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ELECTRONICS
RADIO
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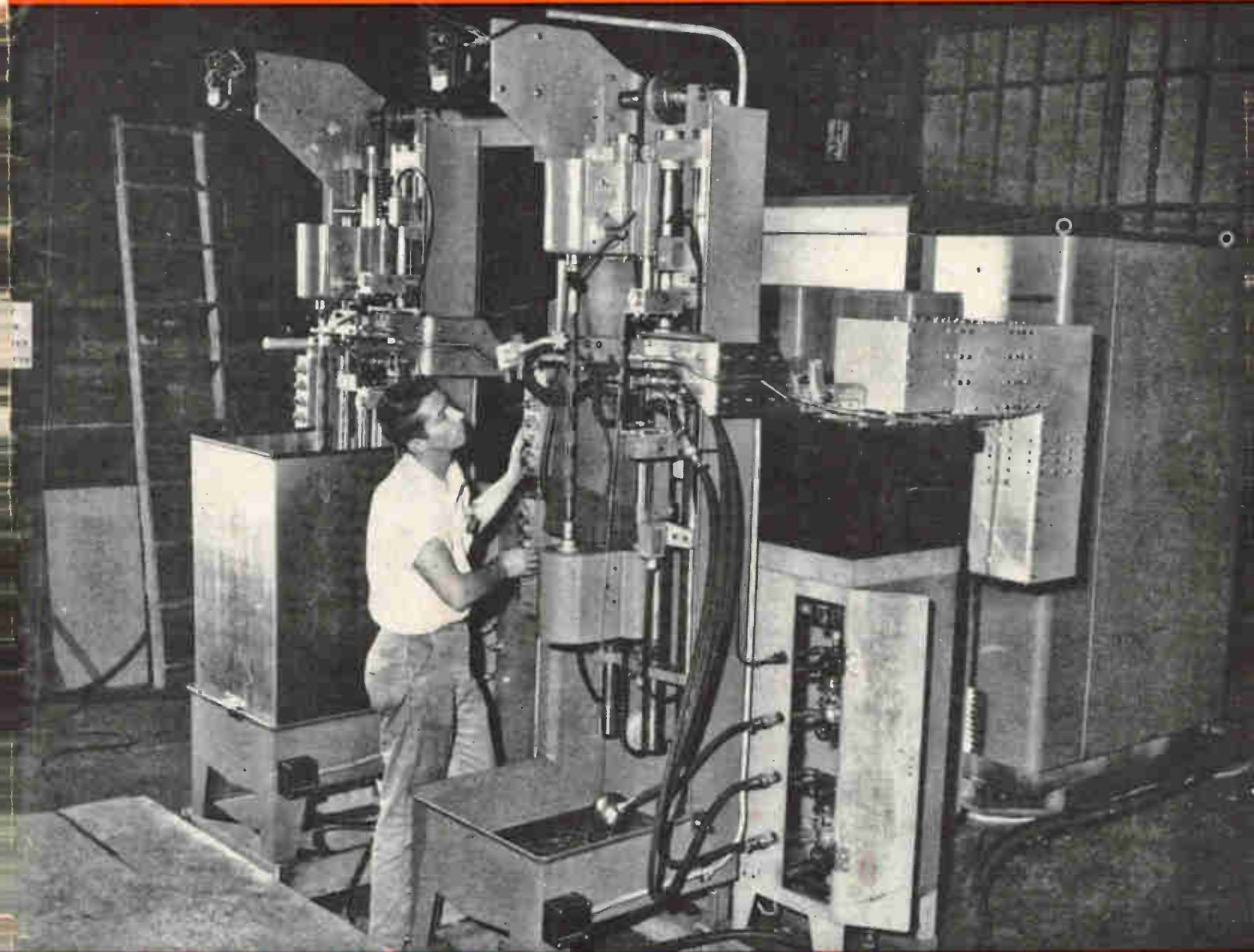
Service Management

