



the PHILCO SERVICEMAN

VOL. 24 NO. 1

JANUARY, 1956

A WORD TO THE
WISE
ON PAGE 2!

PHILCO COLOR TV

SERVICE SCHOOL SET FOR NATIONAL COVERAGE



THE BIG NEWS in electronics for '56 is Philco's Color Television Training School, sponsored by Philco Factory-Supervised Service for its technician membership on a national basis.

In a recent interview granted to one of the leading trade magazines, Frank D. Whitten, Manager of Electronic Service, revealed the history, development and planning that have culminated in the most prac-

tical color service training now available. We'd like to adapt Frank's remarks in that article to bring you up to date on the progress being made to get this course into your hands.

(continued on page 5)

GOOD ADVICE NEVER GROWS OLD

BACK IN the early thirties, the single most important factor in successful service, aside from technical skills, was the impression made on the customer. From those early days of radio to today, reams of advice have been written about neatness,

it must be unpacked in the living room, spread a heavy cover on the floor. Then you can unpack and assemble the instrument on this cover and avoid littering the home with splinters and packing material.

Place your tool box on the floor—

fully so that it cannot fall off its stand and scorch the rug or char the floor.

When you are obliged to move furniture, be very careful to mar neither the furniture nor the floor. You would be wise to check the position of articles in the room before you begin to work. Thus, you can decide which articles you can move to safety so that you do not knock them over accidentally.

The proper performance of the receiver requires that the customer know how to adjust the operating controls and how to recognize a good picture. You should also explain the operation of each control and then hand the customer his user's instructions for reference. Avoid mentioning interference problems unless an interference pattern is present and be especially careful to avoid giving a lecture on the theory and principles of television operation just to show how much you know. Professional men always explain technical matters



WHO WOULD GET THE CALL AGAIN IF THIS WERE YOUR HOME?

courtesy, cleanliness and professional attitude. With but few changes for the new products and more complex service techniques involved, that advice is much the same as it was 25 years ago. Your general appearance still determines to a large extent whether your services will be in demand or used only as a last resort.

In keeping with your personal appearance, your work in the customer's home should always be done carefully and neatly. Your customer's home is his most valuable possession. He has purchased a television receiver to improve his home and to provide increased pleasure for family and friends. Any damage which he can trace to your careless workmanship will neither be overlooked nor forgotten. It may become the basis of a claim for the cost of repairs, or at least, the customer will remember you every time he looks at the set, and not too kindly at that.

For that reason unpack the receiver on the porch or in the basement. If



never on the furniture. Keep tools in an orderly arrangement in the box, not scattered over the floor. Put a cloth under your tool box so that it cannot soil the rug or scratch the floor. Place the soldering iron care-

simply and briefly.

In making conversation with a customer, avoid any mention of politics, religion or obvious personal matters. More ill will has been cre-

(continued on page 5)

Copyright, 1955, PHILCO CORPORATION

Reproduction of any material within this publication is prohibited without the written consent of the copyright owner, PHILCO CORPORATION.

Locating



Gassy Tubes

This is the third and final installment in the series of articles on gassy tubes. A discussion of the suggested test methods used to locate gassy tubes follows.

Test Methods

Since positive ions collect around the control grid of a gassy tube, a "gas current" flows from the cathode around the grid circuit, to the grid. If there is a fairly high resistance in the grid circuit, the gas current produces a voltage drop across this resistance, with positive at the grid end and negative at the cathode end, as shown in Figure 1. Hence, the gas current produces a potential whose polarity is opposite that of the grid bias, thus canceling a part of the negative grid bias.

If the tube is in a resistance-coupled audio circuit, like the one in Figure 1, the test for gas is made by connecting the 20,000-ohms-per-volt voltmeter across the grid leak, with

the positive lead at the grid end. A low voltage range should be used. The meter can then indicate the voltage drop caused by gas current, and if any is found, the tube is discarded. There is only one hitch in this scheme—a leaky coupling condenser from the previous stage can cause the same kind of positive potential to develop across the grid resistor. So we can do either of two things: (1) try a new tube in the socket; (2) if the new tube is not available, cut the lead to the coupling condenser to see if this eliminates the positive voltage.

