORCHESTRAL MUSIC

- Adam:** Giselle—Ballet (complete); Paris Opera Orchestra under Richard Blareau **12" London LL869**
- Bach:** Suite No. 1 in C; Suite No. 2 in B Minor; Suite No. 3 in D; Suite No. 4 in D; Hewitt Chamber Orchestra **2-12" Haydn Society H5L-F**  
RCA Victor Orchestra under Fritz Reiner **2-12" Victor LM6012**  
Suite No. 3 in D; Paris Conservatory Orchestra under Felix Weingartner **12" Columbia ML4783**
- Balakirev:** Tamar—Symphonic Poem; London Symphony Orchestra under Anatole Fistoulari **12" MGM 3076**
- Beethoven:** Symphony No. 3 in E-flat, Op. 55 ("Eroica"); Vienna Philharmonic Orchestra under Wilhelm Furtwängler **12" His Master's Voice LHMV1044**  
Berlin Philharmonic Orchestra under Paul van Kempen **12" Epic 3016**  
Symphony No. 5 in C Minor, Op. 67; Amsterdam Concertgebouw Orchestra under Erich Kleiber **12" London LL912**  
Symphony No. 7 in A Major, Op. 92; Berlin Philharmonic Orchestra under Paul van Kempen **12" Epic 3026**  
Symphony No. 9 in D Minor, Op. 125—4th Movement "Ode to Joy"; NBC Symphony, Robert Shaw Chorale and Soloists under Arturo Toscanini **10" Victor LRM7046**
- Bizet:** L'Arlesienne Suite No. 1; Hallé Orchestra under Sir John Barbirolli **12" Bluebird LBC1047**  
L'Arlesienne Suites 1 and 2; Hague Philharmonic Orchestra under Willem van Otterloo **12" Epic 3018**
- Borodin:** In the Steppes of Central Asia; Leopold Stokowski Symphony Orchestra **10" Victor LRM7056**  
In the Steppes of Central Asia; Paris Conservatory Orchestra under Ernest Ansermet **12" London LL864**

- Prince Igor Polovtsian Dances; Leopold Stokowski Symphony Orchestra **10" Victor LRM7056**
- Brahms:** Symphony No. 1 in C Minor, Op. 68; Philharmonia Orchestra under Guido Cantelli **12" His Master's Voice LHMV1054**  
Symphony No. 3 in F, Op. 90; Vienna Philharmonic Orchestra under Karl Böhm **12" London LL857**  
Variations on a theme by Haydn, Op. 56a; London Philharmonic under Felix Weingartner **12" Columbia ML4783**
- Chabrier:** España—Rapsodie; Lamoureux Orchestra under Jean Fournet **12" Epic 3028**
- Copland:** Appalachian Spring (ballet); El Salón México; Boston Symphony Orchestra under Serge Koussevitzky **12" Victor LCT1134**  
Music for the Theatre; MGM Orchestra under Izler Solomon **12" MGM 3095**  
Billy the Kid—Ballet Suite; Ballet Theatre Orchestra under Joseph Levine **12" Capitol P8238**
- Corelli:** Concerto Grossi, Op. 6—Nos. 1, 2, 7, & 9; Società Corelli **12" Victor LM1776**
- Debussy:** La Mer—Three Symphonic Sketches; Leipzig Radio Symphony Orchestra under Carl Boramsky **12" Urania 7-26**
- \*Diepenbrock:** Marsyas—Prelude & Entr'acte; Amsterdam Concertgebouw Orchestra under Eduard van Beinum **12" London LL851**
- Dvarak:** Symphony No. 5 in E Minor, Op. 95 ("The New World"); NBC Symphony Orchestra under Arturo Toscanini **12" Victor LM1778**
- Elgar:** Pomp and Circumstance Marches Nos. 1 and 4; London Symphony Orchestra under Sir Malcolm Sargent **10" London LD9057**  
Wand of Youth—Suite No. 1; Philharmonia Orchestra under Sir Malcolm Sargent **12" Columbia ML4793**
- Enesco:** Rumanian Rhapsodies Nos. 1 and 2; Leopold Stokowski Symphony Orchestra **10" Victor LRM7043**

## SELECTIONS RECOMMENDED FOR YOUR SPECIAL ATTENTION

### BEST BUYS FOR THE MONEY

- Charpentier:** Louise (abridged version arr. by the composer); Ninon Vallin, Georges Thill and others with the Orchestra and Chorus under Eugene Bigot **2-12" Entre EL7**
- Greig:** Piano Concerto in A Minor, Op. 16; Mendelssohn: Piano Concerto No. 1 in G Minor, Op. 25; Ania Dorfmann with the Philadelphia Robin Hood Dell Orchestra under Erich Leinsdorf **12" Bluebird LBC1043**

### COLLECTOR'S ITEMS: ALL-TIME GREAT PERFORMANCES

- Cimarosa-Benjamin:** Oboe Concerto; Bach-Tovey: Oboe d'Amore Concerto in A; Bach-Whittaker: Sinfonia from Easter Oratorio; Handel: Oboe Concerto in G Minor; Marcella: Oboe Concerto in C Minor. Leon Goossens with the Liverpool Philharmonic Orchestra; Sir Malcolm Sargent & Sir Basil Cameron conducting; with the Philharmonia Orchestra under Walter Susskind **12" Columbia ML4782**
- Beethoven:** Piano Concerto No. 4 in G Major, Op. 58; Artur Schnabel with the Philharmonia Orchestra under Issay Dobrowen **12" Victor LCT1131**
- Mendelssohn:** Violin Concerto in E Minor, Op. 64; Joseph Szigeti with the London Philharmonic Orchestra under Sir Thomas Beecham **10" Columbia ML2217**
- Mozart:** Symphony No. 36 in C Major (K.425) ("Linz"); London Philharmonic Orchestra under Sir Thomas Beecham **12" Columbia ML4770**
- Mozart:** Symphony No. 39 in E-flat (K.543); London Philharmonic Orchestra under Felix Weingartner **12" Columbia ML4776**

- Schubert:** Songs—Die Forelle; Romanze from Rosamunde; Du bist die Ruh'; Heidenröslein; Das Lied im Grünen; Ave Maria; Schumann: Frauenliebe und Leben, Song-Cycle, Op. 42; Elizabeth Schumann (soprano) **12" Victor LCT1126**
- Schubert:** Symphony No. 5 in B-flat; London Philharmonic Orchestra under Sir Thomas Beecham **12" Columbia ML4771**
- Schumann:** Dichterliebe—Song-Cycle, Op. 48; Charles Panzéra (baritone) with Alfred Cortot at the Piano; Aksel Schjeltz (tenor) with Gerald Moore at the Piano **12" Victor LCT1132**

### FOR HI-FI ENTHUSIASTS

- Brahms:** Piano Concerto No. 1 in D Minor, Op. 15; Clifford Curzon with the Amsterdam Concertgebouw Orchestra under Eduard van Beinum **12" London LL850**
- Copland:** Billy the Kid—Ballet; Schuman: Undertow—Choreographic Episodes; Ballet Theatre Orchestra under Joseph Levine **12" Capitol P8238**
- Holst:** The Planets—Suite, Op. 32; Philharmonic Promenade Orchestra with the London Philharmonic Choir under Sir Adrian Boult **12" Westminster 5235**
- Liszt:** Piano Sonata in B Minor; Edith Farnadi **12" Westminster 5266**
- Ravel:** Piano Concerto in G; Piano Concerto for the Left Hand; Jacqueline Blancard with the Suisse Romande Orchestra under Ernest Ansermet **12" London LL797**
- R. Strauss:** Don Quixote—Tone Poem, Op. 35; Vienna Philharmonic Orchestra under Clemens Krauss with Pierre Fournier (cello) **12" London LL855**
- Walton:** Belshazzar's Feast—Oratorio; London Philharmonic Choir with Denis Noble (baritone) and the Philharmonic Promenade Orchestra; under Sir Adrian Boult **12" Westminster 5248**

- Franck:** Symphony in D Minor; Hague Philharmonic Orchestra under Willem van Otterloo **12" Epic 3019**
- Glazounov:** From the Middle Ages—Suite, Op. 79; Indianapolis Symphony under Fabien Sevitzky **12" Bluebird LBC1062**
- Glinka:** Ruslan and Ludmilla—Overture; Paris Conservatory Orchestra under Ernest Ansermet **12" London LL864**
- \***Grieg:** Peer Gynt (original stage version); Oslo Philharmonic Orchestra under Odd Gruner-Hegge with Eva Prytz (soprano) and Alfred Maurstad (actor) **12" Mercury MG10148**
- Haydn:** Symphony No. 94 in G ("Surprise"); Boston Symphony Orchestra under Serge Koussevitzky **12" Victor LM9034**  
Symphony No. 104 in D ("London"); London Philharmonic Orchestra under Sir Thomas Beecham **12" Columbia ML4771**  
Symphony No. 104 in D ("London"); Boston Symphony Orchestra under Charles Munch **12" Victor LM9034**  
Toy Symphony; British Symphony Orchestra under Felix Weingartner **12" Columbia ML4776**
- Holst:** The Planets—Suite, Op. 32; Philharmonic Promenade Orchestra and London Philharmonic Choir under Sir Adrian Boult **12" Westminster 5235**
- \***Ives:** Symphony No. 2; Vienna Philharmonia Orchestra under F. Charles Adler **12" SPA 39**
- Liszt:** Les Préludes—Symphonic Poem; Boston Symphony Orchestra under Pierre Monteux **12" Victor LM1775**
- Méhul:** Symphony No. 1 in G Minor; Berlin Radio Symphony Orchestra under Rolf Kleinert **12" Urania 7109**
- Moussorgsky:** A Night on Bald Mountain; Paris Conservatory Orchestra under Ernest Ansermet **12" London LL864**
- Mozart:** Serenade—Eine kleine Nachtmusik (K.525); Hewitt Chamber Orchestra under Maurice Hewitt **12" Haydn Society 93**  
Divertimento in B-flat (K.287); Hewitt Chamber Orchestra under Maurice Hewitt **12" Haydn Society 93**  
A Musical Joke (K.522); Berlin Radio Chamber Orchestra under Lange **12" Urania 7109**  
Serenade—Eine kleine Nachtmusik (K.525); London Symphony Orchestra under Felix Weingartner **12" Columbia ML4776**  
Symphony No. 29 in A (K.201); London Philharmonic Orchestra under Sir Thomas Beecham **12" Columbia ML4781**  
Symphony No. 33 in B-flat (K.319); Berlin Philharmonic Orchestra under Eugen Jochum **12" Urania 7-27**  
Symphony No. 34 in C (K.338); London Philharmonic Orchestra under Sir Thomas Beecham **12" Columbia ML4781**  
Symphony No. 35 in D (K.385); Prussian State Orchestra under Robert Heger **12" Urania 7-27**  
Symphony No. 36 in C (K.425) ("Linz"); London Philharmonic Orchestra under Sir Thomas Beecham **12" Columbia ML4770**  
Symphony No. 39 in E-flat (K.543); London Philharmonic Orchestra under Felix Weingartner **12" Columbia ML4776**
- Offenbach:** Gaité Parisienne—Ballet; Covent Garden Royal Opera Orchestra under Walter Süskind **12" Bluebird LBC1065**
- Offenbach-Dorati:** Helen of Troy—Ballet; Minneapolis Symphony Orchestra under Antal Dorati **12" Victor LM9033**
- \***Piiper:** Symphony No. 3; Amsterdam Concertgebouw Orchestra under Eduard van Beinum **12" London LL851**
- Prokofiev:** Symphony No. 1 in D, Op. 25 ("Classical"); Paris Conservatory Orchestra under Ernest Ansermet **12" London LL864**
- \***Rimsky-Korsakov:** Suite from "Ivan the Terrible"; London Symphony Orchestra under Anatole Fistoulari **12" MGM 3076**
- \***Saeverud:** Sinfonia Dolorosa, Rondo Amoroso, Galdreslatten; Oslo Philharmonic Orchestra under Øivin Fjeldstad **12" Mercury MG10149**
- Sandt:** Bonampak—Ballet; Mexico National Symphony Orchestra under Luis Sondi **12" Victor LM1737**
- Schubert:** Rosamunde—Overture; Hallé Orchestra under Sir John Barbirolli **12" Bluebird LBC1047**  
Symphony No. 2 in B-flat; Boston Symphony Orchestra under Charles Munch **12" Victor LM9032**  
Symphony No. 4 in C Minor ("Tragic"); Hewitt Orchestra under Maurice Hewitt **12" Haydn Society 89**  
Symphony No. 5 in B-flat; London Philharmonic Orchestra under Sir Thomas Beecham **12" Columbia ML4771**  
Symphony No. 8 in B Minor ("Unfinished"); Philharmonia Orchestra under Rudolf Schwarz **12" Bluebird LBC1047**  
Hewitt Orchestra under Maurice Hewitt **12" Haydn Society 89**  
Boston Symphony Orchestra under Serge Koussevitzky **12" Victor LM9032**
- Schuman:** Undertow—Choreographic Episodes; Ballet Theatre Orchestra under Joseph Levine **12" Capitol P8238**
- Scriabin:** Poem of Ecstasy; Boston Symphony Orchestra under Pierre Monteux **12" Victor LM1775**
- Strauss-Dorati:** Graduation Ball—Ballet; New Symphony Orchestra under Anatole Fistoulari **12" London LL883**
- R. Strauss:** Don Quixote—Tone Poem, Op. 35; Vienna Philharmonic Orchestra under Clemens Krauss with Pierre Fournier (cello) **12" London LL855**
- R. Strauss-Dorati:** Der Rosenkavalier—Suite; Philadelphia Robin Hood Dell Orchestra under Antal Dorati **12" Victor LM9033**
- Suppé:** Poet and Peasant—Overture; Vienna Symphony Orchestra under Rudolf Morolt **12" Epic 3022**
- Tchaikovsky:** Aurora's Wedding (from Swan Lake) Ballet; Leopold Stokowski Symphony Orchestra **12" Victor LM1774**  
Symphony No. 4 in F Minor, Op. 36 Hague Philharmonic Orchestra under Willem van Otterloo **12" Epic 3029**  
Leipzig Radio Symphony Orchestra under Hermann Abendroth **12" Urania 7-25**
- \***Valen:** The Cemetery by the Sea, Michelangelo Sonnet, The Silent Island, Oslo Philharmonic Orchestra under Øivin Fjeldstad **12" Mercury MG10149**
- \***Vaughan Williams:** The Wasps—Incidental Music, Old King Cole—Suite; Philharmonic Promenade Orchestra under Sir Adrian Boult **12" Westminster 5228**
- \***Weill:** Kleine Dreigroschenmusik; MGM Orchestra under Izler Solomon **12" MGM 3095**

## CONCERTOS

- Bach:** Clavier Concerto No. 1 in D Minor, No. 4 in A Major, No. 5 in F Minor; Finn Videreg (harpsichord) with the Copenhagen Collegium Musicum Orchestra under Lavrd Friisholm **12" Haydn Society 92**  
Concerto in D Minor for Violin and Oboe with Orchestra; Töttcher and Ewald Koch with the Berlin Radio Chamber Orchestra under Hendriks **12" Urania 7-31**
- \***Bach-Tovey:** Oboe d'amore Concerto in A Major; Leon Goossens with the Philharmonia Orchestra under Walter Süskind **12" Columbia ML4782**
- Beethoven:** Piano Concertos—No. 1 in C, Op. 15; No. 2 in B-flat, Op. 19; No. 3 in C Minor, Op. 37; No. 4 in G, Op. 58; No. 5 in E-flat ("Emperor"), Op. 73; Wilhelm Kempff with the Berlin Philharmonic Orchestra under Paul van Kempen **3-12" Decca DX125**  
Piano Concerto No. 1 in C Major, Op. 15; Rondo in B-flat; Friedrich Wührer with the Vienna Pro Musica Orchestra under Hans Swarowsky **12" Vox PL8400**  
Hugo Steurer with the Leipzig Radio Symphony Orchestra under Gerhard Pflüger **12" Urania 7-23**  
Piano Concerto No. 4 in G, Op. 58; Artur Schnabel with the Philharmonia Orchestra under Issay Dobrowen **12" Victor LCT1131**  
Triple Concerto in C, Op. 56; David Oistrakh, Knusevitzky, Leo Oborin with the Radio Orchestra under Nicolai Golovanov **12" Period 590**  
Ricardo Odnoposoff, Stefan Auber, Angelica Morales, with the Vienna Philharmonic Orchestra under Felix Weingartner **10" Columbia ML2218**
- Violin Concerto in D, Op. 61; David Oistrakh with the National Philharmonic Orchestra under Alexander Gauk **12" Colosseum 155**  
Bronslaw Hubermann with the Vienna Philharmonic Orchestra under George Szell **12" Columbia ML4769**  
Herman Krebbers with the Hague Philharmonic Orchestra under Willem van Otterloo **12" Epic 3023**
- Brahms:** Piano Concerto No. 1 in D Minor, Op. 15; Clifford Curzon with the Amsterdam Concertgebouw Orchestra under Eduard van Beinum **12" London LL850**  
Violin Concerto in D, Op. 77; Manke with the Leipzig Radio Symphony Orchestra under Hermann Abendroth **12" Urania 7-24**  
David Oistrakh with the National Philharmonic Orchestra under N. Kondroschin **12" Colosseum 150**
- Bruch:** Violin Concerto No. 1 in G Minor, Op. 26; Nathan Milstein with the Pittsburgh Symphony Orchestra under William Steinberg **12" Capitol P8243**
- Cimarosa-Benjamin:** Oboe Concerto; Leon Goossens with the Liverpool Philharmonic Orchestra under Sir Malcolm Sargent **12" Columbia ML4782**
- \***Dittersdorf:** Harp Concerto in A; Irmgard Helms, Berlin Radio Chamber Orchestra under Herbert Haarth **12" Urania 7110**
- Gould:** Interplay (American Concertette No. 2); Cor de Groot (piano) with the Hague Philharmonic Orchestra under Willem van Otterloo; Spirituals for String Choir and Orchestra; Hogue Philharmonic Orchestra under Willem van Otterloo **12" Epic 3021**
- Grieg:** Piano Concerto in A Minor, Op. 16; Ania Dorfmann with the Philadelphia Robin Hood Dell Orchestra under Erich Leinsdorf **12" Bluebird LBC1043**
- Handel:** Oboe Concerto in G Minor; Leon Goossens with the Liverpool Philharmonic Orchestra under Sir Basil Cameron **12" Columbia ML4782**
- Liszt:** Piano Concerto No. 1 in E-flat; Cor de Groot with the Hilversum Radio Philharmonic Orchestra under Willem van Otterloo **12" Epic 3023**  
Piano Sonata in B Minor; Edith Fornodi **12" Westminster 5266**  
Piano Sonata in B Minor; Alexander Uninsky **12" Epic 3027**
- Malipiero:** Violin Concerto; Fritz Kirmse with the Leipzig Radio Symphony Orchestra under Rolf Kleinert **12" Urania 7112**
- Marcello:** Oboe Concerto in C Minor; Leon Goossens with the Philharmonia Orchestra under Walter Süskind **12" Columbia ML4782**
- Mendelssohn:** Piano Concerto No. 1 in G Minor, Op. 25; Ania Dorfmann with the Philadelphia Robin Hood Dell Orchestra under Erich Leinsdorf **12" Bluebird LBC1043**  
Violin Concerto in E Minor, Op. 64; Nathan Milstein with the Pittsburgh Symphony Orchestra under William Steinberg **12" Capitol P8243**  
Joseph Szigeti with the London Philharmonic Orchestra under Sir Thomas Beecham **10" Columbia ML2217**
- Moszkowski:** Piano Concerto in E, Op. 59; Hannes Kohn with the Netherlands Philharmonic Orchestra under Wolter Goehr **12" Concert Hall Society CHS1197**

**Mozart:** Clarinet Concerto in A (K.622); Ewald Koch with the Berlin Radio Chamber Orchestra under Herbert Haarth **12" Urania 7108**  
Piano Concerto in D Minor (K.451); Piano Concerto in E-flat (K.271); Guiomar Novaes with the Vienna Pro Musica Symphony Orchestra under Hans Swarowsky **12" Vox PL8430**  
Piano Concerto in D Minor (K.466); Piano Concerto in A (K.488); Marcelle Meyer with the Hewitt Chamber Orchestra under Maurice Hewitt **12" Haydn Society 88**  
Violin Concerto in A Major (K.219) ("Turkish"); David Oistrakh with Radio Orchestra under Nicolai Golovanov **12" Period 590**  
**\*Nielsen:** Clarinet Concerto, Op. 57; Louis Cahuzac with the Copenhagen Royal Opera Orchestra under John Frandsen **10" Columbia ML2219**  
**Ravel:** Piano Concerto for Left Hand; Piano Concerto in G; Jacqueline Blancard with the Suisse Romande Orchestra under Ernest Ansermet **12" London LL977**  
**\*Schnabel:** Piano Concerto; Helen Schnabel with the Vienna Philharmonic Orchestra under F. Charles Adler **12" SPA 55**  
**Schumann:** Piano Concerto in A Minor, Op. 54; Clara Haskil with the Hague Philharmonia Orchestra under Willem van Otterloo **12" Epic 3020**  
**Shostakovich:** Piano Concerto; Menahem Pressler with the MGM String Orchestra under Theodore Bloomfield **12" MGM 3079**  
**R. Strauss:** Horn Concerto No. 1 in E-flat; Dennis Brain with the Philharmonia Orchestra under Alceo Galliera **12" Columbia ML4775**  
Oboe Concerto; Leon Goossens with the Philharmonia Orchestra under Alceo Galliera **12" Columbia ML4775**  
**Tchaikovsky:** Piano Concerto No. 1 in B-flat Minor, Op. 23; Shura Cherkassky with the Berlin Philharmonic Orchestra under Leopold Ludwig **12" Decca DL9605**

## CHAMBER MUSIC

**Bach:** Solo Cello Suites Nos. 1 and 4; Janos Starker **12" Period 582**  
Suite in C Minor for Flute and Harpsichord; Jean-Pierre Rampal and Robert Veyron-Lacroix **12" Haydn Society 80**  
**Beethoven:** Quartet in C Major, Op. 59, No. 3 ("Rasoumovsky"); Quartet in E-flat, Op. 74 ("Harp"); Vegg Quartet **12" Haydn Society HSQ40**  
Quartet in B-flat, Op. 130; Quartetto Italiano **12" Angel 35064**  
Violin Sonata in F, Op. 24 ("Spring"); Yehudi Menuhin with Louis Kentner at the Piano **12" His Master's Voice LHMV1053**  
Violin Sonatas (complete); Jascha Heifetz **5-12" Victor LM6701**  
**\*Boccherini:** Quartets—A Major, Op. 39, No. 3; E-flat, Op. 58, No. 3; Quartetto Italiano **12" Angel 35062**  
**Brahms:** Cello Sonatas—No. 1 in E Minor, Op. 38, No. 2 in F, Op. 99; Janos Starker with Abba Bogin at the Piano **12" Period 593**  
**\*Chopin:** Trio in C Minor, Op. 8; Bolzano Trio **12" Vox P18480**  
**\*Donizetti:** Quartet in D; Parrenin Quartet **12" Stradivari 618**  
**\*Francaix:** Serenade BEA; Pasquier Sextet and Jean Francaix **12" Esoteric 518**  
**\*Gounod:** String Quartet; Parrenin Quartet **12" Stradivari 618**  
**\*Lalo:** String Quartet; Parrenin Quartet **12" Stradivari 618**  
**Mozart:** Quartet in G (K.387), Quartet in D Minor (K.421); Quartetto Italiano **12" Angel 35063**  
Quartet in G Major (K.387), Quartet in B-flat (K.589); Barylli Quartet **12" Westminster 5265**  
Trios, G Major (K.496), B-flat (K.502); Badura-Skoda, Fournier, Janigro Trio **12" Westminster 5242**  
Trios, E Major (K.542), C Major (K.548); Badura-Skoda, Fournier, Janigro Trio **12" Westminster 5267**  
Violin Sonata in B-flat (K.454); Yehudi Menuhin with Louis Kentner at the Piano **12" His Master's Voice LHMV1053**  
**Rachmaninoff:** Cello Sonata in G Minor, Op. 19; Joseph Schuster and Leonard Pennario (piano) **12" Capitol P8248**  
**\*Riisager:** Sonata for Violin, Cello and Piano, Op. 55a; Wandy Tworek, Johan Hye-Knudsen, Esther Vagning; Sonata for Two Violins Op. 55b, Wandy Tworek and Charles Senderowitz **10" London L5785**  
**\*Salzedo:** 8 Dances for Harp; Carlos Salzedo **12" Mercury MG10144**  
**\*Scheidt:** Tabulatura Nova—Excerpts; Luther Noss (organ) **3-12" Overtone 3**  
**Schubert:** Quintet in C Major, Op. 163; Amadeus Quartet with William Pleeth (cello) **12" His Master's Voice LHMV1051**  
**\*Schumann:** Trio No. 2 in F, Op. 8; Bolzano Trio **12" Vox P18480**  
**\*Vivaldi:** Flute Sonata in D Minor; Jean-Pierre Rampal with Robert Veyron-Lacroix (harpsichord) **12" Haydn Society 80**  
**\*Wolf:** Quartet in D Minor; Italian Serenade; New Music Quartet **12" Columbia ML4821**  
**\*Ysaÿe:** Violin Sonata, Op. 27, No. 3; David Oistrakh **12" Colosseum 150**

## KEYBOARD MUSIC

**Bach:** Chorale-Preludes from the Little Organ Book (complete); Finn Videreg (organ) **2-12" Haydn Society HSL-E**  
Chorale-variations—O Gott, du frommer Gott; Von Himmel hoch; Chorale-preludes—Herr Jesu Christ, dich uns zu wend; Herzlich tut mich verlangen; Liebster Jesu, wir sind hier; Wer nur den lieben Gott lässt walten; Finn Videreg (organ) **12" Haydn Society 94**  
Chromatic Fantasy and Fugue; Italian Concerto; Partita No. 1 in B-flat; Toccata in D; Wanda Landowska (harpsichord) **12" Victor LCT1137**

Goldberg Variations; Jeorg Demus (piano) **12" Westminster 5241**  
**Bartok:** Improvisations, Op. 20, for Children (selections); Carl Seemann (piano) **10" Decca DL4085**  
**Beethoven:** Bagatelles, Op. 33—1-7; Op. 119—1-11; Op. 126—1-6; 2 Bagatelles (1797); Grant Johannesen (piano) **12" Concert Hall Society CHS1199**  
Piano Sonata in C, Op. 53 ("Waldstein"); Piano Sonata in F Minor, Op. 57 ("Appassionata"); Walter Gieseking **12" Columbia ML4774**  
Piano Sonata in F Minor, Op. 57 ("Appassionata"); Edwin Fischer **12" His Master's Voice LHMV1055**  
Rondos, Op. 51; Wilhelm Kempff (piano) **10" Decca DL4086**  
**Brahms:** Variations on an Original Theme, Op. 21; Andor Foldes (piano) **12" Decca DL9708**  
**Chopin:** 24 Preludes, Op. 28; Cor de Groot **12" Epic 3017**  
4 Scherzos; 4 Ballades; 4 Impromptus; Barcarolle; Claudio Arrau (piano) **2-12" Decca DX130**  
**Clementi:** Sonatinas, Op. 36—Nos. 1, 2, 4, 6; Lili Kraus **12" Educo 3003**  
**Debussy:** Estampes; Images—Sets 1 and 11; Walter Gieseking (piano) **12" Columbia ML4773**  
Suite Bergamasque; Friedrich Gulda (piano) **12" London LL754**  
**\*Kuhlau:** Sonatinas—Op. 20, No. 3; Op. 55, Nos. 1, 2, 3; Lili Kraus (piano) **12" Educo 3003**  
**Mozart:** Piano Sonatas—B-flat (K.281); C Major (K.545); Fantasia in D Minor (K.397); Lili Kraus **12" Educo 3004**  
Piano Sonata in C Minor (K.457); C Major (K.545); Walter Gieseking **12" Columbia ML4772**  
Piano Sonata in D (4-hands) (K.381); Lili Kraus **12" Educo 3002**  
**Ravel:** Gaspard de la Nuit; Walter Gieseking **12" Columbia ML4773**  
Friedrich Gulda **12" London LL754**  
**Schubert:** Moments Musicales, Op. 94; Edwin Fischer (piano) **12" His Master's Voice LHMV1055**  
Piano Sonata in C Minor (Post.); Piano Sonata in B Major, Op. 147; Friedrich Wührer **12" Vox PL8420**  
**Schumann:** Fantasia in C, Op. 17; Andor Foldes **12" Decca DL9708**  
Carnaval, Op. 9; Walter Gieseking **12" Columbia ML4772**  
**\*Sessions:** 4 Chorale Preludes; Marilyn Mason (organ) **12" Esoteric 522**  
**\*Shostakovich:** Piano Sonata No. 2; Menahem Pressler **12" MGM 3079**  
**R. Strauss:** Piano Sonata in B Minor, Op. 5; \*Piano Pieces, Op. 3; Alfred Brendel **12" SPA 48**  
**\*Thomson:** 10 Etudes for Piano; Maxim Shapiro **10" Decca DL4083**  
\*Variations on Sunday School Tunes; Marilyn Mason (organ) **12" Esoteric 522**

## VOCAL MUSIC

**Bach:** Cantata No. 4, "Christ lag in Todesbanden"; Robert Shaw Chorale and Orchestra **12" Victor LM9035**  
Cantata No. 51, "Jauchzet Gott"; Elisabeth Schwarzkopf (soprano) with the Philharmonia Orchestra under Peter Gellhorn; My Heart Ever Faithful from Cantata No. 68; Sheep May Graze from Cantata No. 208 **12" Columbia ML4792**  
Cantata No. 82, "Ich habe genug"; Hans Hotter (baritone) with the Philharmonia Orchestra under Anthony Bernard **12" Columbia ML4792**  
Easter Oratorio—Sinfonia; Leon Goossens (oboe) with the Liverpool Philharmonic Orchestra under Sir Malcolm Sargent **12" Columbia ML4782**  
Motet No. 3, "Jesus, Dearest Master"; Robert Shaw Chorale **12" Victor LM9035**  
**Boito:** Mefistofele (complete opera); La Scala Milan Soloists and Chorus under Lorenzo Molajoli **3-12" Entre EL9**  
**\*G. Charpentier:** Louise (abridged opera); Georges Thill, Ninon Vallin and others with Chorus and Orchestra under Eugene Biao **2-12" Entre EL7**  
**M. A. Charpentier:** "Assumpta est Maria", Mass and Symphony; Soloists, Chorus, Orchestra and Organ under Louis Martini **12" Vox PL8440**  
**Cimarosa:** Il Maestro di Capella; Carmelo Maugeri (bass) with Milan Chamber Orchestra under Ennio Gerelli **12" Vox PL8450**  
Il Matrimonio Segreto (excerpts); Eida Ribetti & Amilcare Blaffard with Milan Chamber Orchestra under Ennio Gerelli **12" Vox PL8450**  
**Debussy:** Pelléas et Mélisande (highlights); Paris Opera-Comique; Soloists and Orchestra under Georges Truc **12" Entre RL3092**  
**Gilbert and Sullivan:** The Mikado (highlights), Patience (highlights); D'Oyly Carte Opera Co. under Isidore Godfrey **12" London LL782**  
The Sorcerer (complete operetta); D'Oyly Carte Opera Co. under Isidore Godfrey **2-12" London LL885/6**  
The Yeomen of the Guard (highlights), Ruddigore (highlights); D'Oyly Carte Opera Co. under Isidore Godfrey **12" London LL783**  
**Giordano:** Andrea Chénier (complete opera); La Scala Milan Soloists and Chorus with Milan Symphony Orchestra under Lorenzo Molajoli **2-12" Entre EL10**  
**Gregorian Chants:** Monk's Choir of the St. Pierre de Solesmes Abbey under Dom Joseph Gajard **5-12" London LLA14**  
**Handel:** Messiah (complete oratorio); London Philharmonic Choir and Soloists with the London Symphony Orchestra under Sir Adrian Boult **3-12" Westminster WAL308**  
Rodelinda (complete opera); South-German Radio Soloists, Chorus, and Orchestra under Müller-Kray **12" Period 589**  
**Haydn:** The Creation (complete oratorio); Radio Berlin Soloists, Chorus, and Orchestra under Helmut Koch **2-12" Urania 235**