**THE BUSINESS MAGAZINE OF THE
RADIO-ELECTRONICS SERVICE INDUSTRY**

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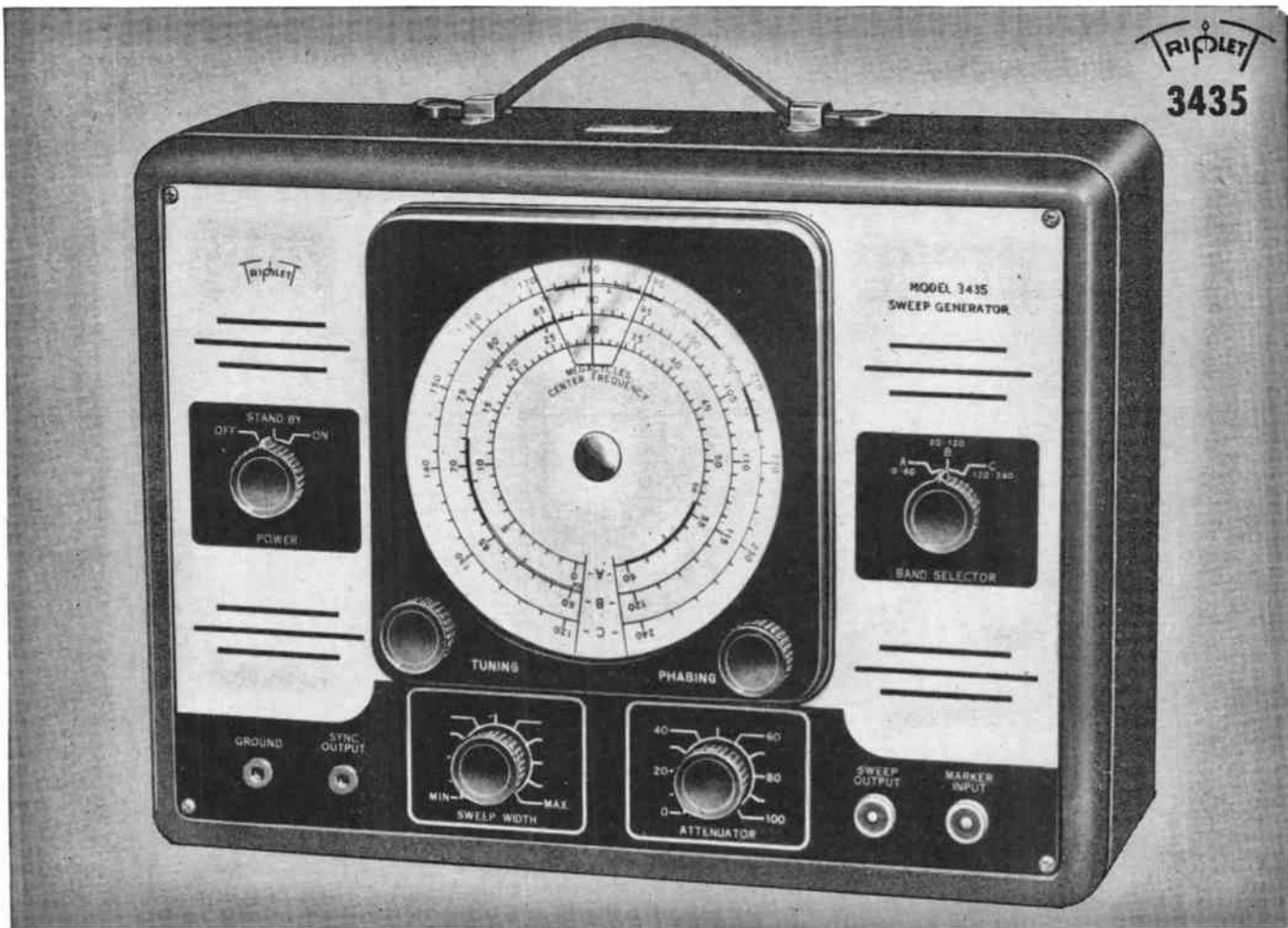
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Pyramid Electric Company announced the addition of three new representatives — **MIKE ROTH SALES COMPANY** of Cleveland, the **MERRILL FRANKLIN COMPANY** of Minneapolis and **THEODORE LOWELL** of St. Louis. . . . **M. A. De MATTEO** has been placed in charge of jobber sales for the Astron Sales Corporation. . . . **JACK ABEL** has joined the Insuline Corporation of America to take charge of the mechanical engineering department. . . . **KENNETH L. BROWN** has been appointed sales representative of Grayburne Corporation and Burlingame Associates. . . . Utah Radio Products, Inc., has appointed **GEORGE DAVIS SALES CO.** to represent it in Southern California and Arizona. . . . James B. Lansing Sound, Inc., has named the **A-N-B SPECIALTIES CO.** to represent it in Ohio, Western Pennsylvania and Kentucky. . . . The appointment of three representatives has been announced by Planet Manufacturing Corporation. . . . They are **ATCHESON & ADAMS** (Southeastern states), **HASTINGS SALES CO.** (Southern California) and **ROBERT MILSK COMPANY** (Michigan) . . . RCA Service Company has appointed **EDWARD STANKO** as manager of engineering. . . . **ROBERT A. PENFIELD** recently named Advertising Manager of the Picture Tube Division of Sylvania Electric Products, Inc. . . . **R. L. TRIPLETT**, president of the company that bears his name, celebrated his 50th year in the industry. . . . The Michigan Chapter of **NEDA** has elected **EMIL J. RISSI** as their president. . . . **J. CALVIN AFFLECK** has been named the new advertising manager of the receiver division, A. B. DuMont Laboratories, Inc. . . . **J. A. MILLING** recently named Executive Vice-President and General Manager of Howard W. Sams & Co., Inc. . . . Radio & Television Division of Westinghouse has announced the following appointments: **RICARDO MUNIZ** as Supt. of Manufacturing and **JAY M. ALLEN** as Manager of Manufacturing. . . . Pilot Radio Corporation has named **ADOLPH L. GROSS ASSOCIATES, INC.**, as exclusive national sales representatives. . . . **HENRY B. NELSON, JR.**, is the new District Sales Representative for the General Electric Tube Department in Cincinnati. . . . The new audio center of Arrow Electronics is to be managed by **CHARLES M. RAY**. . . . Permo, Inc., appointed the following manufacturer's representatives: **THE MAITLAND K. SMITH COMPANY** of Atlanta, **CROCKETT-LUND & COMPANY** of Dallas, and **THE J. W. MARSH COMPANY** of Los Angeles. . . . **WALTER E. STICKEL** has been appointed National Sales Manager of Hoffman Radio Corp. . . . Allied Radio Corporation announced the appointment of **E. C. WHARFIELD** as coordinator for sales of high-fidelity equipment and **ZOLE CSOLKOVITS** as coordinator for sale of Amateur equipment. . . .



