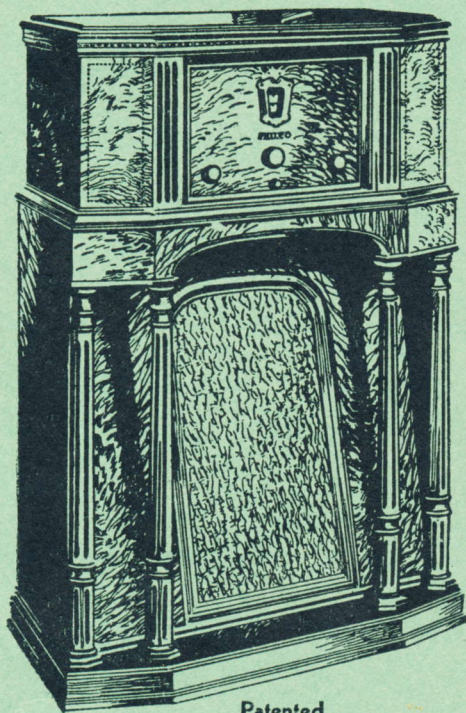


PHILCO

Book of Facts



Patented

It Looks Better It Sounds Better
It IS Better!

PHILCO

Book of Facts

PHILCO IS DEPENDABLE

PHILCO is an old established electrical manufacturer. Started in business years and years before radio broadcasting began. Has been "in radio" ever since. PHILCO is the world's largest radio manufacturer, with factories in Philadelphia and Toronto, Canada, and a subsidiary company in London, England. PHILCO enjoys the highest rating by banks and by Dun, Bradstreet and the other commercial agencies.

PHILCO GIVES MORE FOR THE MONEY

PHILCO produces thousands of radios a day. PHILCO production is so great that all the modern economies of mass production as well as all the advantages of precision machinery are enjoyed. PHILCO buys raw materials in tremendous quantities and therefore, gets lowest possible prices on supplies that meet PHILCO's exacting specifications. Every buyer of a PHILCO shares the benefit of these savings. PHILCO factories run all year around. They are never shut down for long periods. Shut-downs, as everybody knows, are expensive. They pile up overhead. This cost has to be passed along and absorbed by each new period of production. There's no cost of idleness buried in the price of any PHILCO.

PHILCO ALWAYS A SAFE BUY

You never see announcements of "factory clean-up sales" or "factory overstocked sales" of PHILCO. Every time you do see such offerings by other manufacturers, you may know instantly that the sets are not bargains even at slashed prices. Usually they are what the trade knows as "lemons", models which have developed faults in operation after being placed on the market, or they were overpriced to begin with. For one reason or another they have failed to attract normal public buying.

When you buy a PHILCO you are buying known value. Not a single model that PHILCO has ever marketed, has turned out to be a "lemon", because PHILCO has been able and willing to provide every engineering and factory facility known to science to insure perfection in design and workmanship, and PHILCO engineering and factory personnel stand second to none in the world in their adherence to the highest standard of quality, design and workmanship.

And then further, every PHILCO model is initially priced as low as possible; lower than any competitor can possibly meet for equal value, because PHILCO is the largest radio manufacturer in the world and therefore has the lowest costs. When you buy a PHILCO you are asked only a fair price, and no matter what model you select you get full value for your money.

PHILCO ASSURES QUALITY

All raw materials are exhaustively tested in our own chemical and electrical laboratories before they are accepted. Only those materials which will endure through all kinds of weather and under severest operating conditions can pass these tests. PHILCO goes to extremes to assure continuous satisfaction. In PHILCO sets all metal parts are heavily electro-plated for protection against rust. Transformers and choke coils are enclosed in steel housings, and hermetically sealed.

An example of the length to which PHILCO goes to assure constant performance and full value for buyers of PHILCO radios, is indicated by the construction of the by-pass condensers used in all PHILCO models.

Figure 1 shows the condenser naked and exposed. It will perform just as well in this unprotected condition, but the question is, "for how long?"

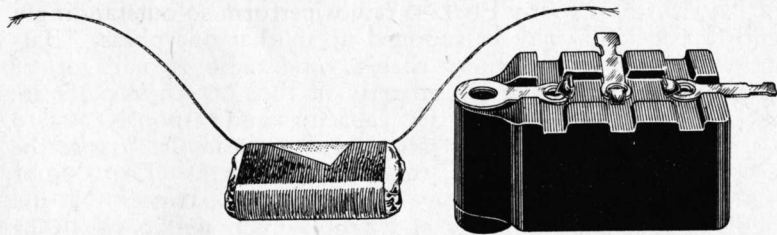


FIG. 1

See in the illustration how PHILCO houses this condenser in a little bakelite cabinet of its own. This protective housing assures constant and almost unlimited performance. In the

11-tube PHILCO models there are 9 of these condensers, and each one is individually housed in its own bakelite container.

PHILCO RADIOS CAREFULLY INSPECTED

PHILCO carries inspection to extremes. First the raw materials are inspected, as we told you; then each part as it is produced is inspected and tested before being placed in a chassis. Each group of parts as they are assembled are tested and inspected, and then when all the parts are in the completed chassis, a test is made of all connections and wiring. Finally PHILCO balanced High Efficiency Tubes are placed in their sockets, and the set as you receive it is tested under home service conditions on actual broadcasts.

PHILCO, you know, was the first manufacturer who made tubes so sturdy that they could be placed in the sets and shipped in place from the factory.

PASSED BY UNDERWRITERS

Long before it was required by law in any state that radios must be built to pass inspection of the Underwriters' Laboratories, PHILCO recognized the obligation to its customers and to itself to build every PHILCO to meet every safety requirement. PHILCO safety construction meets Underwriters' and all legal requirements. It exceeds them in many important details. Do not buy—nor keep—any radio which has not passed the inspection of Underwriters' Laboratories. If you do you certainly take unnecessary fire and electrical risks and you may be breaking a law.

BALANCED UNIT CONSTRUCTION

All the reasons why PHILCO radios perform so outstandingly and last so long, may be summed up in that one phrase "Balanced Units". You know that a good radio is made up of many parts. In PHILCO, and only in PHILCO, these parts are of exactly comparable qualities, capacities and responsiveness to electrical energy. To illustrate what we mean, let us use the illustration of transformers, tubes, and speakers. The tone of a radio depends upon all three being in exact balance. No use in having fine transformers and tubes which will pass all the low and high notes to the speakers unless the speakers are equally well designed and adapted to reproduce all the notes. No use in having two big sensitive speakers to produce full volume if the transformers and tubes are skimped so that they cannot possibly bring this volume to the speakers. No use in

designing special output tubes to give added brilliance to reception, as PHILCO engineers have done, if the gain is cancelled wholly or in part by lack of balance in some other unit.

PHILCO engineering consists not merely in designing each part so that it is good in itself, but in designing it so that it operates in perfect balance with all other parts.

PHILCO EXCELS IN TONE QUALITY

The chief reason why PHILCO stands out as such a superb instrument is because PHILCO engineers have made a scientific study, over a period of years, of every factor having to do with tone. They have developed and coordinated designs of cabinets, baffles, loud speakers, receivers and tubes so that all components work together to give the best possible overall performance. The resultant natural full-toned reproduction gives a striking instance of the advantage of controlling the design and production of all components, as PHILCO does, as compared with the usual custom of assembling a chassis in a purchased cabinet and with tubes and loud speakers also designed and built by outside suppliers.