- Lassus:** Penitential Psalms; Amsterdam Motet Choir  
12" Concert Hall Society CHS1196
- Lortzing:** Czar and Carpenter (complete opera); Württemberg State Theater Soloists, Chorus and Orchestra under Ferdinand Leitner  
2-12" Decca DX129
- Mascagni:** Cavalleria Rusticana (complete opera); La Scala, Milan Soloists and Chorus with Milan Symphony Orchestra under Lorenzo Molajoli  
2-12" Entre EL5
- Massenet:** Manon (complete opera); Germaine Feraldy and others with Paris Opera-Comique Chorus and Orchestra under Elie Cohen  
3-12" Entre EL6
- Werther (complete opera); Ferruccio Tagliavini, Pia Tassinari, and others with the Radio Italiana Chorus and Orchestra under Francesco Molinari  
3-12" Cetra 1245
- Mendelssohn:** Songs—Auf Flugeln des Gesanges; Schifflied; Der Mond; Neue Liebe; Venetianisches Gondellied; Frühlingslied; Max Lichtegg (tenor) with Hans Willi Häusslin at the piano  
10" London LS799
- Monteverdi:** 4-part Mass (1651); Amsterdam Motet Choir  
12" Concert Hall Society CHS1196
- Moussorgsky:** Boris Godounov (highlights); Boris Christiff, French National Radio Chorus and Orchestra and others under Issay Dobrowen  
12" His Master's Voice LHMV1052
- Palestrina:** Masses—"Iste Confessor"; Sine Nomine Welch Chorale  
12" Lyricord 49
- Rossini:** La Cambiale di Matrimonio (complete opera); Rome Teatro dell'Opera Comica Soloists and Orchestra  
12" Period 583
- La Scala di Seta (complete opera); Rome Opera Comica  
12" Period 591
- Il Signor Bruschino (complete opera); Elda Ribetti and others with the Milan Philharmonic Orchestra under Ennio Gerelli  
12" Vox PL8460
- Solemn Mass; Rome Orchestral Society Soloists, Chorus and Orchestra  
12" Period 588
- A. Scarlatti:** St. John Passion; St. Thomas' Choir with Yale Orchestra under Howard Boatwright  
12" Overture 1
- Schoenberg:** Gurrelieder, Op. 35; New Symphony Society Soloists, Chorus, and Orchestra under Rene Leibowitz  
3-12" Haydn Society 100
- Philadelphia Orchestra with Soloists, Chorus under Leopold Stokowski  
2-12" Victor LCT6012
- Schubert:** Songs—Die Forelle; Romanze from Rosamunde; Du bist die Ruh'; Heidenröslein; Das Lied im Grünen; Ave Maria; Elisabeth Schumann (soprano)  
12" Victor LCT1126
- Schumann:** Dichterliebe—Song-Cycle, Op. 48; Akse! Schütz (tenor) with Gerald Moore at the piano; Charles Panzéra (baritone) with Alfred Cortot at the piano  
12" Victor LCT1132
- Frauentliebe und Leben—Song-Cycle; Elisabeth Schumann (soprano) with Gerald Moore at the piano  
12" Victor LCT1126
- R. Strauss:** Salome (complete opera); Soloists, Vienna Symphony Orchestra and Chorus under Rudolf Moralt  
2-12" Columbia SL126
- Tchaikovsky:** Songs—Why?, Why are the Roses so Pale?, At the Ball, One Bright Day; Max Lichtegg (tenor) with Hans Willi Häusslin at the piano  
10" London LS799
- Thomas:** Mignon (highlights); Brussels Royal Theater Soloists, Chorus and Orchestra under Maurice Bastin  
12" Entre RL3093
- Verdi:** Falstaff (complete opera); La Scala Milan Soloists and Chorus with the Milan Symphony Orchestra under Lorenzo Molajoli  
2-12" Entre EL8
- Wagner:** Lohengrin (complete opera); Bavarian State Radio Soloists, Chorus and Orchestra under Eugen Jochum  
4-12" Decca DX131
- Tristan und Isolde (abridged opera); Bayreuth Festival Soloists, Chorus and Orchestra under Karl Elmendorff  
3-12" Entre EL11
- Wallon:** Belshazzar's Feast; London Philharmonic Choir and Denis Noble (baritone) with the Philharmonic Promenade Orchestra under Sir Adrian Boult  
12" Westminster 5248

## THEATER MUSIC

- Anything Goes:** Mary Martin  
12" Columbia ML4751
- The Band Wagon:** Mary Martin  
12" Columbia ML4751
- Calamity Jane:** Day & Keel  
10" Columbia CL6273
- Can-Can:** Selections  
10" Decca DL5469
- Desert Song:** Eddy, Morrow  
10" Columbia AL37
- Eddie Cantor Story**  
10" Capitol L467
- Cantor**  
10" Decca DL5504
- Front Row Center**  
8-12" Columbia SL193
- Indiscretion:** (sound track)  
10" Columbia CL6277
- Island in the Sky:** John Wayne  
10" Decca DL7029
- Jota de la Dolores**  
12" Soria 70007
- Kiss Me Kate:** Grayson, Keel  
12" MGM 3077
- Me and Juliet:** Selections  
10" Decca DL5469
- New Moon:** Hayward, Wilson, Sweetland  
10" Decca DL5472
- Parranda**  
12" Soria 70007
- Petit Monde de Don Camillo:** Debucourt, Eyser  
10" Decca DL7024
- Return To Paradise:** Gary Cooper  
10" Decca DL5489
- Revolosa:** Gomez, Redondo  
12" Soria 70003
- Roberta:** Roberts, Cassidy  
12" Columbia ML4765
- Show Biz:** George Jessel  
12" Victor LOC1011
- Verbena de la Paloma:** Rovira, Tarin  
12" Soria 70005

## CHILDREN'S RECORDS

- Brahms:** His Story and His Music  
10" Vox VL2580
- Building the First Transcontinental Railroad; The Wright Brothers**  
10" Enrichment 104
- California Gold Rush; Riding the Pony Express**  
10" Enrichment 102
- Child's Garden of Verses**  
10" Esoteric ESJ5
- Favorite French Children's Songs**  
10" Vox VL2490
- Explorations of Pere Marquette; Lewis & Clark**  
10" Enrichment 105
- Haydn: His Story and His Music**  
10" Vox VL2610
- Monitor & Merrimac; Lee & Grant at Appomattox**  
10" Enrichment 106
- Paul Revere and the Minute Men; Our Independence & Constitution**  
10" Enrichment 103
- Stephen Foster: His Story and His Music**  
10" Vox VL2620
- The Voyages of Christopher Columbus; The Landing of the Pilgrims**  
10" Enrichment 101

## SPOKEN WORD AND DOCUMENTARIES

- Julius Caesar:** (Shakespeare); Orson Welles  
2-12" Entre EL52
- Columbia Literary Series:** Maugham, Steinbeck, Sitwell, etc.  
12-12" Columbia SL190
- Sounds from Nature:** Birds and Frogs  
10" Cornell U
- This I Believe:** Edward R. Murrow  
12-12" Columbia SL192
- Voices of the Night:** Frogs and Toads  
12" Cornell U

## POPULAR MUSIC—JAZZ—FOLKSONGS

- Ames Brothers:** It Must Be True  
10" Victor LPM3186
- Around the World in Music:** Ireland  
10" Victor LPM3148
- Puerto Rico  
10" Victor LPT 3049
- Bales, Burt:** After Hours Piano  
10" Good Time 19
- Baker, Chet:** Quartet, Vol. 2  
10" Pacific 6
- Ballads:** Revolution; Vols. 1, 2  
2-12" Folkways FP5000
- Band:** Circus  
10" Columbia CL6246
- Circus Time  
10" Decca D15480
- Deutschemeister Band; Concert  
10" Westminster 3011
- Favorite German Marches  
10" Victor LPT3051
- Gould, Columbia Concert Band  
10" Columbia AAL41
- Barber Shop Ballads:** Winners—1953  
10" Decca DL5495
- Barnet, Charlie:** Dance  
10" Clef MGC139
- Bechet, Sidney:** The Fabulous  
10" Bluenote 7020
- Jazz Concert  
10" Stinson 46
- Jazz Festival Concert, Vol. 2  
10" Bluenote 7025
- Beiderbecke:** And the Wolverines  
10" Riverside 1023
- Bernard, Armand:** Valse Eternelles  
10" Period 1008
- Boleros:** Matancera  
10" Stinson 42
- Trio Los Panchos  
10" Columbia CL6253
- Brown, Les:** Dance  
12" Columbia CL539
- Brubeck, Dave:** Trio  
10" Fantasy 3-8
- Brunis, George:** New Orleans Rhythm Kings  
10" Riverside 1024
- Calypso:** Duke of Iron  
10" Stinson 28
- Lord Invader  
10" Stinson 27
- Trinidad Steel Bands  
10" Monogram 814
- Carle, Frankie:** Piano Party  
12" Columbia CL531
- Cavallaro, Carmen:** Lamp is Low  
10" Decca DL5466
- Cesana, Otto:** Sugar and Spice  
10" Columbia CL6261
- Charles, Teddy:** New Directions, Vol. 3  
10" Prestige 164
- New Directions, Vol. 4  
10" Prestige 169
- Como, Perry:** I Believe  
10" Victor LPM3188
- Cowboy:** Bill Bender  
10" Stinson 18
- Bender & Houston  
10" Stinson 37
- Guthrie & Houston  
10" Stinson 32
- Cugat:** Dance With Cugat  
12" Columbia CL537
- Current Pop Instrumentals**  
10" Columbia CL6262
- Curtain Call:** Vol. 4 (Marlene Dietrich, Libby Holman, George Jessel, Ben Bernie)  
10" Decca DL7021
- Dameron, Tadd:** with Clifford Brown  
10" Prestige 159
- Dance the Foxtrot**  
12" Columbia CL533
- Davis, Miles:** with Sonny Rollins  
10" Prestige 161
- Dorsey, Thomas:** Invitation to Dance  
10" Decca DL5452
- Sentimental Mood  
10" Decca DL5448
- Dyer-Bennett, Richard:** Ballads  
10" Stinson 60
- Ballads  
10" Stinson 61
- Elgart, Les:** Sophisticated Swing  
12" Columbia CL536
- Ewell, Don:** King Oliver Tunes  
12" Windin' Ball 103
- Faith, Percy and Orch.:** Continental Music  
12" Columbia CL525
- Romantic Music  
12" Columbia CL526
- Farmer, Art:** Septet; with Clifford Brown  
10" Prestige 167
- Ferrante & Teicher:** 2 Pianos  
10" Columbia CL6264
- Feyer, George:** Echoes of Italy  
10" Vox VX620
- Filippo, Andrea:** Vols. 3, 4  
2-10" Tempo 2238, 42
- Fisher, Eddie:** May I Sing to You  
10" Victor LPM3185
- Flamenco:** Angelillo, Vela  
10" Period 1003

<b>Jenkins, Gordon:</b> Seven Dreams	12" Decca DL9011	<b>Marlowe, Marion &amp; Frank Parker:</b> Romance	10" Columbia CL6267
<b>Jolson, Al:</b> Tribute	12" Audio Rarities 2285	<b>Martin, Ray:</b> Pop Concert	12" Columbia CL529
<b>Kaye, Danny:</b> Entertains	10" Columbia CL6249	<b>Maxwell, Bobby:</b> Swing Harp, Vol. 2	10" Tempo 2240
<b>Kitt, Ertha:</b> That Bad Eartha	10" Victor LPM3187	With Venuti	10" Tempo 2236
<b>Kressyn, Miriam:</b> Sings	10" Banner 60	<b>Mayl, Gene:</b> Dixieland Rhythm Kings	10" Riverside 2504
<b>Late Music:</b>	12" Columbia CL541	<b>Melle, Gil:</b> with Green & Farlow	10" Bluenote 5033
Vol. 2	12" Columbia CL542	<b>Micheyl, Mick:</b> Chansons	10" Period 1006
Vol. 3	12" Columbia CL543	<b>Monk, Thelonious:</b> with Sonny Rollins	10" Prestige 166
<b>Latin American:</b> Jorge Negrete	10" Victor LPM3201	<b>Morgan, Russ:</b> Everybody Dance; Vol. 2	10" Decca DL5471
<b>Lawson-Haggart:</b> with Jerry Jerome	10" Stinson 59	<b>Murphy, Turk:</b> Vol. 4	10" Good Time 18
<b>Leadbelly:</b> Memorial	10" Stinson 17	<b>New Sounds from Rochester</b>	10" Prestige 163
Vols. 2, 3, 4	3-10" Stinson 19, 48, 51	<b>Norman Luboff Choir:</b> Sweet Dreams	10" Columbia CL6252
Play Parties	10" Stinson 39	<b>Northrop, Pat:</b> I Love New York	10" Riverside 8001
Vol. 2	10" Stinson 41	Organ: Frank Engleman	2-10" Tempo 2246, 48
<b>Liberace:</b> By Candlelight	10" Columbia CL6251	Kern & Sloop	3-10" Tempo 2216, 26, 28
Concertos for You	10" Columbia CL6269	Ken Wright, Vol. 2	10" Tempo 2244
Concertos for You	12" Columbia ML4764	<b>Palmer, Roy:</b> State Street Ramblers	10" Riverside 1020
<b>Light, Ben:</b> Dance	4-10" Tempo 2214, 24, 32, 34	<b>Paris, Wilbur de:</b> New New Orleans Jazz	10" A440 AJ503
<b>Litwin, Leo:</b> Smoke Mt. Suite	10" Boston B500	<b>Piano Rags, Stomps, Blues</b>	10" Stinson 58
<b>Lombardo, Guy:</b> Everybody Dance; Vol. 3	10" Decca DL5470	<b>Popular Favorites:</b> (8 Bands), Vol. 7	10" Columbia CL5256
<b>Mambo:</b> Mamborama	10" Vox VX600	<b>Preacher Rollo &amp; Five Saints:</b> Jazz Band Ball	10" MGM E217
<b>Mantovani Program:</b> Immortal Classics	12" London LL877	<b>Quiet Music:</b> Vol. 10	12" Columbia CL532
<b>Flamenquistas:</b>	10" Stinson 33	<b>Ragtime Pianoroll:</b> Vol. 2	10" Riverside 1025
Vol. 2	10" Stinson 34	<b>Reinhardt, Django:</b> French Hot Club Quintet	10" London LB810
<b>Folk Music:</b> Flathead Indian	12" Folkways P445	<b>Religious:</b> Songs from the Bible	10" Folkways FP842
Folksay: Vols. 4, 5, 6	3-10" Stinson 11/13	<b>Renaud, Line:</b> Mademoiselle from Armentieres	10" Vox VL3190
Golden Minutes: Gilkyson	10" Decca DL5457	<b>Requested by You</b>	10" Columbia CL6254
Jewish Dances	10" Banner 61	<b>Rhumbas:</b> Matancera	10" Stinson 43
Norway	12" Folkways P1008	<b>Rose, Wally:</b> Ragtime Masterpieces	10" Columbia CL6260
Swiss, Vols. 3, 4, 5	3-10" London LB819/21	<b>Rough House Comedy</b>	10" Banner 62
Voodoo	10" Monogram 815	<b>Rumsey, Howard:</b> Lighthouse All Stars; Vol. 3	10" Contemporary 2506
<b>Folksongs:</b> Brazil: Gloria	12" Victor LM1737	<b>Russell, Pee Wee:</b> Ragtimers	10" Stinson 30
Haitian: Cuevas	10" Folkways FP811	Ragtimers: Vol. 2	10" Stinson 31
India: Balakrishna	10" Stinson 50	<b>Scobey, Bob:</b> Frisco Band, Vol. 2	10" Good Time 14
Mechau Family	10" Stinson 47	<b>Seeger, Pete:</b> Concert	10" Stinson 57
Ozark Mt.	10" Stinson 49	Lincoln Brigade	10" Stinson 52
Southern Mt.	10" Stinson 54	<b>Sharon, Ralph:</b> Autumn Leaves	10" London LB842
Southern Mt., West	10" Stinson 36	<b>Shirtz, Der:</b> Pinafore in Yiddish	10" Banner 63
<b>Froeba, Frank:</b> Moonlight Playing Time	10" Decca DL5455	<b>Smekc, Roy:</b> Memory Lane	10" Decca DL5458
<b>Gaillard, Slim:</b> Cavorts	10" Clef MGC138	<b>Smith, Ethel:</b> Hits	10" Decca DL5488
<b>Garber, Jan:</b> Argentine Tangos	10" Decca DL5463	<b>Soft Listening</b>	10" Columbia CL6250
<b>Garner, Erroll:</b> At the Piano	12" Columbia CL535	<b>Sowande, Fela:</b> Rhythm Quintet	10" London LB761
For Dancing	10" Columbia CL6259	<b>Spirituals:</b> Davis & Terry	10" Stinson 56
<b>Glahe, Will:</b> Continental Hit Parade; Vols. 9, 10, 11, 12	4-10" London LB815/8	Stearns, Missionary Quintet	10" Folkways FP824
<b>Goodman, Benny:</b> Orchestra	12" Columbia CL534	<b>Stacy, Jess:</b> Jazz Variation	10" Stinson 20
<b>Griffin, Ken:</b> Latin Americana	10" Columbia CL6263	<b>Stafford, Jo:</b> With Frankie Laine	10" Columbia CL6268
<b>Guitar:</b> Ed Flamenco, Vol. 2	10" Stinson 4	<b>Straeter, Ted:</b> The Most Beautiful Girl	10" MGM E218
Montoya & Miralles	10" Stinson 16	<b>Taylor, Billie:</b> Trio, Vol. 2	10" Prestige 165
<b>Gullin, Lars:</b> Modern Sounds	10" Contemporary 2505	Trio, Vol. 3	10" Prestige 168
<b>Guthrie &amp; Houston:</b> Folk Songs	10" Stinson 44	<b>This is My Beloved</b>	10" Columbia CL6247
More Folk Songs	10" Stinson 53	<b>Top Tunes by Top Artists:</b> Vol. 3	10" Decca DL5468
<b>Gypsy Music:</b> Kocze, Songs & Czardas	10" Westminster 3015	<b>Trios Los Panchos:</b> Vaya con Dios	10" Columbia CL6276
<b>Hansen, Joe:</b> Vol. 2	10" Tempo 2222	<b>Van Damme, Art:</b> Martini Time	10" Columbia CL6265
<b>Harmonica:</b> Sonny Terry, Blues	10" Stinson 55	<b>Van Spall, Peter:</b> Melodies by Felix Arndt	10" Request 9001
<b>Harp:</b> Martha Lou: Dream Time	10" Columbia CL6258	<b>Vaudeville 1906-1917:</b> Russell, Cohan, etc.	12" Audio Rarities 2290
<b>Hawaiian:</b> Aloma, Hal, Portrait	12" Columbia CL538	<b>Venuti, Joe and his Violin</b>	10" Tempo 2230
<b>Heath, Ted:</b> Strike up the Band	12" London LL750	<b>Viennese Waltzes:</b> Schneider Ensemble	12" Columbia CL530
<b>Hymns:</b> Bison Glee Club	10" Word 2003	<b>Waller, Fats:</b> Fats at the Organ	10" Riverside 1021
David Lloyd Wade	10" Word 2001	Jivin' With Fats	10" Riverside 1022
Frank Boggs	10" Word 2000	<b>White, Josh:</b> Blues	10" Stinson 14
Herb Hoover	10" Word 2002	<b>Wallington, George:</b> Trio, Vol. 2	10" Prestige 158
To the Sacred Heart	10" Decca DL5476	<b>Weston, Paul:</b> Caribbean Cruise	10" Columbia CL6266
<b>Jackson, Mill:</b> Modern Jazz Quartet	10" Prestige 160	Dream Time Music	12" Columbia CL528
Modern Jazz Quartet; Vol. 2	10" Prestige 170	Mood Music	12" Columbia CL527
<b>James, Joni:</b> Let There be Love	10" MGM E222	<b>Williams, Mary Lou:</b> Jazz Variation	10" Stinson 29
		Piano, '53	10" Contemporary 2507
		<b>Yom Bonditten, Die:</b> Pirates of Penzance in Yiddish	10" Banner 59

Have you ever had one of those embarrassing moments when your enthusiasm for music seemed to exceed your knowledge of it? Or have you ever felt like sinking through your chair because you applauded loudly when you thought a piece was finished before it really was? Well, don't let it bother you again. Even the audiences at Carnegie Hall make some bad mistakes.

Just recently, half of what should have been a very sophisticated audience pulled a real blooper. Dimitri Mitropoulos, conductor of the New York Philharmonic Orchestra, had just finished the second of three movements from a Debussy suite. The orchestra and Mr. Mitropoulos came to a smashing close on the last chord of the Iberian number. It was so beautifully done that some people in the audience felt like applauding, and did. Those impatient souls always present in such audiences got up and left.

Mr. Mitropoulos started the last movement of the Debussy suite. The conclusion was greeted with applause. Then half the audience rose, struggled into their coats, and started toward the exits. One man was heard to say: "Now, that's the way I like to hear Ravel played." Only the Ravel, which was to conclude the program, hadn't been played yet!

Sensing something wrong, Mr. Mitropoulos peered over his shoulder, looked toward the concertmaster, and then turned toward the audience. "There is one more number," he cried out. The audience, delighted at its good fortune, applauded the conductor for his good humor, and sat down to enjoy the Ravel number.

Moral: If half the regular Thursday night audience at Carnegie Hall doesn't know the difference between Debussy and Ravel, you need not be embarrassed if you make an occasional slip!



*The reason for taping the children's program was to give them the pleasure of hearing their own voices, but the grownups who heard the playback were equally entertained. All remarked that the singing sounded much better from the tape than in the church. That was due largely to the position of the microphone. Below: The Presto recorder was operated from the rear pew*

## We Taped a Children's Program

By ETHEL V. SLEEPER

VARIOUS accounts have been written by wives concerning the hazards of being married to a hi-fi enthusiast. For my part, I am sympathetic but not overly impressed by their experiences. My comment: You haven't seen anything. You should be married to the publisher of a hi-fi magazine!

I don't mean to discount the achievement of conditioning one's self to accepting those earmarks of the clan, such as the rituals of listening, the conflicts of opinion, and the excited discussions of things they hear which I don't think they hear at all.

But life really becomes complicated when to so much is added the inflexible discipline of publication dates, at the altar of which one's private life must be offered with at least an outer semblance of cheerful willingness.

Why, it isn't even possible to plan a routine of orderly living around the certainty of the unexpected. No one will ever write a book about the care and feeding of publishers. If they needed care and feeding they couldn't survive the vagaries of their profession. At least, a publisher in this hi-fi business — I was going to say racket but that would be disrespectful — mustn't need to be cared for, since he revolves in an orbit that may allow two hours for lunch one day and just a sandwich on the wing the next, sleep that is something to get in at times when there is nothing more urgent at hand, and quiet evenings at home which materialize as fifty miles of night driving through the woods and over the hills to the airport.

As for those little useful jobs around the house which some husbands, I'm told, are so good about doing in their spare time — well, it's better not to mention them. It may be a good thing that my publisher-husband doesn't have much spare time, for what little he has is spent, I suspect, in metally correcting other people's English. I have never found a blue pencil in his pajama pocket, but if I ever do it won't surprise me.

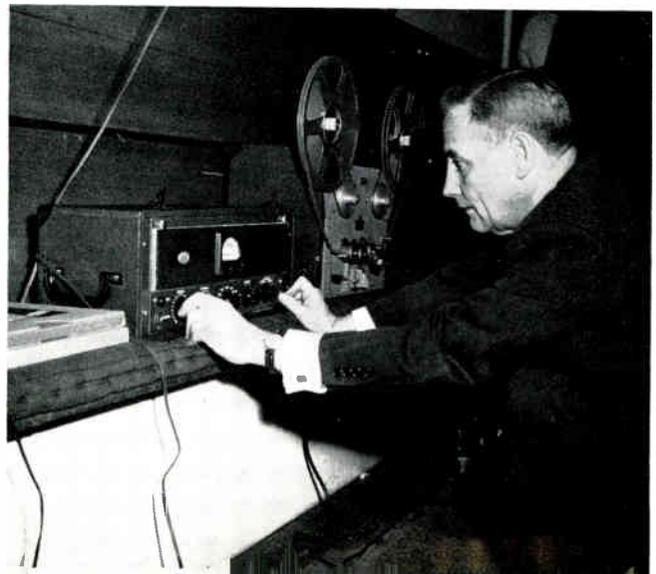
Lest I appear to complain or criticize, let me hasten to say that life with a publisher has many compensations. Some very interesting things happen in my line of duty. One of them was the occasion when we taped a children's program.

Our little town of Monterey, tucked up in the Berkshire Hills, has a very old church and two very old one-room schoolhouses. Each year, under the direction of our teachers, Mrs. Philips and Mrs. Heath, there is a children's program at the church, presided over by Mr. Ward, the minister. This has been going on for a long time.

But this year there was a difference. Progress has come to our part of the Berkshires. We are going to have a new and very modern regional school. That brings to an end an era in the life and activities of our community — an era identified by the old cast iron schoolroom stoves, now equipped for burning oil, but originally fed with wood chopped and furnished by the farmers. This change means that the children will go to a school that has flush toilets, and where drinking fountains will replace the bucket of water carried in by hand each day. Last year, there was one student in our graduating class. In the future, our regional school will graduate fifty or more.

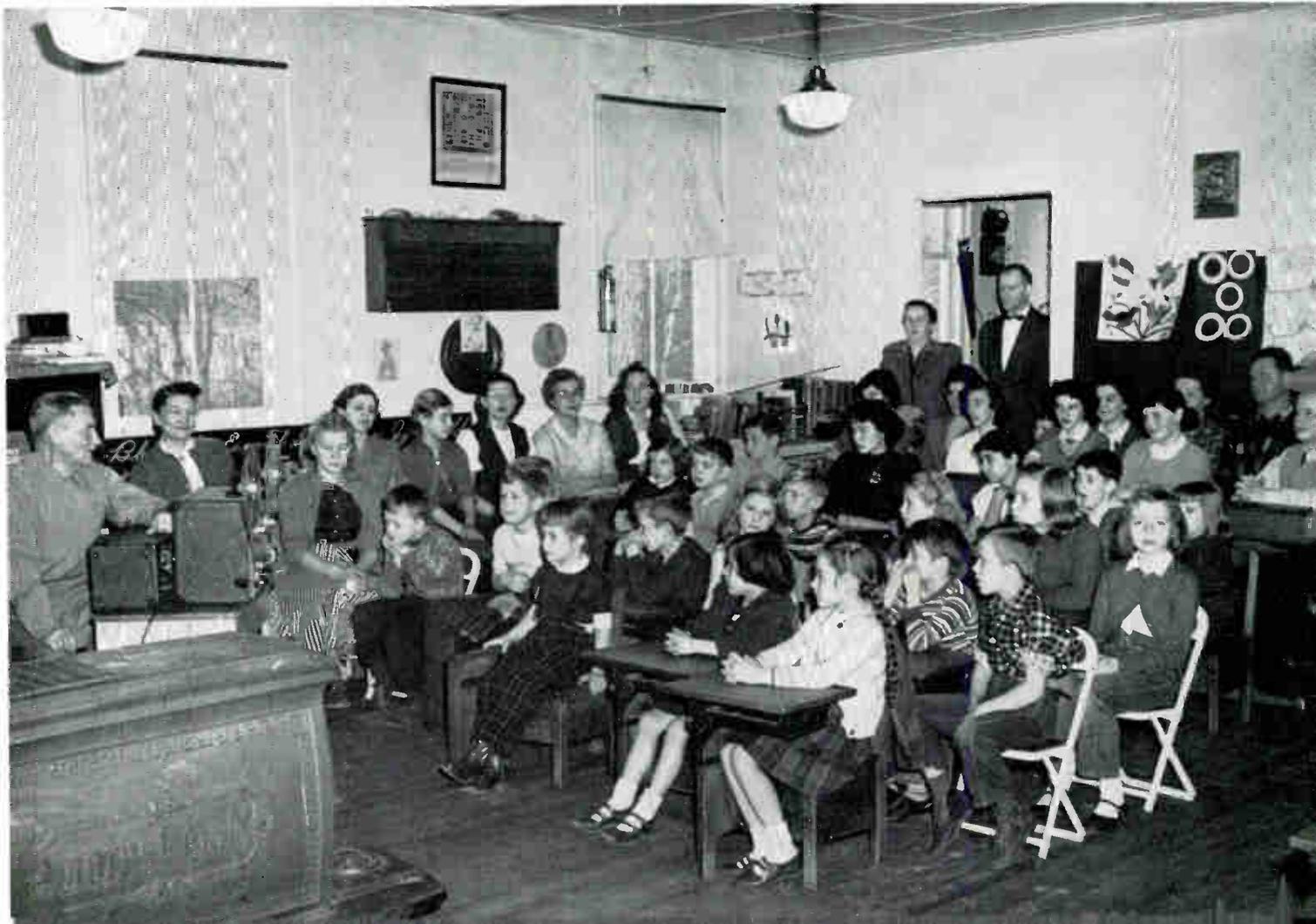
To mark this change, we decided to make a tape of what was probably the last of the annual children's programs, and to play it back to them at the school so they could hear themselves. Children or grownups, there is nothing quite as interesting as the sight of our own pictures or the sound of our own voices. Thus the success of our project was assured.

It was successful, too, despite our lack of preparation. As you can see in one of the accompanying illustrations, we set up a Presto tape recorder on the back pew of the church. From the balcony above, I let down a string and hauled up the microphone. Some of the older children sat up there during the performance, and I probably made myself unpopular between keeping them quiet and warning them away from the microphone cable. But I had my instructions, and I meant to carry *(Continued on page 61)*





*Above: the children were so absorbed with their singing that they were not aware that their voices were being recorded. They weren't even disturbed by the photographer. Below: Here is an unusual study of expressions as the children listened to their own voices. The two members of the recording team are seated at the extreme left*



# *The Why's and the Wherefor's of EP and LP RECORDS*

By NORMAN CHASE

OH, THE MUSIC goes 'round and 'round — and it comes out here." Surely you remember the lyrics of that pop hit back in the 30's. Now, in the 50's there's even more music going around, but the big question is just where does it come out — from a turntable going 'round and 'round at  $33\frac{1}{3}$  or 45 revolutions per minute — and why are there two speeds anyway?

However confusing it may have appeared in the beginning, the rhyme and reason are beginning to emerge, and it is becoming clear that each speed has its proper use in the home music system.

## **Exit Shellac Records**

The year 1947 saw the beginning of the end of the fragile shellac discs, and the start of a phenomenon which inaugurated a new era in the recording industry: the long-playing record. This break with the traditional techniques set off a chain of events which, over the six years ensuing, completely revolutionized the field of recorded music for home entertainment.