Littelfuse 25th Anniversary

Herb Cornelius, Littelfuse sales manager, presents Ed Sundt, president, with silver cuff links to celebrate Littelfuse's 25th anniversary. Shown, left to right, Jack Hughes, vice-president; Tom

Blake, executive vice-president & treasurer; Bob Abbott, advertising manager; Mr. Sundt and Mr. Cornelius. More than 200 friends of Littelfuse attended the celebration in Chicago.



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WORLD'S LARGEST MANUFACTURER
OF TV ANTENNAS & ACCESSORIES



Radio Merchandise Sales Appoints Price

Adrian S. Price, formerly director of public relations for the Dexter Chemical Corporation, has been appointed director of public relations and advertising for Radio Merchandise Sales, Inc., New York 59, N. Y., according to an announcement by Sidney M. Pariser, president of RMS.

Mr. Price, a New York University graduate in marketing, has served as a marketing consultant and is a former advertising manager of Burndy Engineering Co., Inc.

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Here's a real lively "stopper" to attract attention to your place of business and emphasize the quality of your service. Colorful—bright red and two shades of blue. 15 inches high. Your jobber salesman will tell you how to get one.

Service Management

VOLUME 1, NUMBER 10

JULY, 1952

COVER PICTURE

TEXTILE MACHINE SPINDLES SURFACE HARDENED

Spindles for textile machines are selectively surface hardened in this Westinghouse twin-unit r-f induction-heating machine. While the operator loads or unloads one unit, the other is passing the heating coil along the other, heating only the intended areas.

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A satisfied customer is the greatest asset

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Industrial Electronics Maintenance

Industrial Electronics Offer Many Opportunities for the Technically Qualified Service Group

By I. J. KALUZNA

The application of electronic devices is expanding so rapidly in so many different directions that frequently it is impossible, or impractical for manufacturers of equipment to provide for adequate installation and maintenance.

Industrial electronics relates to all those electronic fields not directly associated with communication and entertainment. It relates to the problem of control, mixing, tabulation, sorting, heating, measurement, timing, air cleansing, etc.

The heavy advent of electronics in all sorts of factories is producing a need for a new type of professional man. This man, by the nature of his background and ability to think out problems, will hold an important place in the social status of the professions.

The progress of our time demands that we produce more goods faster and cheaper. Electronic equipment in the factories gives us the means for accomplishing all this. As we use more electronic devices, it becomes a problem of how to handle the up-keep of these specialized devices.

In searching the field, it becomes apparent that the greatest number of potential service engineers can be found among those who have engaged in radio, communication or television service.

Industrial electronics, if approached intelligently, and examined from an "end use" basis, resolves itself as being less complex than most TV circuits. The biggest stumbling blocks to successful industrial electronics service are the mental blocks put up by the technicians themselves. They can easily be overcome by good technicians through taking time to think about what the specific circuit has to do. In so analyzing any equipment, it will break down into a series of simple circuits.

The purpose of this article is to point up the opportunities in the industrial field; the specific area that appeals to you is the one you ought to follow. The independent service businessman can tackle the field in his area of operations by making a study of the type of industrial plants within his range of operations. Once he has determined the type of plants in his area, he then can determine the type of equipment that they would most likely use.

In considering the area, it is well to recognize that in plants employing more than 500 people, it is more economical for the plant to support a qualified technician on its regular staff. Your best domain of operation lies in plants where there are less than 500 people employed.

It is logical to expect to sell your service on a "retainer basis." This means that you are guaranteed so many dollars a month for which you are responsible for specific routine maintenance.

Electronic equipment for industrial service is designed to operate for extended periods of time without attention, or the presence of skilled personnel. Protective devices and special circuits minimize interruptions or serious failures. Some components and circuits require special maintenance but **all electronic equipment** requires periodic maintenance, if peak efficiency and trouble-free operation are to be attained.

Maintenance is primarily insurance for continued reliable operation of equipment. Work is done when the equipment is not in service so that it can be done carefully, according to a plan. This is the thing that can be sold to industrial users of equipment . . . **PREVENTIVE MAINTENANCE INSURANCE, PLUS WHOM TO CALL WHEN FAILURE OCCURS.**

A point about Tube Maintenance . . . It is not generally discussed, but tube cleanliness is important; particularly in sensitive or high impedance circuits, and in those employing high voltages or high frequencies.

Corrosion, dirt, or lint on the tube contacts may affect performance and tube life adversely in various ways. Cathode contacts usually carry larger currents than any other tube contacts. Hence a high resistance at this point reduces cathode voltage; local heating produces oxidation, which, in turn, increases contact resistance. The effect is cumulative; it causes erratic operation and may produce tube failure. In preventive maintenance — tube terminals are cleaned twice a year, or more often if equipment is in a dusty, and dirty location. Glass surfaces should be cleaned regularly with a cloth

dampened in alcohol. Dirt on the glass bulb may not affect performance, but in high voltage or high frequency applications, it may lead to localized heating of the glass and subsequent tube failure.