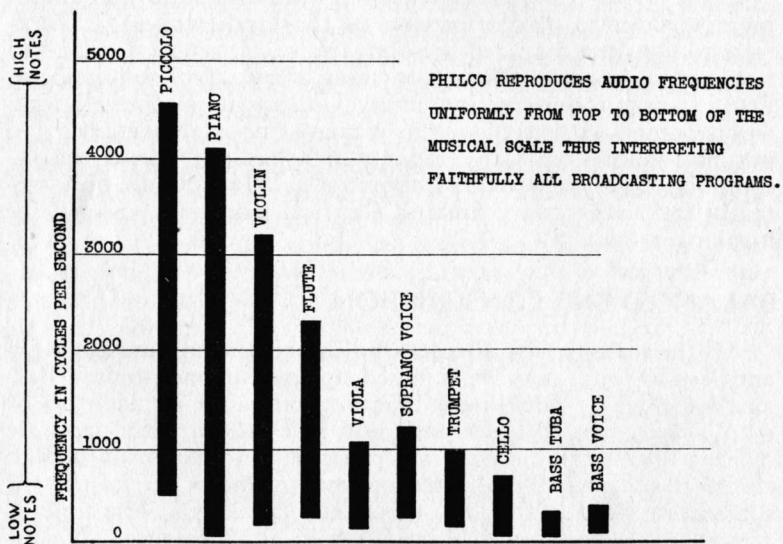


FIG. 2

Figure 2—This chart shows that the receiver and speaker must be responsive over the entire tonal scale if all parts of a program are to be faithfully reproduced. Performance cannot be sacrificed at any point on this scale without giving the effect

of removing one or more instruments from the orchestra. PHILCO, because of extraordinary tonal fidelity and range, reproduces all instruments and voices faithfully so that they can rarely be distinguished from the original.

PHILCO SPENDS THOUSANDS ON TONE

PHILCO accomplished this outstanding leadership only with what might be called *extravagant* expenditure of time, energy and money. But PHILCO, as a result of having achieved this degree of perfection, knows that the expenditure was justified. PHILCO now commands the patronage, not only of more people, but of *more people distinguished in the arts*, than any other radio manufacturer.

THE NEW PHILCO SPEAKER

The new Electro Dynamic Speakers in the 1932 Models are the most faithful sound reproducers ever designed. One reason why they reproduce sound with all the fidelity of its most delicate modulations, is because the cone which really delivers the sound is made of a lighter, more flexible, more responsive material than has ever been used before, and is moulded in one piece including the extra flexible rim. This cone floats freely, because there is no stiff rim or glue to restrain its action. Also, the double-layer voice coil construction, originated by PHILCO, combines sturdiness with minimum weight in this important tone transmitting member. The complete cone, although mechanically strong, is extremely light in weight, so that it can be moved enough even by a weak signal to give a pleasing tone. Such lightness and flexibility combined with the necessary strength have never been achieved before. Therefore the new PHILCO speaker produces the finest tone in all radio. It is the only speaker that gives smooth response to all musical frequencies.

TWIN SPEAKERS

You may have been told that two speakers should be used, one to carry the high notes and the other to carry the low notes. That sounds well but it isn't the proper way to use two speakers. The correct way to apply two speakers is to make two speakers do for radio just what two ears or two eyes do for a human being. We can hear with one ear and we can see with one eye, but we need two ears for depth and fulness of hearing, and we need two eyes for depth and roundness of sight. Just so, twin speakers, properly designed, give to radio tone, ful-

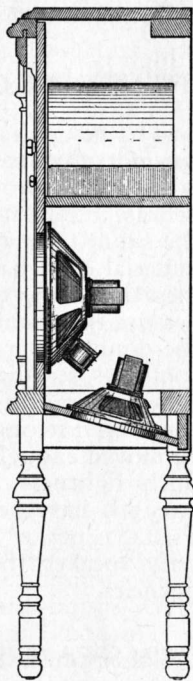
ness, roundness and relief that are impossible with a single speaker.

Do you remember the old stereoscope? A photograph is flat until we look at it through the twin lenses of the stereoscope and then people, and trees and buildings stand right out from the background. We see the picture through both lenses and because of the twin lens arrangement the picture gains depth. However, one lens is not for the high lights while the other is for the shadows, any more than one speaker should be for high notes and the other for low notes.

HOW PHILCO MOUNTS TWIN SPEAKERS

The mounting and positioning of twin speakers as PHILCO uses them is a fine art. Just as the lenses of a stereoscope are focused to give a picture depth, just so are the twin speakers in every PHILCO arranged to give depth to the sound . . . that is, this twin mounting gives the fulness, the roundness, the relief to tone that makes it sound just like the original.

In a conventional style cabinet, the advantage which two speakers could otherwise give is lost if the sound from two speakers has to be forced through one small opening in the front panel. This bottle-neck produces cramped and restricted tone. Two speakers badly mounted only emphasize the "barrel" tone of confined sound. In conventional style cabinets PHILCO mounts its twin speakers so that one points forward to project the full range including the high notes directly into the room, while a second speaker mounted on a separate slanting board, diffuses and blends the sound. You will see in the illustration that each speaker has its own outlet, and that each speaker is carefully adjusted so that the directional delivery of sound causes a pleasing blending of tone giving a binaural (two-ear) effect. Only in PHILCO laboratories has the effective use of twin speakers been so fully developed.



HOW PHILCO MOUNTS TWIN SPEAKERS IN X MODELS

The greatest mounting ever devised for any speaker, whether mounted single or double, is on the big, heavy, inclined sounding board in PHILCO X Models.

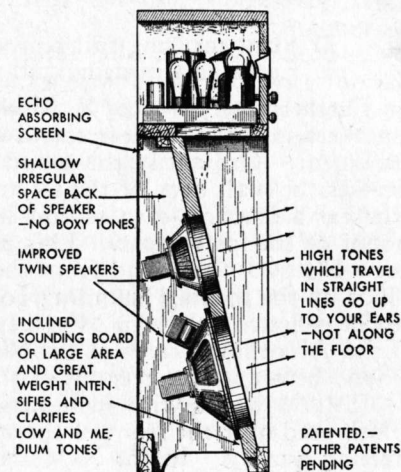
Because the speakers are mounted directly on the inclined sounding board instead of in a sound chamber, all sound from the front of the speaker cones is released freely and easily. No boxy tones because the conventional sound box has been entirely eliminated.

But the sounding board serves still other purposes. The angle at which it is mounted is quite important to achieve full reproduction of high notes.

Men have known for centuries that if water is poured down hill far enough, it will "purify itself". But to "purify" sound, phonetic engineers have learned that it must be poured UP-hill. The explanation is that the waves which sound the *high* notes as they come out of radio loud speakers, travel in straight lines. They are slow to spread out and unless directed upward will only partially reach the ear of the listener. In fact, some of them will be absorbed and smothered in the floor covering. By tilting the sounding board and the loud speakers as shown in the illustration above, these high notes are practically all carried into the field of hearing and the reproduced sound takes on the "brilliance" of the original. Thus this simple but scientific change in the mounting angle of the sounding board eliminates one of the most common faults in radio tone, lack of full brilliance.

Now consider *low* notes. The large area of the sounding board is important here. It is a scientific fact that the waves which sound the *low* notes as they come out of radio loud speakers, tend to nullify each other, so that you only partially hear them unless the speakers are mounted on a baffle or sounding board. It is also a scientific fact that up to a certain point the larger the area of the sounding board the more completely the low notes are held to their full tonal values. The large area of the sounding boards on the PHILCO X Models is therefore just as important in enabling these instruments to bring you the low notes with fine fidelity as the slant of the sounding boards is in enabling them to bring you the high notes.

Remember the three scientific advantages of the PHILCO sounding board.



1. Elimination of sound chamber, insuring free unboxed tone.
2. Slant insuring full reproduction of high notes.
3. Large area insuring full reproduction of low notes.