Therefore, we should make further checks to pinpoint the trouble. There are several ways to do this: (1) if a new tube is available, we can substitute it for the suspected tube, to see if the positive voltage reading disappears; (2) if a new tube is not on hand, we can observe the voltmeter reading with the suspected tube re-

moved from the socket, provided that the set does not have series-wired filaments; (3) we can cut the lead to the coupling condenser, and note the effect on the voltmeter reading.

If it is necessary to test for gas effect with a 1000-ohms-per-voltmeter in a circuit similar to that shown in Figure 1, a different technique should be used. The set should be put into operation with the voltmeter connected across the cathode resistor (Figure 1). In this position the meter records the voltage drop which is produced mainly by the plate current of the tube. Naturally the amount of voltage found at this point is also affected by gas current flowing in the grid circuit. However, the emission quality of the tube also affects the amount of cathode voltage present, so the best way to check for gas is to observe the meter for any gradual change in voltage that takes place after the initial warm-up period. If the voltage reading increases or decreases as the set continues to operate, this can be taken as an indication that gas ionization is present. However, the possibility of a leaky coupling condenser should be checked by cutting the lead to this condenser, to see if this causes any change in the voltage reading. It should also be kept in mind that a leaky cathode condenser is capable of causing a gradual change in the cathode voltage.

The method described above of checking for positive voltage across a grid resistor can be applied to a variety of amplifier circuits in which the grid resistor has a value of 50,000 ohms or more, and the resistor is not shared by another tube circuit. In cases where a grid resistor is common to two or three tubes, as in automatic-volume-control or automatic-gain-control circuits, the same principle can be applied to determine whether any of the controlled

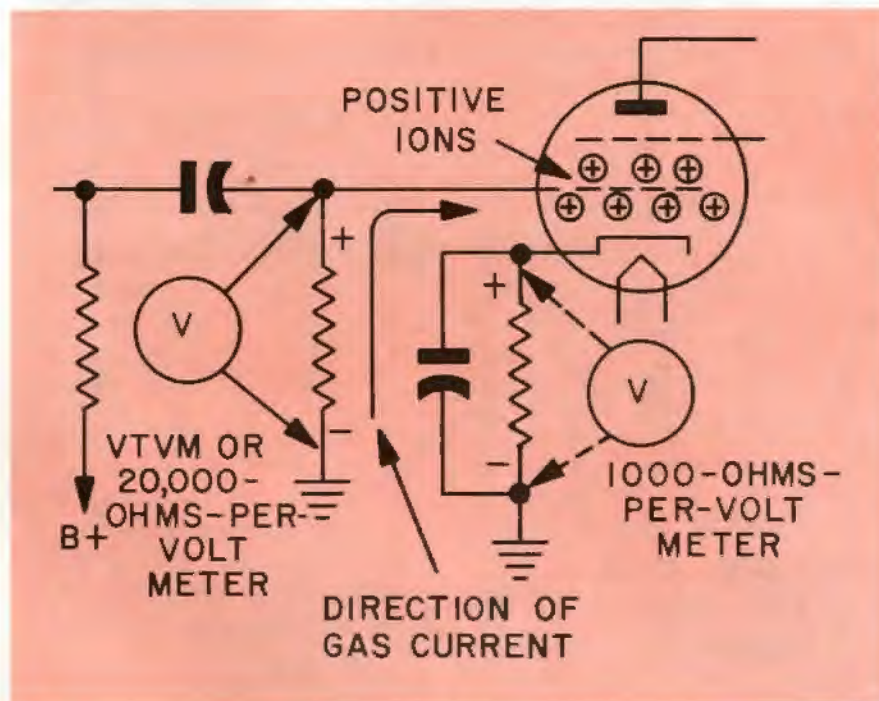


Figure 1

Methods of detecting gas ionization in a stage having high resistance in the grid circuit.