The service businessman, in recognizing the need for competent electronic service, will see that his future is well provided for because:



R-F Induction Heating

Millions of textile shuttle tips are hardened every year at the Charles A. Richardson Co., West Mansfield, Mass. by means of a Westinghouse 20 kw r-f generator which is fully automatic. The r-f generator makes possible "selective" hardening of twenty-four different sizes of shuttle tips at production rates up to 3000 per hour. Selective hardening, by means of exact and automatic process control, produces a high degree of hardness at the point where wear is greatest. The r-f generator replaces oil-fired carburizing furnaces that required 200 square feet of floor space in contrast to less than 30 square feet needed for the r-f generator. Use of r-f to harden shuttle tips increases production, reduces rejects and eliminates smoke and fumes. A process timer, built into the generator, controls positioning, heating and quenching cycles.

"OUR OPINION"

IN ITS annual report the RTMA Service Committee outlined the plan it has submitted to the Executive Set Committee of the Association for improving set servicing practices.

The basic principle of the plan is to encourage set distributors to organize the major segments of the industry into local and regional groups for the purpose of carrying out specific programs within these territories. The recommended programs are:

1. Inform the public on facts about TV service.
2. Recommend, sponsor and support TV service training programs in vocational and trade schools for the purpose of "up-grading" the skills of present servicemen.
3. Sponsor codes of ethics for servicemen.

The report further states that "The RTMA proposes to supply informational material for local and regional use such as:

1. Consumer Education Aids.
2. Servicemen's training courses."

These are all meritorious programs and, if carried out successfully, will help to relieve some of the pressure on the servicing fraternity in their efforts to please the TV set-owning public. The booklet for consumers, "Things You Should Know About the Purchase and Servicing of Television Sets," sponsored jointly by the Better Business Bureaus and the RTMA, is an excellent gesture in the direction of informing the public about some of the cold facts of television reception and servicing. The fact that the initial printing of 185,000 copies of this booklet has been purchased by interested Companies indicates that it is being distributed to the public. We regret, however, that instructions were not offered to dealers and servicemen about how to make the most effective use of this booklet.

If this program can accomplish the stated objective of getting the set distributors interested in their local service industry problems—that would be wonderful. We hope it means to encourage the set distributors to help sponsor and finance some of the excellent industry programs that are so helpful to independent service people. In the past set distributors as a class have turned a cold shoulder to requests that they actively participate in overall industry service programs in their areas. The sponsorship and financing of these

programs has been left largely to the independent Parts Distributors.

But a close study of the RTMA Service Committee's program reveals that the major efforts of the Committee will be directed toward training technicians for service and other industry needs. Working with vocational and trade schools the plan is to "up-grade" currently employed technicians and to encourage the creation of a pool of trained men for the day when a normally expanding electronics industry will need them badly.

Basically, consumer complaints against TV service "practices" are not due to widespread technical incompetence. As a matter of fact, the technical service that is being provided by TV service companies and servicing dealers is remarkably good. Aside from complaints against TV service "gymps," who can be controlled through legal actions, the consumer service complaint problem has not been caused by technical incompetence but rather by bad customer relations. A technician can accomplish a brilliant job of tracing down a fault and repairing a TV set in a home and yet leave a dissatisfied customer because of something he said or did—or failed to do.

A TV-set user's reaction to the service given on his receiver depends almost wholly upon the person-to-person relationship between the technician who does the work and the owner of the set. Public satisfaction with TV service depends upon how well technicians generally understand the simple fundamentals of maintaining good customer relations and whether they apply them day after day in their contacts with service customers. And this training job is one that is squarely in the laps of every TV service contractor, servicing dealer and service shop operator who is "working for the TV public" in servicing sets.

We think that all of these trade association programs are good and every effort should be made to carry them out successfully. But we still believe with Mort Farr, as he is quoted elsewhere in this issue, that—

"We're on our own whether we like it or not. We must fight our own battles. . . ."

And that includes training yourself and your own employees about how to get along congenially with your service customers.

PHW

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Hundreds of unsolicited letters tell what the world's finest Radio & TV Data means to Service Technicians



John E. Schromm
5 Falmouth St.
Belmont, Mass.

"Finding out how good your PHOTOFACT Folder Sets are is like discovering a gold mine."



Mr. Armand Chasse
30 Ward St.
Paterson, N. J.

"I want to thank you for your help. I like PHOTOFACT very much because it makes my servicing so much easier."



Mr. Louis Pesiri
29-23 Jordan St.
Bayside West, L. I., N. Y.

"I buy Howard W. Sams' books and publications regularly because they give me the right information. I have Sams' PHOTOFACT right up to Set No. 165."

NOW! GET THE PROOF FOR YOURSELF!

FREE

We'll send you a Free Photofact Folder on any receiver listed in "PF Index & Technical Digest."

Learn for yourself—at our expense—how PHOTOFACT pays for itself by earning bigger repair profits for you! Select any Folder from the PF Index (if you haven't an Index, get a free copy from your distributor). When you write us for your Free Folder, be sure to state Photofact Set and Folder Number as shown in the Index. Get your Free Folder now. Examine, use, compare—see why you can't afford to be without PHOTOFACT!

HOWARD W. SAMS & CO., INC.
2201 East 46th Street • Indianapolis 5, Indiana

1. The need for qualified, technically efficient service exists.
2. A local independent service-minded businessman can provide that service better than can factory owned branches.
3. He can make a reasonable living by providing such service.
4. He can sell the service on a retainer, plus emergency call basis.
5. He can become factory service representative on all installation of such equipment.

To further emphasize the opportunities, some of the fields in which industrial electronics equipment is being used are listed below. Please note that in only a representative grouping, the entire field is not covered in detail. The opportunities to install and service this equipment is yours, if you seek them. We will help you get this business.