Furthermore, in the X Models PHILCO mounts its twin speakers so that you hear sound only from the front of the instrument. Ordinarily the sound from the back of the speakers strikes the wall back of the set and is reflected forward to reach the ear a fraction of a second later than the sound from the front of the instrument. This naturally causes a blur. In the new PHILCO, the sound from the back is directed down to the floor by the inclined sounding board, and is therefore less likely to be reflected forward. Further protection is afforded by the Echo Absorbing Screen at the back which absorbs much of the sound before it ever gets out of the back of the cabinet.

PHILCO works with such meticulous care that even the grille cloth used over the front of the speaker is measured for its tone-freeing quality. In the X Models a new method of mounting the cloth without any external supporting grille greatly reduces the absorption and blocking of the sound by the cloth and the grille.

PHILCO SUPERHETERODYNE CIRCUIT IMPROVEMENTS

The new PHILCO Superheterodyne Circuits designed particularly for the new PHILCO High Efficiency Tubes are responsible for the increased range, the greater selectivity, a large part of the improved tone quality, and the freedom from noises, which are outstanding qualities of the new PHILCO instruments. This improvement is so marked in all models that the results obtained often equal other radios having two or three more tubes. It is not only the number of tubes which determines the performance of a radio; the design of the tubes and circuits, and how scientifically they are combined are equally important.

NEW HIGH EFFICIENCY TUBES

One of the outstanding radio developments this year is PHILCO's perfection of the powerful new "High Efficiency" tubes, which operate on less current than any previous A.C. tubes, and therefore with gratifying economy.

PHILCO has designed and introduced five new tubes, all of the new High Efficiency type. Three of these are smaller in size, yet give results equal to or better than the earlier types which they replace. The new High Efficiency design permits this saving in size and makes it possible to obtain better results from the set because there is less crowding.

The new 44 type super-control pentode contributes to the reduction of background noise while the new heater-and-cathode type superpower output pentode (type 42) gives greater undistorted output and reduces hum.

PHILCO High Efficiency Tubes are designed for universal use in A.C. sets, D.C. sets and Transitone automobile sets, so that dealers need not carry a lot of special types for different requirements.

PHILCO High Efficiency Tubes are so sturdy that they can be handled with no more care than is ordinarily given to an electric light bulb. They have been designed so as to meet exactly the requirements of the new PHILCO superheterodyne circuit. It is this fact that tubes were designed for the circuit and the circuit for the tubes which so increases the effectiveness of all 1932 PHILCO models. Such perfect balancing and coordination between tubes and circuits is impossible with any set that is made with tubes bought in the open market. Any good tube will work in the PHILCO circuit after a fashion, but only PHILCO High Efficiency Tubes will give the set owner the full measure of performance that PHILCO engineers have built into PHILCO receivers.

Note: PHILCO makes all types of tubes for replacement in all types of sets. A large demand has developed from owners of other sets, who have found that PHILCO tubes will increase the efficiency of any radio receiver.

STOKOWSKI AND THE PHILADELPHIA ORCHESTRA

When PHILCO undertook the broadcasting of the great concerts of the Philadelphia Orchestra, under direction of Leopold Stokowski, direct from the Academy of Music in Philadelphia, there were no adequate transmission facilities, and PHILCO engineers took the lead and worked for three years with Mr. Stokowski and the broadcasting engineers to develop and perfect such equipment.

These have become the world's most famous broadcasts. They are also largely responsible for the splendid transmission equipment that is now used in our best broadcasting studios.

PHILCO engineers have had the advantage of leadership in the development of this thoroughly modern and efficient transmission equipment, and naturally have had the advantage in developing modern receivers in harmony with the modern transmitters. For this reason PHILCO receivers are more responsive to modern broadcasting than any other home radio.

ILLUMINATED STATION RECORDING DIAL

The PHILCO Illuminated Station Recording Dial is neat and small. No glare. This dial does all the things that any dial

could do and does them all better. It is calibrated in channel numbers (kilocycles with the last cipher omitted) to simplify tuning. This means that when you see a notice in a newspaper that a program you want to hear is to be broadcast by a station on channel number 85, (850 kilocycles), you turn the PHILCO dial to number 85. Equally important is the permanent log that is provided for, right on the scale itself. The dial is so arranged that the station call letters can be marked with a lead pencil on the scale each time a new station is tuned in. After the PHILCO has been in use for a short time you can have a complete log of your favorite stations in plain view right on the scale itself where you want it. No reference to other logs is necessary. Only that part of the PHILCO scale that you are using is in sight. The rest of the scale is concealed and protected from dust and dirt. The neat, clean appearance of the PHILCO scale with its special type of illumination is a decided improvement. The pilot light is shielded so that all of the light is reflected forward onto the dial. The light is not reflected back against the wall.

GLOWING ARROW STATION FINDER

The "glowing arrow" station finder, another exclusive PHILCO feature, is a convenient aid to accurate tuning. It is essential with any radio that tuning be done carefully and the glowing arrow station finder on every PHILCO provides a simple method of locating the desired station on the scale. Over most of the tuning scale the new PHILCOS bring in stations at every division. With the glowing arrow station finder, after the call letters have once been noted on the scale, you can ever after tune in your favorite stations quickly and easily without having to remember their wave lengths or channel numbers.

PHILCO SHADOW TUNING

Incorrect tuning causes distorted tone and unnecessary background noise in any exceptionally selective receiver. Even a PHILCO must be correctly tuned to the station if natural tone is to be enjoyed.

Absolutely correct tuning by ear alone is difficult and dependence only on knowing the channel number of a station is unreliable because stations vary a little from their correct channels from time to time. Consequently, it is difficult to tell without visual help, instantly, just exactly where to set the dial for the best tone and clarity.

So PHILCO, to give you absolutely correct tuning instantly, has produced "shadow tuning". A shadow band that is projected on a screen immediately above the station dial narrows

down, as you tune a station, in proportion to the strength of the signal. Just pick the approximate dial setting for your station . . . then move the dial back and forth just a little until the shadow narrows down to its least width . . . and there you are right on the hair line of perfect tuning. This is very important because you cannot get perfect tone until you have perfect tuning. It is not possible to make a mistake when guided by PHILCO Shadow Tuning.

If desired, the station may be tuned with the volume control turned down, tuning visually to the narrowest shadow. When the sound is then brought up by turning up the volume control, it will be found that the station is tuned perfectly.

TUNING SILENCER

To prevent noise between stations when tuning, the new nine and eleven tube PHILCOS have the PHILCO Tuning Silencer. The Tuning Silencer is combined with the power switch. It does not add an additional control to complicate operation. With the power switch turned to the left the radio is off. Turning the switch to the first notch to the right places it in the silent or local position. With the switch in this position the tuning scale can be turned from top to bottom without bringing in static or objectionable noise.

Probably three-quarters of the use of your radio is on nearby stations. Until you try a new PHILCO with the Tuning Silencer you will not believe that a modern high powered radio can bring them in so quietly and soothingly.

DISTANCE SWITCH

Turning the power switch to the second notch to the right releases in full the tremendous power of the PHILCO. Under favorable weather conditions, and in average locations, you can reach stations from coast to coast and with plenty of volume. Even though you may not want distant stations every night, it is gratifying to know that the power to get them is there in a PHILCO—at your command through a simple turn of the switch.

PHILCO FOUR-POINT TONE CONTROL

PHILCO Tone Control has been one of the most widely copied of radio features but the exclusive four-point control is still made and installed by PHILCO and by no one else.

People differ in music and speech appreciation. Broadcasting stations differ in tonal quality. Reception differs as to whether from nearby stations or from distant stations. Room condi-

tions vary as to absorption and reflection of the different sound frequencies. Interference and static conditions vary.