Unbreakable LP discs with their vinyl content and their multitude of grooves per inch brought to the record-buying public a previously unheard-of 20 to 30 minutes of music without interruption. And for this new product, our thanks to Columbia Records, not only for the new speed and all its advantages, but for immediately making their manufacturing facilities and experience available to the new, smaller companies who thereafter helped contribute so very much to the recorded repertoire.

This was not the only innovation in the recording industry during that period. A new method of making the original recordings came into use with the perfection of magnetic tape recorders. This made it possible to correct errors in a recording session merely by replaying the particular sections performed incorrectly, then splicing the corrected replays into their proper places on the original tape. This eliminated the time and cost of going back to the beginning in order to cut another master disc.

## **Birth of a New Industry**

This new technique, naturally, brought recording production costs down tremendously. Then, with the lowered costs and the availability of the Columbia pressing facilities, the record industry was no longer limited to a handful of large manufacturers. An onslaught of what we

call "independent" or small-company labels appeared on the horizon and with them came a mad scramble to unearth previously unrecorded repertoire. Thus the record collectors became the happy recipients of the benefits brought about by this unusual combination of cooperation and competition.

So came about the birth of a virtually new industry, making available the broadest possible choice of material for spinning entertainment in millions of homes not only in America but throughout the entire world.

## **The Third Speed**

The LP record was followed quickly by a new and equally startling innovation in the recording field: the 45 rpm system, developed and introduced by RCA Victor. They also made their facilities and equipment available to the industry. The RCA system featured an amazing, almost feather-weight record, newly and attractively styled in appearance and only 7 ins. in diameter. Its novel design made this type of disc psychologically attractive, and the large center hole offered the advantage that the record could be picked up without ever having to touch the surface. Also, the miniature size, small enough to fit in the palm of your hand, made possible a tremendous saving in space, as opposed to its old 78 rpm counterpart. Nevertheless, it took time for the 45's to catch on because they followed the introduction of LP's so swiftly that the public did not have time to evaluate properly the place that each speed would find in home record libraries.

The advantages of the 33 rpm records were recognized instantly. They were much lower in cost than equivalent shellac 78 albums which ran as high as \$8.00 to \$9.00 for a symphonic recording. They offered 20 to 30 minutes of uninterrupted music, a fantastic saving in shelf storage space, and the great advantage of being non-breakable.

The 45's had their own special advantages, but they were not recognized in many areas nearly as fast. Then, as they were starting to take hold, the 45 system received tremendous impetus from RCA's announcement of a further engineering development which took shape in the form of the Extended Play 45 rpm records. They are no larger than the original 45's, but closer grooving brings about the maximum utilization of space within the fidelity range of the disc. The advantage to record buyers is that EP's give up to 8 minutes of music on each side at a cost of

only \$1.47 for popular music and \$1.58 for classical music.

### Record-Buyers Have Habits

The LP's and the EP's appeared to be competitive recording systems. Actually, they are two *different* systems, each planned for particular purposes, and each offering specific advantages.

The advantages of the long-playing records over the shellac records were so tremendous that, in the beginning, people did not see where they might have a possible drawback. That there was a drawback, however, was probably felt by the retail stores before collectors themselves may have realized that they had changed their buying habits. In the days of the old shellac records, a collector would go into a store to buy a particular album, and almost invariably while in the store would find a single record which he had long wanted but had previously forgotten to buy. This was a very easy sale for the dealer to make, and it added \$1.00 or \$1.25 to a purchase. This was especially true in the case of classical music, where the initial purchase could have run as high as six times the cost of the single record. But with the start of the LP era, and with record buyers being so LP conscious, they began to shy away from shellacs. Consequently, in many instances, the customer did not buy that extra record he wanted because it meant purchasing a \$5.95 disc with several other selections on it which he did not want. And, to buy it on shellac was already starting to seem a bit old-fashioned. Specific examples of this in the classical field are short piano pieces, such as a Chopin waltz, and operatic arias.

That situation was remedied by the advent of EP's, with their 8 minutes of playing time on each side — sufficient for one or two selections.

In the field of popular single records no elaboration is needed when it is said that the 45 rpm EP's are the natural and only replacements for the old 78 rpm records.

### The Basic Difference

To understand fully the advantages of the EP, let us take as an example four LP records, each having several selections of a particular type of music. These might be:

1. Collection of Strauss waltzes
2. Vocal record of popular ballads
3. Light semi-classical orchestral pieces
4. A record of straight piano selections

These 10-in. LP's would probably have four selections to a side. If you stacked them on the spindle of a changer, you would probably hear two or three Strauss waltzes, four popular songs sung by the same voice, two or three orchestral pieces, and, finally, four consecutive selections played on the piano.

Once the records are placed on the spindle there can be no choosing of particular selections on any one record without having to get up, go over to the machine, lift and move the pickup (with possible resultant damage to the record), and then searching for the particular band on the record that you want to hear.

If the same selections were recorded on EP's they would probably make up four albums, each with two records, and each record would have one or two selections on a

side. This, obviously, affords greater flexibility, both as to choice and succession. In other words, EP's permit you to omit selections that you do not want, and to arrange the order of their playing more specifically according to your own preference.

The foregoing applies also to collections of operatic arias, overtures, or any other type of music short enough in length to fit on one side of an EP record. The maximum playing time on one side of an EP is 8 minutes. On the other hand, retail sales in large metropolitan areas indicate that in the instance of show tunes by the original Broadway casts, LP sales far outdistance the EP's of the same music.

It is clear, therefore, that EP's offer great flexibility in the playing of short selections, while LP's of the extended classical works such as symphonies, concerti, operas, oratorios, dramatizations, and ballet suites provide up to 30 minutes of music without a single interruption. Keeping these distinctions in mind, you can make a well-advised decision in choosing between LP's and EP's when the same music is available on both.

One comment on EP's is heard occasionally from very critical listeners, namely that the audio quality varies somewhat between different selections. If the criticism is justified, it is probably due to the fact that closer groove spacing is used on EP's which run to the maximum playing time, or if the spacing is the same, the band is wider. In the latter case, the tone arm is at a greater angle from tangency during the final playing time. This is only a generalization, since methods and practices vary between record manufacturers.

### More Entertainment, Less Expense

Last, but not least, in analyzing the place of EP and LP in the home, the needs of the youngsters should be considered. For them, a special 45 player affords the simplest mechanical operation. The matching children's 45's and EP 45's are so very easy to handle and seem to be the ideal solution for them until they're old enough to operate a regular three speed machine. Also, and this is very important, the surest way to keep children from tinkering with the family's hi-fi equipment is to let them have a record player of their own.

All in all, these last six years have unfolded an amazing story of an industry which is today responsible for providing all of us with the most diversified form of home entertainment, available at any hour of the day or night at our convenience, and at the least cost in dollars and cents. As for LP's and EP's, each has its usefulness; both make important contributions to our enjoyment of recorded music.

Not only have these years seen a wealth of previously unrecorded musical repertoire become available — notably in the field of complete operas, but they have also brought such additions to the record catalogs as readings from the literary classics, the Bible and religious writings, foreign language courses, and other types of material for educational purposes as well as for entertainment. All this has been made possible by the new records which have superceded the old 78's.

# EDWIN HOWARD ARMSTRONG, 1890-1954

THE CAREER OF THE MAN WHO HAS MADE THE GREATEST contributions to radio communication came to an end on January 30th, with the passing of Edwin Howard Armstrong. Everyone who has tuned a radio set, talked by radio telegraph or telephone, or has been aided by a car or truck with mobile radio equipment has been served by one or more of his basic inventions.

Many called him Doctor or Professor Armstrong, in acknowledgement of his scholastic degrees. Some called him Howard. But to a great number within the radio fraternity he was the Major — not out of deference to his rank in World War 1, but rather in recognition of his outstanding leadership.

Yet if he made a business call, and left a message, it was just, "Say that Mr. Armstrong called." Perhaps that makes a picture of his way of thinking, which was so direct that it permitted no embellishment — sometimes cruelly over-simplified.

It was the Major's directness in approaching scientific problems that enabled him to devise the regenerative circuit, the superheterodyne, super-regeneration, and the frequency-modulation method of transmission and reception. He was not interested in pure research which seeks to discover basic truths, without a planned goal of application. His way was to determine the factors which limited the services performed by radio, and then to reason back to find the means for overcoming those limitations. That, as the record shows, he accomplished with signal success.

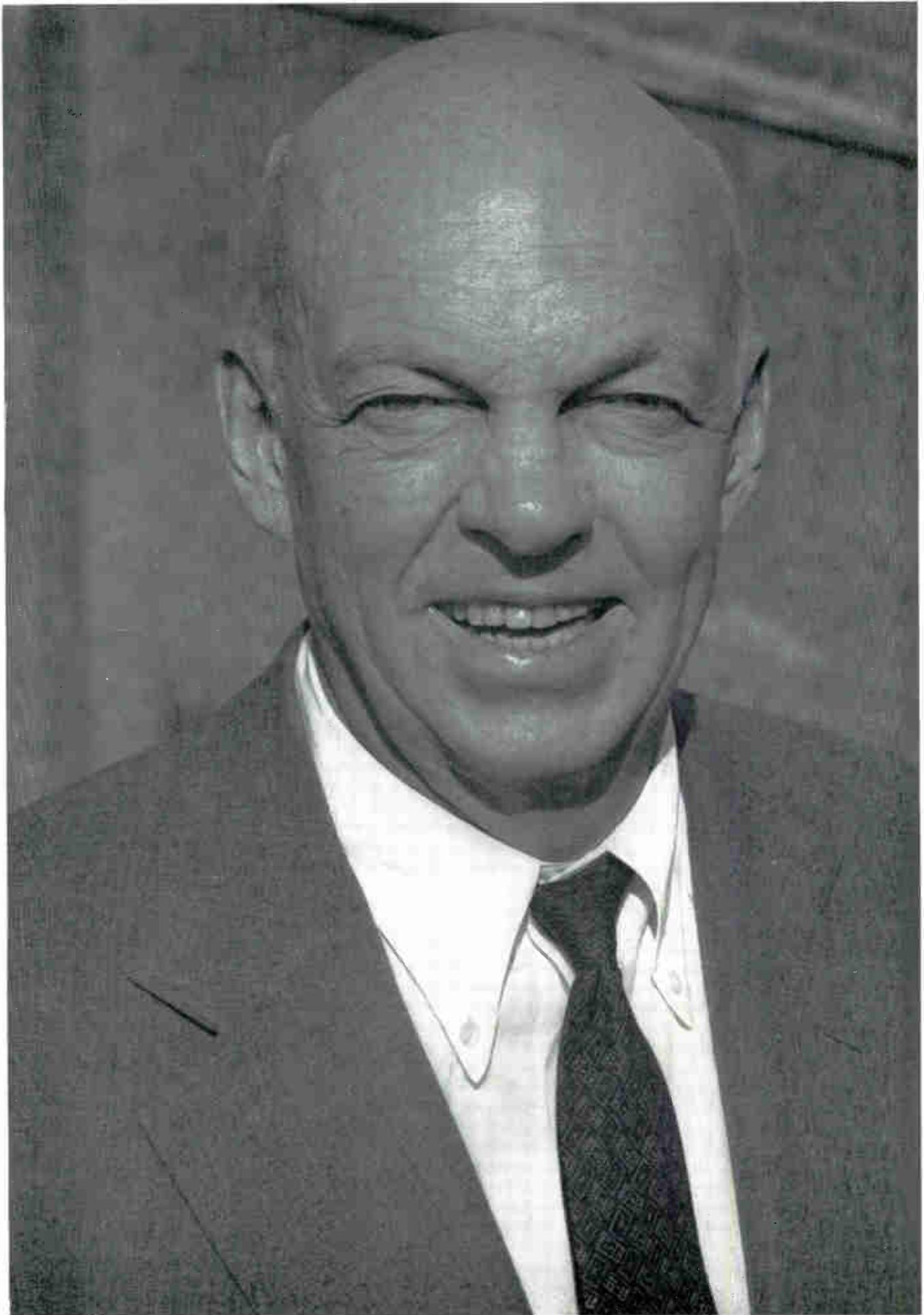
Because reason was the tool with which he worked, he was violently antagonized by the inability or unwillingness of others to reach conclusions by the same method. A man of the very highest ethical and professional standards, he was inflexible in rejecting the expediences and compromises that may be required to keep the wheels of industry turning. To him, profit in itself was not a legitimate objective. As a very wealthy man, he could afford to maintain that position, and he did.

That explains his complete concentration, in recent years, on patent suits involving frequency modulation — to the exclusion of any interest in the commercial development of his invention. Offers of settlement running into the millions of dollars were rejected without consideration, because he was concerned only with establishing and exposing what he believed to be wrong thinking on the part of those whose actions gave rise to the suits he instituted.

No one could dissuade him from this punitive course. The process of reasoning which had served the radio industry so well could not tolerate a compromise. Yet he discouraged and antagonized those who were most interested in expanding FM as a public service. It was true that the Major's only faults sprang from his great virtue and strength of purpose.

But those of us who knew the Major as a friend will soon forget his formidable, unbending ways, and remember only the gentle, kindly manner that won and held our loyal devotion to him. On those occasions when he paused to be himself, no one could have been more gracious or considerate. And he was a very generous man, although his generosity was not recorded for others to know about.

A little later, when it is time to think about such things, we hope that plans can be made to keep the Major's Alpine station on the air as a memorial to him. Certainly there will be staunch support for this idea among the many for whom he did so much. — *M.B.S.*



*The Major — when he took time off to be himself*

*March-April 1954*

# WHAT YOU SHOULD KNOW *about FM*

*Explaining some of the past problems and the present progress of FM broadcasting, and why what the FCC called "the finest aural broadcast system" is only now well on its way to replace AM*

THE Federal Communications Commission has expressly authorized me to say to you again that it is our opinion that FM is the finest aural broadcast system attainable in the present state of the radio art." That statement was made in 1946 by Charles R. Denny, then Chairman of the FCC, in an address to members of the National Association of Broadcasters at Chicago.

Time and experience have confirmed the Commission's opinion. FM is still "the finest aural broadcast system", and there is no likelihood that any future development will contribute significant further improvement.

It may seem surprising, therefore, that FM has not superseded the conventional AM method of broadcasting completely by this time. But changes which affect the general public are not made so quickly, however sound and practical the basic ideas may be. Actually, FM has made more progress in the past eight years than electric refrigerators did in the same period of time. The same is true of the period of transition from the wash tub and scrubbing board to the washing machine, the advantages of which were never questioned, and the subsequent change to fully automatic washers.

## Radio Is a 5-Way Business

It is very interesting to consider the special problems of making such a basic change in radio as shifting from AM to FM. Ordinary home appliances involve only manufacturers and users. If a company brings out a new kind of toaster and you want one, you buy it. That is a simple 2-way business. Radio is very different.

Radio is a 5-way business. That is, it involves the FCC, the transmitter manufacturers, the receiver manufacturers, the broadcasters, and you the public. Major Armstrong invented FM long before the general public ever heard about it.

When he gave the first demonstration of FM broadcasting for the Institute of Radio Engineers nearly 20 years ago — and it was a very impressive, highly successful demonstration, too — he was greeted with this response:

1. The FCC said they were very sorry, but no channels were available for such a system of broadcasting.
2. The transmitter manufacturers took the dim view that FM was nothing more than a scientific curiosity.
3. The receiver manufacturers weren't interested in making sets to receive stations that weren't on the air.
4. The broadcasters were making so much money that they didn't want any part of an invention that would revolutionize their business and possibly change the status quo.
5. As for the public, they didn't know anything about FM beyond some brief and quite negative reports in the papers.

Because of this 5-way situation, there was no possibility for FM to develop commercially unless and until every one of the five groups chose to give it substantial support. Lack of interest and cooperation on the part of any one group could block off the start of FM broadcasting indefinitely.

In the case of almost any other kind of product, if the inventor is unable to find a company willing to market his invention, he can find some way to manufacture and sell it himself. But Major

Armstrong was confronted with the almost impossible task of gaining the support of four different groups before the fifth group — the general public — could have a chance to decide whether or not they would buy FM receivers!

Under those circumstances, the surprising thing is not that FM is only now on its way to replace AM, but that FM ever made a start at all. Indeed, it was only Major Armstrong's unflinching determination and his almost superhuman energy that won for FM its chance to serve the public.

The story will never be told in full, but the few who were acquainted with his activities during the past twenty years know that he gave his life that FM might survive the opposition and indifference to this "finest aural broadcasting system".

## How Major Armstrong Got FM Started

A considerable part of the early FM transmission experiments and many subsequent demonstrations were carried out from the home of C. R. Runyon, Jr. at Yonkers, New York. The first approach to commercial operating conditions was the experimental transmitter which Major Armstrong operated from RCA's quarters in the Empire State Building, New York City. Recordings of reception from that location proved that an FM transmitter of about 1 kw. could deliver static-free signals at a distance of 40 miles during a thunderstorm which completely blanked out signals from the 50-kw. AM transmitter at what was then WEAF — now WNBC.

His work was brought to a stop when the space at the Empire State Building was taken over to install a television transmitter. In order to continue his research and demonstrations, Major Armstrong built the now famous FM station at Alpine, N. J. The late John Shepard, 3rd, then owner of the Yankee Network, was so impressed by the improved tone quality, freedom from interference and static, and increased range made possible by FM that he undertook the installation of FM transmitters at Paxton, Mass. and Mt. Washington, N. H. The planning, engineering, and construction of those stations were in the very capable hands of Paul deMars, as chief engineer.<sup>1</sup>

Other broadcasters became interested in the performance of the Alpine station to the extent that the FCC came to realize that it was necessary to provide channels for commercial FM broadcasting. Major Armstrong's battle to win a place in the ether for FM is a story in itself. The important part is that, supported by testimony from broadcasters who had become interested in FM, he eventually prevailed upon the Commission to allocate the band from 42 to 50 mc. as a permanent place for FM, where it could expand as a commercial service.

Meanwhile, REL pioneered the development of FM transmitters, and Stromberg, Pilot, Freed, Zenith, and Browning got into production on receivers and tuners. As stations went on the air, and listeners began to discover the advantages of this new service, the impossible happened: FM got off to a fast start.

<sup>1</sup> The Paxton and Mt. Washington FM stations covered the entire New England states, except for the tip of Maine. All during the war, AM stations were required to monitor those two FM transmitters continuously for emergency information.

There were two factors that favored Major Armstrong's cause. With only 750 AM stations on the air at that time, broadcasting was a very profitable business. Many were making so much money that they could afford to spend large sums on FM stations just to keep in the forefront of technical progress. As for the receiver manufacturers, with AM sets priced down to \$9.95 in 1939, their business was in a slump, and FM offered the opportunity of getting prices up to a profitable level again.

That much had been accomplished prior to the Japanese attack on Pearl Harbor, in December, 1941. Then, suddenly, our Country was at war, and every means for producing military radio equipment was needed by our Government. All civilian radio production was stopped, and the progress of FM was halted overnight!

### Postwar Progress of FM Broadcasting

The resumption of civilian manufacturing after the war found the radio industry confronted with a completely new set of conditions. Anticipating peace, the FCC had undertaken to revise the frequency allocations throughout the radio spectrum.

One reason for this was the urgent need of preparing for the expansion of FM for 2-way mobile radio communication. FM had proved so successful for military service abroad and for police radio at home during the war that fire departments, taxi companies, railroads, public utilities, pipe lines, and many other kinds of businesses wanted to use 2-way FM communication. FM relay systems for transcontinental telephones and TV networks were already projected by the American Telephone & Telegraph Company, and the groundwork had been laid for other applications of FM to the communication services.

In the course of setting up the new allocations, the FCC moved FM broadcasting to a new, higher band: 88 to 108 mc. As a result, no transmitters could be built immediately after the war because no designs were available for the new frequencies, suitable tubes had not been developed, and the prewar receiver designs were rendered obsolete. Moreover, there was no sale for sets to receive transmitters that didn't exist.

Time has confirmed Major Armstrong's contention that there was no scientific justification for changing the FM band. There was reason to believe that evidence was manufactured at the FCC to support the shift for purely political reasons. Or it may have been an honest mistake in judgment. Probably we shall never know.

The net result was to prevent the resumption of FM progress that was under way at the time the war started. Set manufacturers, their military contracts cancelled, had to convert quickly to civilian production. That meant putting all their efforts on AM receivers and, at the same time, exploring the problems of building TV sets against the time when television broadcasting would get under way.

The high wartime level of profit in the radio broadcasting business attracted many new companies. Since neither FM transmitters nor receivers were available, they laid their plans for AM stations. Hundreds of new applications were filed, and soon the number of AM stations doubled and trebled until there were nearly 2,500 on the air — so many, in fact, that the AM channels were jammed with interfering signals.

Eventually, new FM transmitters were developed and installed. But the 5-way situation created a roadblock. The companies which built the transmitters did not produce receivers. Broadcasters got on the air with FM only to find they couldn't buy receivers to hear their own broadcasts. And without sets there could be no audiences. To complicate matters still further, some makes of transmitters and antennas proved to have been so poorly designed that it was difficult and expensive to keep them on the air.

### Two Serious Mistakes

It was unfortunate enough that the lack of receivers delayed the broadcasters in their efforts to build FM audiences. But additional difficulties arose from two serious mistakes. When FM sets did get into production, most of them had so little sensitivity

and such poorly-designed circuits that their performance was no better than reception on AM. That was the first mistake. The second was that the manufacturers let their customers assume that no antenna was required for FM.

This matter of FM antennas is so important that it deserves discussion here. While it is true that some FM and TV reception over a short range is possible without an antenna, the best results in both cases can be obtained only with a suitable antenna. Everyone knows that a TV set must have an antenna because of the special characteristics of the frequencies on which television operates. The FM channels are in the middle of the lower TV band, so that FM reception, too, requires the use of an antenna.

The better the antenna, the stronger the signals fed to an FM or TV set. Neither type of receiver can give satisfactory results unless sufficiently strong signals are fed to it. Fortunately, it is possible to get perfect, noise-free reception on FM from signals much weaker than those required for clear, sharp television images. In favorable locations, a good FM set will work perfectly with a simple indoor antenna, or one installed in the attic, on stations 60 to 90 miles away. At other locations an inexpensive outdoor antenna may be required. An antenna rotator, such as is used for television, may improve the results. It is even possible to get good reception on old, insensitive FM sets merely by adding an antenna.

Today, practically all current FM models have high-sensitivity circuits, but an antenna is still required for maximum distance, and to assure full noise limiting on weak signals.

Another way to improve reception from old sets or to increase the range of new ones is to use an FM booster. If you prefer not to install an outside antenna, a good booster may give you the stations you want.

### Status of FM in 1954

Every now and then, someone is inspired to write a newspaper or magazine article about the sad fate of FM broadcasting. It is even referred to occasionally as a dead issue.

Nothing could be farther from the truth. Certainly, no one would quote the number of TV station grants that have been turned back to the FCC as proof that TV is dying. Yet more TV grants have been abandoned in the last six months than FM grants in the past two years!

Of course, public interest in hi-fi has contributed substantially to the current rapid growth of FM audiences. More manufacturers are building more and better FM sets than ever before. There are more than three times as many FM stations on the air than TV stations, and the 733 commercial and educational FM stations are operating more hours now than a year ago.

True, a few transmitters are not being maintained properly, and so do not do full justice to FM. They are old installations that were not designed correctly in the first place, and should be replaced. Others are programmed poorly, or are not operated correctly — faults that prevail even more widely at AM stations.

One of the amazing things about the owners of FM stations is their failure to realize how much greater coverage is provided by FM as compared to AM. Witness the announcements from FM-AM stations: "This program comes to you through the courtesy of the XYZ Furniture Company. Drop in at 125 Harrison Street and see the finest collection of home furnishings in town." But what town? Harrison Street where?

If you are listening on AM, you know it is your local station because, particularly at night, it can't be heard more than a few miles away. But on FM, if you wait for the call letters, you may find that the station is 40 or 50 miles away.

It would seem that the owners of FM-AM stations should know something about the vastly greater coverage provided by FM, but the truth is that listeners generally know more about the programming and performance of broadcast stations than the men who own and operate them.

If you aren't acquainted with FM yet, get a good tuner, amplifier, and loudspeaker, and put up a proper antenna to bring in the signals. Within a week you will become a confirmed FM listener, and you'll be enjoying an entirely new concept of radio reception.

*The story of a new kind of speaker, and how it was perfected — not by working from theory to practice, but by simple experiments that resulted in a practical way of meeting well-known requirements of extended bass range, and smooth treble reproduction*

## *A New Approach to Fine Reproduction for*

# HOME ENTERTAINMENT

By PAUL A. deMARS

IT HAS long been the conviction of this observer that the next substantial improvement in music reproduction would result from a new development in speaker design, rather than from further work on speaker enclosures. The basis for this conviction rests firmly on the requirements which loud speakers must fulfill in order to overcome the principal limitation in existing sound reproducing systems, namely, inadequate bass response.

The subject can be made clear by a brief review of the action of the conventional dynamic speakers. In this type of speaker, the voice coil is suspended in a strong magnetic field. It is attached to a cone of fairly stiff paper. This cone is mounted by a flexible support near the voice coil, and by some flexible material between the outer edge of the cone and the mounting frame. The cone is free to move a small distance when electric currents flow through the voice coil. Rapid movement of the cone, due to the movement of the voice coil, produces sound, the tone of which is determined by the frequency of vibrations.

As electric currents, which are the counterpart of musical sounds, flow through the voice coil, this mechanism reproduces the original music with more or less fidelity, depending upon many factors, the more important of which will be discussed later.

Sounds of low pitch, that is, those in the audio range below middle C on the musical scale, move a 12- or 15-in. cone as a whole and the action is described as that of a piston. This is indicated in Fig. 1.

When, however, the system is required to respond to tones of higher pitch, a different action begins to take place. The whole cone does not move but only portions of its surface vibrate, as in Fig. 2 at the right. This latter mode of operation is too complex to discuss here. It is sufficient to point out that it is possible to design a cone speaker that

will provide smooth response in the transition from piston action to the more complex types of vibration at the higher frequencies.

Returning to the problem of piston action at the low frequencies: In this mode of operation, the cone must move a distance inversely proportional to the square of the frequency for constant sound power output. This means that the cone must move 4 times as far for a decrease of 1 octave in pitch, and 16 times as far for a 2-octave decrease in pitch.

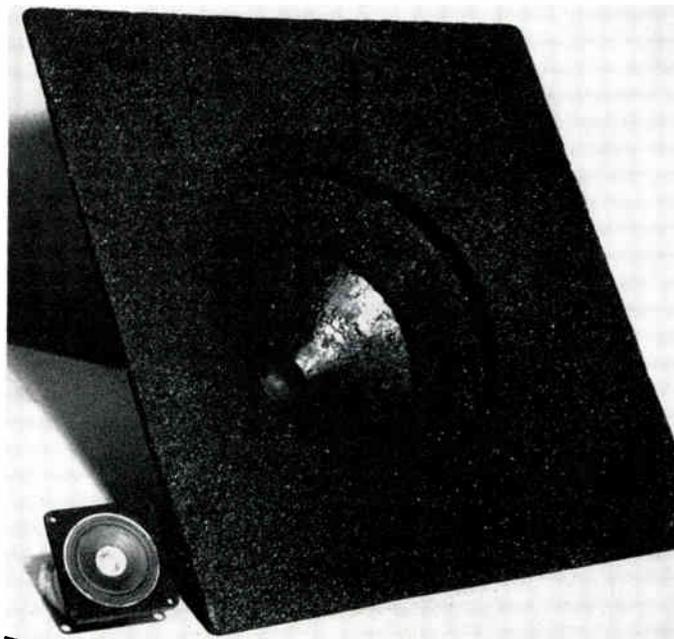
Actually, the movements of the voice coil which drives the cone, and the cone itself, are limited in distance by their mountings and other factors. It is impossible, therefore, for the movement of the cone to increase sufficiently, as the frequency is reduced, to maintain full response at the low tones of such instruments as the organ, contra-bassoon, or even the bass viol. The result is lack of true bass reproduction, since the cone cannot move far enough to drive a

sufficient amount of air! The sound power output is proportional to the area of the vibrating surface. Therefore, if the area of the cone is increased 4 times, the movement of the cone can be reduced one-half for a given sound power output.

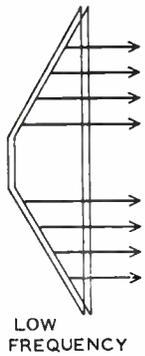
In other words, true bass reproduction requires either large movement of the cone, a large cone area, or a combination of both, compared to what is necessary at the middle and high audio range.

At this point the speaker mounting should be considered. There are two possible systems. In the first, the speaker is placed at the throat of a horn, preferably with an exponential flare.

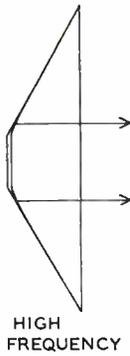
Providing the horn has a sufficiently long, properly-proportioned taper, and further that the mouth is large enough, this system is capable of excellent bass response. Its principal drawback is that the required length and size at the



*The 20-in. square Styrocone speaker as it looks beside a standard tweeter. In spite of its size, this huge cone actually weighs less than 4 ounces!*



LOW  
FREQUENCY



HIGH  
FREQUENCY

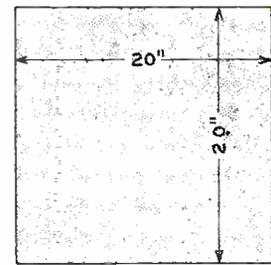
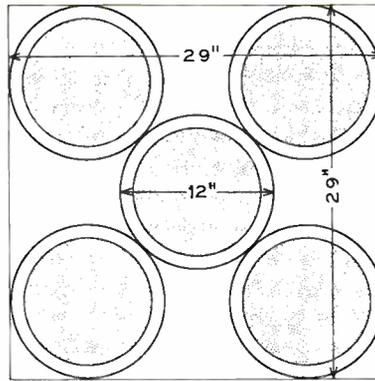


Fig. 1. Low-frequency tones are produced by the movement of the entire cone. Fig. 2. At high frequencies, only a part of the cone moves. Fig. 3. A cone 20 ins. square is equal to the cone area of five 12-in. speakers, occupying twice the mounting area

mouth cannot be accommodated in the average home. Practically all folded-horn speaker systems intended for home use are compromises between size and performance.

In the second system, referred to as direct radiating, the speaker is mounted in a simple box-like enclosure, or is set into a wall or door. This is the most practical system for the average living and listening areas.

tory range of frequencies. The result is that the separate units of this system develop interferences, causing rough and unnatural response.