1. Industrial television applications.
2. Power rectifiers and inverters.
3. Radio-frequency heating equipment.
4. Power-line carrier equipment.
5. Electronic instruments.
6. Industrial X-Ray.
7. Meter control equipment.
8. Precipitation equipment.
9. Regulation devices.
10. Resistance welding.
11. Photo-electric equipment.
12. Geiger counter equipment.
13. Ultra-sonic equipment.
14. Radar equipment.
15. Two-way radio communications.
16. Electro-medical equipment.
17. Beauty Shop operator equipment.

It would take a long book to delve into all the opportunities that are near to you. It is up to you to open your own doors. We will show you where the opportunity lies and it will be up to you to interpret, and put our ideas to use in your own location.

Industrial television will have a big place in industrial application.

SERVICE MANAGEMENT, through its Mr. E. M. Noll, has been engaged in extensive development work in developing inexpensive, industrial television camera and receiver. Industrial television takes the form of a television camera and a viewing screen. With it you can apply it to any process which is dangerous, difficult, expensive, inconvenient, cheaper, and better than any other means at our disposal today.

Those of you who are interested in the ideas presented here are urged to complete the following questionnaire. Service Management will study this questionnaire and will go to work on all manufacturers of electronic equipment and try to weld a service company together which will be useful to them, to their customers, and to the independent service company registered to handle this type of equipment.

INDUSTRIAL ELECTRONICS SERVICE COMPANY QUESTIONNAIRE

(Mail in answers without this form if you wish to keep your S.M. file complete*)

Business Name _____ Owner's Name _____

Address _____ City _____ State _____

State _____ Date _____

Type of Industrial Equipment Interested in _____

Technical History of Owner _____

Technical History of Top Technicians on Which You Base Progress _____

How Large an Area Can You Service? _____

Type of Test Equipment You Have _____

Would You Invest in Test Equipment as Opportunities Presented Themselves?

What Type of Equipment Would You Prefer to Service, Based on Your Present Knowledge? _____

Would you like a series of articles on how to exploit each and every Industrial Electronics Field? _____

*When fully completed this questionnaire should be mailed to:

Industrial Electronics Editor
Service Management
501 Fifth Ave., New York 17, N. Y.

SERVICE MANAGEMENT is compiling a complete list of radio and television service associations for a Service Associations Directory that will be published in the late summer.

Association officers are urged to write to the News Editor, SERVICE MANAGEMENT, 501 Fifth Ave., New York 17, N. Y., for an Association registration form.



Surgical Operation Viewed by Color TV

Physicians and surgeons recently attending the Twenty-third Graduate Fortnight of the New York Academy of Medicine witnessed a demonstration of Du Mont industrial color television at St. Clare's Hospital. Several hundred doctors televised one or more of the latest surgical techniques and saw what might not otherwise be seen because of limitations of the operating table.

Every move of the surgeon's skilled fingers, which disclosed his latest technique, were televised in closeup and in color.

The color camera was set up in a corner of the operating room with color control equipment located in an adjoining room. Coaxial cable carried the TV signals to demonstration rooms, five floors below, where a remote audience witnessed details of the operation by means of a battery of color TV receivers. Rendition in natural color provided a degree of pictorial resolution detail that was reported to be considerably greater than is possible from black and white home receivers.

The Du Mont industrial color TV equipment used is designed strictly for

closed-circuit operation and therefore is not subject to frequency bandwidth restrictions and other limitations imposed on broadcast television. Free of such restrictions, Du Mont engineers have been able to develop higher standards of fidelity while stressing a compromise between cost and practicability. No FCC license is required for this industrial TV system.

The Du Mont TA-164-A equipment used at St. Clare's Hospital resolved the finest detail with its 500-line horizontal resolution due to the 18 mc. bandwidth. All color in the original scene was transmitted to the viewing monitor. Fast 180 fields-per-second frame repetition rate resulted in bright, stable, flickerless images. There was no interference from outside signals and design stability eliminated drift after warmup of the units.

Du Mont color images may be dependably transmitted over coaxial cable to several 12½-inch high-intensity monitors or receivers suitable for daylight direct-viewing. Up to forty persons can view natural color, high definition pictures on each monitor.

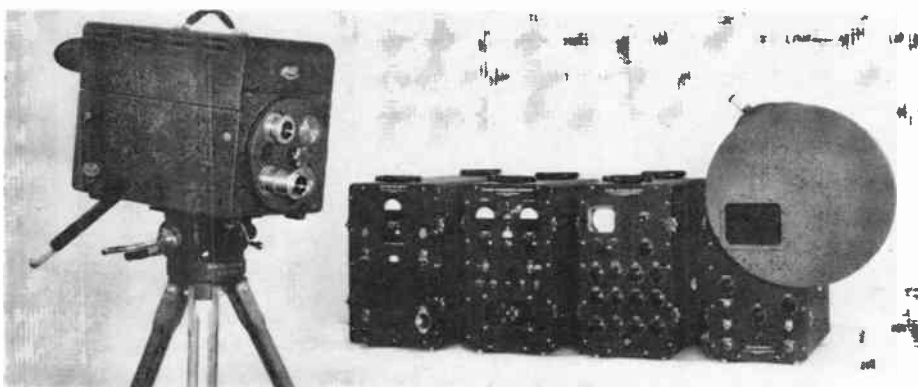
Du Mont color TV camera set up in a corner of the operating room of St. Clare's Hospital in New York. Color control equipment is located in an adjoining room. Several hundred physicians were able to witness latest surgical techniques in demonstration rooms connected by coaxial cable.