PHILCO Tone Control can be used to cut off some of the highest frequencies and thus reduce high frequency noise. This makes good reception possible in many noisy locations.

Too much bass is nerve-racking to some listeners, and too many high frequencies in loud volume are unpleasant to most ears. Changing the Tone Control is equivalent to changing your seat in a music hall from the front row where the drums, bass string instruments and big horns are predominant, to the rear row where a more perfect blending of all the instruments is heard.

PHILCO Tone Control permits the listener to choose the tone quality most pleasing at the moment, and because of the four definite positions (a PHILCO feature) the setting of the control can be noted on a station log or in the operator's mind and all guess work is eliminated in the future. Brilliant, Bright, Mellow and Deep settings enable you to tone every program according to your own personal preference.

STATIC MODIFICATION

Static interference can be greatly modified or reduced by changing the setting of the tone control. In some cases, static becomes a serious handicap to enjoyable reception, but with the PHILCO, stations can be enjoyed in spite of considerable static, simply by turning the Tone Control to the mellow or deep position.

PHILCO'S FLOATING CHASSIS

A controlling factor in PHILCO'S freedom from tone distortion is the method our engineers have developed to protect the chassis from vibration. It is only during shipment that the PHILCO chassis is securely bolted to its base in the cabinet. For use, the shipping bolts are released so the chassis floats freely on soft gum-rubber cushions. In addition, the tuning condenser—a vital part—is individually floated on soft gum-rubber.

This prevents vibrations from the loud speaker being transmitted through the wood of the cabinet to the vital circuit parts of the chassis, thus preventing audio feed-back with its resultant microphonic howling and tone distortion. The heavy chassis and tuning condenser ride smoothly on their rubber cushions and shock-absorbers in spite of any amount of cabinet and speaker vibration, just as you ride smoothly over rough roads in a fine car with its cushions, springs and shock-absorbers.

PHILCO'S ECHO-ABSORBING SCREEN

An important factor contributing to the perfection of tone in PHILCO X Models is our provision for muffling or absorbing undesirable reflected tone that makes programs sound blurred.

For instance, a speaker delivers sound from the back as well as from the front. Sound from the back, naturally, is reflected from the wall to bound into the room and be heard a fraction of a second later than the sounds of the true program. To obviate this fault PHILCO has provided an Echo-Absorbing Screen at the back of each Model with inclined sounding board. This screen absorbs much of the sound from the back of the speaker before it escapes from the cabinet. And even the remainder is not reflected forward because the inclined sounding board throws the sound from the back down into the floor. The result is delivery of pure, freely released tone without echo or blur.

PHILCO CONTROLS VOLUME AUTOMATICALLY

PHILCO Automatic Volume Control keeps constant the volume of sound which comes from your PHILCO. This fact is just as true of reception from many distant stations as it is of reception from nearby stations. This device works automatically—you never have to pay any attention to it.

PHILCO Automatic Volume Control protects you from that distressing habit unequipped sets have of bursting forth with tremendous blasts when you are tuning, and it also protects you from the annoying fading of distant stations, which seems always to happen just at the point where the program becomes most interesting. Because your PHILCO has this Automatic Volume Control, you can receive many more stations with much less effort. Specifically, Automatic Volume Control, by counteracting fading, at least doubles the number of stations you can get and enjoy.

Note: There is one kind of fading that even PHILCO Automatic Volume Control will not fully counteract. This is "side band" fading, the kind which makes a station sound "ragged" at intervals. It is due to atmospheric conditions beyond the control of either the broadcasting station or the receiving set. It is limited to certain times of the day and occurs only at certain distances from the stations. Therefore, in any one location only a few stations are subject to "side band fading".

MANUAL VOLUME CONTROL

In PHILCO radios the knob at the right operates the volume level control. Volume is flowingly increased as the knob is

turned to the right until the tremendous full volume is reached. It is seldom, indeed, that any owner of a PHILCO will care to open wide these flood-gates of sound. This extra volume is there for the same reason that excess speed is in a motor car. It is there if you ever want it. Also, a car that *can* do 90 *does* do 40 a whole lot more smoothly and pleasantly than a car that cannot do more than 40 at any time. So with radio.

During the course of any given concert, it is never necessary to keep turning this knob to reduce or increase volume. Set the control at the desired loudness, or volume level, and leave it there. Automatic Volume Control will take care of all volume fluctuations for you. You need only enjoy the program.

LOW OPERATING COSTS

Although these new PHILCO Models get more distance, have more selectivity, are equipped with better automatic volume control, have better tone and play louder (if desired) than previous models, they cost less to operate. Think of having your choice of the world's radio entertainment at a cost of one-third to two-thirds cent an hour, varying with the model and the local electric rates. The same low operating cost is had whether the instrument is being played softly or with great volume. None of the controls have any effect on current consumption which, even in the big 11-tube PHILCO Models with twin speakers and illuminated grille, just about equals the current consumed by a single electric light bulb as used in most homes.

The two things responsible for this desired radio economy are the important new circuit improvements in combination with PHILCO's new High Efficiency Tubes. **Tube for tube the new PHILCOS cost less to operate than any other radios ever made.**

ILLUMINATED GRILLE

In these new X models, a hidden light automatically floods the grille with a warm amber glow while the sets are in operation. It is surprising how much this extra illumination adds to the beauty of these receivers. More than that, this lighting adds life and animation through optical suggestion highly indicative of the theatre. Individual effects to harmonize more definitely with home decorations may be obtained by changing the color of the light. This lighting is one of those "finishing touches" which add so much to the joy and pride of PHILCO ownership.

ELEVEN TUBE MODEL CIRCUIT AND TUBES

This largest and most powerful PHILCO Superheterodyne uses the new High Efficiency Tubes, including 6 Pentode tubes (See Feature Chart, pages 16-17). The circuit design assures use of the full power and efficiency of all these tubes to afford a tremendously powerful and selective radio receiver with Automatic Volume Control, which maintains the finest possible reception at all times.

Everything that could possibly contribute to better radio reception has been embodied in this greatest of all PHILCOS, including Twin Speakers, Shadow Tuning, Illuminated Grille, Tuning Silencer, Automatic Volume Control, Long Distance Switch and beautiful cabinets scientifically designed for finest musical reproduction.

The circuit has been designed for the new PHILCO High Efficiency Tubes, and it is through their use that the tremendous power is made available. The following tubes are employed:

PHILCO TYPE	NAME	PURPOSE
44	Super-control variable-mu R.F. Pentode	R.F. Amplifier
37	General purpose triode	Oscillator
44	Super-control variable-mu R.F. Pentode	First detector
44	Super-control variable-mu R.F. Pentode	First I.F. amplifier
44	Super-control variable-mu R.F. Pentode	Second I.F. amplifier
37	General purpose triode	Second detector and automatic volume control
37	General purpose triode	Detector amplifier
37	General purpose triode	Audio amplifier
42	Superpower Pentode	Superpower Push-Pull output
42	Superpower Pentode	Superpower Push-Pull output
80	Full Wave Rectifier	Supplies B and C operating voltages

NINE TUBE MODEL CIRCUIT AND TUBES

The PHILCO superheterodyne circuit of this model uses nine of the new High Efficiency PHILCO Tubes, including 4 Pentode tubes (See Feature Chart, pages 16-17). The circuit arrangement is such that one tube performs the combined functions of Detector and Oscillator. This saves one tube, therefore, performance of these nine tubes at least equals that of ordinary sets with ten tubes.