The foregoing explains the considerations which indicated that the logical method of improving bass response would be through the use of a substantially larger cone than those employed in conventional speakers. The following is a brief account

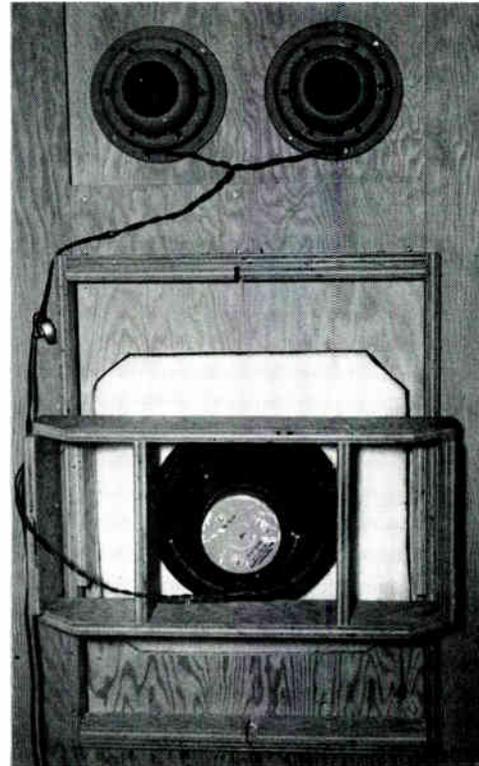
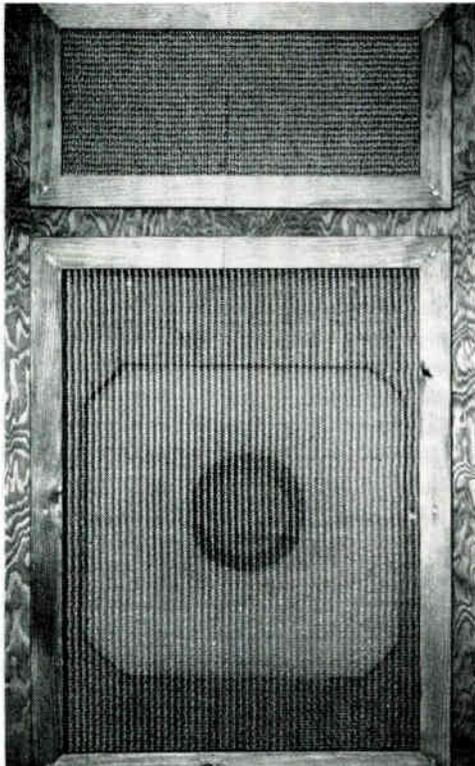


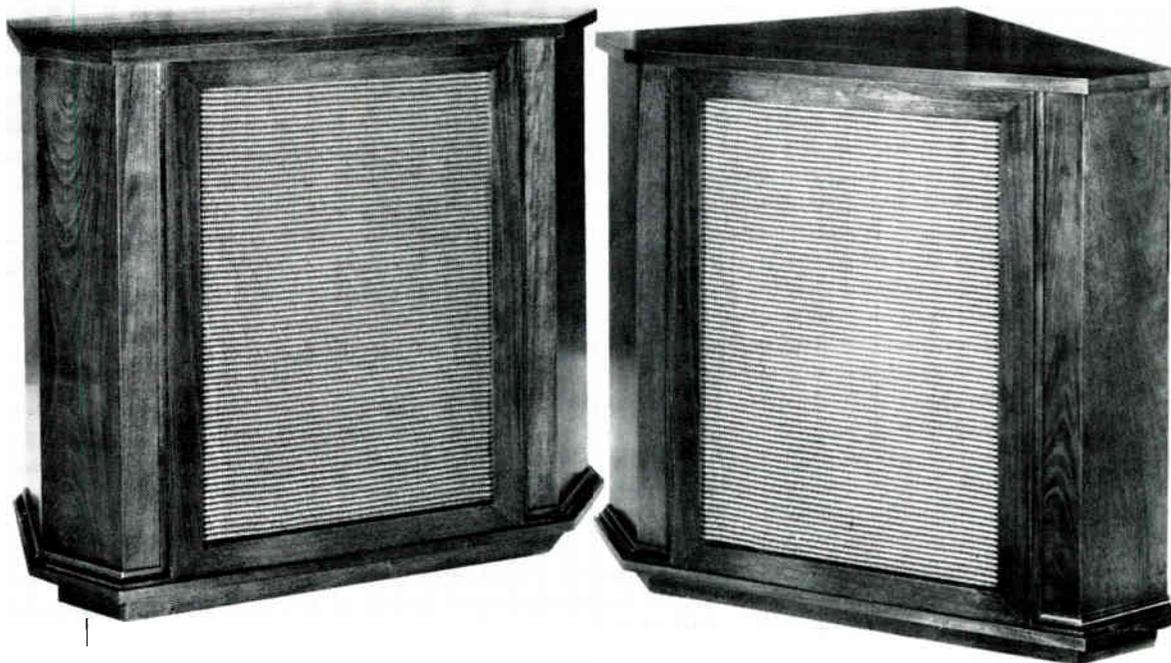
Fig. 4. Front view of the first experimental model, with the Styrocone speaker below, and two tweeters mounted above. This assembly was carried on a heavy piece of plywood, set in place of a closet door. This is a simple, ideal arrangement — where such a door is available. Fig. 5. Rear view, showing the support for the experimental speaker. Note that the cone is not supported at the edges

Since true bass response at a volume comparable to that heard in the original music, and in proper proportion to the higher frequencies calls for a greater movement of the cone than can be obtained in conventional 12-in. speakers, it becomes evident that a logical procedure is to attack the problem of improving the bass response by substantially increasing the area of the cone. This approach is generally recognized as sound in theory.

In the present state of the art, the simple solution is to use several speakers to provide a larger radiating surface. Aside from the cost, this expedient has the disadvantage that it is practically impossible to operate separate speakers in unison over a satisfac-

of the evolution of a new speaker design to which the author has given the name Styrocone, for reasons which will be explained.

At the outset it was recognized that bass response cannot be improved merely by the use of a large cone. Three-foot cones were built and abandoned years ago. The problem was to launch an attack from an entirely new angle, aimed at the development of a speaker and cone which would fulfill the requirements of true bass reproduction. The search led to experiments with a new material for the cone called Styrofoam. It is a synthetic plastic Polystyrene, processed into a closed cellular structure which is amazingly strong, and so light that a cubic foot weighs



*While these cabinets are of moderate size, each contains a 20-in. Styrocone speaker, and four tweeters. The latter are used to provide wide dispersal of treble tones. The cabinet at the left is intended to be placed directly against the wall; the one on the right fits into any corner. Both are built of solid mahogany, heavily braced to prevent vibration in any part of the case*

only a little over 1 pound, or much lighter than balsa wood.

Experiments with Styrofoam were directed toward its use as a cone, flared out to an area 20 by 20 ins. square, approximately 5 times the area of the cone in a 12-in. speaker. Other problems were introduced by undertaking to produce a Styrofoam cone light enough that it could be mounted at the throat only, and stiff enough to act as a free-edge piston at low frequencies.

The use of a cone unsupported at the outer edge has, in the opinion of the writer, advantages in performance over securing it to a supporting frame. There is not general concurrence on this point, but the results seem to support the writer's view in the case of this particular design.

It is interesting to consider the reasons for choosing the 20 by 20-in. size. The dimensions were selected as being about the practical limit of size for an acceptable enclosure for home use. To obtain significant improvement over that realized from 400 square inches would require at least doubling the area. The speaker surface would then be about 28 ins. square, thus increasing the enclosure to unacceptable proportions.

The question has been raised as to why a square surface is used, since it is not as strong mechanically as a conical surface. The answer lies in the fact that the mechanical strength of Styrofoam makes it possible to employ the shape which yields the maximum vibrating surface in a given enclosure.

To avoid problems that arise when an experimental speaker is mounted in an enclosure, the first Styrocone speaker was mounted on a sturdy panel replacing a seldom-used door between two rooms in the writer's home. This fulfilled the practical requirements of a true infinite baffle. In order to have a complete speaker system, so that subjective appraisal would be possible, two Altec Type 755A speakers were used to function as tweeters.

After considerable experimenting, the infinite baffle speaker system emerged. Fig. 4 shows its appearance from the front or living room side. Fig. 5 is a view of the rear of the speaker assembly.

In the crude assembly illustrated, the weight of the Styrofoam cone was about 4 oz. Subsequent refinements have permitted substantial reduction in weight without impairing either the strength of the cone or the performance of the speaker.

The system was connected as follows: The amplifier was connected directly to the Styrocone speaker, with the 755's and 1-

mfd. condenser in series across it. An attenuator in the 755A branch was used to adjust the level with respect to the main unit.

At very low frequencies, where the whole surface of the cone is vibrating as a piston, the movement is reduced to  $\frac{1}{2}$  that of the cone in a conventional 12-in. speaker, for the same sound power output. Since the principle factor limiting sound power output is the movement of the voice coil, the new speaker delivers 5 times as much sound power as a 12-in. speaker.

The importance of this is clear when it is considered that much greater energy is expended to produce the low tones of the original music than the tones in the middle register, or the high notes. Authentic bass reproduction from a loudspeaker requires a corresponding increase in sound-power output. Therefore, even though a speaker may be able to reproduce very low frequencies, if it does not deliver the required sound-power output at the low end, the performance is disappointing.

In the case of the early Styrocone experimental design, the improvement due its high sound-power output was very gratifying. There was no trace of resonance or false bass. Organ pedal notes and percussion effects of the big drums and tympani could actually be felt. One of the most remarkable examples of reproduction was heard from a contra-bassoon recorded on tape. At 20 cycles, the output is so high as to rattle unsecured objects in the room!

Tests and experiments were continued with the closed corner cabinet and with a flat-back design to be used against a wall. Further refinements were made, along with life tests on the Styrofoam cone to determine if any deterioration would take place as the result of vibration. Time gave the reassurance that continued vibration, even at high volume and low frequencies, has no effect on the material. Simple modifications removed the last trace of resonance and hangover. Moreover, neither the ear nor an oscilloscope operated by a microphone disclosed any breakup or peaks at or above the frequencies where the cone ceases to act as a piston, or at the crossover point between the main speaker and the tweeters.

It appears that the perfection of the Styrocone speaker design has extended substantially the degree to which reproduction approaches the quality of original music. However, the final determination must await evaluation by a large number of experienced, critical listeners.

# ORIGIN of the AIR-COUPLER

*Here, told for the first time, is an account of the experiments made by Edmund T. Flewelling with an air duct as a loudspeaker enclosure — the subsequent design that he wouldn't permit anyone to see — incidental information about a mysterious organ that wasn't there any more — and the series of articles that was never written*

PROBABLY more inventive effort has been applied to the design of loud-speaker systems than to any other item of radio and audio equipment. Unfortunately speaker performance cannot be readily appraised by measuring instruments and most of the improvements so enthusiastically reported only represent conditioned listening to a *particular quality* of reproduction — not the achievement of a higher degree of accuracy in reproducing original speech and music.

If you have had the experience of running down a great number of improved speaker systems, finding in each case that the inventor was the only one who could hear the improvement, you, too, have probably become very unresponsive to glowing accounts of reproduction that is "simply out of this world."

## Hi-Fi Served up with Showmanship:

That was my frame of mind when, in the spring of 1950, my old friend the late Edmund Flewelling invited me to visit him, and to hear a speaker system which he described with all the superlatives I had heard so often from so many others. However, Ted was very insistent. In the end, more for the pleasure of seeing him again after many years than because I expected to hear anything important, I made the 200-mile trip to visit him at Ashburnham, Massachusetts.

Ted was a good showman. On my arrival, he talked about everything except the audio system he had invited me to hear. He must have noticed, though, that I looked around the living room to see what he had for equipment. And if my face disclosed my thoughts, he probably enjoyed my dismay at seeing nothing but an old record-player with an equally old crystal pickup, a 6-inch speaker resting on a book shelf, and a 12-inch speaker mounted on a plain board leaning against the wall in one corner of the room.

Finally, in his own good time, he said, "Well, I suppose you'd like to hear some music." I undertook to respond with sufficient enthusiasm to conceal the impulse to ask: "Music from what?" But Ted wouldn't have noticed, because he was very deliberately looking through a row of albums to find a record which, he no doubt calculated, would send me right out of my chair.

Well, believe it or not, the room was suddenly filled with music that did just that! I don't remember the composition, but I do remember that my jaw dropped, and I said: "What in the world have you got here? I've never heard such music from a record in all my life!"

Ted just grinned. "You thought you had come here on a fool's errand, didn't you? You haven't heard anything yet."

Instead of wondering how I could bring the demonstration to an end very quickly, as I expected I would want to do, I found myself asking him to play record after record. Ted explained: "There's a different quality to this reproduction. People

don't get tired of it. I'll bet this is the first time you have been able to enjoy listening to one record after another."

He was right. I had always listened to 78 RPM shellac records in spite of the quality of reproduction, not because of it. On this occasion, I was amazed to find the tone was so agreeable, and so completely satisfying. You can imagine how curious I was to know the details of the system. Certainly the music wasn't coming entirely from the two speakers I could see. Specifically, they couldn't account for the way I actually *felt* the power of the organ pedal notes.

After a while I decided that Ted didn't intend to tell me about the system until I asked him. When I did, I didn't learn anything. He just said: "You're not the only one who wants to know how it works. This job has really stumped the experts!" Then he told me about engineers who had been up from various companies, how some were frankly impressed and puzzled, while others, annoyed because he didn't show them how the system worked, offered the comment that, "There are several ways to get the same results." To which Ted might have replied: "If it's so simple, why haven't you done it yourself?"

## Much Entertainment, but No Information:

My particular interest at that time, four years ago, was to get an article about the system for *FM-TV Magazine*. In that I was not successful, however, beyond the promise that if and when the details could be released, I could count on being the first to publish the story.

That's where matters stood when I returned home. The more I thought about the extraordinary reproduction I had heard, the more intrigued I was. I couldn't even guess how it was done. There was nothing concealed on two of the walls, because the living room was on the left front corner of the house. The right hand end of the room opened into a hall, and the bathroom was on the other side of that wall. There could have been something on the rear wall but, listening carefully without being too obvious about it, I couldn't locate a speaker anywhere. Neither was any sound coming through the floor grille of the one-pipe furnace. I had just *happened* to stand on it, but the bass reproduction was definitely coming from some other part of the room. That was one of the things that puzzled me. Wherever I moved, the bass seemed to come from somewhere else! Also, I noticed that the music had almost a stereophonic quality, rather than the usual one-point-source effect, yet this had no adverse effect on vocal selections.

Altogether, I was doubly intrigued by the installation, for I was as delighted with the music as I was puzzled over the method of reproducing it.

Perhaps a month later, Ted phoned to ask me up again, and he suggested that I take Roy Allison, then editor of *FM-TV*, and Charles Fowler, our office manager, with me on this visit. We

were sure that, between us, we could discover the secret of the system, if Ted still refused to break down and tell us.

The only information we got from Ted that day was that he had applied for a patent which had been assigned to Stromberg-Carlson, and that he was designing a radio-phonograph cabinet that would incorporate his invention. Consequently, he couldn't write anything for publication until some time in the indefinite future. We had a most enjoyable session of listening to music. Ted entertained himself by telling us about new visitors who had been just as mystified as we were, and just as filled with admiration for the extraordinary quality of reproduction. But we knew just as much when we left as when we came.

Charles and Roy were as impressed with what they heard as I had been — and just as puzzled over the installation. We knew the two speakers in evidence weren't handling the bass. Still, something was giving powerful reproduction of the low frequencies!

### Mystery of the Missing Organ:

That was where matters stood when, sometime in July, Ted invited us again. He didn't actually say so, but he implied that he was ready to break down and tell all. Of course, we accepted. This time, however, Charles Fowler announced that he had already solved the mystery. Therefore, he said, we wouldn't make that long trip without accomplishing anything more specific than giving Ted a chance to gloat over our not being able to fathom the secret of his installation. He had come to the conclusion that the bass tones came from an old-fashioned, pedal pumped organ that stood against the wall at the right hand end of Ted's living room. Further, he was convinced that Ted used the motor of a loudspeaker to drive the sounding-board of the organ.

With that detail settled, we would ask Ted to write an article about his system. If he tried to put us off again, Charles would say: "All right. We'll buy an article if you want to write it now, but if you don't, we will write it, because we know how the installation is set up."

Thus prepared, we started out. It was a very hot day. When we finally drove up at Ted's home, the front door was open, the windows were up, and we could hear that glorious music coming from the living room. After the usual greetings, we walked into the house. Charles had a gleam in his eye that meant, "He isn't going to fool us any longer!"

As we entered the living room, all three of us turned to look at the organ. But all we saw was the wall. The organ was gone! Yet the quality of the music had not changed. Trying to keep any indication of surprise from my voice, I asked: "What did you do with the organ, Ted?"

"Oh, that thing," he said. "I've been meaning for months to haul it off to the dump, and finally, yesterday, I got around to it." So there we were, right back where we had started.

### The Article That Was Never Written:

We did make progress toward an article however. Ted was having trouble with the cabinet that was to combine his audio system with a radio receiver and phonograph, and his deal seemed to be running out. Before we left, although he didn't offer a single item of information, he agreed to write a series of three articles provided we sent him a check at once, and used his picture for front cover of *FM-TV Magazine* for October, 1950. After he received the check, we were to return once more to learn the secret of his system, and to take his photograph.

The check was mailed the next day. Two weeks later, still unable to hazard a guess to what he would tell us, we went back again. We didn't even feel sure that we had made a good bargain at that point. This was confirmed when he started to explain his system by telling us that LP records were worthless, that the only thing to do with reluctance pickups was to toss them in the nearest ashcan, and that FM broadcasting had no

advantages over AM. That was too unorthodox to be reassuring.

Finally, he got around to the speaker system. "You didn't see it, but there's a small grille in the floor," he explained. "It's over there at the end of the couch, by the front door." We looked. It was there, all right. We had walked right by it, dozens of times. The metal grille measured about 6 by 16 inches.

"I was trying to rig up an inexpensive audio system," Ted continued, "one that would give me the kind of music I always wanted but never could get, when I hit on the idea of using the air duct from the furnace as a speaker enclosure. When that didn't work out, I tried various other schemes. Finally, I constructed a box utilizing two of the beams under the floor, and made an opening at one end for the grille you see there. Then I mounted the speaker so that it played into the enclosure. That's how I get the wonderful bass you have been hearing!"

Naturally, we wanted to see the construction under the floor. In fact, we wanted to build an entire system, to see if any unexpected problems might develop. To that idea, Ted said: "No! No one is going to check *my* work. Anyway, all the details will be in my article." We had to be satisfied with that, for there was no arguing with Ted.

Three weeks passed before we heard from Ted. Then came two pages of manuscript and a note explaining that this introduction to the first article would be followed shortly by the remaining text. That would have been all right except for the fact that the introduction was devoted to comments about pickups, LP records, and loud speakers which just didn't make sense.

Thereupon, I called Ted to explain, as diplomatically as possible, that I had some suggestions for minor revisions. But he was adamant. We could publish the articles as he would write them, without adding a word or changing a comma, or we could forget the whole thing. Since we had no choice, that brought the series to a halt before the first article was written.

We had to go ahead with what information we had been given, though, because the first announcements had appeared by that time, promising that a series of articles on the Flewelling Audio System would start in the October issue of *FM-TV Magazine*. As I had promised his picture appeared on the cover of that issue, and we prepared a series of articles on his speaker, to which I gave the name "Air-Coupler", without ever having seen the original model!

### Tragedy, Contention, Fine Performance:

There you have the background of the Air-Coupler and its origin. The story has its note of tragedy, too. Not long after the first articles were published, Ted Flewelling was killed when his car went off the road and crashed into a tree.

Probably no other piece of audio equipment that has achieved such popularity has come from such a strange beginning. Perhaps this accounts in part, at least, for the controversies that have raged over the Air-Coupler. Audio experts have insisted that true bass reproduction is impossible from such an enclosure. Their criticisms seem to be confirmed by curves made on Air-Couplers set up in anechoic chambers. Possibly, there is an element of bias in such tests because, first of all, no one would ever listen to an Air-Coupler under such completely artificial conditions, but what is more to the point, this type of speaker enclosure must be fastened securely to the floor, or weighted sufficiently so that only the cone vibrates, and not the enclosure. In an anechoic chamber, since the floor is merely spring-suspended wire mesh, the Air-Coupler is used under the most adverse conditions that could be found for testing its performance.

On the other hand, reports from audio enthusiasts have been consistently favorable. The most frequent and significant comment from those who have reported on the quality of reproduction is: "I didn't know there was so much music on my records!"

If you are interested in seeing the Flewelling patent application, it was filed December 3, 1942, assigned to Stromberg-Carlson, and issued on February 10, 1953. It is No. 2,627,931. And that is the story of the Air-Coupler! — Milton B. Sleeper

*From a simple beginning, you can add equipment to make your installation as fancy as you please. The first article in this series shows how easy it is to install an inexpensive and highly satisfactory system comprised of an FM-AM tuner, amplifier, and speaker. Part 2 will explain the addition of a record-changer and a tape recorder*

## Step-by-step Plan for Hi-Fi Beginners

PART 1 — By MILTON B. SLEEPER

**I**F YOU are starting out to build a home music system without having had any past experience, it is a very good idea to go at it step-by-step, rather than to tackle an elaborate installation all at once. This suggestion is prompted by repeated calls for help from friends who became tangled up in bigger jobs than they knew how to handle, and wound up with fifty-dollar results from a thousand dollars' worth of equipment.

Hence the advice: Start out with an FM tuner, amplifier, and loudspeaker. You can't get into trouble with that combination. When you have that much installed and working properly, add a record-player, and then a tape recorder.

Get units of moderate price. Remember that expensive equipment requires expert handling and, used improperly, it may sound worse than a simple system installed correctly. After you have mastered the problems of your initial installation, give the whole thing to one of your children or your favorite niece or nephew. Then you can make a fresh start with as complicated and expensive equipment as you please, with complete confidence that you know exactly what you want, and that you will get the full measure of performance you expect.

Some of the audio experts may not agree with this philosophy. But this series of articles is not intended for them. The man who says, "Oh, no, you should get nothing but the very best you can afford," may break down in a moment of weakness and tell you



Fig. 2. The front plate can be removed for mounting the chassis in a cabinet. Then it can be put in place again, as in Fig. 1



Fig. 1. The simplest mounting for the tuner, with the amplifier set into the bottom of the loudspeaker cabinet

about some of the troubles he had and the mistakes he made when he started, if he followed the same advice he offers you. Expertness in installing and operating hi-fi components, and judging performance come only from experience, and there are sharp differences of opinion even among those who have had an opportunity to learn: almost all there is to know.

### The FM-AM Tuner Installation

Because of the way audio equipment is designed, it is logical to start out with an FM or FM-AM tuner, amplifier, and loudspeaker. These basic units can be arranged to accommodate the addition of a record-player, preamplifier, and tape recorder. As for the speaker, you can change from one to another at any stage in the progress of your installation. It is well to bear in mind, however, that the various units must be of matched quality. Thus they should all be within the same general price range.

For purposes of illustration, the Pilotuner and amplifier are shown here, since they are typical of well-designed components of moderate price. Other equivalent components can be used of course. Their cost, plus a good speaker and an FM antenna, should be something less than one hundred and fifty dollars.

This combination will give you FM reception, free of noise and interference, from stations 50 to 75 miles away and of a quality that will restore your interest in listening to broadcast programs. There is nothing by way of a factory-built instrument that can compare in price, performance, and satisfaction with what you will get from an installation of this sort.

### Arranging the Equipment

The first and principal considerations in planning the arrangement of the tuner and amplifier are convenience and appearance. The location of the speaker is a separate matter, since that is related to the acoustics of the room. So you must answer these questions:

1. Where can you put the tuner to make it most readily accessible for adjustment?

2. Do you want to mount the tuner by itself on a table or bookcase shelf, on the cabinet of the loudspeaker, in a simple box in combination with the amplifier, or would you prefer to build some simple furniture piece to house the equipment?

Whatever your decision, it must be related to the location of the loudspeaker.

Since you may find the speaker location to be a controlling

factor, it may be well to consider that first. Your speaker should be at some distance from the particular spot where you will sit to listen to it. Also, the speaker should face in such a way that sounds from it will not be reflected by walls or any large object directly back at the speaker. That is one of the advantages of a corner cabinet. When you have chosen a tentative position, stand at the spot and snap your fingers or clap your hands. If you hear a sharp noise that indicates an echo, move to other parts of the room and try again. Somewhere, the sound will be more like a *plop* than a *crack*. The former indicates the absence of echoes or direct reflection. You may wind up by moving the furniture so that you can place the speaker to best advantage. The effort involved is worth while.

Be sure to buy a tuner with a *cathode follower output*. It isn't necessary for you to understand the term, but it is important to get that type because it will permit you to locate your amplifier up to 100 ft. from the tuner. You may want to put the tuner near your easy-chair, with the amplifier inside the speaker cabinet at the opposite end of the room.

Don't forget about the antenna lead to the tuner, and the AC outlet which the tuner requires. While you are considering these details, bear in mind that you will probably want to add a record-changer or turntable later.

Wherever you put the tuner and amplifier, it is necessary to provide ample ventilation. While these units generate only a moderate amount of heat, the heat will build up to an excessive temperature if either one is tightly enclosed. There is probably no danger of fire in any event, but the tuner particularly will be damaged if there is no free circulation of air at the rear, or from the bottom to the top. The amplifier naturally runs hotter. For that reason, if the tuner and amplifier are mounted one above the other, the tuner should always be underneath.

The flexibility of this combination of units is indicated by the following arrangements from which you can take your choice:

1. Tuner, amplifier, and speaker separate
2. Tuner, amplifier, and speaker together
3. Tuner and amplifier together, with the speaker separate
4. Amplifier and speaker together, with the tuner separate

Three arrangements are indicated in the accompanying illustrations. They may serve to suggest modifications to suit your particular requirements.

### Mounting the Units

Fig. 1 shows a simple box for the tuner that can be put at any convenient spot, such as a bookcase shelf. Probably the amplifier

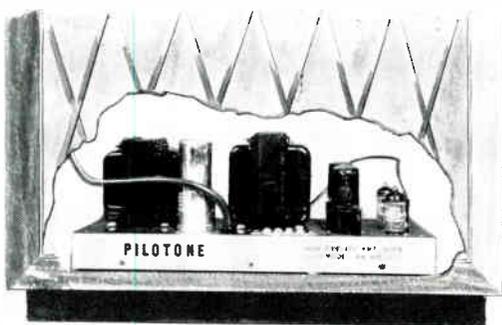


Fig. 4. The bottom of the speaker cabinet provides well-ventilated space for the amplifier, where it can be hidden readily

would be in the cabinet below, or in the bottom of the speaker cabinet. That might depend on the accessibility of a socket for plugging in the amplifier.

It is important to protect the tuner from dust. The box should be open at the back, with some  $\frac{1}{2}$ -in. holes at the top for extra ventilation. Therefore, space must be allowed between the rear of the box and the back of the shelf. Also, there should be at least  $\frac{1}{2}$  in. between the top of the box and the shelf above.

Practically all tuners are fitted with removable front panels

to facilitate mounting. Fig. 2 shows the front of the Pilot tuner, for example, with the panel or escutcheon removed. An opening can be roughed out for the dial, and oversized holes drilled for the three shafts. Thus accurate work is not required, and the openings are covered when the panel is put in place on the front. Under the chassis are rubber mountings and threaded holes by which the chassis can be fastened to the bottom of the box.

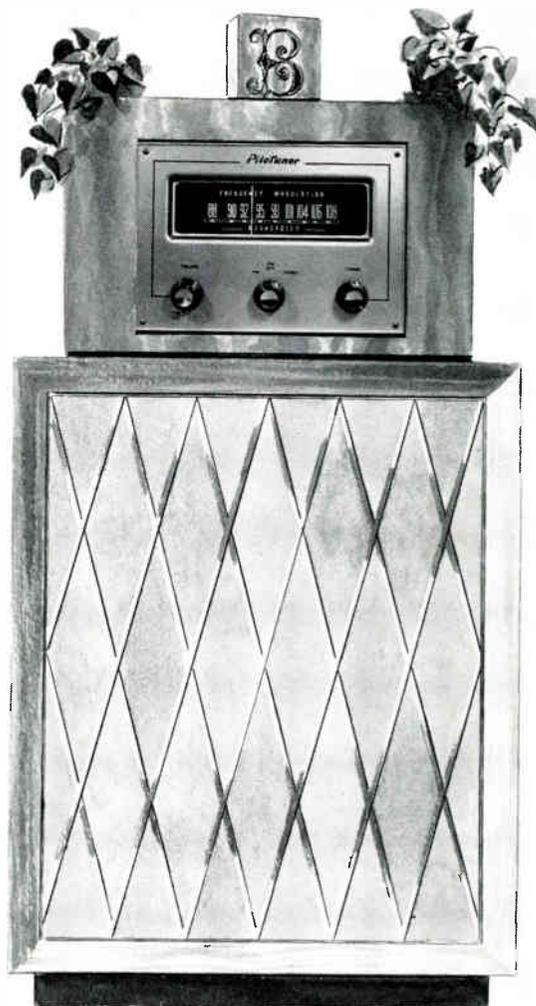


Fig. 3. This attractive arrangement combines the tuner and speaker, with the amplifier set on the bottom of the speaker cabinet

Another convenient plan is suggested in Figs. 3 and 4. Here the tuner and its case are set on the loudspeaker cabinet, with the amplifier down at the bottom, as shown by the cut-away picture in Fig. 4. The only disadvantage, and you might not find it important, is that with the tuner and speaker together, they would probably be at some distance from your listening position. That would make it necessary for you to walk across the room to retune the set.

Another plan worth considering, particularly if you are going to add a record-player, is to combine the tuner and amplifier as in Fig. 5. In this way, if the turntable and preamplifier are located nearby, all the leads can be kept very short, except for the lead to the loudspeaker. If that runs long, it makes no difference, up to 100 ft.

You have a wide choice in speaker cabinets. The one in Fig. 3 can be made from  $\frac{3}{4}$ -in. plywood. It is merely an open-back box 24 ins. high, 18 ins. wide, and 15 ins. deep, mounted on a frame

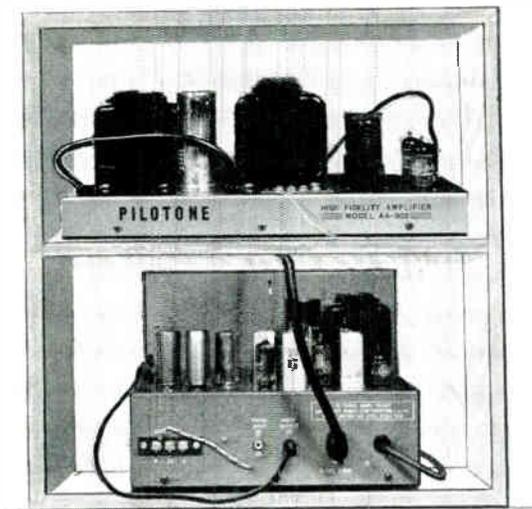


Fig. 5. With the tuner and amplifier combined, the latter must be on top as it runs hotter. Decoration above tuner is a brass trivet

of pieces 2 by 3 ins. At the front, the cloth and grille are held in place by strips of simple molding, mitred at the corners.

In case you don't want to tackle that project, there is a wide choice of straight and corner cabinets available in which you can mount the speaker you select, or you can buy a cabinet with the speaker already in place.

### Details of the Components and Wiring

To anyone who has never connected the components of a hi-fi system, it may appear to be a complex undertaking. Actually, it is no more involved than plugging in conventional electric appliances. Here is the list of operations:

1. **ANTENNA CONNECTION** — Fig. 6 shows the rear of the tuner chassis, with the antenna terminal strip at the left. In this picture, a wire runs to terminal D1, and D2 is connected to G. This is to use the line cord as an antenna — a practice not recommended by *MUSIC AT HOME*. To get maximum FM reception, disconnect the wire to D1, and remove the wire between D2 and G. Then connect the two wires from an FM antenna to D1 and D2.

2. **AC FOR THE TUNER** — The AC line for the tuner runs out at the right of the chassis, Fig. 6. This can be plugged into any socket carrying 105 to 120 volts, 60 cycles. The current drain is 50 watts, equal to that of a small electric bulb.

3. **AC FOR THE AMPLIFIER** — The amplifier, Fig. 7, has its own line cord. It can be plugged into the socket at the rear of the chassis. Then, if that is done, the amplifier will be turned on

and off by the switch at the front of the tuner. If the tuner and amplifier are too far apart to make that practical, the amplifier can be plugged in at any socket, but it will be necessary to switch it off separately. On the other hand, some people let the amplifier run continuously. That does no harm, as long as the ventilation is good, and makes very little difference in the life of the tubes.

