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Emporium, Pa., May 1934

HIGH FIDELITY RECEPTION

by E. FINLEY CARTER, Division Engineer

Within recent months much has been said and written concerning high fidelity reception. Such comments in themselves may be interpreted as a good omen, predicting improvement in business conditions. The market for high quality receivers again becomes very attractive which in turn will stimulate more engineering effort upon problems vital in the advancement of the art than has been practical during the past few years. An immediate consequence will be larger and more profitable unit sales for the dealer.

This, of course, does not imply that the midget receiver, in which certain quality concessions were necessarily made because of price considerations, has outlived its usefulness and popularity. On the contrary, such receivers have served their purpose and will continue to do so. They have their place in the homes of those who otherwise might be unable to enjoy the benefits and delight of radio. Furthermore, they create within the users the desire for better radios with improved reproduction, and with the return of better economic conditions many will be eager to purchase such instruments.

High fidelity reception implies that the programs received are so faithfully reproduced and so nearly like the original that there is an illusion of reality associated with it. This requires freedom from interfering set noises such as hiss, hum, scratching sounds, static and man-made interference. The frequency response must faithfully cover the low notes as well as those of medium and very high audio frequencies. Wave distortion cannot be tolerated beyond a point where undesirable harmonic frequencies become objectionable. Of equal importance are the requirements of the broadcast stations. Their transmitters should have the best possible characteristics, furnishing adequate signal strength at the receiver and freedom from interference and fading.

It is apparent that high fidelity reception stipulates numerous prerequisites. What part can the receiver play to assist in approaching the ideal? No one link in the chain can be so perfect as to offset defects in the rest of the chain. Likewise, it is quite impossible to incorporate in the receiver design or in the component parts (tubes, transformers, coils, resistors, condensers, etc.) everything that is essential to make a perfect system. Nevertheless, poor design and inferior parts can readily spoil a system which might otherwise approach perfection.

What then are the important circuit problems to consider in designing a high fidelity receiver? As an excellent example let us consider the superheterodyne circuit and discuss the phases, step-by-step. In the first place the antenna transformer should be well designed so as to give a high efficiency transfer of the incoming signal from the antenna to the grid of the first tube, which for most quiet operation should be an RF stage. Any loss in transfer at this initial point would have to be compensated for by increased amplification in succeeding stages. This might result in an undue amount of hiss especially on weak signals. A sufficient amount of selectivity is required in the front of the set to prevent cross modulation (in all types of receivers) and to avert image response (in superheterodyne circuits).

The next point for consideration is the first detector and oscillator circuits. With the advent of electron-coupled pentagrid converter tubes a single tube suffices for detector-oscillator service. Often this is a decided advantage from the standpoint of cost and performance.



This Sylvania window display is not only strikingly effective—it is also truthful. Sylvania Tubes are sold all over the world, and new and strange-sounding names from the far corners of the earth are being added so fast that it is hard to keep up with them. The display is furnished free to dealers who will plan to use it profitably. The colors, deep blue, brilliant orange, and white, make it a grand attention-getter in the window, and afterward help to brighten dark corners inside the store. Order through your Sylvania jobber

AN IMPORTANT STATEMENT

It hardly seems necessary at this time for us to reiterate our policy of outright sale; a policy in which we believe as strongly as the day the first Sylvania tube was sold. Sylvania has *always* believed in full profit for the dealer—Sylvania list prices are *never* cut. But we mean *more* than this. We believe that the dealer has a right to the full *margin of profit*, some of which has to be taken away from him by the manufacturer who sells on consignment, to pay the enormous costs of consignment operation. We are confident that thousands of radio "merchants" will continue their loyal support of these policies.

S. N. ABBOTT
General Sales Manager

RMA DEFINES "ALL WAVE" AND OTHER RECEIVERS

To inform the radio buying public as well as the trade, means to establish identification of "all wave" and other receiving sets have been adopted by the RMA. The object is to definitely classify the new and improved receivers, to avoid misrepresentation and to facilitate merchandising of sets.

Nomenclature and frequency ranges for a standard broadcast receiving set, the "all wave" receiver and the "standard and short wave," or "dual wave" receiver, were adopted by the RMA Board of Directors April 18 at Chicago following recommendations from the Association's Engineering Division.

The "Standard Broadcast" receiver is defined to include sets having the regular frequency range from 540 to 1500 kilocycles.

The definition of the "all wave" receiver applies to sets with frequency ranges from 540 kilocycles to at least 18,000 kilocycles.

The "standard" and "short wave" or "dual wave" receiver as defined by the RMA will apply to sets having frequencies between 4,000 and 20,000 kilocycles with a short wave range covering a ratio of maximum to minimum frequencies of at least two and one half to one.

The definitions outlined above were adopted by the RMA Board as the simplest possible to correctly advise the buying public and the trade. Detailed standards defining the nomenclature and frequency ranges of the three types of receivers will be issued soon by the RMA Engineering Division.

SYLVANIA 1C6 AND 12A5 RADIO TUBES

TYPE 1C6

Sylvania 1C6—Pentagrid Converter is an improved 2 volt filament type, 5-grid electron-coupled detector-oscillator tube with a high conversion gain, similar to type 1A6. Type 1C6 was designed especially for all-wave battery receivers and operates satisfactorily over all frequencies up to 20-24 megacycles, providing efficient coil and circuit design is followed.