The circuit has been designed for the new PHILCO High Efficiency Tubes, and it is through the correct balancing of tube and circuit design that the high efficiency of this PHILCO model is obtained. The following tubes are employed: (Cont. on page 18)

OUTSTANDING PHILCO FEATURES

	11 tube models	9 tube models			7 tube models		5 tube models
	15X 15DX	91X	91D 91L	91B	71D 71H	71L 71B	52L 52C 52B
1. PHILCO superheterodyne balanced unit circuit	V	V	V	V	V	V	V
2. Improved PHILCO electro dynamic speaker	V	V	V	V	V	V	V
3. Pentode power output	V	V	V	V	V	V	V
4. Improved ease of tuning	V	V	V	V	V	V	V
5. Illuminated station recording dial	V	V	V	V	V	V	V
6. Radio chassis and tuning condenser floating on rubber	V	V	V	V	V	V	V
7. New economy in operating costs	V	V	V	V	V	V	V
8. Underwriters' Laboratories approval	V	V	V	V	V	V	V
9. Latest PHILCO high efficiency tubes	V	V	V	V	V	V	V
10. Automatic volume control	V	V	V	V	V	V	V
11. New super-control variable-mu pentode tubes	V	V	V	V	V	V	V
12. Glowing arrow station finder	V	V	V	V	V	V	V
13. Tone control	V	V	V	V	V	V	V
14. Twin speakers	V	V	V		V		
15. New PHILCO shadow tuning	V	V	V	V			
16. Tuning silencer	V						
17. Distance switch	V						
18. Superpower push-pull pentode output	V	V	V	V			
19. New PHILCO twin speaker inclined mounting system	V	V					
20. Inclined sounding board and echo-absorbing screen	V	V					
21. Decorative illumination of grille and cabinet	V						
22. Drum dial 4-gang tuning condenser	V						
23. Super-selective band pass tuning circuit	V						

- Philco Radio Phonograph Model 22L see page 20 for description and features
- Philco Radio Phonograph Model 23X see page 19 for description and features
- Philco Short Wave Combination Models 43X, 43H, 43B see page 21 for description and features
- Philco Short Wave Converter Model 4C see page 23 for description and features
- Philco Extension Speaker Model R-3 see page 30 for description and features
- Philco Radio Control Clock Model "A" see page 31 for description and features
- "B"—Indicates Baby Grand Cabinet
- "L"—Indicates Lowboy Cabinet
- "H"—Indicates Highboy Cabinet
- "D"—Indicates Highboy Cabinet with doors
- "X"—Indicates inclined sounding board models

PHILCO TYPE	NAME	PURPOSE
44	Super-control variable-mu R.F. Pentode	R.F. amplifier
36	Screen grid tetrode	Detector—Oscillator
44	Super-control variable-mu R.F. Pentode	I.F. amplifier
37	General purpose triode	Second Detector and Automatic Volume Control
37	General purpose triode	Detector amplifier
37	General purpose triode	Audio amplifier
42	Superpower Pentode	Push-pull power output
42	Superpower Pentode	Push-pull power output
80	Full Wave rectifier	Supplies B and C operating voltages

SEVEN TUBE MODEL CIRCUIT AND TUBES

The PHILCO Superheterodyne circuit of this model uses seven tubes, including 4 Pentode tubes, and because of the combined Detector and Oscillator which requires two tubes in ordinary sets but only one in PHILCO, these seven tubes give performance at least equal to that ordinarily obtained from eight tubes.

The circuit gives maximum performance when used with PHILCO High Efficiency Tubes, and the correct balancing of the circuit with these tubes makes this a highly efficient set in compact form. Following are the tubes used:

PHILCO TYPE	NAME	PURPOSE
44	Super-control variable-mu R.F. Pentode	R.F. amplifier
36	Screen Grid Tetrode	Detector—Oscillator
44	Super-control variable-mu R.F. Pentode	I.F. amplifier
37	General purpose triode	Second Detector and Automatic Volume Control
44	Super-control variable-mu R.F. Pentode	Audio amplifier
42	Superpower Pentode	Power output
80	Full wave rectifier	Supplies B and C operating voltages

FIVE TUBE MODEL CIRCUIT AND TUBES

This model contains the PHILCO Superheterodyne circuit employing five tubes, including Pentode output tube, and because of the efficient combination of Detector and Oscillator circuits in one tube, the performance is at least equal to that usually afforded by six tubes. The following tubes are used:

PHILCO TYPE	NAME	PURPOSE
24	Screen Grid Tetrode	Detector—Oscillator
35	Variable-mu screen grid tetrode	I.F. amplifier
24	Screen Grid tetrode	Second Detector
47	Power Pentode	Power output
80	Full Wave Rectifier	Supplies B and C operating voltages

PHILCO COMBINATION AND SPECIAL MODELS

In addition to the A.C. electric radios listed, PHILCO manufactures a complete line of modern radio-phonographs, short-wave radios, D.C. electric radios, battery-operated radios, TRANSITONE automobile radios and many special devices. Among the most popular are the following:

- RADIO-PHONOGRAPH COMBINATIONS—(See pages 19-20-21)
- SHORT WAVE COMBINATIONS—(See pages 21-22)
- SHORT WAVE CONVERTER—(See page 23)
- DIRECT CURRENT RADIO—(See pages 23-24)
- BATTERY-OPERATED RADIO—(See page 24)
- TRANSITONE RADIO—(See page 25)
- PHILCO HIGH EFFICIENCY TUBES—(See page 8)
- EXTENSION SPEAKER—(See page 30)
- NEW DRY "A" BATTERY—(See page 31)
- RADIO CONTROL CLOCK—(See page 31)

RADIO-PHONOGRAPH MODEL 23X

DESCRIPTION

An elegant radio-phonograph instrument, combining the many advantages of the PHILCO inclined sounding board radio with the modern electric phonograph. All of the desirable entertainment features of the standard records and the new long-playing records combined with PHILCO Radio make this model an all embracing musical instrument for the home.

The PHILCO superheterodyne circuit of this model uses nine of the new PHILCO High Efficiency Tubes, including 4 Pentodes, so arranged in the combination circuit as to afford performance characteristics equal to many sets with ten or more tubes.

The following types are employed:

PHILCO TYPE	NAME	PURPOSE
44	Super-control variable-mu R.F. Pentode	R.F. amplifier
36	Screen Grid tetrode	Detector—Oscillator
44	Super-control variable-mu R.F. Pentode	I.F. amplifier
37	General purpose triode	Second Detector and Automatic Volume Control
37	General purpose triode	Detector amplifier
37	General purpose triode	Audio amplifier
42	Superpower Pentode	Push-pull power output
42	Superpower Pentode	Push-pull power output
80	Full wave rectifier	Supplies B and C operating voltages

FEATURES

1. A great combination of the latest and best in phonography with the latest and best in radio.
2. PHILCO superheterodyne balanced unit circuit.
3. Plays new type 33 $\frac{1}{3}$ r.p.m. long-playing records, also standard 78 r.p.m. records.
4. Convenient speed change-over lever.
5. Uses new type needles, plays 25 or more records with a single needle.
6. Quiet, constant-speed.
7. Dependable automatic record stop.
8. Twin speakers—improved PHILCO electro-dynamic type.
9. PHILCO "X" cabinet with inclined sounding board.
10. Nine latest PHILCO High Efficiency Tubes.
11. Economical to operate.
12. New PHILCO super-control variable-mu pentode tubes.
13. New PHILCO pentode output tubes in push-pull.
14. Automatic volume control.
15. Tone control and static modifier.
16. New PHILCO Shadow Tuning.
17. Tuning Silencer.
18. Distance Switch.
19. Illuminated Station Recording Dial.
20. Glowing Arrow Station Finder.
21. Illuminated Grille.
22. Radio chassis and tuning condenser floating on rubber.
23. Sharp selectivity at all points on dial.
24. Great distance range.
25. Economical to operate.