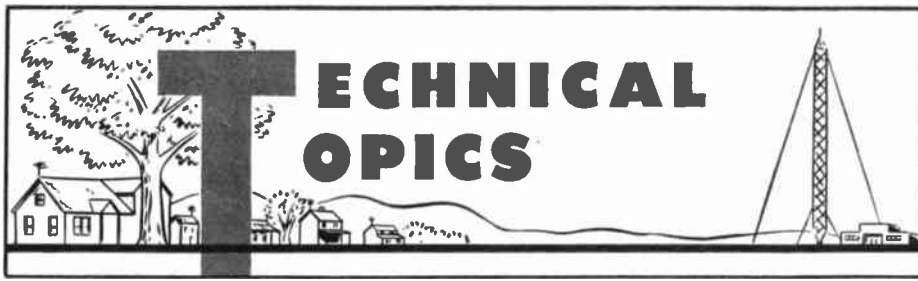
Fluoroscope Image Amplifier

Radiologists at Johns Hopkins Hospital, Baltimore, Maryland, distinguish between parts of the body, that are mere outlines on ordinary fluoroscope screens, with a new fluoroscopic image amplifier developed by the Westinghouse Electric Corporation. The new image amplifier increases screen brightness more than 100 times so that movie-like viewing of internal organs and movements from any angle is possible. This is considered a great improvement over the very dim view possible with the best of equipment without amplification.

The new fluoroscopic image amplifier consists of an evacuated cylinder with a fluorescent screen at one end. Behind the screen is a surface that emits electrons when light from the screen reaches it. The electrons are accelerated in the tube and impinge on another fluorescent screen at the other end of the tube. Operation of the tube is similar to that of television picture tubes. The resultant image is brighter than the input image because electron energy is increased in the tube.



Du Mont industrial color TV equipment including camera, at left, and receiver shown at right.



FREQUENCY MODULATION ??? WHY ???

By EDWARD M. NOLL

Frequency modulation has been obscured by the growth of television. Only a few high fidelity fans have recognized the advantages of FM reception. The lack of general interest has had a retarding influence of FM programming in many areas. Certainly, the broadcaster will not remain high-cost high-fidelity conscious if the public remains in the dark about FM and is not taught to appreciate its advantages.

Too often FM has been belittled before the public by personnel and dealers within the industry — this lack of foresight has hampered FM growth. High fidelity, volume range, non-static, and non-interference advantages are there to be utilized. We realize high fidelity programming has been limited but the limitation has been a result of lack of interest and no technical failing of the system of FM transmission. The FM broadcaster would expand and improve facilities to a great extent if there were a rigorous interest by the public — wide public interest creates advertising interest and a paying basis for FM operations.

Here is a summer-fall project of great potential for the dealer-service organization and an opportunity to create public interest in FM and high fidelity audio as the two go hand in hand. Some well-planned consumer advertising and store audio demonstration room can sell the public. There is substantial profit in the sales of just a few FM tuners, high fidelity audio installations per week. No audio system should ever be sold without an FM tuner and no FM tuner or receiver sold without a high fidelity and adequate audio system.

Successful introduction of FM to your customer depends on these factors:

Advertising:—

Advertising must be planned to teach some of the technical facts about FM as well as create interest in the subject. By careful choice of words the basic advantages of FM can be explained and the public informed as to its advantages. A good basic ad can be built around the four major advantages of FM.

"Frequency Modulation is a method of radio transmission that offers improved and more realistic reception. You can enjoy these four major advantages of FM:

Noise-Free Reception FM radio is not subject to electrical noises, sparking motors, lightning static, etc. It permits quiet, relaxing reception.

Minimum Station Interference Station interference is not present. Signals remain constant and reliable day and night over the coverage area of the station. Distant signals do not cut in and out and interrupt reception from station you wish to receive.

Volume Range You are able to enjoy full volume range in your musical reception. Low level music is not expanded and loud passages are not compressed as in standard broadcast or AM transmission. Low level passages can be transmitted quietly and naturally because of the very low background noise of FM. High level sections can be conveyed at full volume.

High Fidelity Frequency Modulation permits you to hear the very low and very high notes of musical renditions with clarity and roundness. It must be mentioned the high fidelity characteristics of FM can only be realized with a good audio amplifier, large speaker, and adequate cabinet or enclosure. Drop into your dealer for a high fidelity demonstration.

This material can be used as a single large ad or as three or four consecutive small ads. A good opening catches the eye of the customer. This type arouses immediate interest:

TELEVISION IS WONDERFUL.
GOOD MUSIC IS WONDERFUL
TOO. HAVE YOU NEGLECTED
THE THRILL AND RELAXATION
OF MUSIC?

This type is particularly fitting in television areas where FM has taken a backseat too long.

Demonstration:—

Frequency Modulation can be best sold by demonstration and comparison and the dealer equipped to prove his points will lead in sales. Demonstration can be planned to show advantages of FM.

1. Use old electric razor or any sparking device that raises havoc on the broadcast band. Demonstrate results preferably using local AM-FM

outlet transmitting same program.