The interchanging of type 1A6 with

TYPE 12A5

Sylvania 12A5—A power Output Pentode of the cathode type provided with a 12.6 volt, 0.3 ampere heater, suitable for series operation in AC-DC receivers and also center-tapped, permitting the two halves to be connected in parallel for 6.3 volt, 0.6 ampere operation. In the latter application, this tube is generally used in auto receivers.

When operated at 12.6 volts on the filament with 100 volts on the plate and a negative bias of 15 volts the power output is 65 watts. With 6.3

CAN WE BEAT THIS IN 1934?

Total set sales for 1933 were 3,806,000, according to statistics gathered from the radio trade by *Radio Retailing*. This is an increase of 45 per cent or 1,186,000 sets over unit sales for 1932.

Total sales of radio products at retail in 1933 were valued at \$212,598,000, a gain of \$16,408,000 over the previous year.

The greatest gains were recorded by auto-radio sales and in the small table models. But the console sets more than held their own with a gain of 279,000 over the previous year.

Motor car sets jumped from 143,000 in 1932 to 724,000. If the present public interest in "radio as we ride" continues, sales will easily surpass the million mark for 1934. Retail value of the auto sets sold last year was \$28,600,000 or more than four times that of 1932.

Tube sales rose from 44,300,000 with a retail value of \$48,730,000 in 1932 to 55,605,000 valued at \$56,599,000 in 1933, a gain of 11,305,000 units and \$6,875,000. These figures include tubes in sets shipped from factories as well as those sold for replacement purposes. Gains over 1932 were recorded also in sales of accessories and parts.

Radio dealers and service men are doing a better job selling new tubes to the owners of old sets. But we should have made even a better showing. Based on the following conservative estimates, according to the March issue of *Radio Retailing*, we missed our mark by 14,000,000 tubes:

Sets needing one tube	3,000,000
Sets needing two tubes	7,000,000
Sets needing three tubes	13,500,000
Sets needing an average of 5.5 tubes	22,500,000

Total (Estimated) possible replacement sales 46,000,000

"Based on the fact that there will be at least 19,000,000 sets in active service by September 1934, the trade could sell over 50,000,000 tubes this year if it would maintain all these receivers in the pink of condition.

"Like it or not, people never will keep their sets up to scratch unless the difference is demonstrated, right in the home. There isn't a better door-opener than the offer by a real technician to 'test your tubes without charge and right in your own parlor.' And bear in mind the establishing of a friendly complement of tubes is, or should be, just the entering wedge to the establishing of a friendly and personal relationship that may lead to the sale of a new set or some other piece of electrical apparatus.

"We cannot emphasize the thought too strongly; make more calls this year. And every time the front door is opened to you—*Test Those Radio Tubes!*"

Loss Leaders Out Says Johnson

A ten per cent allowance for wages of store labor has been set by General Johnson, NRA Administrator, to be added to the minimum cost of an article before fixing the retail price. Radio and Electrical stores operate under the general retail code, and are affected by this ruling. The order became effective April 21, fourteen days after signing.

Cost to the merchant was defined as the "actual net delivered cost, less discounts, or current replacement costs, whichever is lower." Ten per cent of this cost must be added to the price

A MOMENT WITH INSTITUTE OF RADIO SERVICE MEN

KEN. A. HATHAWAY, Executive Secretary, 510 N. Dearborn St., Chicago, Ill.

Perhaps you've noticed that several manufacturers are voluntarily directing the attention of service men to the Institute by the use of a logotype with the inscription, "Every radio service man should be a member of the Institute of Radio Service Men", in their advertising matter.

And, we would be remiss, were we to mention the foregoing without calling attention to the fact that Hygrade-Sylvania was the first manufacturer to grant this same kind of cooperation when it offered to devote a column of this valued paper for the use of the Institute each month.

There have been several additions to the list of broadcasting stations cooperating with the Institute in its cooperative industry selling program. Others are to be added shortly. The National Association of Broadcasters is collaborating with the Institute in its campaign designed to maintain the maximum level of listening audience at all times.

Important Announcement

Rochester Convention, Hotel Seneca, Rochester, N. Y. September 16, 17, 18.

Eastern Convention and Exhibition, Hotel Pennsylvania, New York City, October 19, 20, and 21.

A recent meeting of the Chicago Section was given over to a technical exhibit of auto radio in which manufacturers or distributors supplied technical representatives to discuss their products from the service angle. More than 200 service men attended the evening session.

More than 700 service men attended a meeting of the New York Section on March 26 at which time Jerry Golten, Service Engineer for Stewart Warner conducted a Service School on Stewart Warner sets. The small ball room at the Hotel Pennsylvania was filled to capacity, and the meeting lasted from eight until nearly midnight. This is the third such meeting that Jerry has conducted, the first at Rochester, and the second at Cleveland. There is no doubt of the good that is obtained from service schools of this type. More of them are being arranged through the office of the Institute.

The Midwest Section of the Institute with headquarters at Belleville, Illinois, is planning a banquet in conjunction with a technical lecture, the affair to be held at the Hotel Belleville. This

group is one of the most recent additions to the Institute family, having been formed last in February.

There is a renewed supply of the pamphlet, "Gentlemen Ride the Cushions", on hand in the office of the Institute. If you want a copy of this pamphlet, simply send a request to the office of the Institute at the address given at the head of this column.

The work of organization of the 20th Region of the Institute with Rochester as the Key Section is proceeding as rapidly as possible. Coincidental with the development of the 20th Region, preparations are being made to establish the 2nd, the 19th, and the 19th Regions with New York, Chicago, and Cleveland as the Key Sections, respectively. The establishment of the Regions will complete the organization of the Institute.