4. **TUNER OUTPUT TO AMPLIFIER INPUT** — The Pilot amplifier, like most others, is furnished with a 6-ft. shielded lead having plugs at each end. That is to connect the tuner to the amplifier. One plug goes into the socket which can be seen at the extreme left of the chassis in Fig. 7, while the other goes into the socket at the rear of the tuner marked **AUDIO OUTPUT**. Fig. 6.

5. **LOUDSPEAKER CONNECTIONS** — Along the edge of the amplifier chassis there is a strip, visible in Fig. 7, with terminals marked 0, 4, 8, and 16. These are to indicate the speaker connections according to the impedance of the speaker. Every speaker is marked to show its impedance. One lead from the speaker should be connected to terminal 0. The other should be connected to the terminal that is marked with the impedance of the speaker.

6. **AMPLIFIER SWITCH** — On the top of the Pilot chassis there is an amplifier switch marked **Out** and **In**. Put the switch at the **In** position.

With these connections made, your installation will be ready to operate, and if the amplifier is plugged into the tuner, you can operate from the controls on the tuner panel.

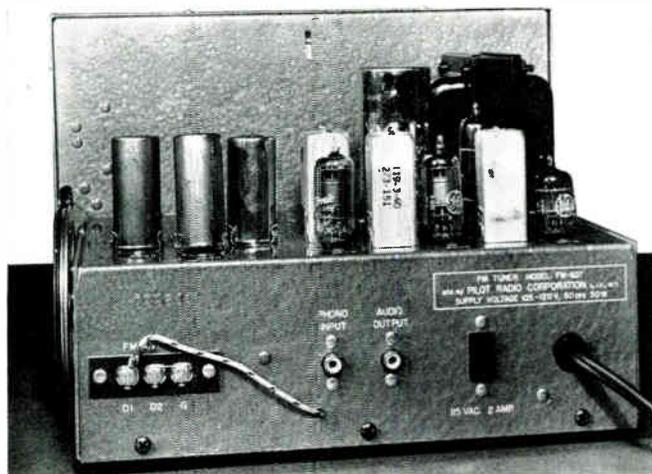


Fig. 6, left: Rear view of the tuner, showing the various connections. Fig. 7, above: Speaker terminals are along the edge of the amplifier chassis, with the plug for connection to the tuner at the extreme right end, between the tubes

# RECORDING TECHNIQUES

*A European conductor's views of the methods — good and bad — as he has observed them in American studios. The final determination of perfect reproduction, the Author explains, "is like being in love; you only know it when you get it," which is probably as precise a kind of measure of quality as is available.*

By DR. HANS WOLF

THIS is an era when super-techniques in the field of engineering and super-sophistication in the territory of the human mind are trying rapidly to outsmart the natural human instincts. At such a time, it may be wise to pause occasionally, and contemplate at length the natural and most fundamental sources of human enjoyment. Only then should we permit the refinements of civilization to take their course, being careful not to allow them take possession of our very nature, our true moods, our primitive feelings, and our natural ways of thinking. It is always well to remember that any kind of refinement can only be understood as such if it is based on nature. Otherwise, our refinements become sophistication in an artificial sense, and they lose their meaning. Culture and civilization are great assets and companions of humans, if humans at the same time respect nature, think and act naturally, and do not lose touch with the sources of life itself.

As a musical director, as the conductor of many professional recording sessions, I have come to see the tremendous difficulties connected with the achievement of good sound, true sound, sound which moves you as it does in concert halls; sound which is not artificial, not sugar-coated or "intellectual," but is well balanced, accurately defined, and sensitive to the style it represents. In short, hi-fi reproduction at its best.

Though present-day recording techniques are rapidly approaching the state of perfection, I have always felt that despite technical efficiency, contradictory as it may seem, the strictly artistic side of the sound problem is sometimes being neglected, or applied in a manner altogether too mechanical. There are certain critical concepts of sound reproduction which, however perfect in a technical sense, are nevertheless not satisfactory artistically. Only too often for example, music reproduced on tape does not reveal true orchestral sound.

## Science in the Service of Art:

In these brief remarks I shall mention some of the difficulties which might arise during recording sessions in connection with musical balance and definition. If my statements are found to be true, they should correspond with the feelings and findings of the educated symphonic record collector, and will help to clear up some questions which may have come to mind while he listened to his own recordings. They may also show that musicians have a natural feeling for musical sound, and detest any effects which are created artificially in the course of reproduction.

Curiously enough, in recording the string section of an orchestra, it is a difficult and delicate task to put a true and noble string sound on tape. To record a good woodwind sound is by far easier and, as a rule, most symphonic recordings have good woodwind quality, but not an entirely satisfactory reproduction of strings. The reason is to be found in the fundamental frequency of the woodwinds which is not much stronger than the harmonics. In the case of strings, however, the harmonics are considerably

weaker than their fundamentals and are, therefore, much more difficult to reproduce. Also, while listening to a woodwind tone, one can hear the harmonics separately from the fundamental. That is not the case with the strings, where fundamental and harmonics form a much closer unit.

To verify this point one need only pick at random various recordings of the same symphony and compare the differences in their string quality. What a variety of the most delicate nature the critical listener can find as to sound and color! What differences as to refinement of sound — or lack of it — one will begin to observe. To be more specific, I have found that RCA Victor's recording of Beethoven's "Ninth" under Arturo Toscanini shows noble and true string quality without artificial boosting of highs and lows and with the right flavor of concert hall violins. Comparing this string sound with less competent releases, one can appreciate its fidelity. In speaking of fidelity I am referring to *concert fidelity*, a term which I would suggest be used in place of the much discussed and much misused *high fidelity*. I say it is misused inasmuch as highs and lows alone do not make for realism. One famous sound recorder, on being asked how he could judge when he had precise fidelity on tape, said: "It's like being in love; you only know it when you get it."

## Violins, a Typical Problem:

In the attempt to record sparkingly and brilliantly, some discs show a piercing, hard hitting, cutting quality of the violins in the upper dynamic range, while the attempt to achieve a soft and tender violin sound often leads to phrases without intensity and liveliness, sounding weak and uninspired, as if lacking breath support. One of the vocal prerequisites of *piano* singing is that enough breath support be given to lend expression to the softness of the voice. The same goes for instruments. In the case of strings, the bow replacing the breath. The intensity of a soft string quality — and this applies to violas and celli to an even greater extent — has to be backed up by a microphone position which is just as sensitive towards the lower dynamical range as it is to the high levels. Only too often just a small portion of the dynamic range of the music is picked up properly. Strangely enough, in a number of cases, microphones are set up to satisfy the *forte* sound, but in this position they have only little response to *piano*. The result is unsatisfactory low-level sound.

Sometimes it may become necessary to change microphone positions between movements of a symphony. A very intimate movement might require that the microphones be moved in somewhat on the orchestra in order to catch an especially delicate phrase, picking up enough intensity to transmit the most sensitive expression to the listener. To this procedure one could object by saying that a listener sitting in a concert hall would certainly not move farther front when the selection reached a movement of intimate *piano* character. So why should the microphones?

Yet an audience becomes more intense while listening to such a movement and is more silent and attentive during subdued *piano* phrases. A microphone change before such a movement would represent exactly this different listening attitude. It makes the record listener aware of tension in calmness, and adds considerably to the much discussed feeling of presence which is so often lacking on records when it comes to low level music.

### Double Bass Shouldn't Snore:

A great problem child in the string family is the double bass. In a great number of symphonic recordings the basses, sometimes including the celli, snore and roar in the distance without even revealing clear definition or definite pitch. They rumble somewhere in the background with complete absence of focus, being recognizable by their depth rather than by the sound characteristics they should reveal. And how wonderful a symphony sounds when its very fundament, the celli and basses, stands out, and is well defined. At this time I am not referring to poor sound resulting from bad pressings, poor disc material, or inadequate playback systems. I am speaking strictly of poorly recorded sound, sound not recorded according to the truth, lacking in realism.

The record collector might attempt two experiments: He could compare various recordings of the same work as suggested above. Or, if he has opportunity to sit in on a recording date, he could switch back and forth from the original source of sound to the sound from the tape. He would be surprised to note how the double basses change definition and color and lose presence unless the microphones were set up exactly right.

An instrument which, in a similar way, is difficult to record is the timpani. It is not easy to reproduce a clean-cut, crisp timpani color in a way that is well focussed and sounds to the point, lending to the orchestra that wonderfully vigorous and virile liveliness which this instrument can create. This source of vitality can be strongly reduced in its effect either by sounding too hollow, being too noisy with relation to the rest of the orchestra, being too distant, or just by having the wrong flavor.

In the too noisily recorded category of instruments we find the brass section represented in many instances. There is great danger in reproducing vulgar and altogether too brassy sound when all brass forces are unleashed. In such cases, noisy and undefined brass blasts certainly do not represent this section of the orchestra with artistic sensitiveness and taste. And yet a large number of record enthusiasts believe that the more the brass blasts the merrier, and the higher the high fidelity. Yet they forget that they have lost definition, orchestral balance, and natural brass quality. Such record bugs — a variety of audio fan with a major interest in mechanics and a minor love for music — do not mind, after the thunderous part is over, that the string section will by comparison sound like a weak assembly of a few violins. But also, in recording sessions, the brass is frequently boosted — at the cost of proper balance and definition.

I could go on to discuss a number of percussion instruments and their particular reproduction difficulties, but this would be part of an extensive treatise in which it would be necessary to investigate each instrument of the modern orchestra as to its recording possibilities. Here, however, I am concerned with a subjective attitude rather than with objective research. Only too often have I witnessed recording sessions during which the conductor was quite unconcerned with the fidelity of sound on his tape, partly being afraid to intrude upon the domain of the sound engineer, partly listening with much more concern to his interpretation and striving for faultless flow of the music.

### The Conductor's Responsibility:

On the other hand, a number of the great conductors in this Country have most emphatically taken the lead in the right direction, and have not released any tape before they completely approved of its sound quality. It becomes the artistic responsi-

bility of the recording artist to be fully aware of, and in the highest artistic sense of the word sensible to, the problem of sound quality and realism. He should be part of the recording team and, if necessary, suggest changes in microphone placement. This should not offend the sound engineers who, as a rule, are well equipped and trained to handle all problems concerning acoustics, microphones, and recording equipment. Close collaboration with the recording artist in matters of sound, balance, and definition can go a long way to improve the quality of reproduction.

Just as the musical director of any recording company would not object if the performing conductor requested a second tape of the same portion of music he has just conducted for reasons of interpretation or faulty playing, no competent sound engineer should mind if certain changes in sound or color are suggested by the performing artist. The conductor might not be able to judge high or low frequencies in a technical sense, might not know much about the acoustic conditions of the hall in which he records, and might even misjudge microphone positions, but he certainly will always be able to check the sound and balance on the tape against the sound situation in the concert hall or studio. And it is exactly this comparison which we need so very badly in the otherwise very efficient field of sound recording.

Comparison with the natural source of sound must at all times be given first consideration; microphones must continuously be adjusted to this requirement, and the artist must assist in making the honesty of sound a holy law.

Recently, I met a professional man in the field who played for me his latest classical recordings. They contained enough echo to drown the sound. Yet he praised them as the latest technical achievement in the field to bring about concert hall fidelity. He had about doubled the normal echo of any big concert hall. If a conductor must work with such an echo-bug at the controls during a recording session, it becomes his artistic duty to object. I have always believed in the employment of natural echo for recording, but the echo should never be used as an end in itself.

There is a present tendency to produce all kinds of sophisticated sounds in symphonic music, intentionally intellectualized by artificial means. Echos are very popular in this connection, and unnaturally pre-emphasized highs are considered just about the last word by certain audio bugs. These artificialities are created by technical enthusiasts who love to experiment, but are not sensitive to the artistic requirements of the music they thus falsify. This misrepresentation would not be at all objectionable if it were sold as artificial-on-purpose.

However, we are concerned here with incorrect sound pictures of classical music, sold as the latest-in-high-fidelity, and bought as such by people whose natural tastes are thus being perverted. It becomes the grave responsibility of the musician, whether he functions in a supervisory or performing capacity, to oppose anything of an artificial nature, and which fails to provide concert fidelity to the buying public. The industry must bring out its products in accordance with the standards of classical sound. Otherwise, record companies might as well start manufacturing Beethoven symphonies in moody sugar-coated sounds, and abandon completely the classical standards.

### Color, Balance, and Dimension:

There is, to be sure, an occasional purpose in changing the sound picture of a symphonic piece slightly. I was present at a recording session when Debussy's "L'après Midi d'un Faune" was on the program. The performing conductor had the microphones moved around in various positions for almost two hours in order to achieve a certain impressionistic effect. Such color effects, dictated by the music itself, are artistically justified. On the other hand, there are instances when a conductor, because of his unfamiliarity with recording techniques, can make the wrong requests. In such cases, the recording team must see that such errors are avoided. At one of my sessions a certain conductor asked for the use of ten microphones. He was greatly disappointed when

(Continued on page 63)

# Directory of FM Stations

A Geographical Listing of Commercial and Educational Stations, with Hours of Operation Shown in Local Time

To provide exact information on the hours of operation at each FM broadcast station, letters were sent to the General Manager at each station listed here. However, as is evident below, many of the stations did not reply. Later, a second request will be sent out, and in a subsequent issue this Directory will be published again. At that time, we hope to complete the data on hours of operation.

If you have a good FM receiver and an efficient antenna, you should be able to pick up stations at a distance of 50 to 75 miles or more with full noise limiting. Some of the high-power transmitters can be heard at 150 to 200 miles.

Some of the FM stations carry the same programs as are on their AM transmitters. Others have special musical features or local sports programs that cannot be heard on AM. The more you listen to FM, the more interesting things you will discover about the FM stations, and the more you'll enjoy the freedom from background noise and interstation interference which characterize AM reception after dark.

It is important to the FM broadcasters to know where their listeners are located. Also, they need to know what types of programs you like and don't like. Write them. They will be glad to hear from you.

ALABAMA		CALIFORNIA		COLORADO	
Albertville WAVU-FM.....	105.1	Siloam Springs KQOA-FM.....	105.7	Riverside KPOR.....	97.5
Alexander City WRFS-FM 6:30 AM-10:00 PM.....	106.1	Bakersfield KERN-FM.....	94.1	Sacramento KCRA-FM.....	96.1
Andalusia WCTA-FM.....	98.1	KMAR.....	92.5	KFBK-FM.....	96.9
Anniston WHMA-FM.....	100.5	BERKELEY KRE-FM.....	102.9	KXOA-FM.....	107.9
Birmingham WAFM.....	99.5	KPFA.....	94.1	San Bruno KSBK 3:00 PM-9:00 PM Wed.-Sun....	100.5
WJLN.....	104.7	Chico KVIC.....	101.1	San Diego KFSD-FM.....	94.1
WSGN-FM.....	93.7	Culver City KMGM.....	98.7	San Francisco KCBS-FM 3:00 PM-9:00 PM.....	98.9
Clanton WKLF-FM.....	100.9	Eureka KRED 6:00 AM-12:00 M.....	96.3	KDFC.....	102.1
Cullman WFMH-FM.....	100.9	Fresno KARM-FM.....	101.9	KGO-FM.....	106.1
Decatur WHOS-FM 6:00 AM-11:00 PM.....	92.5	KRFM.....	93.7	KNBC-FM.....	99.7
Florence WJOI-FM.....	98.3	KMJ-FM.....	97.9	KRON 3:00 PM-10:00 PM Mon.-Fri....	96.5
Gadsden WJBY-FM.....	103.7	Glendale KUTE On the air 24 hours per day.....	101.9	KALW*.....	91.7
Huntsville WHBS-FM.....	95.1	Long Beach KFOX-FM.....	102.3	KXXK.....	97.3
Jasper WWWB-FM.....	102.5	KNOB 3:00 PM-9:00 PM Sun.-Fri.; 3:00 PM-11:00 PM Sat.....	103.1	San Jose KSJO-FM.....	95.3
Lanett WRLD-FM.....	102.9	KLON* 8:20 AM-3:05 PM.....	88.1	San Mateo KCSM* 12:00 N-6:00 PM wk.....	90.9
Mabile WABB-FM 4:30 AM-12:00 M.....	102.1	Las Angeles KECA-FM 9:00 AM-12:00 M.....	95.5	Santa Ana KVOE-FM 3:00 PM-9:15 PM.....	96.7
WKRG-FM On the air 24 hours per day	99.9	KFAC-FM.....	104.3	Santa Clara KSCU*.....	90.1
Montgomery WCOV-FM.....	94.5	KFWB-FM.....	101.1	Santa Monica KCRW*.....	89.9
Tuscaloosa WTBC-FM.....	95.7	KHJ-FM.....	98.7	Stockton KGDM-FM.....	92.9
WUOA*.....	91.7	KMGH.....	98.7	KCVN* 5:00 PM-7:00 PM.....	91.3
<b>ARIZONA</b>		KNX-FM 3:00 PM-9:00 PM wk.; 10:00 AM-9:00 PM Sun.....	96.1	<b>CONNECTICUT</b>	
Mesa KTYL-FM.....	104.7	KRKD-FM.....	96.3	Colorado Springs KRCC*.....	91.3
Phoenix KFCA*.....	88.5	KSRT.....	93.9	Denver KFEL-FM.....	97.3
<b>ARKANSAS</b>		KUSC*.....	91.5	KLZ-FM.....	94.1
Blytheville KLCN-FM.....	96.1	Marysville KMYC-FM.....	99.9	KOA-FM.....	95.7
Fort Smith KFPW-FM.....	94.9	Merced KVME.....	97.5	<b>CONNECTICUT</b>	
KFSA-FM.....	107.1	Madesta KTRB-FM.....	104.1	Hartford WDRS-FM 3:00 PM-12:05 AM.....	93.7
Jonesboro KBTM-FM.....	101.9	KBEE.....	103.3	WTIC-FM 5:00 AM-1:00 AM.....	96.5
* Educational Stations.		Oakland KLX-FM 3:00 PM-10:00 PM.....	101.3	Meriden WMMW-FM.....	95.7
		Oceanside KOEN*.....	89.7	New Haven WHNC-FM.....	99.1
		Ontario KEDO.....	93.5	WBIB.....	100.7
		Pasadena KWKW-FM.....	98.3	Stamford WSTC-FM.....	96.7
		Reading KVRE.....	103.9	<b>DELAWARE</b>	
				Georgetown WJWL-FM.....	101.5

	Mc.	
Wilmington		
WDEL-FM	93.7	
<b>DISTRICT OF COLUMBIA</b>		
Washington		
WGMS-FM 6:30 AM-12:00 M	103.5	
WASH 7:30 AM-10:30 PM	97.1	
WMAL-FM	107.3	
WBUZ	96.7	
WOL-FM	98.7	
WCFM	99.5	
WRC-FM	93.9	
WFAN	100.3	
WTOP-FM	96.3	
WWDC-FM 7:00 AM-2:00 AM wk.;		
9:00 AM-12:00 M Sun.	101.1	

**FLORIDA**

Daytona Beach		
WNDB-FM	94.5	
Gainesville		
WRUF-FM 5:00 AM-12:00 M	104.1	
Jacksonville		
WJAX-FM 3:00 PM-11:30 PM	95.1	
WJHP-FM	96.9	
WMBR-FM 6:00 AM-12:00 M	96.1	
Lakeland		
WFSI*	88.1	
Miami		
WGBS-FM	96.3	
WIOD-FM	97.3	
WQAM-FM	94.9	
WWPB-FM 3:00 PM-12:00 M	101.5	
WTHS*	91.7	
Miami Beach		
WKAT-FM 9:00 AM-2:00 AM	93.9	
Orlando		
WDBO-FM 4:55 AM-1:05 AM	92.3	
WHOO-FM	96.5	
WORZ-FM	100.3	
Palm Beach		
WWPG-FM	97.9	
Panama City		
WDLP-FM	98.9	
St. Petersburg		
WTSP-FM	102.5	
Tallahassee		
WTAL-FM	103.9	
Tampa		
WDAE-FM 6:00 AM-12:00 M	100.7	
WFLA-FM	93.3	
WTUN*	88.9	
Winter Park		
WPRK*	91.5	

**GEORGIA**

Athens		
WGAU-FM 5:30 AM-12:05 AM	99.5	
Atlanta		
WAGA-FM	103.3	
WATL-FM	97.5	
WBGE-FM	95.5	
WGST-FM 5:30 AM-10:30 PM Mon.-		
Fri.; 5:30 AM-12:00 M Sat.-Sun.	94.1	
WSB-FM	98.5	
WABE* 9:00 AM-5:00 PM	90.1	
Augusta		
WAUG-FM 7:30 AM-8:00 PM	105.7	
Columbus		
WGBA-FM	95.1	
WRBL-FM 6:00 AM-12:05 AM	93.3	
Dawson		
WDWD-FM	101.1	
Gainesville		
WDUN-FM	103.9	
LaGrange		
WLAG-FM 1:00 PM-11:15 PM	104.1	
Macon		
WBML-FM	100.7	
WMAZ-FM	99.1	
WNEX-FM	96.9	

\* Educational Stations.

Newnan		Mc.
WCOH-FM 12:00 N-11:15 PM	96.7	
Rome		
WRGA-FM	106.5	
Savannah		
WSAV-FM 6:00 AM-8:00 AM, 5:00 PM		
-11:15 PM wk.; 3:00 PM-11:15 PM		
Sun.	100.3	
WTOC-FM	97.3	
Swainsboro		
WJAT-FM	101.7	
Toccoa		
WLET-FM 6:00 AM-11:15 PM	106.1	
Valdosta		
WGOV-FM	92.5	
West Point		
WRLD-FM	102.9	

**IDAHO**

Pocatello		
KSEI-FM 6:00 AM-12:00 M wk.; 7:00		
AM-12:00 M Sun.	96.5	
Rexburg		
KRKK-FM	93.7	
Twin Falls		
KTFI-FM 6:00 AM-12:00 M	99.7	

**ILLINOIS**

Alton		
WOKZ-FM	99.9	
Bloomington		
WJBC-FM 6:00 AM-12:00 M	101.5	
Canton		
WBYS-FM	100.9	
Carmi		
WROY-FM	97.3	
Centralia		
WCNT-FM	96.5	
Champaign		
WDWS-FM	97.5	
Chicago		
WAAF-FM	93.9	
WGNB	98.7	
WBBM-FM	97.1	
WBIK	96.3	
WENR-FM	94.7	
WEFM	99.5	
WMAQ-FM	101.1	
WFJL	93.1	
WFMT	105.9	
WBEZ*	91.5	
WEHS	99.7	
WFMF 8:00 AM-2:00 AM Mon.-Thur.;		
8:00 AM-4:00 AM Fri.-Sat.; 12:00		
N-2:00 AM Sun.	100.3	
Chicago Heights		
WCHI	95.9	
Decatur		
WSOY-FM 5:00 AM-12:05 AM	102.1	
East St. Louis		
WTMV-FM	102.5	
Elmwood Park		
WLEY 3:00 PM-9:00 PM	107.1	
Evanston		
WNUR*	89.3	
WEAW 6:30 AM-11:30 PM	105.1	
Elgin		
WEPS	88.1	
Freeport		
WFJS	102.5	
Harrisburg		
WEBQ-FM	99.9	
Jacksonville		
WLDS-FM	100.5	
Mattoon		
WLBH-FM	96.9	
Mt. Vernon		
WMIX-FM 6:00 AM-9:15 PM	94.1	
Oak Park		
WOPA-FM	102.3	

Paris		Mc.
WPRS-FM 3:00 PM-10:30 PM wk.;		
3:00 PM-10:00 PM Sun.	98.3	
Peoria		
WMBD-FM	92.5	
Quincy		
WTAD-FM	99.5	
WODI	105.1	
Rockford		
WROK-FM	97.5	
Rock Island		
WHBF-FM	98.9	
Saint Charles		
WEXI	106.3	
Springfield		
WCVS-FM	102.9	
WTAX-FM 5:00 AM-11:05 PM	103.7	
Urbana		
WKID-FM 4:00 PM-10:00 PM	103.3	
WIUC	91.7	
WIUC*	89.9	

**INDIANA**

Bloomington		
WFIU 12:55 PM-10:15 PM	103.7	
Columbus		
WCSI-FM	93.7	
Connersville		
WCNB-FM	100.3	
Elkhart		
WTRC-FM	100.7	
Evansville		
WKY-FM	104.1	
WMLL	94.5	
WEVC*	91.5	
Fort Wayne		
WKJG-FM	106.1	
WOWO-FM	96.1	
Greencastle		
WGRE* 3:30 PM-11:00 PM	91.7	
Hammond		
WJIZ	92.3	
Huntington		
WVSH*	91.9	
Indianapolis		
WAJC*	91.9	
Lafayette		
WFAM	95.1	
Lebanon		
WINL	107.1	
Madison		
WORX 7:00 AM-7:00 PM	96.7	
Marion		
WMRI 7:00 AM-10:00 PM wk.; 10:00		
AM-6:00 PM Sun.	106.9	
Michigan City		
WIMS-FM	93.5	
Muncie		
WVHI*	91.5	
WMUN	104.1	
New Albany		
WNAS*	83.1	
New Castle		
WYSN*	91.1	
WCTW	102.5	
Shelbyville		
WSRK 6:00 AM-10:00 PM	101.3	
Terre Haute		
WBOW-FM	101.1	
WTHI-FM	99.9	
Wabash		
WSKS* 9:30 AM-10:45 AM Mon.-Fri.;		
6:15 PM-10:00 PM Fri., Sat.	91.3	
Warsaw		
WRSW-FM	107.3	
Washington		
WFML	106.5	

**IOWA**

Ames	Mc.	Paducah	Mc.
WOI-FM* 4:00 PM-11:00 PM wk.....	90.1	WPAD-FM 5:30 AM-11:05 PM.....	96.9
Boone		WKYC.....	93.3
KFGQ-FM.....	99.3	<b>LOUISIANA</b>	
Cedar Rapids		Alexandria	
KCRK.....	96.9	KALB-FM 5:00 AM-12:00 M wk.; 6:00	
Clinton		AM-11:00 PM Sun.....	96.9
KROS-FM 1:00 PM-12:00 M.....	96.1	Baton Rouge	
Council Bluffs		WAFB-FM.....	104.3
KSWI-FM.....	96.1	WBRL.....	98.1
Davenport		WLSU*.....	91.7
WOC-FM 6:00 AM-12:00 M wk.; 8:00		WLCS-FM.....	101.1
AM-12:00 M Sun.....	103.7	Lafayette	
Des Moines		KVOL-FM.....	96.1
KRNT-FM 3:00 PM-9:00 PM wk.; 1:30		Monroe	
PM-9:00 PM Sun.....	104.5	KMLB-FM.....	104.1
KSO-FM.....	97.3	New Orleans	
WHO-FM 7:00 AM-12:00 M.....	100.3	WDSU-FM.....	105.3
KDPS*.....	88.1	WRCM.....	97.1
Dubuque		WSMB-FM.....	102.7
KDTH-FM.....	100.5	WBEH*.....	89.3
WDBQ-FM.....	103.3	Shreveport	
Fort Dodge		KRMD-FM.....	101.1
KFMY.....	102.7	KTBS-FM.....	101.1
Iowa City		KWKH-FM.....	94.5
KSUI*.....	91.7	<b>MAINE</b>	
Keokuk		Bangor	
KOKX-FM.....	102.7	WGUY-FM.....	93.1
Mason City		Lewiston	
KGLO-FM.....	101.0	WCOU-FM.....	93.9
Muscataine		<b>MARYLAND</b>	
KWPC-FM 10:00 AM-10:15 PM.....	99.7	Annapolis	
Sioux City		WNAV-FM.....	99.1
KSCJ-FM 3:00 PM-10:30 PM.....	94.9	Baltimore	
Storm Lake		WCAO-FM.....	102.7
KAYL-FM.....	101.5	WITH-FM.....	104.3
Waterloo		WWIN-FM.....	94.7
KXEL-FM.....	105.7	WBJC*.....	88.1
Waverly		Bethesda	
KWAR*.....	89.1	WUST-FM.....	106.3

**KANSAS**

Emporia		Cumberland	
KSTE*.....	88.7	WCUM-FM.....	102.9
Hutchinson		Frederick	
KWBW-FM.....	93.1	WFMD-FM.....	99.9
Lawrence		Hagerstown	
KANU* 1:45 PM-10:30 PM Sun.-Fri....	91.5	WJEJ-FM.....	104.7
Manhattan		Salisbury	
KSDB-FM*.....	88.7	WESN.....	97.5
Ottawa		<b>MASSACHUSETTS</b>	
KTJO-FM.....	88.1	Amherst	
Wichita		WMUA* 5:00 PM-11:00 PM Mon.-	
KFH-FM.....	100.3	Thu.; 5:00 PM-11:00 PM Fri.; 7:00	
KMUW.....	89.1	PM-12:30 AM Sat.....	91.1

**KENTUCKY**

Ashland		Boston	
WCMI-FM 6:00 AM-12:00 M.....	93.7	WBZ-FM 9:00 AM-12:00 M.....	92.9
Bowling Green		WCOP-FM.....	100.7
WLBJ-FM.....	101.1	WEEL-FM.....	103.3
Henderson		WHDH-FM.....	94.5
WSON-FM.....	99.5	WLAW-FM.....	93.7
Hopkinsville		WNAC-FM.....	98.5
WHOP-FM.....	98.7	WERS*.....	88.9
Lexington		WBRU* 2:00 PM-10:00 PM wk.; 10:00	
WLAP-FM 5:30-12:00 M.....	94.5	AM-10:00 PM Sun.....	90.9
WBKY*.....	91.3	WGBH* 3:30 PM-10:30 PM.....	89.7
Louisville		Cambridge	
WFPL* 7:00 AM-10:00 PM.....	89.3	WXHR 5:00 PM-11:00 PM.....	96.9
WSDX* 10:00 AM-11:00 AM, 6:00 PM-		Brocton	
10:00 PM.....	90.3	WBET-FM.....	97.7
Madisonville		Greenfield	
WFMW-FM.....	93.9	WHAI-FM.....	98.3
Owensboro		Holyoke	
WOMI-FM.....	93.3	WHYN-FM.....	93.1
WVJS-FM.....	96.1	Lowell	
		WLLH-FM 6:00 AM-11:30 PM wk.; 7:45	
		AM-11:30 PM Sun.....	99.5
		Lynn	
		WLYN-FM.....	105.5

\* Educational Stations.