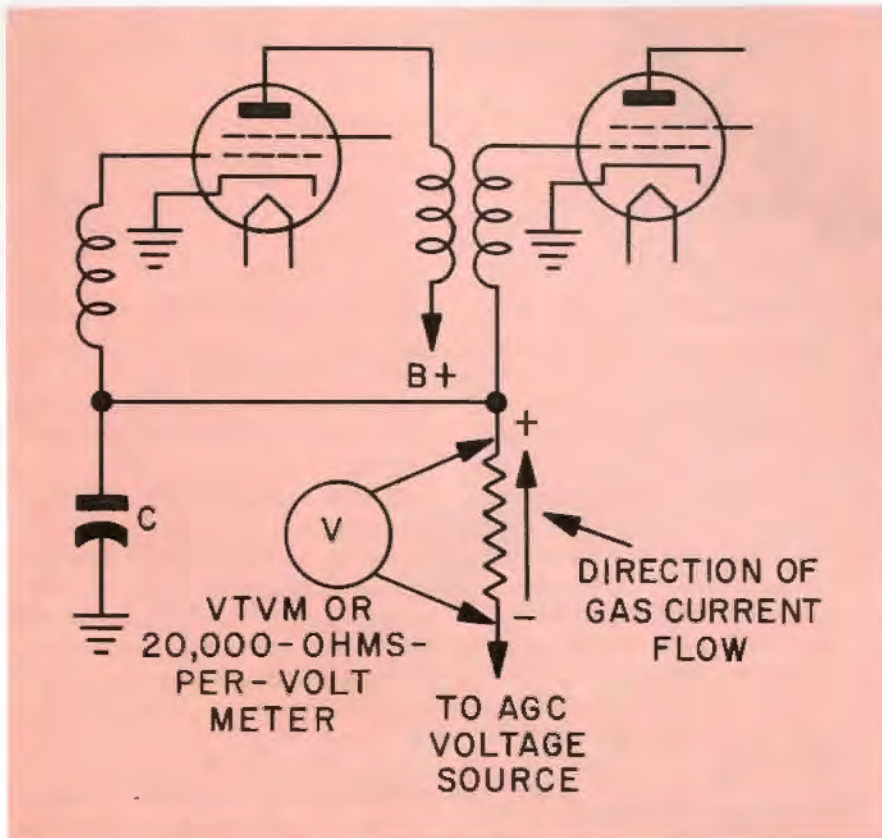


Figure 2
Method of detecting gas current due to ionization in one or more tubes
in a typical a-v-c or a-g-c circuit.

tubes has a gassy condition, but the test will not, of course, indicate directly which tube is at fault. For example, the grid circuits of two i-f amplifiers in an automatic-gain-control circuit may have an isolating resistor (a-g-c filter resistor) that is common to the two tubes, as shown in Figure 2. The check should be made with no receiver input signal, to avoid developing any appreciable a-g-c voltage. The presence of any positive voltage reading indicates gas ionization in one (or both) of the two amplifiers. The tube at fault can be found easily by substituting new tubes, one at a time. When making this test, it should be kept in mind that a leaky a-g-c filter condenser ("C" in Figure 2) can cause the same kind of voltage reading as gas ionization of the tubes.