The new Certificate of Membership being distributed to the members in good standing is meeting with high favor among the membership. The Certificate is beautifully designed, printed in two colors, with a border prepared for the exclusive use of the Institute by the American Bank Note Company.

It will be very much worth while for every service man within commuting distance of New York City to attend the meeting of the New York Section of IRSM at Hotel Pennsylvania on May 15. George C. Connor, Hygrade Sylvania Resident Engineer will speak on Auto Radio Installation and Servicing, a subject on which he is an authority, both in theory and practical experience.

And then there is the newly designed decalcomania for use on windows, windshields, test kits, and other places, which supercedes the one that has been used for the past two years.

The work of providing enforceable technical standards in the radio service industry is making excellent progress. It is highly probable that there may be some important news on this matter in the next issue.

QUESTIONS AND ANSWERS

Question—I have heard that it is possible to get 10 to 15 watts from the Type 42 tubes. Is this possible and, if so, how can it be done?

Answer—A pair of 42 or 2A5 tubes operating in push-pull triode operation will deliver 10 to 15 watts power output with low distortion. For triode operation, the screen is tied to the plate at the socket. The output tubes operate over-biased, therefore a driver tube is required to supply the power. The driver can be either a 42 or 2A5 operating as a triode with a plate voltage of 250 volts and a negative grid bias of 20 volts. The two push-pull tubes should have 350 volts on the plates and a negative grid bias of 38 volts. For additional operating conditions and characteristics refer to a late Sylvania Characteristic Chart, obtainable on request.

Question—What is the tube type intended for battery operation, as mentioned in your column "A Chat With Roger Wise"? Can it be used in place of any other tube now in use?

Answer—The tube you have reference to is Type 106, designed especially to operate satisfactorily over frequencies up to 20-24 megacycles, providing sufficient coil and circuit design is followed. It is a five grid electron-coupled detector oscillator tube with a high conversion gain, being similar to Type 1A6. The interchanging of Type 1A6 with Type 106 is recommended only in circuits where the ballast lamp or filament series resistor can be changed to accommodate the extra 0.06 ampere filament drain required by Type 106.

Question—I want to use a .3 ampere voltage doubler tube, such as Type 25Z5, in a circuit that I am working on but I find that the 25Z5 has a maximum current rating of only 100 milliamperes. My circuit will require at least 150 milliamperes. What have you in a higher output current tube similar to Type 25Z5?

Answer—We would suggest that you use two Type 25Z5 voltage doubler tubes operating in parallel. By this arrangement

We assume that you intend using a series hook-up in your heater circuit. If this is the case, the use of an extra 25Z5 will be advantageous in that the required series resistor in the heater circuit can be reduced considerably.

Question—How can I replace the AC-222's in a receiver that uses these tubes? I understand that this tube has been discontinued and would like to know if any tube has taken its place.

Answer—The AC-222 was the original screen grid AC operated tube and was similar to the present Type 24A tube. In practically all cases the new 24A will replace the AC-222 without any circuit changes. It is possible that the new 24A tubes will cause the receiver to oscillate. If this happens it will be necessary to re-neutralize the receiver and possibly use grid suppressors, or some similar method to overcome the oscillation.

Question—What Sylvania tube will replace the BR rectifier tube in auto "B" units?

Answer—It is impossible to directly replace the BR rectifier tube with a Sylvania rectifier tube, but if you desire to make wiring changes it will be possible to use the Sylvania Type IV tube. The Type BR is a cold rectifier tube using no filament, therefore it will be necessary to wire filament voltage to the large prong on the rectifier socket when using a Type IV. The two original wires on these large prongs should be moved over to the adjacent socket prongs since these are the connections to the anode and cathode elements of the rectifier. No other changes are required to adopt the use of the IV.

Question—Do the tubes in the new dome style bulbs have the same characteristics as when in the old style bulbs?

Answer—The characteristics of the older type tubes in the new dome shape bulbs remain practically the same. Where changes have been made in characteristics, they were

SERVICE EXCHANGE

Dynamic Speaker—Centering Voice Coil Without Removing Set to Workshop. Remove speaker from cabinet and disconnect voice coil wires from transformer and in place of these connect transformer to any of the AC heater sockets. Lay speaker down level cone upwards, and slacken spider bolt. Now switch on set and a continuous frequency note of 50 or 60 cycle will be reproduced. While this is vibrating the coil, tighten up spider bolt again, and unless the trouble is caused by the cone being warped, everything should be O. K. S. Haden, Liverpool, England.

Bosch Model 58—Bad hum, checking all parts thoroughly, I found that the hum could be cleared by tightening securely all bolts in casing and core of the power transformer.

Clifford Van Winkle, Passaic, N. J.

Atwater Kent Model 165—When the tone control is switched from one position to another a very undesirable noise emanates from the speaker. This is due to the weak contact spring in the control and can be easily remedied by removing the chassis and with a pair of pliers pull straight out on the control arm and wrap one turn of No. 22 gauge wire between the shoulder and the split washer. This acts as an additional washer thus tightening the contact arm and eliminating this undesirable noise. F. C. Underwood, Jr., Quitman, Ga.

Crosley—Hum in older Crosley models. Remove Mershon Condensers from chassis and shake for several minutes. This will often clear up the trouble.

R. P. Haviland, Warrenton, Mo.

Phono-Radio Combinations—The damping rubbers in the pickup should be replaced every year. This is a neglected source of income.