RADIO PHONOGRAPH MODEL 22L

DESCRIPTION

A fine radio-phonograph instrument, combining a powerful Superheterodyne radio with the latest and most modern electric phonograph. The two-speed electric motor for playing both the standard and the new long-playing records, makes this combination an ideal musical entertainment instrument.

The PHILCO Superheterodyne circuit of this model uses seven of the new PHILCO High Efficiency tubes, including 4 Pentodes. An ingenious combination of functions performed by one of the tubes in place of two ordinarily used assures overall reception equal to that of many sets with eight or more tubes.

The following types are employed:

PHILCO TYPE	NAME	PURPOSE
44	Super-control variable-mu R.F. pentode	R.F. amplifier
36	Screen Grid tetrode	Detector—Oscillator
44	Super-control variable-mu R.F. pentode	I.F. amplifier
37	General purpose triode	Second Detector and Automatic volume control
44	Super-control variable-mu R.F. pentode	Audio amplifier
42	Superpower pentode	Power output
80	Full wave rectifier	Supplies B and C operating voltages

FEATURES

1. PHILCO modern electric radio-phonograph.
2. PHILCO superheterodyne balanced unit circuit.
3. Plays new type 33 $\frac{1}{3}$ r.p.m. long-playing records, also standard 78 r.p.m. records.
4. Convenient speed change-over lever.
5. Uses new type needles, plays 25 or more records with a single needle.
6. Quiet, constant-speed.
7. Dependable automatic record stop.
8. Twin speakers—improved PHILCO electro-dynamic type.
9. Seven latest PHILCO High Efficiency PHILCO tubes.
10. Economical to operate.
11. New PHILCO Super-control variable-mu pentode tubes.
12. New PHILCO pentode output tube.
13. Automatic volume control.
14. Tone control and static modifier.
15. Illuminated station recording dial.
16. Glowing arrow station finder.
17. Radio chassis and tuning condenser floating on rubber.
18. Sharp selectivity at all points on dial.
19. Great distance range.
20. Approved by Underwriters' Laboratories.

SHORT WAVE COMBINATION MODELS

DESCRIPTION

A new and improved PHILCO, covering both standard and Short Wave broadcast bands. The fine tone and dependable performance that characterize the standard broadcast models are also found in this convenient combination model.

The PHILCO superheterodyne circuit of this model has been designed especially for the new PHILCO High Efficiency tubes. The amazing performance of these tubes (8 in this set, 4 Pentodes) makes this circuit unusually efficient.

The following tubes are employed:

PHILCO TYPE	NAME	PURPOSE
36	Screen grid tetrode	First Detector
37	General purpose triode	Oscillator
44	Super-control variable-mu R.F. Pentode	First I.F. amplifier
44	Super-control variable-mu R.F. Pentode	Second I.F. amplifier
37	General purpose triode	Second Detector and Automatic Volume control.
44	Super-control variable-mu R.F. Pentode	Audio amplifier
42	Superpower pentode	Power output
80	Full wave rectifier	Supplies B and C operating Voltages

Available in three cabinets:

- Model 43B Baby Grand
- Model 43H Highboy
- Model 43X with Inclined Sounding Board.

FEATURES

1. Short wave and standard broadcast receiver in one.
2. PHILCO Superheterodyne balanced unit circuit.
3. Provides all-wave radio reception from 19 megacycles (15.8 meters) to 550 Kilocycles (545 meters).
4. Capable of world wide reception under favorable conditions.
5. Improved PHILCO Electro-Dynamic Speaker.
6. Twin speakers in highboy and inclined sounding board models.
7. Latest PHILCO high efficiency tubes.
8. Economical to operate.
9. New PHILCO super control variable-mu pentode tubes.
10. New PHILCO pentode output tube.
11. Automatic Volume Control.
12. Single tuning control with station frequency calibrations.
13. Convenient switch for changing to various wave length ranges; no plug-in coils necessary.
14. Four range tuning scale greatly simplifies tuning.
15. Illuminated Station Dial.
16. Glowing arrow station finder.
17. Radio chassis and tuning condenser floating on rubber.
18. Entire assembly built on a single chassis and with only one set of controls.
19. Approved by Underwriters' Laboratories.
20. Sharp selectivity at every point on dial.

SHORT WAVE CONVERTER MODEL 4C

DESCRIPTION

A highly sensitive short wave converter operating on the superheterodyne principle. This PHILCO model is self-powered and can therefore be used in conjunction with any standard broadcast receiver for the reception of short wave stations throughout the short wave band.

The following tubes are employed in this model:

PHILCO TYPE	NAME	PURPOSE
27	General purpose triode	Short wave oscillator
24	Screen grid tetrode	Short wave detector
80	Full wave rectifier	Supplies B and C operating voltages

FEATURES

1. Short wave converter operating on superheterodyne principle.
2. Can be connected to any broadcast receiver.
3. Highly sensitive, capable of world wide reception under favorable conditions.
4. Covers entire short wave band from 1500 kilocycles to 19 megacycles (200 meters to 16 meters, approximately).
5. Illuminated dial with station frequency calibration.
6. Radio set employed same as for broadcast reception, no wiring changes necessary.
7. Does not interfere with regular broadcast reception.
8. Convenient switch knob for changing over to different wave length ranges; no plug-in coils necessary.
9. Three range tuning scale greatly simplifies tuning.
10. Attractive utility design cabinet—can be used for supporting PHILCO Baby Grand, or can be placed on top of larger cabinet model.
11. Approved by Underwriters' Laboratories.

PHILCO DIRECT CURRENT SUPERHETERODYNE MODEL 47

DESCRIPTION

The first 110 volt direct current radio to give full A.C. radio performance. The new type 43 D.C. push-pull Pentode output tubes afford the same volume and tone quality which are obtainable from A.C. output tubes. The same quality performance is now available in this new PHILCO model as that offered in the corresponding A.C. PHILCOS.

The PHILCO superheterodyne circuit of the new D.C. model uses eight of the new PHILCO High Efficiency tubes, including four Pentodes. Two of the Pentodes are the new type—high

output, 25 volt filament tubes, giving high undistorted volume, equal to that of A.C. Pentodes. A combination of functions performed by one of the screen grid tubes in place of two ordinarily used, assures overall reception equal to that of many sets with nine or more tubes.

The following types are employed:

PHILCO TYPE	NAME	PURPOSE
44	Super-control variable-mu R.F. Pentode	R.F. amplifier
36	Screen grid tetrode	Detector oscillator
44	Super-control variable-mu R.F. Pentode	I.F. amplifier
37	General purpose triode	Second detector and automatic volume control
37	General purpose triode	Detector amplifier
37	General purpose triode	Audio amplifier
43	D.C. superpower pentode	Superpower push-pull output
43	D.C. superpower pentode	Superpower push-pull output

Available in four cabinets:

- Model 47B—Baby Grand
- Model 47H—Highboy
- Model 47D—Highboy with Doors
- Model 47X—With Inclined Sounding Board.

FEATURES

1. PHILCO superheterodyne Balanced Unit circuit.
2. Eight new High Efficiency PHILCO tubes.
3. Improved new PHILCO electro-dynamic speaker.
4. New super-control variable-mu pentode tubes.
5. Two latest PHILCO D.C. pentode output tubes.
6. Push-pull pentode output circuit.
7. Automatic Volume Control.
8. Tone control and static modifier.
9. Illuminated Station Recording Dial.
10. Glowing arrow station finder.
11. Radio chassis and tuning condenser floating on rubber.
12. Combination circuit design affords double efficiency.
13. Sharp selectivity at all points on dial.
14. Great distance range.
15. Approved by Underwriters' Laboratories.
16. Economical to operate.
17. Illuminated Grille in Model 47X.