New Bedford	Mc.		Mc.
WBSM-FM.....	97.3		
WFMR 6:30 AM-11:30 PM Mon.-Fri.;			
8:00 AM-11:30 PM Sun.....	98.1	Paxton	
		WTGR.....	99.1
		Pittsfield	
		WBEC-FM 6:45 AM-12:00 M wk.; 8:00	
		AM-12:00 M Sun.....	94.3
		Springfield	
		WBZA-FM.....	97.1
		WJKO-FM.....	101.9
		WMAS-FM.....	94.7
		WSPR-FM.....	97.9
		WEDK*.....	91.7
		West Yarmouth	
		WOCB-FM 7:00 AM-11:30 PM.....	94.3
		Worcester	
		WTAG-FM.....	96.1
		WGTR.....	99.1

**MICHIGAN**

Ann Arbor			
WPAG-FM.....	98.7		
WUOM*.....	91.7	Bay City	
		WBCM-FM 6:00 AM-12:00 M.....	96.1
		Benton Harbor	
		WHFB-FM 6:00 AM-10:00 PM.....	99.9
		Coldwater	
		WTVB-FM 6:00 AM-11:35 PM.....	98.3
		Detroit	
		CKLW-FM.....	93.9
		WDET.....	101.9
		WJBK-FM.....	93.1
		WBRI.....	97.9
		WJR-FM.....	96.3
		WKMH-FM.....	100.3
		WLDL 7:00 AM-2:00 AM.....	95.5
		WWJ-FM.....	97.1
		WXYZ-FM.....	101.1
		WDTR* 9:00 AM-3:00 PM.....	90.9
		East Lansing	
		WKAR-FM*.....	90.5
		Flint	
		WFBE* 9:00 AM-11:30 AM; 1:15 PM	
		-3:30 PM.....	95.1
		WFUM.....	107.1
		Grand Rapids	
		WJEF-FM.....	93.7
		WFRS.....	92.5
		WLAV-FM.....	96.9
		Jackson	
		WIBM-FM.....	92.3
		Kalamazoo	
		WMCR* 1:00 PM-4:00 PM, 6:00 PM-	
		9:00 PM Mon.-Fri.; 1:00 PM-4:00	
		PM Sat.....	91.1
		Mount Clemens	
		WMLN.....	106.3
		Muskegon	
		WKBZ-FM.....	98.9
		Owosso	
		WOAP-FM.....	103.1
		Pontiac	
		WCAR-FM.....	99.5
		Royal Oak	
		WOMC.....	104.3
		Saginaw	
		WSAM-FM.....	98.1
		<b>MINNESOTA</b>	
		Duluth	
		WEBC-FM.....	92.3
		Mankato	
		KYSM-FM 6:00 AM-1:00 AM wk.; 7:00	
		AM-12:00 M Sun.....	103.5
		Minneapolis-St. Paul	
		KTIS-FM.....	98.5
		WMIN-FM 6:30 AM-10:00 PM.....	99.5
		WTCN-FM.....	97.1

now you can easily...

**IMPROVE**

**AUDIO**

**PERFORMANCE**

Use the famous  
**DUBBINGS' TEST RECORDS**  
which have enabled thousands of  
Hi-Fi enthusiasts to calibrate phono  
equipment without voltmeters.

**D-100—"THE MEASURE OF  
YOUR PHONOGRAPH'S PERFORMANCE"**

**D-101—"THE MEASURE OF  
YOUR PHONOGRAPH'S EQUALIZATION"**

*with Dubbings' simplified methods*

now the latest in DUBBINGS' Co.  
devices — engineered to help you  
adjust for peak performance...

**ONLY D-110 AND D-111 TAPES**

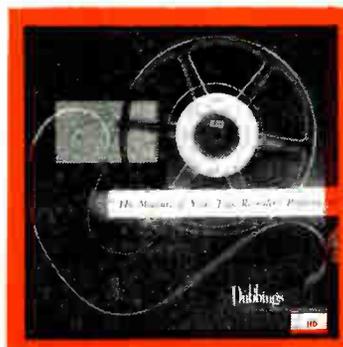
*"The Measure of Your Tape  
Recorder's Performance"*

**CAN TEST FOR:**

- Wow and Flutter
- Head Azimuth Alignment
- Frequency Response
- Signal to Noise Ratio
- Signal Level
- Tape Speed

**THE FIRST COMPREHENSIVE**

**TEST  
TAPE**



...recorded  
exclusively on stretch-  
proof, REEVES  
SOUNDCRAFT  
**LIFETIME**  
professional tape!

READ DETAILED DATA AND SPECIAL IN-  
TRODUCTORY OFFER ON NEXT 3 PAGES



## TEST TAPE

the first and only comprehensive test tapes

Now, for the first time, you can calibrate, service and adjust your tape recorder completely for maximum performance by using *one* test tape—everything from setting proper volume level to aligning recording head.

These tapes are expected to serve you for many years to come, so they have been recorded on REEVES SOUNDCRAFT LIFETIME tape, the most durable ever developed... It is stretch-proof, moisture proof, exceedingly strong... and the highest quality professional tape available anywhere. Recorded with the finest available professional tape machines — produced by the FAIRCHILD Recording Company.



*HAROLD D. WEILER, author of "High Fidelity Simplified," in his forthcoming book, "Tape Recorders and Tape Recording," states: "The DUBBINGS' Test Tapes are an absolute must for anyone interested in obtaining and maintaining peak performance from his tape recorder. Their use insures better tapes. They are more than just test tapes..."*

TO ORDER, SIMPLY DETACH CONVENIENT STAMPED, ADDRESSED ENVELOPE AT RIGHT ▶

## TEST RECORDS

the most widely accepted standard of performance

These highly acclaimed test records permit *every* owner of a Hi-Fi phonograph to make his system perform to the limit of its capability. No more questionable performance with expensive equipment. These records are also the best trouble shooting tools conceived. How much weight should the pickup arm have for proper tracking? What are the best tone control settings?... And the solution to almost any other problem for attaining peak performance... these records will do it for you.



## TEST INDICATOR

proven accuracy at modest cost

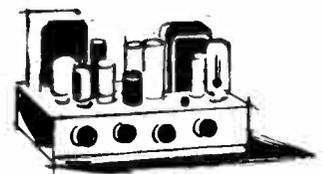
For many years the only way to check an audio system's output was with a good vacuum tube voltmeter. Since voltmeters are expensive and complex, DUBBINGS has developed a very inexpensive, simple test level indicator for the audiophile. It is the only real substitute for a voltmeter, and can be used with ANY TEST TAPE OR TEST RECORDS.



## AUDIO SALES

select lines of quality components

The DUBBINGS Company, Inc. is an authorized agent for the leading audio manufacturers. Rather than list all these tested and proven components, just ask for our catalog, which describes the best quality-for-your-money equipment—on the order form at the right...



## AUDIO SERVICES

Our other services include disc recording, tape duplication, off-the-air monitoring, master recording and many more. You can receive a bulletin describing these services by checking order form at the right...

The DUBBINGS Co., Inc., Dept. 44RT, 41-10 45th Street, Long Island City 4, New York

# TEST TAPES

## "THE MEASURE OF YOUR TAPE RECORDER'S PERFORMANCE"

D-110—5" reel, 7½ ips  
D-111—7" reel, 15 ips

Recorded on REEVES SOUND CRAFT LIFETIME magnetic tape made of DuPont "Mylar" Polyester film.

### The only tape for indicating:

- Wow and Flutter
- Head Azimuth Alignment
- Frequency Response
- Signal to Noise Ratio
- Signal Level
- Tape Speed

for technical data see following page

# TEST INDICATOR

## D-500 TEST LEVEL INDICATOR

For use with any test tapes and test records....

The only accurate, yet inexpensive substitute for a good voltmeter. Consists of three bulbs calibrated to light up at 3 db intervals when connected across speaker leads.

# TEST RECORDS

## "THE MEASURE OF YOUR PHONOGRAPH'S PERFORMANCE"

D-100—12" vinyl disc, 33½ rpm

### The only record for measuring:

- Frequency Response
- Rumble and Hum
- Wow and Flutter
- Tracking

## "THE MEASURE OF YOUR PHONOGRAPH'S EQUALIZATION"

D-101—12" vinyl disc, 33½ rpm

The only record with these response curves:

- Columbia LP
- AES
- NARTB
- RCA's "New Orthophonic"

IN ADDITION... **AUDIO EQUIPMENT**  
OF TESTED QUALITY IS FULLY STOCKED  
at the **DUBBINGS co., inc.**

FOR YOUR CONVENIENCE...  
AN ADDRESSED, POSTAGE FREE  
ORDER ENVELOPE IS AT RIGHT

Simply detach along perforated lines, fill out and mail today

To Calibrate for  
Peak Hi-Fidelity.  
Performance use



(exclusively engineered by  
the **DUBBINGS co., inc.**

ORDER NOW WITH THIS CONVENIENT  
POST-FREE, ADDRESSED ENVELOPE

FOLD

\*FIRST FOLD HERE

Enclosed find  CHECK  MONEY ORDER

Quantity		Amount
<input type="checkbox"/>	D-110 TEST TAPE 5" reel 7½ ips INTRODUCTORY OFFER @ \$10.95 (For Orders Received After May 15, 1954, cost is \$12.50)	\$.....
<input type="checkbox"/>	D-111 TEST TAPE 7" reel 15 ips INTRODUCTORY OFFER @ \$15.95 (For Orders Received After May 15, 1954, cost is \$17.50)	\$.....
<input type="checkbox"/>	D-500 TEST INDICATOR @ \$3.95 For use with any test tapes or records	\$.....
<input type="checkbox"/>	D-100 TEST RECORD @ \$3.50 "The Measure of Your Phonograph's Performance"	\$.....
<input type="checkbox"/>	D-101 TEST RECORD @ \$4.95 "The Measure of Your Phonograph's Equalization"	\$.....

Simple, complete instructions  
enclosed with all the above.

FOLD

\*SECOND FOLD HERE

<input type="checkbox"/>	Fresh 7" Reel of REEVES SOUND CRAFT <b>LIFETIME</b> Tape (\$9.75 list) @ \$6.50	\$.....
<input type="checkbox"/>	Fresh 10½" Reel of REEVES SOUND- CRAFT <b>LIFETIME</b> Tape (\$19.80 list) @ \$13.20	\$.....

Postage & Handling \$ .50

(\*Enclose Remittance Between  
First and Second Folds) **TOTAL** \$.....

New 1954 Audio Catalog  Recording Service Bulletin

**UNCONDITIONAL MONEY BACK GUARANTEE!**

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

I am a:  PROFESSIONAL IN ELECTRONICS  AUDIOPHILE

Please Print

**LISTEN...  
TO  
WHAT  
AUDIO EXPERTS  
ARE  
SAYING...**

*comprehensive  
technical specifications  
on  
DUBBINGS':*

## **AUDIO TESTS**

SEE PRECEDING PAGE FOR VITAL FACTS



### **BUSINESS REPLY ENVELOPE**

First Class Permit No. 1851, Sec. 34.9, P.L.&R., Long Island City, N. Y.

**The DUBBINGS Co., Inc.**

**41-10 45th STREET**

**LONG ISLAND CITY 4, N. Y.**

DEPT. 44RT

SEE PRECEDING PAGE FOR VITAL FACTS

**GEORGE MAERKLE, Chief Engineer, Fisher Radio Corporation.**

*"The DUBBINGS' D-110 and D-111 Test Tapes are the first to fill the long standing need for accurate and easily used means of evaluating and improving performance of magnetic recording equipment..."*

**ROBERT J. MARSHALL, Chief Engineer, Fairchild Recording Equipment.**

*"DUBBINGS' new Test Tapes are welcome companions to this company's series of fine test records. They demonstrate the same high calibre and are the only practical means for truly measuring the high fidelity tape recorder's performance. Getting all the important tests on a single reel is a tribute to advanced engineering know-how."*

**HAROLD D. WEILER, author of "High Fidelity Simplified," in his forthcoming book, "Tape Recorders and Tape Recording," states:**  
*"The DUBBINGS' Test Tapes are an absolute must for anyone interested in obtaining and maintaining peak performance from his tape recorder. Their use insures better tapes. They are more than just test tape..."*

#### **D-110 TEST TAPE—"The Measure of Your Tape Recorder's Performance" 5" reel 7½ ips, REEVES SOUNDCRAFT LIFETIME Tape**

WOW AND FLUTTER—3,000 cps tone • HEAD AZIMUTH ALIGNMENT—5,000 cps tone • FREQUENCY RESPONSE—30 to 7,500 cps in 13 steps 30, 50, 100, 200, 400, 700, 1 kc, 2, 3, 4, 5, 6, 7.5 kc. Recorded with standard NAB characteristic for 7½ inches per second. • SIGNAL TO NOISE RATIO—400 cps tone, 15 to 50 db in 5 db steps with announcements • MAXIMUM SIGNAL LEVEL—zero level, 400 cps, 3% total harmonic distortion • TAPE SPEED—timing beeps at 0, 5 and 10 minutes. Detailed instruction book enclosed.

#### **D-111 TEST TAPE—"The Measure of Your Tape Recorder's Performance" 7" reel, 15 ips, REEVES SOUNDCRAFT LIFETIME Tape**

WOW AND FLUTTER—3,000 cps tone • HEAD AZIMUTH ALIGNMENT—10,000 cps tone • FREQUENCY RESPONSE—30 to 15,000 cps in 14 steps 30, 50, 100, 200, 400, 700, 1 kc, 2, 4, 6, 8, 10, 12, 15 kc. Recorded with standard NAB characteristic for 15 inches per second. • SIGNAL TO NOISE RATIO—400 cps tone, 15 to 50 db in 5 db steps with announcements • MAXIMUM SIGNAL LEVEL—zero level, 400 cps, 3% total harmonic distortion. • TAPE SPEED—timing beeps at 0, 5 and 10 minutes. Detailed instruction book enclosed.

#### **D-500 TEST LEVEL INDICATOR**

RANGE—Calibrated for 3 db increments in level; 1 db increments can be judged easily • SENSITIVITY—Indicates at listening volume level when connected across 3 to 16 ohm loudspeaker terminals • FREQUENCY RESPONSE—Non-frequency discriminating; equally accurate at any frequency. Precision made, durable construction. Leads and alligator clips supplied. Detailed, easy to use instruction book enclosed.

#### **D-100 TEST RECORD—"The Measure of Your Phonograph's Performance" 12" pure vinylite disc, 33½ rpm microgroove.**

FREQUENCY BANDS—30, 50, 100, 250, 400, 700, 1 kc, 2, 4, 6, 8, 10, 12 kc., 4½ db/oct. attenuation below 500 cps. Constant velocity above 1 kc at 6 cm/sec level • ACCURACY—Within 1 db • WOW AND FLUTTER—3,000 cps tone • TRACKING TEST—5 bands of 400 cps tone at increasing levels: 2.5, 4, 6, 8½, 11 cm/sec. • UNMODULATED GROOVE—to check rumble, noise and hum. Both sides of record identical. Detailed, easy to use instructions on record cover.

#### **D-101 TEST RECORD—"The Measure of Your Phonograph's Equalization" 12" pure vinylite disc, 33½ rpm microgroove.**

FREQUENCY BANDS—30, 50, 100, 250, 400, 700, 1 kc, 2, 4, 6, 8, 10, 12 kc for each of the following recording curves; Columbia LP, NARTB, AES, and the RCA "New Orthophonic." An additional 1 kc reference tone before each frequency run • ACCURACY—within 1 db. Detailed, easy to use instructions on record cover.

St. Cloud	Mc.
KFAM-FM 6:00 AM-12:00 M.....	104.7
St. Paul	
WNOV*.....	89.1
Winona	
KWNO-FM 6:00 AM-11:00 PM.....	79.5

**MISSISSIPPI**

Gulfport	
WGCM-FM 6:30 AM-11:00 PM wk.;	
9:00 AM-11:00 PM Sun.....	101.5
Hattiesburg	
WRFM 12:00 N-11:00 PM wk.;	
-11:00 PM Sun.....	97.9
Jackson	
WJDX-FM.....	102.9
McComb	
WAPF-FM.....	100.1
Meridan	
WMOX-FM.....	98.5
WMMI*.....	88.1

**MISSOURI**

Charleston	
KCHR.....	101.7
Clayton	
KFUO-FM.....	99.1
Jefferson City	
KWOS-FM.....	98.5
Joplin	
WMBH-FM 6:00 AM-12:00 M.....	96.1
Kansas City	
KCMO-FM 6:00 AM-10:00 PM.....	94.9
Kennett	
KBOA-FM Sunrise-10:15 PM.....	98.9
Poplar Bluff	
KWOC-FM.....	94.5
St. Louis	
KXOK-FM.....	93.7
KFOU-FM 6:00 AM-8:30 PM.....	104.1
KFUO-FM 6:00 AM-12:00 M.....	99.1
KSLH*.....	91.5
Sedalia	
KDRO-FM.....	99.7
Springfield	
KTTS-FM 7:00 AM-11:00 PM.....	94.7
West Plains	
KWPM-FM.....	97.3

**NEVADA**

Las Vegas	
KENO-FM 7:00 AM-12:00 M.....	103.9

**NEW HAMPSHIRE**

Berlin	
WMOU-FM.....	103.7
Claremont	
WTSV-FM 6:30 AM-11:15 PM wk.;	
8:00 AM-11:15 PM Sun.....	106.1
Manchester	
WKBR-FM.....	101.1
Nashua	
WOTW-FM 6:30 AM-9:00 PM wk.;	
8:00 AM-9:00 PM Sun.....	106.3

**NEW JERSEY**

Alpine	
KE2XCC.....	93.1
Asbury Park	
WJLK-FM.....	94.3
Elizabeth	
WPOE.....	96.7
Newark	
WAAT-FM.....	94.7
WNJR-FM.....	102.7
WBGO*.....	88.3
New Brunswick	
WCTC-FM.....	98.3

\* Educational Stations.

Plainfield	Mc.
WXNJ.....	103.9
South Orange	
WSOU*.....	89.5
Trenton	
WTOA 7:00 AM-11:00 PM.....	97.5

**NEW MEXICO**

Albuquerque	
KANW*.....	89.1

**NEW YORK**

Albany	
WROW-FM.....	93.9
Auburn	
WMBO-FM.....	96.1
Binghamton	
WKOP-FM.....	95.3
Bristol Center	
WVBT.....	95.1
Brooklyn	
WNYE*.....	91.5
Buffalo	
WBEN-FM 5:30 AM-1:00 AM wk.;	
8:00 AM-12:05 AM Sun.....	
WBNY-FM 8:00 AM-2:00 AM wk.;	
12:00 N-2:00 AM Sun.....	92.9
WXRC 12:00 N-9:00 PM.....	103.3
WWOL-FM.....	104.1
Corning	
WCLI-FM.....	106.1
Cortland	
WKRT-FM.....	99.9
Deruyter	
WVCN.....	105.1
Floral Park	
WSHS* 9:00 AM-10:00 AM; 2:15 PM-	
5:00 PM; 5:00 PM-7:00 PM Mon.-Fri.	90.3
Hempstead	
WHLI-FM.....	98.3
Hornell	
WVHG-FM.....	105.3
Ithaca	
WHCU-FM.....	97.3
WITJ* 5:30 PM-10:35 PM.....	91.7
Jamestown	
WJTN-FM 5:55 AM-12:00 M.....	93.3
Massena	
WMSA-FM.....	105.3
New Rochelle	
WGNR-FM.....	93.5
New York	
WCBS-FM 24 hrs. daily, except 1:05	
AM-5:30 AM Mon.....	101.1
WEVD-FM.....	107.5
WGHF 7:40 AM-3:00 AM wk.;	
10:40 AM-3:00 AM Sun.....	101.9
WHOM-FM 9:00 AM-9:30 PM Mon.-	
Fri.; 9:00 AM-6:00 PM Sat.....	92.3
WJZ-FM.....	95.5
WMGM-FM.....	100.3
WNBC-FM.....	97.1
WNYC-FM 6:00 AM-3:00 AM.....	93.9
WOR-FM.....	98.7
WQXR-FM 6:00 AM-1:00 AM.....	96.3
WFUV* 9:30 AM-4:45 PM.....	90.7
Niagara Falls	
WHLD-FM.....	98.5
Ogdensburg	
WSLB-FM.....	106.1
Olean	
WHDL-FM 6:15 AM-11:15 PM.....	95.7
Patchogue	
WALK-FM.....	97.5
Poughkeepsie	
WHVA.....	104.7
Rochester	
WRNY-FM 6:00 AM-9:00 PM wk.;	
8:00 AM-9:00 PM Sun.....	97.9
WHFM.....	98.9

Springville	Mc.
WSPE*.....	88.1
Schenectady	
WBCA.....	101.1
WGEM.....	99.5
Syracuse	
WNDR-FM.....	102.5
WSYR-FM.....	94.5
WAER*.....	88.1

Troy	
WEVR*.....	91.3
WFLY.....	92.3

Utica	
WIBX-FM.....	96.9
WRUN-FM.....	105.7

Watertown	
WWNY-FM 6:15 AM-11:05 PM wk.;	
3:00 PM-11:05 PM Sun.....	100.5

Wethersfield	
WFNF.....	107.7

White Plains	
WFAS-FM.....	103.9

**NORTH CAROLINA**

Asheboro	
WGWR-FM 5:00 AM-9:05 PM.....	92.3

Asheville	
WLOS-FM 6:00 AM-12:00 M.....	104.3

Burlington	
WBBB-FM.....	101.1
WFNS-FM 6:00 AM-11:00 PM.....	93.9

Charlotte	
WAYS-FM.....	107.7
WBT-FM.....	99.9
WIST-FM.....	104.7
WSOC-FM.....	103.5

Durham	
WDNC-FM 5:30 AM-12:05 AM.....	105.1

Elkin	
WIFM-FM.....	100.9

Fayetteville	
WFNC-FM.....	98.1

Forest City	
WBBO-FM.....	93.3

Gastonia	
WGNC-FM.....	101.9

Goldsboro	
WEQR.....	93.3

Greensboro	
WGPS*.....	88.9
WFMY.....	97.3

Henderson	
WHNC-FM.....	92.5

High Point	
WHPE-FM.....	95.5
WNOS.....	100.3
WMFR-FM.....	99.5
WHPS* 9:00 AM-9:30 PM on school	
days.....	89.3

Laurinburg	
WEWO-FM.....	96.5

Lexington	
WBUY-FM.....	94.3

Mayodan	
WFMB.....	93.5

Mount Mitchell	
WMIT 2:00 AM-11:00 PM.....	106.9

Raleigh	
WNAO-FM.....	96.1
WPTF-FM.....	94.7
WRAL-FM.....	101.5

Reidsville	
WREV-FM 6:00 AM-10:00 PM wk.;	
8:20 AM-10:00 PM Sun.....	102.1

Roanoke Rapids	
WKFM.....	98.5

Rocky Mount	
WEED-FM.....	92.1
WFMA.....	100.7

Salisbury WSTP-FM.....	106.5	Mc.	Marion WMRN-FM 6:30 AM-12:00 M wk.; 8:00 AM-11:00 PM Sun.....	106.9	Mc.	Easton WEST-FM.....	107.9
Sanford WWGP-FM.....	105.5		Mount Vernon WMVO.....	93.7		WEEX 2:30 PM-1:00 AM.....	98.3
Shelby WOHS-FM.....	96.1		Newark WCLT-FM.....	100.3		Erie WERC-FM.....	99.9
Statesville WSIC-FM.....	105.7		Kent WKSU-FM*.....	88.1		WLEU-FM.....	97.9
Thomasville WTNC-FM.....	98.3		Oxford WMUB* 4:00 PM-10:00 PM wk.....	88.1		Harrisburg WHP-FM.....	97.3
Wadesboro WADE-FM.....	95.9		Portsmouth WPAY-FM 6:00 AM-12:00 M wk.; 8:00 AM-12:00 M Sun.....	104.1		Havertown WHHS*.....	89.3
Wilmington WMFD-FM.....	96.3		Steubenville WSTV-FM.....	103.5		Hazleton WAZL-FM.....	97.9
Winston-Salem WAIR-FM.....	93.1		Toledo WSPD-FM.....	101.5		Johnstown WARD-FM.....	92.1
WSJS-FM.....	104.1		WTOL-FM.....	104.7		WJAC-FM 6:00 AM-1:00 AM wk.; 8:00 AM-12:05 AM Sun.....	95.5
<b>OHIO</b>			WTRT.....	99.9		Lancaster WGAL-FM.....	101.3
Akron WAKR-FM.....	97.5		WTDS*.....	91.3		WLAN-FM.....	96.9
Alliance WFAH 6:45 AM-11:00 PM.....	101.7		Wooster WST-FM.....	104.5		Lebanon WLBR-FM 6:00 AM-12:00 M.....	100.1
Ashland WATG-FM.....	101.3		Youngstown WFMJ-FM.....	105.1		WLAB.....	104.1
Astabula WICA-FM.....	103.7		WKBN-FM 3:00 PM-12:00 M.....	98.9		Lewistown WLTN.....	97.9
Athens WOUI*.....	91.5		<b>OKLAHOMA</b>			McKeesport WMCK-FM 3:00 PM-9:00 PM.....	104.9
Bellaire WTRF-FM.....	100.5		Durant KSEO-FM.....	107.3		Meadville WMGW-FM 6:30 AM-12:00 M.....	100.3
Bowling Green WBGU*.....	88.1		Muskogee KMUS-FM.....	101.5		Philadelphia KYW-FM.....	92.5
Canton WHBC-FM 6:00 AM-1:00 AM wk.; 8:00 AM-12:00 M Sun.....	94.1		Norman WNAD-FM*.....	90.9		WCAU-FM.....	98.1
Cincinnati WCPO-FM.....	105.1		Oklahoma City KOKH-FM* 9:30 AM-2:30 PM.....	88.9		WFIL-FM.....	102.1
WKRC-FM 5:00 AM-1:00 AM wk.; 7:00 AM-1:00 AM Sun.....	101.9		Shawnee KGBC*.....	89.9		WFLN 7:00 AM-12:00 M.....	95.7
WLWA.....	101.1		Stillwater KSPI-FM.....	93.5		WHAT-FM 6:30 AM-1:00 AM.....	105.3
WSAI-FM.....	102.7		Tulsa KAKC-FM.....	95.5		WIBG-FM.....	94.1
Cleveland WERE-FM 5:30 AM-1:00 AM Mon.- Sat.; 8:00 AM-12:00 M Sun.....	98.5		KTUL-FM.....	97.1		WIP-FM 9:00 AM-12:00 M.....	93.3
WGAR-FM.....	99.5		KWGS* 5:00 PM-11:00 PM.....	90.5		WPEN-FM.....	102.9
WHK-FM.....	100.7		<b>OREGON</b>			WPWT*.....	91.7
WJW-FM.....	104.1		Albany KWIL-FM* 6:00 AM-12:00 M.....	101.7		WRTI-FM* 3:00 PM-10:00 PM Mon.- Fri.....	90.1
WTAM-FM.....	105.7		Eugene KUGN-FM.....	99.1		Pittsburgh KDKA-FM 10:00 AM-12:00 M.....	92.9
WBOE*.....	90.3		KWAX*.....	88.1		WCAE-FM.....	96.1
Cleveland Heights WSRS-FM.....	95.3		KRVM 9:30 AM-3:30 PM.....	90.1		WJAS-FM 6:30 AM-12:30 AM.....	99.7
Columbus WCOL-FM.....	92.3		Grants Pass KGPO 6:00 AM-11:00 PM.....	96.9		WKJF.....	93.7
WELD.....	97.1		Oretech KTEC.....	88.1		WWSW-FM.....	94.5
WHKC-FM.....	98.7		Portland KEX-FM.....	92.3		WDUQ*.....	91.5
WLWF.....	96.3		KGW-FM 3:00 PM-10:15 PM.....	100.3		Pottsville WPPA-FM.....	101.9
WVKO-FM.....	94.7		KOIN-FM.....	101.1		Scranton WGBI-FM.....	101.3
WOSU-FM* 8:00 AM-10:00 PM wk.; 9:00 AM-10:00 PM Sun.....	89.7		KPFM 6:00 AM-11:00 PM.....	97.1		WEJL 6:15 AM-12:00 M.....	107.3
Dayton WHIO-FM.....	99.1		KPOJ-FM.....	98.7		WQAN-FM.....	92.3
WLWB.....	97.5		<b>PENNSYLVANIA</b>			WUSV*.....	88.1
WTWO.....	104.7		Allentown WSAN-FM 3:00 PM-10:30 PM.....	99.9		Sharon WPIC-FM.....	102.9
Delaware WSLN*.....	91.1		WFMZ.....	100.7		Sunbury WKOK-FM 7:00 AM-12:00 M wk.; 7:55 AM-12:00 M.....	94.1
Elyria-Lorain WEOL-FM.....	107.3		Altoona WVAM-FM.....	100.1		Warren WRRN 6:00 AM-11:05 PM.....	92.3
Findlay WFIN-FM.....	100.5		Bethlehem WGPA-FM.....	95.1		Washington WJPA-FM.....	104.3
Fostoria WFOB-FM.....	96.7		Butler WBUT-FM.....	103.9		Wilkes-Barre WBRE-FM 8:00 AM-12:00 M Mon.-Fri.; 5:30 AM-12:00 M Sat.; 12:00 M- 12:00 M Sun.....	98.5
Fremont WFRO-FM.....	99.3		Chambersburg WCHA-FM.....	95.9		Williamsport WLYC-FM 7:00 AM-10:05 PM.....	105.1
Hamilton WMOH-FM.....	103.5		Du Bois WCED-FM.....	102.1		WRAC-FM 6:30 AM-12:00 M.....	103.3
Lima WIMA-FM.....	102.1		<b>RHODE ISLAND</b>			York WNOW-FM.....	105.7
WLOK-FM.....	103.3		Providence WJAR-FM.....	95.5		WRZE.....	93.5
			WPJB-FM 6:00 AM-12:00 M.....	105.1			
			WPRO-FM.....	92.3			
			WPVL*.....	91.5			

\* Educational Stations.

Woonsocket	Mc.
WWON-FM.....	105.5

**SOUTH CAROLINA**

Anderson	101.1
WCAC 5:29 AM-12:05 AM.....	
Charleston	96.9
WCSC-FM 6:00 AM-12:15 AM.....	
WTMA-FM.....	95.1
Clemson	97.1
WTIG.....	
Columbia	97.9
WCOS-FM.....	
WIS-FM 6:00 AM-12:05 AM.....	94.5
WUSC-FM*.....	89.9
Dillon	92.9
WDSC-FM.....	
Greenville	92.5
WESC-FM.....	
WFBC-FM.....	93.7
WMRC-FM.....	94.9
Greenwood	95.7
WCRS-FM.....	
Orangeburg	102.7
WTND-FM.....	
Rock Hill	97.5
WRHI-FM.....	
Seneca	98.1
WSNW-FM.....	
Spartanburg	98.9
WSPA-FM.....	
WDXY.....	100.5
Walterboro	106.3
WALD-FM.....	

**SOUTH DAKOTA**

Rapid City	94.7
KOZY.....	

**TENNESSEE**

Briston	96.9
WOPI-FM.....	
Chattanooga	96.5
WDOD-FM.....	
Jackson	100.7
WTJS-FM.....	
Johnson City	100.7
WJHL-FM 5:30 AM-12:00 M.....	
Kingsport	98.5
WKPT-FM.....	
Knoxville	93.3
WBIR-FM.....	
WUOT*.....	91.9
WKCS* 10:30 AM-2:30 PM every school day.....	91.1
Lenoir City	100.3
WLIL-FM.....	
Memphis	99.7
WMCF 5:30 AM-12:00 M.....	
Nashville	97.5
WSIX-FM.....	

**TEXAS**

Abilene	91.9
KACC* 1:00 PM-6:00 PM Mon., Tue., Thu., Fri.; 1:00 PM-5:00 PM Wed.....	
Baytown	92.1
KREL-FM.....	
Beaumont	99.5
KRIC-FM.....	
Cleburne	94.3
KCLE-FM.....	
Dallas	104.5
KIXL-FM On the air continuously, except 8:30 AM-9:00 AM.....	
KRLD-FM.....	92.5
WRR-FM.....	101.1
KSMU-FM*.....	89.3
KVTT*.....	91.7
Denton	106.3
KDNT-FM.....	

\* Educational Stations.

El Paso	88.5
KVOF-FM.....	
Fort Worth	100.5
WBAP-FM.....	
Galveston	98.7
KLUF-FM.....	
Houston	102.9
KPRC-FM.....	
KTRH-FM 3:00 PM-10:00 PM.....	101.1
KXYZ-FM.....	96.5
KVHF 2:30 PM-10:30 PM.....	91.3
Longview	105.9
KLTI-FM.....	
Lufkin	95.5
KRBA-FM.....	
Plainview	88.1
KHBL* 4:30 PM-8:00 PM.....	
San Antonio	97.3
KITE-FM 5:00 AM-11:00 PM.....	
KISS.....	99.5
KONO-FM.....	92.9
KTSA-FM.....	101.5
Temple	107.5
KTEM-FM.....	
Texarkana	98.1
KCMC-FM 6:00 AM-12:00 M.....	
Wichita Falls	99.9
KWFT-FM.....	