R. P. Haviland, Warrenton, Ohio.

Victor R15—When sets of this model cut on and off when tuned across the dial be sure that the chassis is not bound up in the cabinet. This chassis is very flexible and the condenser gang shorts out if the chassis is not in the proper position.

John F. Bivins, High Point, N. C.

U. S. Radio 700 (7 Tube)—Oscillation. First try new Sylvania 57 and 58 tubes. I have stopped this entirely in this way. If set had been tampered with, and new tubes do not stop trouble and condenser checks O. K., coupling between plate and grid leads may cause oscillation. Separate and push toward chassis. All tubes must be perfectly shielded.

Ted Love, Trenton, Mo.

Brunswick Models S14-S21-S3—Volume dropping off sometimes not for a day and sometimes every minute. Turning up volume control or banging set would stop the trouble. Everything tested O. K. but on replacing the .001 condenser between the grid and the plate of the 24 det. tube the trouble was cleared up. This condenser would open intermittently.

H. G. Martin, Toronto, Ontario.

Leaky Line Voltage Condenser—A leaky line voltage condenser will sometimes cause a hum in some models of G M receivers. A quick repair is to disconnect ground which stops the hum. Then insert small condenser of .01 or so in series with the ground. For a permanent repair either cut out or replace the condenser.

Jacob Dubinsky, Bronx, N. Y.

Speaker Fields—While working with monitors employing dynamic speakers I temporarily magnetized a good watch through magnetization of its steel parts in the flux thrown out by the field windings of the speakers.

The watch was demagnetized by tying it to a string, which was twisted tightly. The watch was suspended by the string and allowed to revolve near a strong magnet. While it was still revolving it was moved out of the magnetic field.

George B. Hart, Norwood, Ohio.

Stewart Warner 950 Series—An intermittent buzzing and crackling accompanied by periods of no reception will invariably be traced to the 20,000 ohm, 2 watt carbon screen grid resistor. Replace with a 5 watt resistor to insure against future troubles from this source.

barely touches the resistance. If reception is not loud unsolder lead from middle lug (antenna lead) and solder the RF coil lead in volume control. This will increase volume and bring in more stations.

Harry Penrod, Jr., Baltimore, Md.

Silver Marshall "R"—Set would change tone slightly on a powerful local signal or fade out on a weak one. Indicator on tuning meter would swing off scale on left. The trouble was worse on weak signals. Trouble did not occur when tube shield removed altho this produced a thumping sound, not very bad. Trouble was due to oscillation in two i. f. tubes. Placing a 1500 ohm resistor in series with plates, increasing plate and cathode bypass condensers from .1 to .25 mfd, cured trouble.

Anthony Hitzhammer, Chicago, Ill.

R. C. A. 18—Noisy Volume Control. This model, and many later model RCA receivers, uses a wire wound potentiometer with porcelain base. When they become noisy, cleaning the wire wound strip and slider contact have no effect, as the trouble will be found in the center, at the shaft, where a bronze "spider" rotates on a disc extended from one of the terminals. This can be cleaned, clearing up the trouble, but it is writer's opinion that the repair is only temporary, and a new control should be recommended.

T. R. Bailey, Oconto Falls, Wis.

Grebe Model 89 Super—I've found that by substituting a .01 mfd. condenser for the .0005 mfd. found between the antenna and the first R. F. Coil an appreciable change in sensitivity and volume will result. This appears to have no effect on the volume control selectivity.

Ray E. P. Abbott, Bethlehem, Pa.

Philco 90—Models using one 47 Tube. Greatly reduced volume, distortion or cutting off is sometimes due to the 47 tube oscillating. This can be checked with a plate millimeter as the plate current goes up to 50 or 60 mls. The remedy is to reduce the 47 screen voltage with a 1000-5000 resistor. This trouble has also shown up in a Kolster K-60.

Clarence Wagner, Hornell, N. Y.

Kolster 60, 70, 80—No reception except weak signal from locals and their heterodynes, and these signals off scale about 40 KC on dial. Cause—open shunt condenser across oscillator condenser value .00075. If you don't happen to have this value handy use one .0005 and one .00025 connected in parallel. This is, of course, the same value.

Jack Irish, West Hartford, Conn.

Gulbransen 161—This set had low volume and had a continual "bubble" or frying noise when in operation. This circuit has a resistance couples stage feeding from the 27 detector being coupled by a .006 condenser. The condenser was found to be leaking. Quality can be somewhat improved too if the condenser is replaced with an .01 mfd. unit.

Leo Zimmer, Canisteo, N. Y.

Auto Hints Book Now Ready

That new handy booklet of Auto Service Hints is ready for you, as we promised. Thanks to the many service men who came across in grand style in answer to our request last month, we have been able to get together a fine collection of service and installation hints, just in time for the spring and summer rush. We have added several pages of technical information by Sylvania engineers, blank pages for notes, and put it all into a sturdy little book that you can carry in your pocket.

We might add that even engineers are grateful for practical information on the comparatively new subject of auto radio service. Several of the hints have already been used to iron out stubborn kinks in sets belonging to Hygrade-Sylvanians.

It's free. Write for your copy of Sylvania Auto Hints Booklet today, and we'll get it to you as soon as it's humanly possible. We mailed out ten thousand copies of the Service Hints Booklet within ten days after it was offered, and we expect as many requests for the new booklet, so please don't be too impatient if it doesn't reach you by

A CURE FOR CUT-PRICE BUGS

What sounds like an effective method of handling customers who call in a service man, and then say "I can buy tubes cheaper down town" is used by L. D. Gordon, Tyler, Texas.