PHILCO BATTERY OPERATED SUPERHETERODYNE MODEL 36

DESCRIPTION

A highly efficient battery operated PHILCO, offering the many advantages of the powerful superheterodyne circuit, pentode

output, illuminated dial and moving coil dynamic speaker with economy in operating costs. Uses the special PHILCO High Efficiency battery tubes, and the new PHILCO Dry A battery.

The PHILCO superheterodyne circuit of the battery model uses seven of the special low-current two-volt battery tubes.

These tubes consume an extremely small amount of power from the A and B batteries, making possible longer battery life with a resulting economy in the cost of operating the receiver.

The following tubes are employed:

PHILCO TYPE	NAME	PURPOSE
32	Screen grid tetrode	R.F. amplifier
32	Screen grid tetrode	First detector
30	General purpose triode	Oscillator
32	Screen grid tetrode	I.F. amplifier
30	General purpose triode	Second detector
30	General purpose triode	Audio amplifier
33	Power pentode	Power output

FEATURES

1. PHILCO Balanced Unit superheterodyne circuit.
2. Uses seven High Efficiency low-current low-voltage PHILCO battery tubes.
3. Improved PHILCO moving coil speaker.
4. Three screen grid tubes.
5. Pentode power output tube.
6. Tone Control and static modifier.
7. Illuminated Station Recording Dial.
8. Glowing arrow station finder.
9. Radio chassis and tuning condenser floating on rubber.
10. Sharp selectivity at all points on dial.
11. Great distance range.
12. Approved by Underwriters' Laboratories.
13. Uses new PHILCO dry A battery and only three PHILCO B batteries affording long life and dependable power.
14. Economical to operate.

Available in three cabinets:

- Model 36B—Baby Grand.
- Model 71D—Highboy with Doors.
- Model 71L—Lowboy.

PHILCO TRANSITONE MODEL 7 AUTOMOBILE RADIO

The new PHILCO Transitone Receiver, Model 7, furnishes radio entertainment in automobiles, motorboats, and aircraft comparable with that obtained from the better home radios.

PHILCO Transitone is a highly efficient superheterodyne Receiver with Automatic Volume Control and a genuine PHILCO

Electro-Dynamic Speaker. Great selectivity is combined with high and uniform sensitivity. The five tubes used are all of the latest PHILCO High Efficiency type. There are three of the screen grid 36-type tubes, one 38 pentode and one 41 power output pentode.

The operation of the Automatic Volume Control in this receiver far surpasses any other automatic control in use today. In conjunction with the amazing sensitivity of the receiver, it gives almost uncanny results. In locations which heretofore were commonly considered dead spots, it is now possible to pick up broadcasts. Bridges and viaducts which once apparently shielded all signals now make very little difference when receiving a fairly strong station signal.

Such control adds considerably to the ease of operation. Local and distant stations are tuned in with the same ease and without any fussing with the controls. While driving, it makes it possible to hold and enjoy programs without having the volume continually go up and down.

The control unit is neat and compact and mounts very readily on the steering column. The dial is illuminated, but is of a non-glaring type so that it does not become an annoyance when driving fast at night.

The dial is calibrated in channel numbers, facilitating the location of desired stations. A lock and key prevents the use of the radio without the owner's permission.

The new 41 tube in the output stage of the receiver gives added power and together with the large efficient electro-dynamic speaker is responsible for the remarkable tone quality.

Only three 45-volt "B" batteries are required for the plate supply while the car battery furnishes the power to heat the tube filaments. Automatic grid biasing eliminates the use of "C" batteries and increases the useful life of the "B" batteries. In addition, the low plate drain of the receiver means longer battery life with infrequent replacements.

With the exception of the small control unit mounted on the steering column, all parts are concealed and are out of the way. The receiver and cables are electrically shielded so that with the use of PHILCO suppressor units, all bothersome motor noise is eliminated.

PHILCO CABINETS

The finest exemplifications of today's cabinet making art are these new PHILCO cabinets for 1932. Nothing so crude as screws and nails enters into their construction. Mortise and tenon and dowels are used in the joining of PHILCO cabinets, in the manner of the old masters. We expect the finer PHILCO

cabinets to endure through more than one lifetime and to become even more beautiful with age.

Where, in any kind of cabinets anywhere, and for any purpose, will you find the use of such rare, expensive and beautiful woods? Rich, black American Walnut—a fine furniture wood that is fast disappearing—and yet PHILCO uses even Crotch Walnut, a form so rare that many people haven't even seen a piece of it, to say nothing of owning panels of it. And Myrtle Burl. PHILCO uses that along with Rosewood, Boxwood, Satinwood, Quilted Maple and such. AND EVERY PHILCO CABINET IS HAND RUBBED. Details of PHILCO Cabinets are as follows:

DESCRIPTION OF PHILCO CABINETS

15DX

This is PHILCO'S finest model—a de luxe cabinet of surpassing beauty—of regal elegance—and of supreme quality. It is the very finest cabinet ever developed for radio, done in a rare combination of American Black Walnut, highly figured and inlaid Butt Walnut with panels of Myrtle Burl, the instrument panel being enclosed with tambour sliding doors. The bow front and ornamental work are hand-carved out of solid walnut and the entire set is hand-rubbed. Height, 47 inches; width 30 $\frac{1}{8}$ inches.

23X

An extraordinary cabinet which stands alone in all radio for its individuality. The X principle is combined with the phonograph in this perfectly proportioned cabinet. Doors are of Crotch Walnut, that rare wood which can be taken only from where the limb branches from the trunk of the tree. Pilaster panels and inclined sounding board are of highly figured Butt Walnut, perfectly matched. The fluted lower pilaster rails add to the magnificent dignity of the design. This cabinet is solidly constructed with heavy ends and base which add to the tone quality. The self-balancing lid support is another feature which makes this design an outstanding cabinet. Height, 44 $\frac{3}{4}$ inches; width 27 $\frac{3}{4}$ inches.

22L

A six leg radio-phonograph cabinet with a combination of selected woods matched in perfect harmony. The instrument panel is of imported figured Oriental wood, in beautiful natural color and perfectly matched. The post carvings blend with the woods used in this design. The pilaster panels are quarter sliced, pin stripe, American Black Walnut. This cabinet is solidly constructed and has a self-balancing lid support as used

in more expensive designs. Arch and apron are of highly figured Butt Walnut, inlaid with Boxwood and center matched to add to the beauty of design. Height 43 inches; width 25 $\frac{3}{8}$ inches.

15X

This is one of the finer X models and is solidly constructed to protect against any microphonic disturbances with heavy ends and tops and an especially constructed solid base. The entire front of this cabinet is highly figured matched Butt Walnut, inlaid with Satin and Ebony colored woods. The four beautiful fluted front columns are an added feature of this design. The highly figured Butt Walnut in this cabinet distinguishes the model as a really fine musical instrument. Height 42 $\frac{1}{2}$ inches; width 27 $\frac{1}{8}$ inches.

91X

This is the smallest of the famous X models of PHILCO large enough to reproduce with the richness of a great instrument, and yet small enough to conveniently take its place in the average home or apartment. This cabinet is also solidly constructed for protection against microphonic disturbances through resting upon a specially constructed solid base reinforced by heavy ends and top in the cabinet. Highly figured matched Butt Walnut inlaid with Satin and Ebony colored woods, forms the front of this cabinet and makes it a worthy member of the X group. Instrument panel of Butt Walnut and Myrtle Burl.