2. Keep a check on local high fidelity record programs preferably transmitted on both AM and FM simultaneously. Be able to change over rapidly between AM and FM to demonstrate high fidelity and volume range advantages of FM as well as quiet background of FM in the transmission of low level music passages.

3. By all means be able to demonstrate the very best FM and just fair FM in terms of high fidelity reproduction. Use a conventional AM-FM console and also be able to switch over rapidly to a high fidelity audio system.
4. A good carefully-chosen high fidelity record can also be used to emphasize the type of audio amplification present in a conventional console or table model as compared to high fidelity units. This expedient serves as the natural link between FM and high fidelity audio and also impresses customer with fact he is not deriving full benefit from his record collection.

The low noise characteristics and interference rejection features of FM can always be demonstrated. However, high fidelity advantages can not be made obvious to a customer with a low fidelity recording or inferior audio range program or amplifier. He should be made aware of this distinction.

Antenna System:—

The FM antenna is an important consideration in most locations except, perhaps, in very strong signal areas where only local reception is desired. There are many, many locations where the built-in FM antenna is entirely inadequate if full FM benefits and noise rejection are to be obtained. In most metropolitan areas one finds a few local stations below FM limiting level or near that level. Complete and thorough limiting (as can only be obtained with sufficient signal) insures quiet background and complete interference rejection.

A good outdoor antenna permits peak performance. FM antenna can be attached to same mast as TV antenna. At least FM antenna should be attic-mounted if you do not want an outdoor installation. Most FM antennas (turnstile or S-dipoles) have gains less than a standard folded dipole to permit reception in a number of directions. However, for local reception, antenna pattern and gain is not nearly so critical as compared to TV antenna problems, because of the very wide range of limiter operation.

To improve longer distance reception, high gain and sharply directional pattern antennas have definite advantages.

(Continued on page 16)

BETTER TRAINING

At the close of World War II in 1945, there were no regular television programs on the air and no television receivers, other than a few of experimental design, in the American home. Today there are 109 stations transmitting regular programs in this country and over sixteen million receivers in the hands of the public. Over 40,000 service or dealer organizations, employing more than 100,000 technicians, are engaged in the installation and servicing of customer sets.

Some of these organizations have grown up like Topsy and many of their employees have "learned by ear" all that they know of their trade. No wonder that there are many gripes from dissatisfied set-owners and a general feeling that there are entirely too many "gyp" service companies and incompetent servicemen.

What is the remedy? The same as in any other similar line — **training!** Training which begins before the technician tackles his first customer assignment and which continues as long as he is working at his trade. For in this fast growing art of radio electronics no one can afford to stand still. Techniques which were new and sound yesterday are changing today and may be obsolete tomorrow.

How does this affect management and what can it do to help the situation? Obviously, a dealer or service company which sends out poorly trained men on installation or troubleshooting jobs is not going to stay long in business. But the labor market is tight and new jobs are opening faster than men are being trained to fill them. With the lifting of the freeze on new television stations it is conservatively estimated that the number of stations will increase in the next five years to about 1,500 and the number of TV sets to approximately fifty million. Here is a real training problem.

Some of the larger service organizations are preparing to meet it by on-the-job programs and by establishing certain minimum training requirements as a prerequisite to promotion. The prospective technician, who has the time and means, will do well to consider a resident course at an established technical school. The man who is working at a full-time job but who realizes the need of self-improvement can get the necessary training either by part-time attendance at a resident school or by enrolling in a carefully selected home study or correspondence course.

THE BIG NEED IN RADIO-TELEVISION SERVICING

By G. L. VAN DEUSEN
President, RCA Institutes, Inc.



RCA Institutes, Inc.

Resident and Home Study Courses

Resident schools should be investigated thoroughly before enrollment to determine their past experience and record of performance, the qualifications of their teaching staff and the sufficiency of their laboratory and other plant facilities. In training by home study methods there is danger of the student coming to grief if he signs an agreement with no provision for refund of tuition if he is unable to complete the course. Unfortunately, state laws and regulations are far from uniform in the standards prescribed for technical institutes and vocational schools and for correspondence or home study courses.

A home study course may also be "over the head" of a student and he may fail to realize this fact. In as complicated a product as a television receiver much of the value of a home study course will be lost unless the student is able to apply the instruction to an actual set or component assembly.

What should be the scope and content of a reasonably thorough course in television servicing? To be of real benefit to the bright and ambitious technician, such a course should not only cover the operations normally performed by an installer-serviceman, but should also provide enough fundamental knowledge to make it possible for the student to comprehend later developments which will be incorporated into the home receiver from year to year.

At this very moment we stand on the threshold of mass production of new models resulting from two major developments—the opening of UHF channels and the use of color. The technician who knows only how to locate and replace a defective tube in a current model will be of little use in servicing a set of the near future.

Theory and Laboratory

For the beginner who has little or no background in radio or electricity, a basic knowledge of radio physics and elementary mathematics should be imparted, to be followed by the study of all-wave and FM radio receivers before passing to the problems encountered in the installation and servicing of television receivers.

In a resident course there should be a fairly even division of time between lecture (theory) and laboratory work. The home study student of television or radio should be furnished, or have available at his home or business, the necessary equipment for demonstrating the principles and techniques inculcated by correspondence instruction.