He writes "The usual service call charge here is \$1.00. For the last two years our shop has put the following policy into effect in case the trouble is found to be bad tubes only:

For one tube, 75 cents plus cost of the tube.

Two tubes, 50 cents plus cost of the tubes.

Three tubes, 25 cents plus cost of the tubes.

Four or more, no service charge.

"The way we handle the price situation is this:

"If the customer wants to buy bargain tubes, we carefully explain the advantages of standard brand tubes in better reception and longer life. Then if we fail to convince we collect our regular service call charge and let him figure up what he saves by buying tubes at the cut price store. A little work with a pencil and paper will show him that he is actually losing money.

"For example, one of these customers very recently had three bad 24s. It worked like this:

Cut price (verified) 3 24's	\$ 2.94*
My service charge	1.00
	\$ 3.94
My price	\$ 3.60
Service	.25
	\$ 3.85

"It took him five days to discover that he had lost money by buying the 'cheap' tubes, and less time than that to discover that he had inferior tubes. The next time he'll buy from me, and forget about the half-price bug. This may be all wrong, but we can't find any holes in it."

*Editor's Note—These prices are standard for a large and well-known chain, and are somewhat higher than the usual cut-price competition which must be met by service men in the larger cities. However, there seems to be a glimmer of hope that the 39 cent and 49 cent tubes are on their way out.

Too Much Kindness

About seven years ago the first shipment of Sylvania AC tubes was received by Hopkin Brothers in Philadelphia. A few weeks ago a complete set of these tubes was discovered, still in service. "The owner," writes N. M. Sewell of Hopkin Brothers, "has taken wonderful care of these veterans. Every month since he has had them he has taken them from their sockets and polished the prongs with emery cloth. Recently he brought them in to inquire the purpose of the small wires showing through the sides of the prongs. Examination showed that he had polished them so often to make sure of good contact that the brass is now worn completely through to the lead wires. He was advised to pension the veterans and recruit a new set of Sylvania's, which he promised to do eventually, though he claims these tubes still have lots of service left in them"

H. D. TAYLOR CO., LAUNCHES SALES DRIVE



A pleasant interlude in the two day sales Clinic held by the sales force of H. D. Taylor Company, Buffalo, N. Y. In the immediate foreground are Rex Westerling, captain of the leading team in the Hygrade Lamp sales drive, Taylor Wettlaufer, and E. E. Healy, Hygrade Sylvania Sales representative. Toward the rear are Dr. C. E. Wettlaufer, President, Adon H. Browell, Vice President and General Manager, John Clifford, Manager of the Radio Department. Also present are the managers of various other sales departments and the entire road and inside sales force of the company. Missing, because of illness, is Waldo Rice, Lamp Buyer and Manager of the Laundry and Janitor Supplies Department.

Hygrade Sylvania is proud to be represented by the H. D. Taylor Company. One of the oldest jobbers of Sylvania Tubes, they received, in 1921, part of the first shipment of tubes released from the Sylvania factory at Emporium, and have been exclusively Sylvania ever since. Beginning in 1833, in the locksmith shop of Dennis Taylor, the business gradually expanded into general wholesale merchandising, passing to the founder's son, Henry Dennis Taylor, then to the management of George Finley, and finally to Dr. C. E. Wettlaufer, husband of the founder's granddaughter, who is now President and General Manager. On the death of George Finley his son Albert became sales manager, and in December 1933, Adon C. Browell took this position, which he now holds. The company does a large wholesale business in New York State, Pennsylvania and Ohio.

Sales of Hygrade Lamps by the H. D. Taylor Company increased 63 per cent in January and February 1934 over the same period in 1933. During March, which was the first of the three months' special sales campaign now in progress, 51 lamp contracts, each with order attached were brought in by H. D. Taylor lamp salesmen, and, writes Mr. Brownell, "the campaign is promising even greater results during the rest of the year."

Sylvania Tubes Satisfy Siam

หลอด ซิลวาเนีย ของ อเมริกา

ใช้ A.C.

DC/AC และ

Sylvania แอมเพอ

ซิลวาเนีย แอมเพอ

หลอด ซิลวาเนีย

ฟาร์อีสต์ เติม ราดิ

ถนน เจริญกรุง

This strange-looking advertisement for Sylvania Radio Tubes is perfectly intelligible to the readers of the Siam Rashdra. Far Eastern Radio, Bangkok, Sylvania tube representative in Siam, is the advertiser. The Sunday edition of the Siam Rashdra, from which the quarter page ad was clipped, is the same size as Sylvania News, and contains sixteen pages of news, stories, and advertisements, none of which we could read, though we recognized a tire ad.

Does Not Get Filed in "B"

R. B. Whittaker, Houston, Texas, offers a suggestion for dealers and service men who mail advertisements to customers and prospects. "I find that letters advertising my radio service are much more likely to be read if addressed in distinguished handwriting. This gives them a personal appearance and makes it much more probable that they will be opened and read, while the ordinary typewritten address says 'advertisement' too plainly, and results in the letters being tossed into the waste basket unopened. Of course, the message inside has to be interesting and forceful, but the most convincing sales letter in the world can't produce results if it isn't read."

WANT TO WRITE?

If you are interested in a suggestion to start correspondence between service men in various parts of the country, we'll be glad to cooperate.