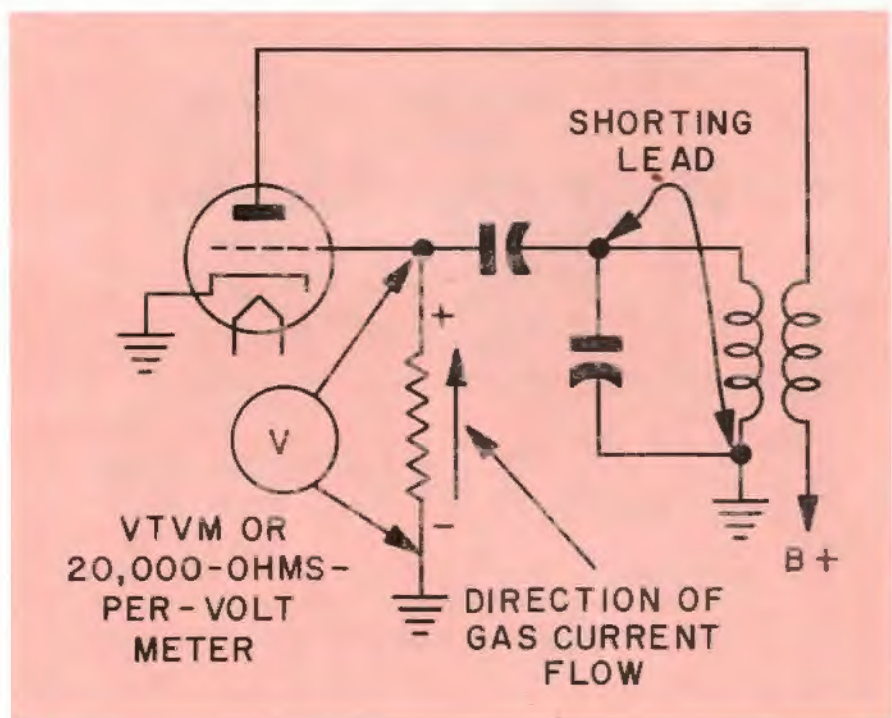
R-F oscillators can be checked for gassiness by stopping the oscillations and checking for positive voltage across the grid leak. Figure 3 shows a typical oscillator circuit, and the connections for making this check. If the tank circuit does not carry B+ voltage, stop oscillations by connecting a shorting lead (using a short

piece of wire) across the tank circuit. If the tank circuit does carry B+ voltage, shunt it with a .1- μ f. or .25- μ f. condenser. Then connect the

voltmeter across the grid leak and observe the voltage reading, if any. A positive grid voltage indicates gas ionization. Do not leave the tank circuit shorted out any longer than is necessary, because in most oscillator circuits the tube has no negative grid bias provided when it is not oscillating, and, consequently, the plate current is somewhat higher than normal.

When applying this test to high-frequency oscillators, such as those used in TV, it may be that a tubular paper condenser across the tank circuit will not prevent the oscillator from operating, because this type of condenser may act more like an inductance than a capacitance at high frequencies. If such is the case, the oscillations will be indicated by a negative voltage reading on the voltmeter. To stop the circuit from oscillating, try shunting the tank circuit with a small molded mica condenser such as 250 μ f.

With a little ingenuity, the same principles of testing explained above can be applied to almost any circuit in a radio or TV set. As in all testing, it is advisable to repeat any test wherein a new tube is substituted for an original one. It pays to double-check.



PHILCO COLOR TV SERVICE SCHOOL SET FOR NATIONAL COVERAGE

(Continued from page 1)

The Philco Color Television School is the result of intensive effort and research on color as it applies to you, the TV technician. Frank and the Electronic Educational Department, managed by Dick Hershey, have worked continuously over two years to bring this important program to its full effectiveness.

Groups of Distributor Service Managers are now taking this 40-hour course at factory headquarters in Philadelphia. These classes will continue until all distributor organizations have had one or more fully trained men. Upon graduation, these men will set up and duplicate these courses in their home territories for all qualified members of PFSS.

This course is the finest effort to date on Color TV. Seventeen specially prepared slide film and record sessions are used in the lecture portion of the program. Each lecture session will be followed by a period

of lab work in order that all technical aspects of Color TV can be thoroughly experienced through practical bench activity.

Instruction will cover every phase of color servicing, including installation, trouble shooting and alignment procedures. As a part of your electronic membership in PFSS you will receive the authoritative 160-page textbook, "Color Television—Simplified Theory and Service Techniques," containing over 200 illustrations and diagrams. This is your own personal copy, an invaluable reference which will be constantly used during your early color service training and work.

As new color receiver features and techniques develop, Philco will institute additional training courses to keep the members abreast of latest developments.

Your Color TV education will be highly specialized, considerably more complex than black and white. Yet, it

is expected that the 20,000 members who became highly skilled TV technicians through Philco's original monochrome school can successfully complete the color course. Classes for a maximum of 20 servicemen will be held. These small classes will make it possible to give you more personal instruction and give special attention to the problems of any individual in attendance.