**UTAH**

Ephraim	88.9
KEPH*.....	
Logan	88.1
KVSC*.....	
Salt Lake City	98.7
KDYL-FM.....	
KSL-FM 3:00 PM-9:00 PM.....	100.3
KUTV.....	97.1

**VIRGINIA**

Arlington	105.1
WARL-FM.....	
Crewe	104.7
WSVS-FM Sunrise to Sunset.....	
Danville	97.9
WBTF-FM 3:00 PM-9:00 PM wk.; 3:00 PM-9:15 PM Sun.....	
Emporia	100.1
WEVA-FM.....	
Harrisonburg	100.7
WSVA-FM.....	
Lynchburg	97.5
WLVA-FM.....	
WWOD-FM 6:00 AM-12:00 M.....	100.1
Martinsville	96.3
WMVA-FM 6:00 AM-11:00 PM.....	
Newport News	96.5
WGH-FM 3:00 PM-10:30 PM.....	
Norfolk	102.5
WRVC-FM 1:30 PM-10:40 PM.....	
WTAR-FM.....	97.3
Richmond	98.1
WCOD 6:00 AM-12:30 AM wk.; 7:00 AM-12:30 AM Sun.....	
WLEE-FM.....	102.9
WRNL-FM.....	102.1
Roanoke	94.9
WDBJ-FM 12:00 N-11:15 PM wk.; 9:00 AM-11:15 PM Sun.....	
WROV-FM 6:00 AM-12:00 M.....	103.7
WSLS-FM 6:00 AM-12:00 M.....	99.1
Winchester	92.5
WRFL 6:15 AM-11:15 PM.....	

**WASHINGTON**

Richland	103.9
KALE-FM.....	
Seattle	98.1
KING-FM.....	
KIRO-FM 2:00 PM-10:20 PM.....	100.7
KISW.....	99.9
KOMO-FM.....	98.9
KUOW* 2:00 PM-10:00 PM Mon.-Fri.	90.5

Tacoma	97.3
KTNT-FM 6:30 AM-12:00 M.....	
KTOY* 9:00 AM-3:00 PM.....	91.7

**WEST VIRGINIA**

Beckley	99.5
WJLS-FM.....	
Charleston	98.5
WGKV-FM.....	
WKNA-FM 9:00 AM-12:00 M.....	97.5
Clarksburg	95.1
WPDX-FM.....	
Fairmont	92.3
WJPB 3:00 PM-9:00 PM.....	
Huntington	100.5
WHTN-FM.....	
WPLH-FM.....	102.5
Logan	103.3
WLOG-FM.....	
WVOW-FM.....	92.3
Martinsburg	94.3
WEPM-FM 6:30 AM-11:45 PM.....	
Morgantown	99.3
WAJR-FM.....	
Oak Hill	94.1
WOAY-FM.....	
Parkersburg	106.5
WPAR-FM.....	
Wheeling	97.3
WKWK-FM.....	
WWVA-FM.....	98.7

**WISCONSIN**

Brule	89.9
WHSA* 7:15 AM-11:15 PM.....	
Chilton	89.3
WHKW* 7:15 AM-11:15 PM.....	
Colfax	88.3
WHWC* 7:15 AM-11:15 PM.....	
Delafield	90.7
WHAD* 7:15 AM-11:15 PM.....	
Eau Claire	94.1
WEAU-FM.....	
Green Bay	101.1
WJPG-FM.....	
Highland	91.3
WHHI* 7:15 AM-11:15 PM.....	
Janesville	99.9
WCLO-FM.....	
Madison	101.5
WIBA-FM.....	
WISC-FM 6:00 AM-12:00 M.....	98.1
WMFM.....	104.1
WHA-FM* 7:15 AM-11:15 PM.....	88.7
Marshfield	103.9
WDLB-FM.....	
Merrill	100.7
WLIN 6:00 PM-12:00 M.....	
Milwaukee	93.3
WEMP-FM.....	
WISM-FM.....	102.9
Neenah-Menasha	98.5
WNAW-FM.....	
Paynette	94.9
WWCF.....	
Racine	100.7
WRJN-FM 6:15 AM-10:15 PM.....	
Rice Lake	96.3
WJMC-FM.....	
Rib Mountain	91.9
WHRM* 7:15 AM-11:15 PM.....	
Sheboygan	100.3
WHBL-FM.....	
West Salem	90.3
WHLA* 7:15 AM-11:15 PM.....	
Wisconsin Rapids	103.3
WFHR-FM 6:30 AM-10:30 PM wk.; 7:30 AM-10:30 PM Sun.....	

# The Greatest Hi-Fi Value

**M**ORE AND MORE people are asking these days: "How much will it cost for me to have hi-fi music in my home?" There are probably as many answers as there are to the question: "How much does it cost to build a house?"

A much better approach is to ask: "How can I get the greatest value for the money I want to spend?" That permits of practical and really helpful suggestions. For example, it leads directly to the first decision that must be made, namely, the choice between assembling a music system from component parts, and a complete factory-built instrument that is ready to use as soon as it is plugged into a socket, and the antenna is connected if FM reception is included.

Serious hi-fi enthusiasts will advise you to shun factory-built models because they fear that your selection will be more influenced by the design and size of the cabinet than by the music from the loudspeaker. If a man and his wife set out to make the purchase together, he will almost surely choose the model that offers the best in equipment, while she will as certainly argue him into buying the cabinet that she thinks will look most attractive in her living room, without any particular reference to the real purpose of the purchase, which is to provide musical entertainment.

In fairness to the distaff side of the purchasing department, it should be noted that women are coming to think of home music equipment in terms of its performance, particularly the mothers who want their children to grow up with an appreciation of music as it is heard in the concert halls. Their number is in the minority, however.

The convenience of factory-built cabinet models is an important factor when the husband does not have the time or the inclination to undertake the installation of components. If the dealer will do all the work up to the point of switching on the instrument and putting records on the changer, that may be the deciding influence in closing a sale.

Performance-wise, some excellent values are available in factory-built instruments. Others

*The question is not how much hi-fi costs, but how you can get the best reproduction for the amount you spend*

are greatly over-priced. A few are offered with claims so exaggerated as to be utterly absurd. Watch out particularly for the dealer who promises you stereophonic or 3D reproduction from a conventional radio or phonograph. Remember that merely adding a speaker may give an improvement over the reproduction from a single speaker, but it does not provide the dimensional effect which, for example, makes the sound of a locomotive seem to move from one side of your living room to the other! True stereophonic or binaural equipment employs at least two record or tape tracks, or two radio channels.

So, if you are not entirely confident of your own ability to choose the best factory-built instrument at the price you plan to pay, call on someone who knows music, and ask him to help you choose the model that gives tone quality most nearly approaching live music.

On the other hand, if you have a little mechanical skill, and you enjoy putting it to practical use, you can get more performance by investing a given amount in components. The advantage comes in eliminating the cost of the cabinet which accounts for a large part of the price tag on a factory-built instrument. Roughly it is possible to assemble a system from components at 50% of the cost of a factory-built cabinet model giving the same features and performance. It is a little hard to establish, on the other hand, that the price of the latter, spent on components, will provide twice the performance quality! The reason for that is explained in the companion discussion: "What Is Hi-Fi Quality?"

If you decide to buy components, you have the choice of 1) building (*Continued on page 61*)

# What Is Hi-Fi Quality?

*The real measure of hi-fi reproduction  
is the degree of satisfaction that it gives  
to the people who live with it in their homes*

AS YOU MAY HAVE READ in the newspapers, a Stradivarius cello, presumed to have been destroyed during the Nazi looting of Paris, came to light recently in the hands of a German violinmaker, and was restored to its owner, cellist Gregor Piatigorski. This cello, fashioned in 1712, is valued at \$90,000.

What does this have to do with the matter of hi-fi tone quality? Well, there's a very interesting connection.

That Stradivarius cello is worth \$90,000 not as an antique, nor for the value of the materials in it, but because of its tone quality. And the tone quality is judged to be worth \$90,000 not on the basis of laboratory measurements, or oscilloscope tests of its performance, but because trained musicians who have heard it played by expert cellists *say* that is a reasonable price. It should be noted also that this cello was made in 1712, two hundred years before there were any instruments for elaborate audio measurements, or oscilloscopes, or anechoic test chambers!

In other words, the design and construction of a cello, or any other musical instrument for that matter, was and still is an art — to which modern science now contributes. That is why the final appraisal of instruments which produce music must be made listening to them.

That's the only test that counts. It is true that many people would not recognize the difference between the Stradivarius cello and one of relatively low price. Some might even say they preferred to hear the latter. Such divergent opinions simply reflect varying degrees of training and experience. Given the opportunity to develop the capacity for critical listening, however, the person who would reject the

Stradivarius today might, a year from now, come to value it so highly that he would gladly pay a premium to own such an instrument.

What applies to instruments that make the original music is also applicable to equipment for reproducing that music from records, tape, and FM radio. True, the performance of the individual audio components can be measured. So can certain tests and checks be made on the materials and parts to be assembled into a cello, a trombone, or a piano. But the ultimate performance of an audio system or a musical instrument can be judged only by listening. Thus there may be as many opinions as there are listeners, and each listener is entitled to his own opinion.

When the term "high fidelity" first came into use, probably in the middle 30's, it was intended to identify the top-quality reproduction then obtainable from commercial equipment sold specifically to broadcast stations. More recently, it has been applied broadly to audio components, factory-built phonographs, and phonoradio combinations of widely varying reproducing capabilities. This created a great hue and cry throughout the golden-ear fraternity, and such a demand for technical specifications and standards that, last year, the Radio-Electronic-Television Manufacturers Association appointed a committee to consider the problem.

They accomplished just as much as any group of musical-instrument manufacturers would if they undertook to establish specifications, standards, and test procedures for their products. In short, the RETMA committee found that it had undertaken an impossible task. The one realistic comment that came from this effort was this:

"As beauty is in the eye of the beholder, so high-fidelity is in the ear of the listener." The more you think about it, the more willing you will probably be to accept that point of view. It leaves the question of reproduction quality up to the individual listener to decide for himself. Since none of us can listen with another's responsiveness and reac- (Continued on page 62)

# When Things Go Wrong

The best equipment may develop defects, but troubles with hi-fi installations almost always are due to outside sources which are least suspected

By A. STEWART HEGEMAN

**T**HE PURPOSE of a hi-fi reproducing system is, of course, to give as perfect and realistic tone quality as is furnished by the best program material from records, tape, and FM radio. However, the more perfect the system, the more disturbingly the imperfections show up if there are any in the music source.

Consider, for example, the dismay of the lady who called me early one Monday morning. At great expense, I was told, she had had a really excellent hi-fi system installed in her home for the express purpose of enjoying the Toscanini programs and the Philharmonic Concerts. But, to her dismay, there was a most annoying hum from her speaker that ruined the music. She had been told that I was an expert in correcting faults in hi-fi systems, and would I prove it by coming to her home next Sunday and eliminating the noise which was disturbing her enjoyment of those all-important programs?

## Always Blamed, Not Always Guilty

Those simple troubles are always the toughest. Nevertheless, prepared to defend my reputation, I was on hand the next Sunday before the end of the Philharmonic Concert. The hum was there, all right, but I couldn't find any fault in the equipment. I was still looking when the concert ended. And so did the noise — as soon as the program was switched back to the CBS studios!

In other words, the noise was not in the lady's equipment. It was in the telephone line running to Carnegie Hall.

This experience is cited because it is so typical of 1) the manner in which hi-fi reproduction brings out faults outside the equipment which are never noticed on conventional factory-built radios and phonographs, and 2) the way people assume that faults lie in the equipment when, in most cases, the trouble is somewhere in the program source or is at least external to the hi-fi installation.

One of the FM-AM stations which is reputed to be outstanding for its fine music is responsible for many complaints about poor performance from really fine equipment. I have been told on several occasions: "My FM reception is poor. The records played by that station don't compare with the quality of the same records when I play them myself at home."

## Hi-Fi Is Catching up with FM Broadcasters

When I got the first complaint of that sort, I called the station manager. He said: "There's nothing wrong with our station. We go right out to 15,000 cycles." So I listened carefully to their transmission. My immediate conclusion was that the station manager didn't pay much attention to his own programs, or that he had a poor receiver that didn't show up the poor quality.

Then I did a little sleuthing. I found the answer. Actually, I found three answers. 1) No doubt many of the records in the station library were good once upon a time, but they were old shellac 78's, and very badly worn. 2) The station used so much scratch filter to reduce the record noise that all the highs were cut off. 3) Because all programs were carried on AM as well as FM, the music is put through an automatic volume control that makes soft passages louder, and holds down the loud passages. That is considered necessary on AM broadcasting so that the soft parts won't get lost in the background noise and static, and the loud parts won't overload the transmitter. Such a control is not required on an FM transmitter. One of the important advantages of FM is that it can handle all the volume range of records or live music.

Why a station that claims proudly to be tops in good music

programs should be operated that way is something I don't understand. I have a pretty good idea, though. I think the station manager feels that he is doing his job when he sells time. As for listening — he lets others do that.

On the other hand, some of the FM stations are doing a remarkably fine job of transmission. WGBH in Boston is an outstanding example. Several of the older stations have replaced their early installations since they undertook to do a serious job of top-quality broadcasting, and they have also discarded old records.

## Good Equipment Needs Maintenance

There is no intention to imply that good audio installations never develop faults. Of course they do. But a record of service calls that I have kept over a long period of time discloses that less than 10% of the troubles reported as "something has gone wrong with my audio system" were due to defects in the equipment itself.

Consider the complaint: "Something has happened to my amplifier or loudspeaker that is causing terrible distortion." Often there is such additional information as: "I had my television serviceman spend several hours trying to fix it. He said the voice coil of the speaker was off center, or that one of the transformers had broken down . . . Oh, yes, I'm sure that is the trouble. My serviceman is really an expert, and that's what he said."

Yet the trouble with the supposedly defective speaker or amplifier disappeared miraculously after a readjustment of the stylus in the phono pickup. A camel's hair brush attached to the pickup so that it drags on the record, or an application of such a brush to the stylus after each record is played helps to avoid this particular kind of trouble.

On some pickups, it may be necessary to adjust the baton so it will be centered accurately in the gap, and to keep the stylus exactly vertical in the record groove. This is a difficult adjustment to make. I have spent as much as an hour and a half trying to adjust a stylus to my own satisfaction. The easy way out is to send the pickup back to the factory, but most hi-fi enthusiasts are reluctant to forego their music for the length of time that is required.

Each make of pickup calls for a different adjustment technique. Some are more difficult to handle than others. One type takes a much keener eye than I possess to determine when the stylus is riding exactly vertical in the record groove. Recently I hit upon a simple and satisfactory method:

In my record collection I found an invaluable assistant that enables me to make a precise adjustment in a few minutes. Side A of my Westminster WL5090 (XTV-15504-1A) has a faint post-echo at the end of band 1, and an equally faint pre-echo at the start of band 2. Using this part of the record as a test, it is only necessary to adjust the stylus until the echoes are of equal intensity, and as faint as possible. Other records have echoes, but this is the only one I have found where they are on the same disc, and conveniently close together.

Using this record as a guide, it is surprising to hear the improvement in tone quality when the stylus is readjusted accurately. Customers who were keenly disappointed in the quality they were getting from expensive and presumably fine LP's have had their faith in the record manufacturers completely restored. And, what is of equal importance, they have learned what to suspect if similar tone troubles develop again. I believe that there are some new test records that can be used to locate certain faults, but I haven't had a chance to try them yet. (Continued on page 56)

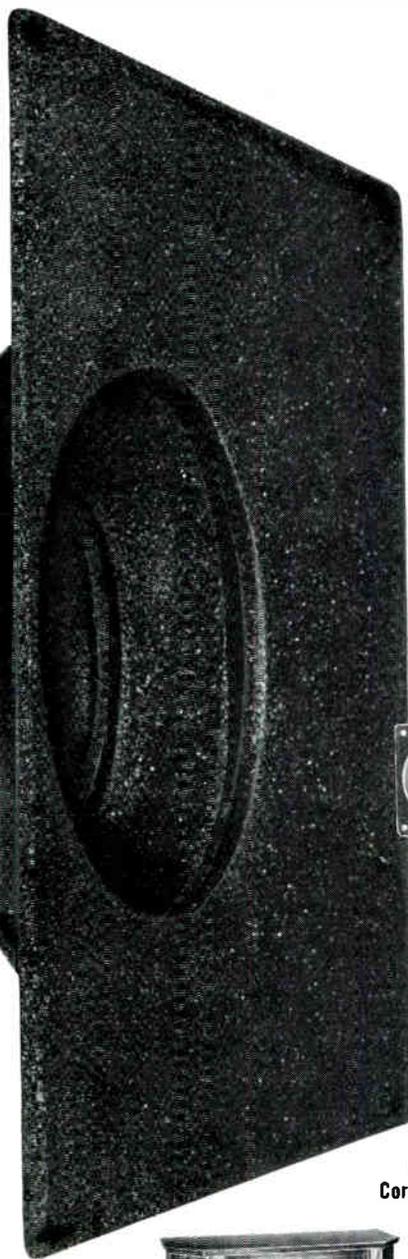
# THERE'S NO SPEAKER SYSTEM LIKE IT...

*the* **deMARS**  
*Loudspeaker system*

**AUTHENTIC BASS REPRODUCTION  
AND GENUINE CONCERT HALL QUALITY  
IN A COMPACT DIRECT  
RADIATION SPEAKER SYSTEM.**

"I have developed a new loudspeaker system incorporating the "Styrocone" speaker, capable of reproducing the sounds of musical instruments from the lowest bass notes through the entire tonal spectrum, into the highest frequencies. This unit is distinguished by naturalness of sound reproduction and resulting excellence of musical definition, which permits listening at concert volume without fatigue. These characteristics are obtained in a unit so compact that it is eminently suitable and practical for home use."

*Paul A. deMars*



**Model S  
Basic System  
\$250\***



**Model SC  
Corner Style  
\$450\***



**Model SW  
Wall Style  
\$450\***

Basic system is mounted on wooden baffle board 22" x 32".

Enclosures are custom-built of finest, genuine solid furniture woods, all hand-finished in mahogany, walnut, or blonde, to your preference.

\*FOB Lawrence, Mass.

**deMARS ENGINEERING & MFG. CO. · 360 Merrimac Street · Lawrence, Mass.**

<p><b>Q.</b> What is the deMars speaker system?</p> <p><b>A.</b> A multi-cone system with a single voice coil mechanism, supported by an array of very high frequency direct radiators.</p>	<p><b>Q.</b> What kind of loudspeaker system is the deMars?</p> <p><b>A.</b> It is a direct radiation system as distinguished from acoustic coupling devices, such as horn types or acoustically baffled systems.</p>
<p><b>Q.</b> How does the deMars system achieve better reproduction?</p> <p><b>A.</b> Through the multi-cone principle, which presents the optimum vibrating surface for each area of frequencies over the tonal spectrum.</p>	<p><b>Q.</b> Why was this new type of direct radiation system required?</p> <p><b>A.</b> To obtain authentic bass response in the home within acceptable sized enclosures, and independent of location in the living room.</p>
<p><b>Q.</b> What distinguishes the deMars system from all others?</p> <p><b>A.</b> It incorporates a new device, called the "Styrocone", which enlarges the vibrating surface beyond that of any other single multi-cone type unit known today... much larger than any other direct radiation system on the market.</p>	<p><b>Q.</b> What is the advantage of a direct radiation system, such as the deMars?</p> <p><b>A.</b> It performs better than other types of speakers, except when they are coupled with horns or baffles of prodigious size... and, it is much more flexible and practical for economical installation.</p>

<p><b>Q.</b> What is the opinion of the critics?</p> <p><b>A.</b> The new deMars system has been tested under many and varied room conditions. Critics have been unanimous in their enthusiasm.</p>
<p><b>Q.</b> Is the deMars system available, and what does it cost?</p> <p><b>A.</b> Yes... it is available now, in three models, each built under Mr. deMars' personal direction. The basic system comes pre-assembled and mounted... can be installed quickly and without difficulty by simply connecting 2 wires.</p>

**— MAIL COUPON TODAY —**

deMars Engineering & Manufacturing Co.  
360 Merrimac Street,  
Lawrence, Mass.

Gentlemen:  
Enclosed is my check  — money order  — for style.....

Send me your illustrated literature on the deMars Speaker System.

Send information as to where I can hear the deMars Speaker System.

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Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

MH-3

# Here's how RCA INTERMATCHED COMPONENTS take the mystery out of High Fidelity



RCA Intermatched High-Fidelity cabinet and enclosures house any selection of components you may choose.

If you're interested in high fidelity . . . interested in the beauty of music, beautifully reproduced, but confused about how to select the system you want . . . here's how you can have everything you want in high fidelity *plus the assurance of the RCA name on every component in your system.*

Here is professional-grade equipment—bearing the best known name in professional sound—designed to bring the concert hall and the recording studio into your home. Here is RCA's broad background in acoustics and profes-

sional sound reproduction in equipment selected to meet your needs, your taste in high fidelity, and your budget.

In RCA's broad line you can find an almost limitless number of combinations—and the *one* combination you want. Because these units are all *intermatched*, you can develop your own system without a technical background—without fear of mismatch at any stage. It's the easy way to choose . . . it's the sure way to get what you want in high fidelity.



Work out any system you want—Select from these typical combinations—or plan your own

HEAR THEM AT YOUR RCA ELECTRONICS DISTRIBUTOR'S

			TUNERS		AMPLIFIERS			SPEAKERS		
	Record Changer (SRC-S1)	Pre-Amplifier (SV-1)	ST-1	SVT-1	SVP-10 (10-watt)	SP-10 (DeLuxe 10-watt)	SP-20 (DeLuxe 20-watt)	SL-8	SL-12	LC-1A
Quality record reproduction at low cost	X				X			X		
Quality record and radio reproduction at low cost	X		X		X			X		
Extended range record reproduction, medium price	X	X				X			X	
Extended range record and radio reproduction, medium price	X			X		X			X	
DeLuxe quality record reproduction	X	X					X			X
DeLuxe quality record and radio reproduction	X			X			X			X

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High Fidelity  
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**LEADER IN SOUND**



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- Please send me your new, free booklet on RCA Intermatched high-fidelity equipment.
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Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

(Continued from page 54)

## Trouble with Hum

Quite naturally, I suppose, people lay the blame for hum trouble on their equipment, although it is seldom the real source. That statement calls for some qualification. To take a typical example:

We are all accustomed to the noise, interference, distortion, and limited audio range of conventional AM radio sets. Bad as the quality is, we are conditioned to accepting it, or just switching off the set when it gets too annoying. But we don't complain about it. As for those who listen critically, and are only willing to accept virtually perfect reproduction, they don't listen to AM at all.

It is only when the quality approaches perfection that people suddenly become conscious of slight noises or minor distortion that would go unnoticed coming from conventional instruments. In short, the finer the hi-fi installation, the more accurate the response to whatever is fed into the system, whether it is music or distortion. That is why people who have always enjoyed listening to shellac 78's suddenly can't stand them on hi-fi.

It is possible to design component parts which, individually, give well nigh perfect performance and yet, when they are installed, there may be a hum loud enough to spoil the music from the loudspeaker. Usually that is due to some simple cause, such as having the power transformer on a tuner chassis or amplifier too close to the preamplifier or phonograph pickup. Hum may be caused by defective wiring, poorly soldered connections to shielded wire, excessively long leads, or wires run too close to the pickup. These sources may be difficult to locate but once found, are usually easy to eliminate.

Consider the apartment house installation that produced music when the the phonograph was turned on, even though there was no record on the changer. There just didn't seem to be any answer to that one until I asked the people in the adjoining apartment if they had any radio or audio equipment. Then I found they had a TV set on their side of the wall directly behind the phonograph that was giving trouble! A little experimenting disclosed the fact that the preamplifier was picking up audio signals from the TV set. This fault was cured by a simple filter.

Surprisingly, an excessively long cable may cause peaks in the reproduction that give objectionably shrill effects at the higher frequencies. Some pickups must be less than 3 ft. from the preamplifier on that account. Or the terminating resistor, if not of the exact value required, may affect tone quality.

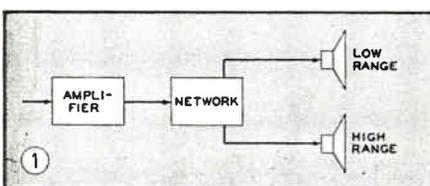
EDITOR'S NOTE: *This discussion by Mr. Hegeman, now chief engineer at Brociner Electronics, will be continued in the next issue of MUSIC AT HOME.*

# How to Select and Order G.A. Fixed or Variable Networks Specifically Suited to Your Speaker System

**TO HELP** you make sure that you select the correct networks for finest performance from your particular speaker system, the following information is presented on two and three-speaker types, using either G.A. fixed networks or the new G.A. Variable Audio Crossover Controls.

## G.A. FIXED NETWORKS

**High-Quality Performance:** The circuit designs and components furnished for G.A. networks represent the very best audio engineering practice. They provide these essentials of true high-fidelity performance:

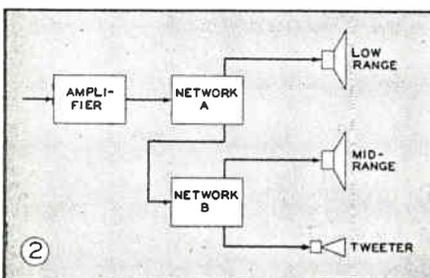


- 1) Selectivity giving 12 db droop per octave.
- 2) Losses are held to a minimum by the use of air cores and No. 16 wire.
- 3) Inductance values are extremely accurate, and coils are unconditionally guaranteed against shorted turns.
- 4) Individual level controls permit exact balancing of the speakers.

General Apparatus Company is probably the largest manufacturer of high-precision network inductors. G.A. quality control assures you of the finest performance, at prices which reflect economies due to quantity production.

**Two-Speaker Systems:** Fig. 1 illustrates a two-speaker system. First, decide on the crossover frequency you want, and check the impedance of the *low-range* speaker.

Select the network you require from the Table, according to the impedance of the *low-range* speaker. It is not necessary that both speakers be of the same impedance, but one should not be more than twice the impedance of the other. With an Air-



Coupler for the bass, a crossover of 175 cycles is generally used, or 350 cycles if the bass speaker is in a conventional cabinet.

**Three-Speaker Systems:** Two networks are required for three-speaker systems, as

shown in Fig. 2. Network A should have the same impedance as the bass speaker, and network B, the same impedance as the mid-range speaker. Usually a crossover of 1,100 or 2,200 cycles is chosen for network B.

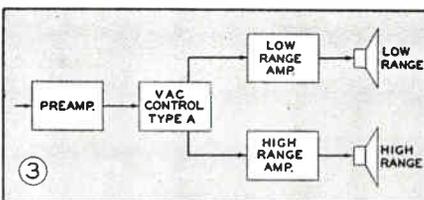
Impedance of low-frequency speaker	Crossover Frequency	Order by 2 Coils	Price Only	Price Complete*
16 ohms	4,400	No. 1A	\$ 5.75	\$ 9.50
	2,200	1	7.00	11.50
	1,100	2	7.00	12.00
	350	4	12.00	17.50
	175	5	20.00	24.00
8 ohms	2,200	6A	5.75	9.70
	1,100	6	7.00	12.00
	350	8	12.00	17.50
	175	9	20.00	24.00
	85	10	20.00	26.50
4 ohms	275	12	7.00	15.00
	175	13	12.00	19.00

\* Complete networks include necessary capacitors and level controls. Be sure to indicate whether you want just the coils or the complete network.

**Network Circuits:** Complete information is supplied with each G.A. network. Connections are so simple that the components can be hooked up in a few minutes. If you are in doubt about the correct network for your particular system, send 10¢ for the G.A. Network Data Sheet.

## G.A. V-A-C CONTROLS

The Variable Audio Crossover Control is an exclusive G.A. development. Types for two and three-speaker systems permit the adjustment of the crossover at any point between 90 and 1,100 cycles (Type A) or 900 to 11,000 cycles (Type B).

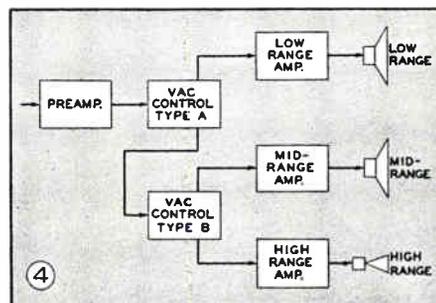


Thus it is possible to determine the optimum point, or points, *after your speaker system has been installed*. If, at any time, you want to experiment with other speakers, you can shift to any other crossover by merely resetting the calibrated control knob.

**Completely Flexible Controls:** The V-A-C is a tube-operated device, complete with its own power supply. In addition to the calibrated control knob, there are in-

dividual adjustments for setting the level of each speaker independently of the other. Overall volume can be regulated from the preamplifier. Since the V-A-C has a possible gain of 5, power amplifiers can be operated at minimum distortion. No measurable distortion is introduced by the V-A-C.

**V-A-C Control for Two Speakers:** Connections for a two-speaker system are given in Fig. 3. The V-A-C can be used with any standard preamplifier and power amplifiers. Use an amplifier of 20 to 50 watts for the



low-range, and 10 to 20 watts for the high-range. Order V-A-C Control Type A.

**V-A-C Controls for Three Speakers:** Using a combination of Type A and B Controls, with three speakers, the crossover points can be varied from 90 to 1,100 cycles, and from 900 to 11,000 cycles. The high-range amplifier should be of 5 to 10 watts.

This is the ideal speaker system, permitting unequalled flexibility of control, delivering the finest performance that money can buy. Order V-A-C Types A and B.

**V-A-C Prices, Deliveries:** The V-A-C is supplied in kit form, including all components, a handsomely-finished aluminum chassis 10 by 5½ by 3 ins., one 6SN7-GTA and one 6W4GT, and an instruction book with picture wiring diagrams and step-by-step instructions. As far as possible, deliveries are made from stock. Price, Type A or Type B, \$39.95, plus 75¢ mailing.

**V-A-C Instruction Book:** The V-A-C Instruction Book is available at \$1.00 post-paid. You may deduct that amount later from the price of a V-A-C.

# GENERAL APPARATUS COMPANY

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YOU  
ARE  
THERE  
WITH  
STEPHENS  
*True Fidelity*  
SPEAKERS

**MODEL 206AX**

List price;  
206AX 15" coaxial  
16 ohm.....\$166.00  
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**FEATURES**

- ★ 7½ lbs. Alnico Magnet
- ★ Heavy Die-cast Aluminum Frame
- ★ Low Frequency Cone Resonance—35 c.p.s.
- ★ Frequency Response 30 to 18,000 c.p.s.

For emotionally satisfying... thrilling new sound sensations, music critics choose Stephens Tru-Sonic *True Fidelity* Speakers. Made by the Nation's number one pioneer in *High Fidelity* reproducing equipment, these outstanding Speakers will give you years of distortion-free listening pleasure.

Producing pure, clear tones of mellow richness, Tru-Sonic Speakers are a creation of advanced design and master craftsmanship. Frequency response is smooth and distortion-free from 30 to 18,000 c.p.s.