James H. Sledd, of Haleyville, Alabama, who made the suggestion, feels that this would be a big help to service men in smaller communities who have little chance of contact with others in the profession, or of attending association meetings. He would like to hear from service men, and we can vouch for the fact that Mr. Sledd writes interesting letters and is a live wire service man.

Are there others who would like to be put on the correspondence list? If so, send in your names and addresses, and we'll publish them in the next issue of Sylvania News. After that, it will be up to you to carry on.

You Can't Keep Your Lamp And Use It Too

Voltage deserves more attention than it usually gets from lamp buyers and sellers, for voltage can shorten lamp life appreciably on the one hand, and on the other it can reduce materially the anticipated illumination and quality, in either event causing consumer dissatisfaction. What to do under such circumstances?

"Just so long as lamp life remains a fetish with uninformed lamp users, we shall have to combat the practice of using higher voltage lamps. It is by no means uncommon to find lamp buyers progressively raising the voltages of their lamps, starting with say 110 and going right on up to 130 volts, for the sole purpose of gaining lamp life.

"Meanwhile, of course, such buyers are only cheating themselves, for they are wasting a great deal of illumination. The higher the operating voltage with regard to the lamp voltage rating, the greater the illumination efficiency. Indeed, maximum illumination economy instead of just lamp economy—and it is illumination, after all, that is really being bought and sold—dictates that a lamp of the correct voltage for the average line voltage or, if anything, a bit lower than the average line voltage, be employed. The quality or brilliancy of the light is also improved by operating at rated voltage or slightly above.

"Standard Hygrade Lamp Bulbs are available in 110, 115, 120 volt ratings; and 125 and 130 volts on special order. Do not use lamps of voltage ratings above the average line voltage; and for real lighting efficiency, use lamps of a rated voltage just a trifle below the average line voltage."

Out For The Record

W. W. Brackenridge, of Harrison, Ohio, submits several entries for the Sylvania long-service record, drawn from his experience with his customers.

He writes, "It was in 1927 and 1928 that I first used Sylvania tubes. At that time I had many back orders on file for sets, and to make matters more difficult, the sets came through without the tubes, because of the tremendous demand. I frantically bought every make of tube I could secure, among them Sylvania. After sifting the chaff from the wheat I found that I had become better acquainted with one real top notch radio tube, and that was Sylvania.

"Today, six years later, one of my customers has a model 72 Majestic with three of the type 26 Sylvania still in use, and the set still gets plenty of distance.

"There is a Sylvania 220 A here in a 6D Kolster in constant use seven years, and still perfect. Also a Grebe SK4, sold in 1930, that was very hard on 280s. I replaced three or four in the first three months; I then put in a Sylvania 80, and today, four years later the old boy is still driving the set and tests as good as a new tube.

"Another customer has a 280 and two 26 Sylvania which have been in constant use for six years.

"With this experience, I know that there is no better tube in the world than Sylvania, and mighty few their equal."

COMPLETE SERVICE

HERE FOR SERVICE MEN



Mr. Sam Poncher (left) President, and the salesmen of the radio tube and parts department of Newark Electric Company, Chicago, which has recently joined the ranks of Sylvania jobbers. Service men in Chicago and vicinity will find a complete stock of radio parts and Sylvania

TO BURY—NOT TO MOURN

Not mourners, but all dressed up to lay away all doubt about the record year of business they expect in 1934 are these members of Erskine-Healy, Inc. of Rochester, N. Y., distributors of Hy-

TOP ROW: Ray F. Healy, Treasurer, William P. Ward, John Wiest and Anthony Scheible.

FRONT ROW: Wilbur Miller, Walter Biergiver, Carl



grade Lamps, Sylvania Tubes, Crosley radios and refrigerators, and various other electrical appliances. Reading from left to right, these "pall bearers" of the late depression are:



Baseball News in New Log

The summer edition of the Sylvania Radio Log is ready for your customers. Added feature is the baseball section with Major League schedules for 1934. The short wave station listing has been brought up to date and improved according to the suggestions of a nationally famous short wave club. The convenient and popular map listing of all North American radio stations, including Canada, Mexico and Cuba, is continued, as well as alphabetical listing of stations, and a map shows police broadcast areas in the United States, with wave lengths.

The dimensions are 4 by 6 inches, and there are 14 pages of radio information. Space for your imprint is provided on the front cover, and the cost is \$1.75 per hundred. This includes imprinting with your name, address and telephone number. If you prefer, logs will be supplied without imprinting, at the same price. Order through your Sylvania jobber, or direct from the Hygrade Sylvania Corporation, Emporium, Pa. Cash must accompany order.

Midget on the Way Out—What Do You Think?

Ever since the first "midget" radio was offered for sale, to be followed by regiments and platoons of imitations, improvements and developments, there has been an undercurrent of feeling that the little fellows have been the curse of the radio industry, and that the sooner they disappear, the better.

We do agree that a great many manufacturers and dealers went much too far in offering the midget set as equal in performance and quality to the high-priced receiver, and that they neglected many opportunities to sell an expensive receiver because the midgets practically sold themselves.

We do not agree that the midget ruined the radio market, or that the wise dealer will now refuse to offer them for sale. In fact, we believe that the midget opened a vastly wider market for sets, and kept interest in radio alive, at a crucial period, just as the small, inexpensive automobile kept the market going in that industry in the face of prophecies of a "saturated market" for the big expensive cars which only the wealthy could afford to purchase. You don't hear many people glooming about the evil influence of Fords and Chevrolts on auto sales.