It is important to note that this program will be carried out by invitation only to qualified Electronic or All Year 'Round members of PFSS.

In a nutshell, that is Philco's program of color education for its PFSS organization. Keep in touch with your Distributor Service Manager. Find out when he will start classes and make sure you are scheduled for participation in his color school.

When someone again asks you, "Are You Ready?" be sure you can say, "Yes, Color TV School, here I come!"

New Supervisor Format Bows This Month

Depending upon your membership, this mailing contains the first issue or issues of the new SUPERVISOR "twins." In answer to your many requests the original PHILCO SERVICE SUPERVISOR has been divided into two separate and distinct publications. Electronic members are now receiving a twelve-page publication exclusively on electronic subjects — television, home radio and auto radio. Appliance members benefit from their newly designed SUPERVISOR through twelve pages slanted to the products of their specialty — refrigeration, air conditioning and home laundry equipment.

By divisionalizing the SERVICE SUPERVISOR, non-applicable material has been eliminated, enabling you to streamline your reference material.

As usual, your comments will be appreciated. Let us know how you like the new system and if you have any suggestions that will improve it.

GOOD ADVICE NEVER GROWS OLD

(continued from page 2)

ated by such chance remarks than you can possibly imagine.

When you are making antenna installations, walk around the roof as little as possible to avoid causing leaks or ceiling cracks. Be sure to obtain permission before you drill into a chimney to mount the antenna. Be particularly careful to follow Underwriters' regulations and local ordinances in making installations. Before you drill any holes, survey the location thoroughly to avoid drilling through the roof or into such objects as furniture, radiators, or rugs. Make transmission lines slightly longer than is necessary so that the receiver can be moved aside when the room is being cleaned.

Before you leave the customer's home, check the receiver from all possible locations to make certain that the picture is clear from all positions. After you have completed your work be careful to leave the room and the outside of the house as neat and clean as they were before you did your

work. As you leave assure the customer of your desire to help him in any way in the future.

A positive attitude toward good working and housekeeping habits is not restricted merely to television service calls. Regardless of what product you are repairing or installing in the customer's home, the same rules apply.

Not one of the tips listed above require any extra effort on your part. They can be done quickly and easily while your customer receives a positive impression that cannot be duplicated as forcefully in any other way. Skill levels, in electronic and appliance servicing do not, as a rule, vary greatly among legitimate servicemen. Therefore, to set yourself a cut above your competitors, you have to provide the customer with something extra. In these days of quick, brisk efficiency, the customer welcomes a little personal courtesy, cleanliness and extra consideration. It's the kind of policy that can make your business the busiest in town!

BIG SERVICE DOINGS IN DIXIE



P FSS members in Roanoke, Virginia, and Bluefield, West Virginia, were treated to a bang-up service program recently, sponsored by their Philco Distributor, the Dixie Appliance Company, located in both cities.

Specifically the occasion was a series of service clinics on Philco's "D" line Television Receivers conducted by Philco SDR Joe Contino and Dixie Service Managers Mike Stupalsky (Bluefield) and Bill Sprouse (Roanoke). As a special feature of the program, members in attendance got an opportunity to thoroughly inspect one of Philco's Mobile Television Labs, and they went over the big van with a fine-tooth comb! In an interesting demonstration, man-made interference was created and its effect on competitive TV sets was shown. An explanation of how to improve picture quality on community antenna systems had special significance to servicemen in this area which is served by a number of these systems. The mobile lab generated a tremendous amount of interest in both cities since it is one of Philco's most important product performance tools and has been recognized as the most complete and compact type of equipment of its kind.

Not content to merely provide their members with an unusual program, the Dixie Appliance crew went one step further to put their meetings in the exceptional class, by arranging for a personal tour and inspection of Roanoke's newest radio-television



center, the beautiful WSLS (Shenandoah Life Stations) building.