91L

An unique Lowboy, unobtrusive but with a rich appearance made possible by the use of expensive woods. Butt Walnut instrument panel and carved pilaster panels, using quartered sliced pin stripe Walnut and Butt Walnut overlay. The instrument panel is highly figured Oriental wood of great natural beauty and beautifully finished. The pilaster panels are specially constructed allowing the use of beautiful woods. The arch and apron again use rich Butt Walnut. The six fluted legs blend perfectly with the carved pilaster panels. Height 39 $\frac{5}{8}$ inches; width 25 $\frac{1}{8}$ inches.

91D

An artistically designed Highboy with highly figured matched Butt Walnut Doors. The designer has added ornamentation to this cabinet with post carvings, apron carvings and six beautiful fluted legs. The pilaster panels are made with quarter sliced pin stripe American Black Walnut which requires special cutting of veneer at added expense. The doors have

drop leaf pulls with ultra-antique finish. Apron and arch again use matched Butt Walnut, highly figured and carefully selected. Height 47 $\frac{3}{4}$ inches; width 26 $\frac{1}{8}$ inches.

71D

Identical with the above except that the mounting is for the seven tube chassis.

71H

This model is today's development of the long popular Highboy. Sliced Black Walnut is in the top panel; Oriental Wood in the Pilaster panels; the instrument panel is of Butt Walnut and so are the aprons. Rich carvings add tastefully to the design, in which both Satinwood and Rosewood inlays are used. Six fluted legs. Height 42 $\frac{1}{2}$ inches; width 24-9/16 inches.

71L

This is a perpetuation in modern form of the long popular Lowboy. Hundreds of thousands of previous models are now being enjoyed in American homes, and this new model will, we expect, be even more popular than its predecessors. The top panel is of American Black Walnut; the pilaster panels quarter sliced walnut; the instrument panel is American Sliced Walnut; the aprons are of Quilted Maple; and the grille is also of American Sliced Walnut. Height 39 $\frac{5}{8}$ inches; width 23 $\frac{1}{2}$ inches.

PHILCO BABY GRAND

For uniqueness of design and perfect proportions the 52, 71 and 91 Baby Grands cannot be equalled. An arch of true Gothic shape veneered with Quartered Pin Stripe Walnut perfectly matched forming a "V", which adds a dignity true to all PHILCOS. The instrument panel which is so strikingly beautiful is veneered with Oriental Wood imported from Australia. The Australian woods are new in this country and have been used quite successfully on high grade furniture. PHILCO engineers were quick to adopt this wood which is so beautiful and so rich in natural color.

91—Height 18 $\frac{13}{16}$ "—width 16 $\frac{1}{4}$ "

71—Height 18 $\frac{3}{16}$ "—width 15 $\frac{1}{2}$ "

52—Height 16 $\frac{1}{8}$ "—width 13 $\frac{9}{16}$ "

52C—COMPACT

This is a convenient little cabinet designed to place the most possible radio in the least possible space. It is beautiful enough to take its place on mantel, table or stand, and yet, so compact that it can be placed inside a bookcase if desired. Cabinet work

in this little set is comparable with all PHILCO woodwork. Black Walnut is inlaid with Boxwood and Blackwood. Height 10 $\frac{3}{8}$ inches; length 18 inches.

PHILCO HIGH EFFICIENCY TUBES

Following are the types of new PHILCO High Efficiency tubes. PHILCO TYPE 37, General Purpose Triode. A High Efficiency tube in the new small size for universal use in A.C., D.C. and Transitone radio receivers. Stronger and lighter elements, better suspension, more rigid construction, greater economy and better performance are features of this tube.

PHILCO TYPE 36, Screen Grid Tetrode. Another of the new PHILCO High Efficiency tubes. This is an advanced type of screen grid tube designed for use in operating A.C., D.C. and Transitone receivers and giving lower costs.

PHILCO TYPE 44, Super-control R.F. Pentode. A new High Efficiency Super-control pentode tube (also called multi-mu and variable-mu) designed for universal use in the different types of radio receivers. This tube may be used as either a radio frequency or an audio frequency amplifier and in either case gives better results with lower operating costs.

PHILCO TYPE 42, Superpower Pentode. A new PHILCO High Efficiency output tube. This is the latest development in a power output tube having heater-and-cathode construction incorporating many improvements over previous tubes. The outstanding advantages are quieter operation, greater uniformity and greater efficiency.

PHILCO TYPE 41, Power Pentode. A new PHILCO High Efficiency power output tube, especially designed to meet the requirements of automobile radio use.

PHILCO TYPE 43, Power Pentode. A new PHILCO High Efficiency power output tube, especially designed for D.C. line operation. Tremendous power output, heretofore available only in A.C. sets, can now be had in the new D.C. PHILCO through the use of the type 43 tubes.

EXTENSION SPEAKER, MODEL R-3

This is a moving coil dynamic speaker of the permanent magnet type capable of reproducing all types of broadcast programs with fine fidelity. It is of the high impedance type designed for use with all models of PHILCO radio both old and new so that its use has no effect on the tone quality of the speaker or speakers in the radio cabinet. Ordinarily an extra speaker added to a radio set will affect the tone quality of the set itself. The design of the PHILCO Extension Speaker in-

sure perfect tone from the radio whether the extension speaker is operating or not.

The connections to the Extension Speaker are arranged so that the speaker in the radio cabinet can be used alone, the Extension Speaker can be used alone, or both can be used at the same time.

It is possible to connect from one to eight of these extension speakers all operating from the same radio. Complete instructions are included with every speaker.

There are many uses for extension speakers. Among them are:

- An extra speaker in the dining room.
- An extra speaker in the bedroom.
- An extra speaker in the den.
- An extra speaker in the kitchen.
- An extra speaker on the porch.
- An extra speaker in the maid's room.
- Small school installations with speakers in several rooms.

The PHILCO extension speaker is provided with a twenty foot cord. Extra twenty foot lengths of extension cord are available equipped with the necessary plug and receptacle for convenience in making connections.

PHILCO ELECTRIC CLOCK—MODEL "A"

FEATURES

1. An accurate automatic electric time switch.
2. Used to turn on or off radio, or other electrical appliances, at any predetermined time.
3. Handsome electric clock.
4. The radio plugs into back of clock permanently—turns on at any 15-minute interval of the twenty-four hours; also turns off at any desired 15-minute interval.
5. Convenient setting knobs for "ON" and "OFF" adjustments.
6. Cutout switch to eliminate automatic feature when desired.
7. Electric clock operates with switch in either position.

NEW PHILCO DRY "A" BATTERY

The new PHILCO Dry "A" battery is a very important development contributing to the improvement of battery operated radios. It is a truly dry and hermetically sealed battery. It can be connected to the new PHILCO battery radio just as received without any preparation of any kind. It is always

ready for use, and will have a long satisfactory life. A very important exclusive feature is the extra power built into this battery enabling PHILCO owners to use a pilot lamp with their radios giving them the great advantage of PHILCO'S Illuminated Station Recording Dial with channel number calibrations and PHILCO'S Glowing Arrow Station Finder.

It is not a storage battery. It never has to be recharged. There are no seals to break when putting into service. It does not require any filling with water, or anything else, either when putting into service or during its life. Nothing to spill. No vent caps to remove. Can be used in any position—even upside down—with no effect on life or performance. No creeping of solution or corroding of parts outside the case because it is 100% dry. The new PHILCO Dry "A" battery as well as the "B" batteries fits inside the cabinet of the PHILCO battery-operated radio, Model 36-D, and supplies all the "A" power as well as current for the pilot lamp. The long life and dependable service obtained set a new standard for radio "A" battery performance.

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PHILCO RADIO & TELEVISION CORPORATION
PHILADELPHIA