It is our honest belief that the dealer who makes a study of the possibilities of his market will always find a place for the midget. If he caters to the prosperous, he will not begin his set sale by extolling the virtues of a set at \$19.95. His customers can afford and will buy the expensive set with all the latest refinements in appearance and performance.

However, he will not forget that there are many possibilities for the sale of second, third or fourth sets to these customers. Especially designed for this class of trade are the sets in boudoir colors, the Mickey Mouse, Three Little Pigs, and other nursery models, the novelty globe, chest and book sets. This dealer will have very little use for the lower price ranges, and would perhaps be foolish to carry them in stock.

For the great middle class are the many excellent medium priced consoles, the book-case, smoking table, and other furniture designs, and a careful selection of the novelties suitable for the living room.

If this customer is able to afford a second set, he will probably invest first in an auto radio. If he buys a second set for his home, it is likely to be in the lower price ranges. The "faddy" or extreme is a good thing to keep away from with this customer. He may buy

it, if he sees it, but he will tire of it quickly, with consequent loss of good will toward the dealer who "roped him in to buying it".

For the "hand to mouth" customer, whose wages barely cover his living expenses, the midget is the only safe sale. He will buy an expensive console, if he can get long-term credit, but every dealer has had unfortunate experiences with this type of sale. Sell him the midget, by showing him what it can do, and by avoiding comparisons which will show him what it can't do. Some day he may be more prosperous, and in the meantime he will be kept in contact with radio entertainment through the small set that he can afford now.

One warning! Demonstration of the difference in tone quality and performance is the only way to overcome the harm that has been done by injudicious advertising of the midget as an acceptable and satisfactory substitute for the better set. If you have a stubborn customer who insists that a midget is good enough, and you are sure that he can afford something better, don't argue. Show him the difference.

HIGH FIDELITY RECEPTION

Continued from Page One

pentodes with the addition of outer shields have contributed much to the means of reducing regeneration. In the RF and IF stages, and to a somewhat lesser degree in the remaining stages, it is very essential to employ high quality tubes. They must be free from such defects as intermittent short circuits, loose elements, high leakage paths, grid emission and gas. Any one of these may introduce disturbing noises detrimental to high quality reception.

A necessary prerequisite for the output circuit of the first detector and the IF circuits is proper design to insure the transmission of an adequate band of frequencies. This band must be at least twice as wide as the highest audio frequency which is to be reproduced in or to prevent the attenuation of the higher audio frequencies with a resulting loss in fidelity.

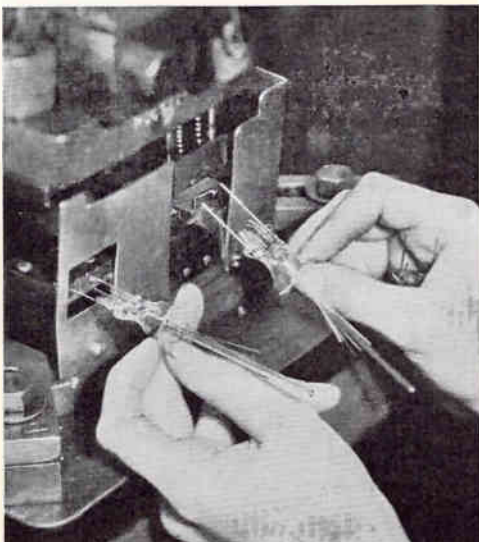
The second detector is liable to be a source of distortion when this circuit is poorly designed. However, by properly choosing circuit constants for the type of tube employed, the distortion may be reduced to a minimum. For diode detectors this requires an input transformer having the correct ratio for the IF amplifier in whose plate circuit it works. Of equal importance is the matching of the audio resistance of the diode network with its DC resistance. the RF filter must be sufficient to block any RF which might otherwise get through to the audio amplifier. At the same time it should not provide a low shunt impedance to the highest audio frequencies which are to be reproduced.

The audio frequency or output is often considered to be more closely associated with distortion than any other portion of the receiver circuit. This is not necessarily true since output stages can be designed which give adequate output with almost negligible distortion. In the past year or so real advances have been made both in output tubes and in the methods of employing them. It is considered essential for high fidelity reception to provide sufficient peak audio output so as to allow for the wide range of amplitudes which must be handled. This is especially true in the reproduction of programs such as offered by symphony orchestras. Finally, this power must be efficiently transformed into sound by means of a well designed output transformer and loud speaker. Much could be written on this latter unit alone, concerning those characteristics which are of outstanding importance in high quality reception. It is beyond the scope of this article to discuss this question in further detail.

Saved From Tax Raise

The radio industry has just escaped an increase in the 5 per cent excise tax on radio and phonograph apparatus. Termination in 1935 of this "nuisance" tax now seems probable, according to the RMA report. Efforts of the RMA to secure modification or repeal of the excise tax are being vigorously pursued.

Automatic Stem Punch Press



A close-up of one of the more delicate operations in the making of a Sylvania Radio Tube. As the stems are delivered from the automatic stem machine, die punch presses completely trim and form the stem wire, in two operations.

The Reasons For Blue Glow

Many inquiries are received relative to the blue glow which is present in a number of Sylvania Tubes. Most of these are based on the misunderstanding of the different types of glow that may be present in a tube. There are three different types of blue haze that may appear while tubes are in operation. They are classed as: Fluorescent glow; Mercury Vapor Haze; Gas.

The fluorescent glow is usually of violet color, and is noticeable around the inside surface of the glass bulb. This glow is a phenomenon caused by electronic bombardment taking place within the tube. This glow changes with the intensity of the signal and may at times become quite brilliant. Fluorescent glow has absolutely no effect on the operation of a receiver. In fact, tubes with this characteristic are particularly good as regards gas content.