This newly constructed center is one of the most fully equipped electronic broadcasting stations in this part of the country. Spearheaded by its towering transmission facilities high atop Poor Mountain (4,000 feet above sea level), WSLS transmits 316,000 watts of effective radiated power over 63

counties in three states, providing maximum coverage to a viewing audience of over 2,500,000.

Its main television studio boasts 2,000 square feet of floor space and the entire center contains 24,745 square feet of usable floor space. Ceilings of mineral acoustical tile and vinyl cork floors insure the quiet necessary for broadcasting. The building itself is an architectural show-place, with an exterior of rough-sawn Indiana limestone, polished granite columns and honed granite facade.

Servicemen on the tour were highly impressed with this vital part of the industry in which they play a prom-

inent part. The inner workings of a television station provide a fascinating experience for anyone, but especially those who earn their livelihood from the miracle that is electronics.

Their progressive approach to service and interesting side trips in the interest of better service are a tribute to Dixie Appliance Company and its management.

PHILCO SERVICE BINDERS FOR GREATER SHOP AND HOME SERVICE EFFICIENCY



Philco Service Binder
(3 post, 3 3/4 inch capacity)
PR-2157

Philco "Leather Web" Binder
(3 ring, 1-inch capacity) Blue
cover with gold imprint of
"Electronic Service Informa-
tion"

Some as above with green
cover and gold imprint of
"Appliance Service Informa-
tion"

PR-2687

PR-2688

HAVE YOU ever lost an important service manual or spec sheet just when it was needed most? If you've gone through that experience, you know how frustrating it can be. If you haven't—don't take the chance now!

Every page of the service information coming to you throughout this year contains vital data that will be put to use in practical application when servicing Philco color and black and white TV, refrigeration products and home laundry equipment. You can't afford to lose any of it, or the time it would take to replace it.

Your best insurance against loss of this type is the old standby Philco

Service Binder. These workhorse binders were designed specifically for the purpose of filing and protecting important service literature. With a capacity of three and three-quarter inches, you can really pack 'em with manuals and they'll lay flat even when fully packed. Over the years this convenient shop aid has been one of our all-time best sellers. Many veteran Philco organization members have literally dozens of these binders full of data covering the earliest vintage Philco radio models—a real tribute to their usefulness.

To cover your reference needs while on home service calls, two additional binders are available for

storing current information you want to carry around. Philco "Leather Web" Binders feature three rings, a one-inch capacity, light weight and real convenience for taking with you on the job. In the customer's home with the specific printed data at hand for the problem, you'll do a faster, more accurate job. Later, when this information has been absorbed to your satisfaction, it can be filed in the larger binders mentioned above, the ones that compose your permanent shop library.

To save yourself time and labor, order as many sets of these binders as you need from your local Philco Distributor.

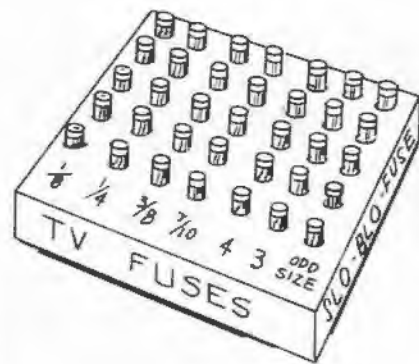
10 DOLLAR AWARD!

Handy TV Fuse Kit

A simple, but highly effective time-saver earns ten dollars for H. D. Grimm, 417 Nelson Street, Morton, Illinois, who operates out of the Radio Department of Home Oil Company, Morton.

"Just the thing for your TV tube kit. Take a small block of wood and

cut it to suitable size. Mark off and drill holes in a line, a little over the size of the television fuses. Make enough holes to give you a couple of fuses of all kinds to cover most TV sets. Mark the fuse size beside the fuse and your troubles searching for fuses are over. Really saves time on those service calls."