*The International Standard. Write for descriptive literature and specifications.*

**STEPHENS**



STEPHENS MANUFACTURING CORPORATION • 8538 WARNER DRIVE • CULVER CITY, CALIFORNIA

# IDEAS

INFORMATION ABOUT NEW EQUIPMENT AND ACCESSORIES

THE PURPOSE of this Department is to call attention to new products of interest to our readers. No attempt is made to rate performance of equipment shown, as that is not considered to be a proper function of this Magazine. Detailed specifications and descriptive literature can be obtained on request by writing the manufacturers. *MUSIC AT HOME* will appreciate your mentioning this Magazine.

**Preamplifier & Amplifier**

The British-made leak units are offered in a new and very versatile design. Practically any pickup can be used with the preamp, including Audak, Electro-Voice,



Fairchild, G. E., Pickering, and Sono-Tone. Connections are also provided for a tape recorder and tuner. The 10-watt amplifier, using KT-61 beam power tetrodes in push-pull is described as having .1% distortion at 1,000 cycles with 8 watts output. Dimensions of the amplifier: 11 ins. wide, 9 ins. deep, 6½ ins. high. The preamp: 9⅝ ins. wide, 2¾ ins. high, 3¾ ins. deep. *British Industries Corp., 164 Duane St., New York 13.*

**FM-AM Tuner**

Altec Lansing has a new version of their FM-AM tuner, type 303C, redesigned for a further increase in sensitivity, and added



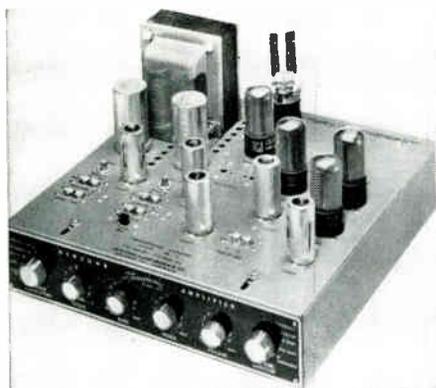
flexibility of operation. While the tuner can be mounted so that only the front panel shows, the metal cabinet is finished in satin brass over baked enamel, giving a soft, golden effect so attractive that the tuner can be used on a table where it is open to view. *Altec Lansing Corp., 161 6th Ave., New York 13, or Santa Monica Blvd., Beverly Hills, Calif.*

#### FM Booster

Electro-Voice has just introduced an FM booster, type 3005-FM, for use with any FM receiver. It is designed to provide an increase of 10 times over the entire band of 88 to 108 mc., and requires no manual adjustment. The booster is merely connected to the antenna on one side, the receiver on the other, and is plugged into 115 volts AC. A built-in thermal relay turns the booster on or off from the FM set. Purpose of the booster is to provide increased range of good FM receivers, and to feed sufficiently strong signals into older, low-sensitivity sets so that they will give acceptable FM performance. *Electro-Voice, Inc., Buchanan, Mich.*

#### Two-Channel Amplifier

Newcomb's two-channel amplifier, model 3D-12, is comprised of two separate 12-watt amplifiers, individual preamps, and a switch to cut in each channel separately



or together, and to reverse the channels. While the unit was designed for binaural tape, record, or radio reproduction, it can be used also with the General Apparatus VAC, or variable audio crossover, as the latter requires separate amplifiers for the high-range and low-range speakers. *Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 28, Calif.*

#### FM-AM Binaural Tuner

Browning now has an FM-AM tuner, model RJ-48, which can be used for reception of FM-AM binaural programs. Although it operates from a single antenna, there are separate tuning controls and dials, and separate output circuits. Among other tricks that can be done with this tuner, it is possible to tune in the FM and AM channels of an FM-AM station, and switch back and forth to compare the quality of reception. Provisions are made for feeding

# In music listening quality is everything . . .

## Audax

### CHROMATIC POLYPHASE reproducer

It is the no. 1 MUST. Without it everything else becomes meaningless. The Audax CHROMATIC has that quality to a degree not equalled by any other pickup — this according to the thousands of Audax users themselves.



### Audax COMPASS-PIVOTED ARMS

Audax Compass-Pivoted arms (3 models) are unquestionably the simplest and most efficient yet devised. Only 3 parts — no restraint to stylus travel; frontal oscillation nil; no springs; no fatigue; maintains original point-pressure permanently regardless of climatic changes.



### Audax STYLUS-DISK

Gives visual indication (change in color) of whether or not the stylus is in playing condition — tests any stylus, in any pickup, at any speed — in less than a minute — Costs ONLY \$3.90 net at your dealers (add 25c — if shipped from N. Y. C.)



Be sure to obtain your copy of "ELECTRONIC PHONO FACTS" at your dealers or write direct to

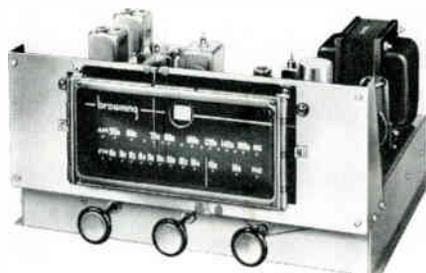
## AUDAK COMPANY

500 Fifth Avenue Dept. B New York 36, N. Y.

Creators of Fine Music-apparatus for over 25 years

"The Standard by Which Others are Judged and Valued"

a tape recorder, automatic frequency control can be cut in or out, and there are two 115-volt outlets for plugging associated



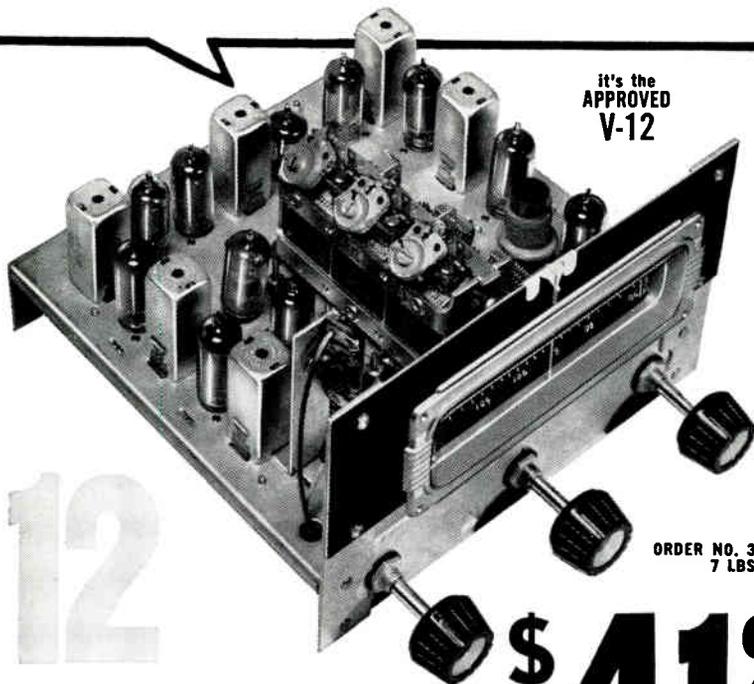
equipment at the rear of the chassis. FM circuits are of the Armstrong limiter-discriminator type. *Browning Laboratories, Inc., Winchester, Mass.*

#### Straight FM Tuner

Latest in the REL series of FM receiver models is now in production, and deliveries have started. A direct lineal descendent of the first receivers built for Major Armstrong in 1936, the new Precedent has been engineered mechanically and electrically as a reference standard of FM receiver performance, and as a fitting successor to the 646-B's which, when owners can be induced to part with them, still bring premium prices. While the Precedent is available for home use, it is designed strictly in accordance with commercial radio and telephone practice, and incorporates many features originally developed for receivers furnished to the U. S. Bureau of Standards. Like the 646-B, the new model has a tuning meter and a signal-strength meter, but does

**EXCLUSIVE AT RADIO SHACK!  
\$85 APPROVED FM-AM TUNER  
AT A SACRIFICE LOW PRICE!**

**12 TUBES! TUNED RF! ARMSTRONG-TYPE FM!**



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**APPROVED  
V-12**

ORDER NO. 36-206MH  
7 LBS.

**\$41<sup>95</sup>**

**MINIATURE TUBES\***

\*Plus germanium diode AM detector!

**DUAL CASCADE LIMITERS!**

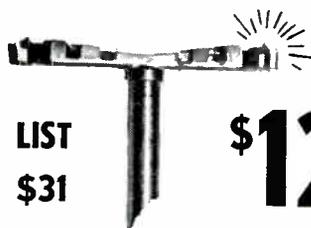
NOT ratio detector but true HIGH-FIDELITY Armstrong-type FM, plus sensitive AVC AM. Twelve — not 8 — miniature tubes. 30-15,000 cps cathode follower output! Dual FM-AM band indicating lamps. Ultra compact to fit anywhere: 8¼ W x 5½ H x 8" deep.

**TUNED RF STAGE FM, AM!**

Yes! Tuned RF stage and separate RF and IF stages on both FM and AM. Rugged 6-GANG condenser! Hundreds now in use by appreciative music lovers from coast to coast. Attach to any amplifier, radio, TV set or sound system. Immediate delivery!

**SIMPLIFIED POWER SUPPLY**

The model V-12 tuner comes less power supply, requires 6.3V AC @ 4 amps, 190V DC @ 35 ma. Available from us, 100% wired, for just \$12.05. Order No. 36-207 7 lbs.



**DIAMOND-SAPPHIRE for G-E RPX-050**

LIST  
\$31

**\$12<sup>95</sup>**

NOTE: include est. postage

Big savings on a limited quantity of the RPX-050 replacement stylus with diamond tip for LP and sapphire tip for 78's. Here's a bargain every hi-fi fan will recognize, for America's most popular magnetic pickup, the G-E triple play! Guaranteed first quality; and the LP diamond is a genuine South African whole stone, not a fragile chip or splint. Immediate delivery on mail orders, while they last! Order No. R-6008-MH

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167 Washington St., Boston 8, Mass. (Dept.MH)

not include an amplifier. The output provides 2 volts for a high impedance, or .2 volt to 600 ohms. This model is available as a chassis only, mounted in a pierced metal cabinet as illustrated here, or on a



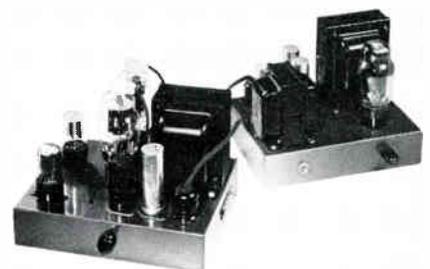
19-in. panel for rack mounting. The chassis only, fitted with a metal cover, is 15½ ins. wide, 5½ ins. high, and 12½ ins. deep. Radio Engineering Labs., Inc., 36-40 37th St., Long Island City 1, N. Y.

**Home Music Systems**

Louis Biancolli and Lester H. Bogen have written an excellent 48-page book entitled "Understanding High Fidelity," planned to explain the choice of equipment and the proper ways to install hi-fi components. Various makes of speakers, tape recorders, changers, turntables, and pickups are illustrated and discussed in combination with Bogen tuners and amplifiers. Price of the book is 25¢. David Bogen Co., Inc., 29 Ninth Avenue, New York 14.

**25-Watt Amplifier**

For those who like to assemble their own equipment, Stancor has a power supply and amplifier kit comprising two punched chassis, output transformer, power transformer, and filter choke for building an ultra-linear Williamson-type amplifier. The additional parts, listed in the assembly instructions, are standard parts available from



any dealer or mail order house. Construction is simple enough to be completed successfully by anyone who can handle a soldering iron. Instructions are also available for changing the regular Stancor Williamson-type amplifier to the new ultra-linear circuit. Performance of the new design is rated less than 1% total harmonic distortion at 1,000 cycles with 25 watt output. Chicago Standard Transformer Corp., Addison & Elston Sts., Chicago 18.

*Music at Home*

## Children's Program

(Continued from page 28)

them out unflinching as you would expect.

In the rush to reach the church well ahead of time, we forgot to bring a headset for monitoring the tape, but we did have a portable speaker. Accordingly, we ran off a little tape to pick up the noise as the people came in. Then, as a check to see that the equipment was all in order, we played it back on the speaker. Finally, with the level set by the meter on the amplifier, everything was ready.

Nothing is easier than making a tape recording. The one trick we have learned is to leave the controls strictly alone after the recording starts.

When the program was over, we invited some of our friends to join us in listening to the playback. It was really wonderful! They all agreed that the tape was better than what they heard on the floor of the church. That was probably because the microphone up on the balcony heard less of the audience noise.

Most surprising was the clear reproduction of the solo parts for those tiny children's voices were barely audible at the church. The tape, however, picked up every part perfectly. At one point, a baby in the audience cried persistently, and we were amazed to hear a little boy say: "Aw, shut him up!"

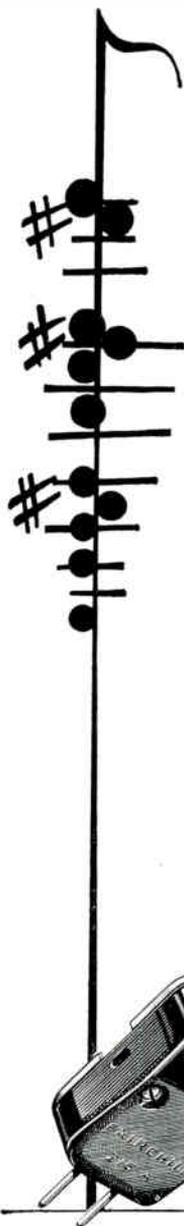
The real thrill, though, was at the school when we played the tape for the children, and they heard their own voices for the first time. The quality was perfect, for we had run the tape at fifteen inches per second. You can see from the picture how intently they listened. I never knew that a roomful of children could be so perfectly quiet for half an hour. The parents who came were just as much intrigued. I could see some of the children singing to themselves as they listened. One boy who had a solo part stood up, quite oblivious to those around him, and went through the motions he had made on the stage.

It was an experience the children will remember for a long time. And we shall remember it, too, because they enjoyed it so much. Perhaps this will suggest some interesting things that you can do with your tape recorder. You'll discover that children's activities provide some wonderful program material. And they make a most responsive audience when they can listen to their own voices!

## Hi-Fi Value

(Continued from page 52)

them into closets, shelves, or other parts of the permanent construction of your home, 2) fitting them into furniture you have already, or 3) assembling into any one of the special cabinets that are now available for this purpose. Or, as many people are doing now, you can arrive at some very simple arrangement by mount-



# 6 REASONS WHY HI-FI FANS DEMAND THE FAIRCHILD SERIES 215 DIAMOND CARTRIDGE WITH HIGH COMPLIANCE

*Instantly*—there's a startling improvement in sound when record collectors switch to the FAIRCHILD Series 215. Listeners who have just discovered high-fidelity—and seasoned audiophiles both hear a new *presence* in recordings.

Only FAIRCHILD's *moving coil design* can give such unequalled performance. Compare—and you too will agree that the start of any high-fidelity system must be the *high Compliance FAIRCHILD Series 215*.

- 1 — Brings true-to-life color to high piano chords.
- 2 — Releases new low frequency tones.
- 3 — Smooth linearity — lower apparent surface noise.
- 4 — Reduces tone arm resonance greatly.
- 5 — Preserves record quality — reduces stylus wear.
- 6 — Eliminates—completely—listening fatigue caused by tracking distortion.

All of this at an unbelievably low price — \$37.50

And investigate these FAIRCHILD products, too!



The NEW Model 240 Balanced-Bar Preamplifier-Equalizer offers typical FAIRCHILD quality, a wide latitude of control, extreme operating simplicity, correct record equalization and decorator styling. Net to user — \$98.50

The NEW Model 280 Plug-In Type Pickup Arm brings professional quality into the home with minimum size, unusual pivoting method, low bearing friction and accepts all standard makes of cartridges. Net to user — \$29.50



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**FAIRCHILD RECORDING EQUIPMENT**  
156th STREET & SEVENTH AVENUE, WHITESTONE, L. I., N. Y.

ing the loudspeaker in a cabinet of its own, separate from the rest of the equipment.

One advantage in assembling a system from components is the flexibility that permits you to improve or modify any part of the installation. That is important. What is satisfactory today may not be good enough to please the more critical taste you may develop in the next six months. You may want a different type of preamplifier, or a better speaker. There may be a reason for revising the whole system, or adding facilities that were not included originally.

It is wise to keep this matter of flexibility in mind right from the time you plan

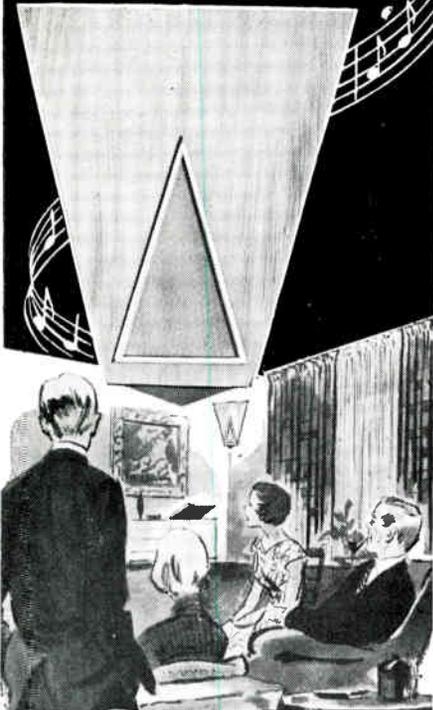
your first purchases. Don't persuade yourself that, "This is final. I am not going to make any changes." The one certainty about a hi-fi installation is that you won't be able to resist the temptation to improve it!

Very careful consideration must be given to the problem of selecting components which are correctly matched in their electrical characteristics. A relatively inexpensive assembly of matched components may outperform a costly installation comprised of units that were not intended to be used together! It is advisable, whether you buy components from a dealer or order them by mail, to get them

(Concluded on page 62)

**NOW! A Hi Fi Speaker System  
that is HEARD . . . NOT SEEN**

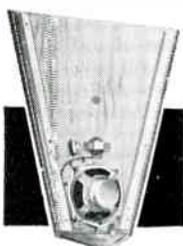
**LORENZ**  
**SOUND CORNER**  
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**Solves the Problem of  
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The Lorenz SOUND CORNER — the amazing corner-wall two way speaker system is an ingenious horn design of triangular cross section which uses the walls of a room corner as two of the three rigid boundaries, the speaker baffle being the third. The SOUND CORNER uses no floor space . . . is as easy to install as hanging a picture on the wall, and is perfectly low-priced to harmonize with any budget.

**QUALITY COMPONENTS PLUS SOUND DESIGN**



Built around the LP 215 "Woofer" loudspeaker, famous for its clear tonal quality, and the brilliant high frequency LP 65 "Tweeter", the SOUND CORNER reproduces the full range from 31 to 16,000 cycles with breath-taking Concert Hall "Presence." From the smooth fundamental bass of the Organ Pedals to the sparkling "highs" of the Piccolo, the SOUND CORNER adds the Miracle of Life to the Magic of Music — a superlative complement to the finest high fidelity equipment and custom installations.

The SOUND CORNER blends deftly with any decor . . . can be painted easily to harmonize with any color scheme. If desired, a lamp mounting can be added with little effort to provide indirect lighting. With an overall height of only 31", the SOUND CORNER tapers down from a top width of 27½" to a mere 11¾" at its base.

**SCL SOUND CORNER** — complete ready for connection to your amplifier. Available in Blonde wood only. **net \$59.50**

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**Hi-Fi Value**

(Continued from page 61)

all from the same place. Then the dealer or the mail order house will assist you in selecting the right combination of units. If you shop around, picking up separate items in different places, you'll be on your own in case you have trouble making the units work together.

The foregoing notes and comments are offered to emphasize the necessity of deciding, in a general way, what will best suit your tastes and requirements before you buy *anything*. At that point, knowing what you want, you will be ready to select the equipment that will give you the greatest value for the amount you want to spend. A considerable amount of information on the details of planning systems to suit individual tastes, pocketbooks, and home requirements will be published in forthcoming issues of Music AT HOME.

**Hi-Fi Quality**

(Continued from page 53)

tions, we can hardly demand that all people accept some specific standard of tone quality, even if such a standard could be defined — which we know cannot be done.

It is just as impossible, for example, as it would be for an art gallery to set standards for the paintings that it exhibits, with the idea each should be approved by every visitor, and that every visitor must be favorably impressed by each painting.

In discussions of tone quality, we must recognize that millions of people have no critical listening faculties, and they accept as altogether satisfactory the music they hear from juke boxes, AM table-model radios, and diminutive speakers squeezed into television sets. Many of these people, as time goes on, will have opportunities to hear fine reproduction. Then they will start to listen more and more critically.

A considerable part of the articles to appear in Music AT HOME will be planned to help our readers develop an appreciation of the best music attainable from records, tape, and FM radio, and to improve their systems to the end that they may have the very finest quality of reproduction attainable.

Since there is no universal basis for measuring the degree of satisfaction that individual components or complete installations will provide, this Magazine will use the term "hi-fi" in referring to equipment that is intended to win the approval of critical listeners. Music AT HOME will adhere to the editorial philosophy that "music is for everyone, and the finer the equipment, the more entertainment it affords," which is another way of saying that the quality of performance delivered by a hi-fi system is not determined by measurements of response and distortion, but by the degree of satisfaction it gives to the people who hear it.

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*Music at Home*

## Music Minus One

(Continued from page 21)

Haydn's Trumpet Concerto. Thus the student or artist practicing in private would have conditions equivalent to being part of a large group.

Classic Editions also expects to record the complete versions which will give you a chance to compare your performance with the regular member of the ensemble sitting in on your part. The complete versions will be made with the same group, in the same recording hall, and under the same acoustic conditions, so that you can hear your instrument as part of the ensemble. Maybe you will like your own rendition better! At any rate you will have a chance to try.

## Conductor's Views

(Continued from page 45)

he was allowed only three. He did not realize that the natural concert hall balance might have been completely destroyed by special emphasis on individual orchestra sections through excessive use of directional microphones. It certainly is artistically justified to boost a solo which, if it could be boosted during a regular concert, would likewise produce an improved effect. But this practice can be exaggerated to such an extent that the over all balance suffers. It takes great artistic judgment and discipline to avoid misusing the microphones.

There is another source of poor balance. In the effort to adjust the location of certain instrumental sections of an orchestra to a standard microphone position, the sound engineer may change the location of the individual players in such a way that the musicians find themselves surrounded by instruments other than those to which they are ordinarily adjacent. A musician knows by instinct and habit the dynamic relation of his instrument to the instruments of the players surrounding him. If forced into an entirely different set of conditions, his sense of dynamics may be thrown off balance. In this case, the over-all balance of the orchestra might suffer considerably.

In order to improve general recording practices, a continuous comparison with concert hall fidelity and balance is imperative. The conductor or soloist must collaborate constantly with the recording crew, and must use all his musical judgment in bringing about a photographic orchestral picture in reproduced sound. It is not a question of satisfying the audio bugs, but rather a matter of serving the concert-minded symphonic record listeners. Realism of reproduction should be available to such critical people. Undoubtedly the growing library of binaural recordings will contribute much to progress toward concert fidelity, and the ultimate goal of perfect realism.

*Amplifier* SENSATION OF THE YEAR  
the H. H. SCOTT "99"



\$99.95 net

"best amplifier for the money I've ever owned"  
Other owners say: (owner's comments on returned guarantee tags)  
"amazed at its performance—idea of fully encasing the amplifier is brilliant—a group of twelve persons, upon hearing this amplifier, judged it the best dollar for dollar buy on the market — more than satisfied — I am sure every owner is as proud as I am of his 99-A amplifier."

**FREE BOOKLET**

**An Expert Says:**  
"the little Scott, amusingly designed to resemble a control unit alone, has few rivals in the feature of flexibility, regardless of price."  
C. G. Burke, NEW TRENDS IN AUDIO  
"Saturday Review" Dec. 26, 1953

HERMON HOSMER SCOTT, INC., 385 PUTNAM AVENUE, CAMBRIDGE 39, MASSACHUSETTS

## WANTED for PUBLICATION: PHOTOS of INTERESTING HI-FI INSTALLATIONS

MUSIC AT HOME Magazine will pay \$10.00 each for acceptable photographs of amateur and professional hi-fi installations made in private homes or public places. Here are the simple rules:

1. Photos must be clear, sharp, undistorted. Glossy prints are required, 8 by 10 ins.
2. Include photos of any special features or details of construction. Each picture must be accompanied by a brief description of the equipment, and the name of the individual or company by whom the installation was made. The pictures will be so identified.
3. For each photo used, MUSIC AT HOME will pay \$10.00 promptly on publication. Acceptable photos not used at once may be held over for a subsequent issue. Published photos will not be returned. Those which are not acceptable will be returned only if they are accompanied by return postage. MUSIC AT HOME will not be responsible for loss or damage to photographs submitted.

## MUSIC *at* HOME

Hi-Fi House, 207 East 37th Street, New York 16, N. Y.

# Music Lovers:

## BULLETIN

### BROCINER PREAMPLIFIERS

Rated by  
**Mr. C. G. BURKE,**  
Author of *The Saturday Review*  
*Home Book of Recorded Music*  
and *Sound Reproduction*,  
among those

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From All the Others  
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24 RECORD-PLAYBACK CHARACTERISTICS to match every possible record. **UNIVERSAL PICK-UP COMPENSATION** to accommodate all makes of high quality pick-ups. **TREBLE CUT-OFF FILTER**... a professional range selector to give you the best possible results from imperfect as well as flawless program material. **ADJUSTABLE LOUDNESS CONTROL**... a true level compensator easily adjustable for all requirements... and other features too numerous to mention, presented in complete, factual form in our bulletins.

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LITERATURE ON REQUEST

**BROCINER ELECTRONICS LABORATORY**

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## Hi-Fi Notes

(Continued from page 5)

director of the System by which WNYC and WNYC-FM are operated.

He has been a member of the staff for nearly thirty years and pioneered in serious recorded music programs such as the Masterwork Hour which he created more than twenty years ago. He is also known as a conductor, having conducted American music programs in Norway, Sweden, Denmark, Finland, Germany, Austria, Poland, and Czechoslovakia. Dr. Neuman also conducts a weekly broadcast series known as "Hands Across the Sea," broadcast by WNYC every Saturday at 6 o'clock. It was his idea to associate food and music, as he did in his Scandinavian Program, and we suspect that much more will be heard about this delightful plan.

**Pioneer FM Broadcaster:** Back in 1941, we attended an FM broadcast demonstration given during a luncheon for the Advertising Club of Boston. That, we submit from personal association, is as hard-boiled an audience as any performer might be called upon to face. Yet, to our utter amazement, the music delivered via an excellent audio system was so startlingly beautiful and perfect that those tough advertising men applauded with enthusiasm that would have warmed the heart of any artist if he had been there in person to hear it.

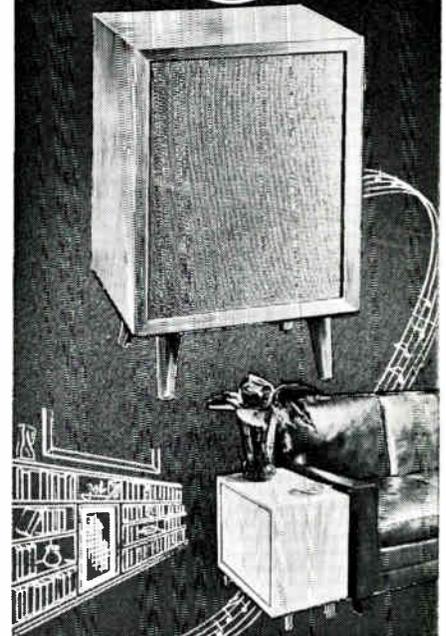
The man responsible not only for that demonstration but for the entire broadcast station setup was Paul de Mars, then chief engineer of the Yankee Network. The famous Paxton station and the much-photographed installation on Mt. Washington were monuments to his engineering genius, and his capacity for meeting entirely new and extremely difficult problems not with temporary measures, but with the meticulous care that sets precedents of good practice.

So Paul de Mars' entry into the loudspeaker field, via experiments which he carried on in his home under natural listening conditions, has created quite a stir. His plant in Lawrence, Mass., is representative of the new industries, growing up around technological progress and Yankee ingenuity, which are moving in as the old and tired machinery of the cotton and woolen mills is being carried out.

**Walter Buehr:** Our Art Director and our Publisher are old friends. Before the last war, they shared an apartment-studio on East 37th Street — an arrangement which, we understand worked out very well because one was only there in the daytime, and the other at night, with the result that they didn't see each other for weeks on end. Hence the amicable arrangement!

**MAXIMUM TONAL REALISM**  
In Minimum Space  
At Minimum Cost!

**KINGDOM**  
SOUND COMBINATION  
featuring **LORENZ** Speakers



Here is a sound combination that makes music come alive in every home. The acoustically engineered **KINGDOM CABINET** is made of Hardwood 5/8" thick. Reproduces both high and low frequencies with full tonal realism. Small in size. Versatile and Decorative... Blends with modern or traditional interiors. Furnished completely assembled with **LORENZ LP-215 WOOFER**, **LORENZ LP-65 TWEETER** AND **KINGDOM HP-1 HIGH PASS FILTER** (Shown below). All perfectly matched and balanced to bring you all the musical charm and enchantment of the original performance... Natural, clear and crisp up to 16,000 cycles.

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AND TWEETERS

Made Expressly for **KINGDOM** Products

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Used with the **LORENZ LP-65 TWEETER** it will extend the range of any speaker to the limit of human audibility, going smoothly from 4,000 CPS up to 16,000 CPS. Net \$4.95

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A masterpiece of sound engineering. Performs smoothly over the Full range. Response: 40 — 13,500 cycles. Power: 8 watts. Impedance: 4 ohms. Size 8 1/2" dia. Net \$22.50

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**MODEL TL/10 COMPLETE WITH "POINT ONE" REMOTE CONTROL PRE-AMPLIFIER**  
 Most economical combination ever built by LEAK, manufacturer of Britain's finest audio equipment!

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MODEL TL/10 AMPLIFIER



Bottom view of TL/10 chassis, showing all components mounted on terminal board for easy servicing... as in the most expensive scientific laboratory and government equipment.

This is a new improved design of the famous Leak unit which set unmatched performance standards at the B.B.C. and other world-renowned broadcast studios and laboratories. In its new version, it is the ideal electronic complement to the TL/10 amplifier. It is a two-stage feedback unit of distortion so low as to be virtually unmeasurable, and in which resonant circuit filters are NOT used. The "Point One" unit will operate from any phonograph cartridge now available, including Audak, Electro-Voice, Fairchild, General Electric, Pickering, Sonotone; from any microphone; from any radio unit or tuner; and with the greatest convenience, from any tape recording machine. It provides the best features of all previous models, and every desirable refinement suggested by users in Britain and the U. S. These include the greatest variety of equalization adjustments ever provided on a Leak amplifier... all that are required, without unnecessary flourishes, for fullest satisfaction in listening to today's wide range of recordings under home acoustic conditions.

REMOTE CONTROL "POINT ONE" PRE-AMPLIFIER, WITH MASTER CONTROL UNIT



Amplifier Dimensions: 11" wide x 9" deep x 6 1/2" high.  
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 Power: 105 Volts-125 Volts, 50 to 60 Cycles AC.

All controls on a handsome, highly polished gold escutcheon plate with jeweled pilot light. The entire plate removes for panel mounting, when desired.

## FOUR MASTER CONTROLS plus tape recorder jacks (input and output) on handsome front panel for listener's convenience



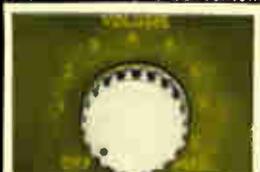
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 Eight indicated stages... over a 23 db range, without distortion.



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