Mercury vapor haze is a blue glow which is noticeable between the plate and filament in types 82 and 83 rectifier tubes. These are the only types of Sylvania receiving tubes in which this type of haze appears. The perfect operation of types 82 and 83 is dependent upon a mercury vapor which comes from free mercury that has been placed in the bulb during the exhaust period. Therefore this type of blue haze is in no way detrimental to the operation of these tubes.

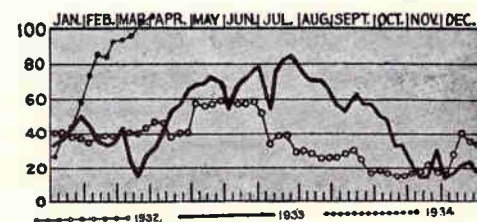
Gas is a blue haze which is usually confined to the vicinity of the plate and filament structure. Its presence, when of large content, affects the operation of a receiver to the extent that erratic performance is noticeable. Gassy tubes should always be replaced with new tubes.

Testing for the above conditions can be best accomplished by actual operation in a receiver. It is not necessary to test for the blue glow evident in types 82 and 83, since this is characteristic of these two tubes.

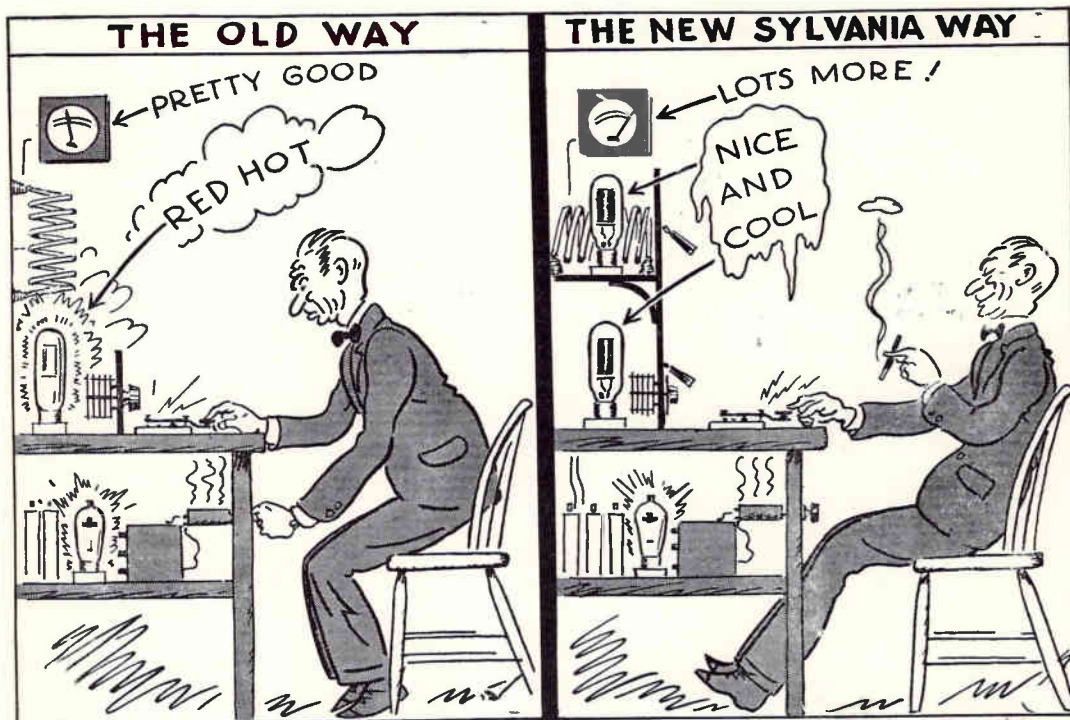
When in doubt as to the blue content of other types of tubes a sure test can be made by using a strong magnet next to the bulb. A gassy tube will not be affected

AUTO SALES GOING UP

Automobile production continues to increase, the output in the week ending March 24 being 81,906 units, compared with 79,673 the previous week, according to Cram's Estimates. This chart, prepared by the United States Department of Commerce, should interest every dealer who handles auto radio. Keep in touch with the automobile salesman in your locality. In most cases



they will be willing to furnish you the names of those to whom they have sold cars. Then go after these live prospects by mail, by telephone, and most important of all, by road demonstration. You probably will not make a sale for every demonstration, but we're willing to predict that you'll make enough to send your sales graph to a new high point.



SYLVANIA GRAPHITE ANODE TUBES RUN COOL YET DISSIPATE GREATER POWER

AMATEURS the country over, yes, even the world over are acclaiming SYLVANIA GRAPHITE ANODE TUBES. They run "cool as cucumbers" . . . no red-hot plates . . . yet they put more power into the antenna without your having to "push" them. What this all means is that you get more power output with the same plate power you have been using, and with a greatly lengthened tube life. In a nut shell, improved performance. . . lower cost. Every

uses the GRAPHITE ANODE construction. Do not confuse SYLVANIA GRAPHITE ANODE tubes with the garden variety of carbon plate tubes. There is distinct difference. SYLVANIA GRAPHITE ANODES receive a special treatment which eliminates the possibility of amorphous carbon and hydrocarbons being scattered on the grid, filament, press and spacers during bombardment. Sylvania transmitting tubes receive a very thorough and exacting exhaust which brings them mighty close to a "perfect"