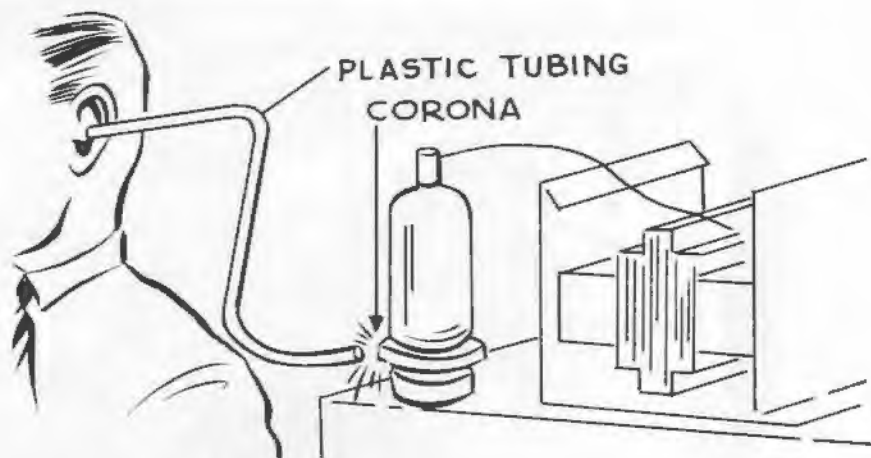
5 DOLLAR AWARD!

Plastic Tube Spots Corona

"Dr." Chester M. Luchessa, Albany Television Service, 1148 Solano Ave., Albany, California, uses a medical approach to rate our \$5.00 award for January.

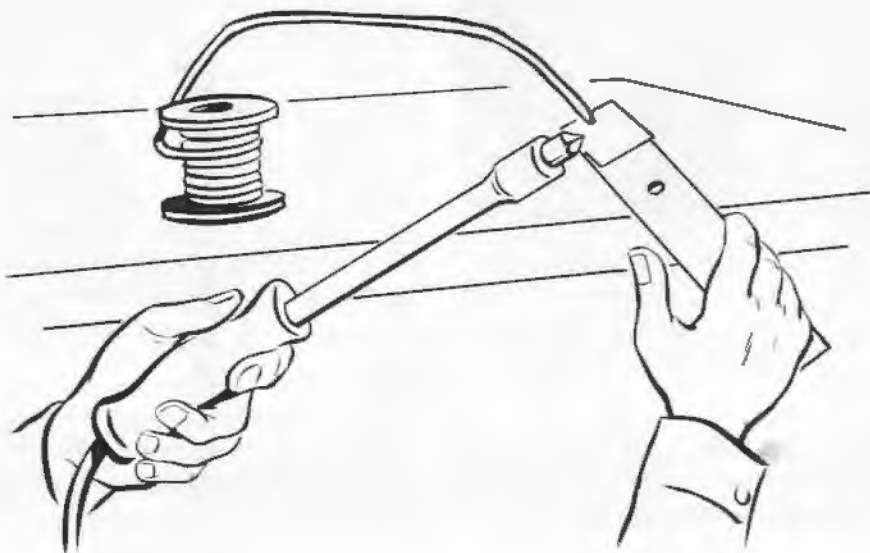
"Here is our method of running down elusive corona. Plastic tubing conducts the sound of corona discharge directly to the ear when it cannot be seen and thereby enables us to apply whatever method of elimination is best suited."

As you can see from the accompanying diagram, the makeshift "stethoscope" can be an effective tool for tracking down this hard-to-check symptom.



2.50 AWARD!

A Third Hand For Soldering



The \$2.50 award goes to H. F. MacDonald, Kodiak Cold Storage Company, far up in the frozen hinterlands of Kodiak, Alaska.

"You, too, can have a third hand for soldering operations. Here's how it's done. Set your solder spool or coil in front of you on your service bench and pull the loose end up, over, and down so that you can put your work up to the solder with one hand and hold your soldering iron in the other hand. It's really an easy way to solder phono plugs, etc."

In addition to figuring out new ways to save servicing time and operating a refrigeration sales and service setup in Kodiak, "Mac" keeps busy up in this rugged country with a full line of Fresh Fish, Frozen Fish, Mild Cured Salmon, Ice Lockers and Frozen Storage. We can imagine how well he must do in that frigid Alaskan weather!