That competent training courses will benefit the average television service technician is not open to question. How will these courses help the employer and to what extent will the employer be warranted in bearing or sharing the expense of such training? The answer comes in the form of satisfied customers

(Continued on page 17)

1952 ELECTRONICS PARTS SHOW



Electro-Voice Mobile Demonstration Unit

Electro-Voice, Inc., introduced its new mobile demonstration unit that contains a high fidelity audio show on wheels at the recent Electronic Parts Show. The mobile unit is mounted in an 1850 cubic foot, 12,000 pound CaraVan that is pulled by a Chevrolet cab-over-engine tractor. Interior of the mobile demonstration unit has been designed to simulate rooms in a home or studio. Items featured in exhibits include Electro - Voice furniture - styled Klipsch-licensed folded horn corner cabinets and new cornerless corner cabinets. Speakers and speaker systems are fed

by quality broadcast recording equipment including: Ampex and Magnecord tape recordings and playback units; Rek-O-Kut turntable with E-V phono-cartridges; and a console switching control system to permit listening comparison tests.

The Electro-Voice Mobile Demonstration Unit is now on the road. It should be of interest to many people including those who record at home; music lovers; audio and video engineers; radio amateurs; distributors; and radio and TV Servicemen.

Binaural Recording Equipment

The first commercial binaural radio broadcast was initiated from the Annual Electronic Parts Show in Chicago in a program featuring Henry Weber and the Symphony Orchestra from WGN and WGNB. Binaural or "third dimensional" hearing, according to Magnecord, Inc., that introduced their binaural recording equipment at the Show, "is to transmitted or recorded sound as stereopticon pictures are to the eye." Magnecord binaural recording is made through separate speakers and amplifiers to separate recording heads, and is recorded on separate sides of standard magnetic recording tape.

Jensen Manufacturing Company shared space and show time with Magnecord and made a premiere showing of its "Reproducer of the Future," said to be the ultimate in speaker design and range.

One of the apparent problems of binaural transmission is that it requires two radios and speakers, one on each of

the a-m and f-m bands, and the speakers should be turned inward toward each other, according to Magnecord.

The system, which is expected to be successful, may provide new life to radio. Plans are reported to be already underway to combine the principles of binaural recording and stereopticon or third dimensional movies — to create the ultimate in motion picture realism.

Jensen "Reproducer Of the Future"

Jensen Manufacturing Company explained its "reproducer of the future" at the Annual Electronic Parts Show by saying: "It's like the 'dream cars' of the auto makers — but with a difference; all of its four loudspeaker elements are commercially available now. All that's needed . . . is the space to house it, the necessary custom cabinetry with special acoustic passages — and money!" The "reproducer of the future" was reported to be eight feet long by virtue of its "transflex" column at the bottom. The

column is used to attain high efficiency in the 20-40 cycle region, where extremely low notes of the organ and orchestral bass instruments occur. A total cubic content of 46 cubic feet probably makes it the largest speaker system in the world. The "transflex" very low frequency section is driven by a P15-LL "woofer". Frequency range from 40 to 600 cycles is handled by a similar "woofer" in a back-loading folded horn. Above 600 cycles and up to 4000 cycles, a rectangular mouth "tweeter" takes over. Above 4000 cycles to nearly 20,000 an RP-302 "super tweeter" does the work. Three electrical dividing networks channel the proper frequency components to each speaker.



R-J Speaker Enclosures

Contrasting with Jensen's Gargantuan "reproducer of the future," R-J Audio Products, Inc., New York 13, N. Y. presented some very attractive speaker enclosures which they claim will out-perform ordinary enclosures more than three times their size. Several models shown are suitable for square or rectangular mounting in bookcases or as floor models. They are a part of the British Industries Line of high fidelity equipment, are nominally priced and are recommended for use with any loudspeaker.

WICHITA KANSAS

Service Center

By ERNEST W. FAIR

"A hundred little things go into making a profitable radio and television service business and the more carefully they are planned the surer a shop owner can be of his chances for success."

That's Ted Combs of Wichita, Kansas, speaking. He operates the Ted Combs Radio Service at 1412 North Hillside and is president of the Radio Service Dealers Association of Wichita. He's been in the business for over 20 years at the same location.

"It's been my experience that staying in the same spot is mighty important also," he observes, "for I've watched the shops which jump around the city and observed that every time they move they lose some of their business."

"The best way to stay in the same spot is to own your own building and I believe it's wise for a shop owner to work toward that end as soon as possible."

Mr. Combs solved his problem by buying the lot and building the two-store structure shown in an accompanying illustration with off-street parking which he considers vitally essential to the success of the modern shop. When the shop owner builds he may also find it advisable to do as Combs has done and build a two-story unit for just a little additional capital or loan expenditure . . . then the one side rented to another business firm can practically pay off the whole building cost.

Combs, in his 20 years of building one of the top notch repair businesses in Wichita, has developed a number of "little ideas" all of which have proved profitable and which he heartily recommends to other shop owners no matter where they may be located.

"One of these is to follow up on every repair job," he explains, "and do it in person or by telephone using postcards or letters only if you can't reach the customer in person. That personal contact is worth a hundred times more to you as a business builder than the easier approach of using the mail."

"I personally call up my customer exactly a week after I have delivered his radio or television set to make certain everything is all right and if it isn't I see that it is made okeh right then and there. If I can't reach him on the telephone then I send him a post card. But I believe this contact is absolutely necessary from a goodwill-building standpoint and also to catch any small thing you may occasionally slip up on."

Speaking of slipping up, the RSDA in Wichita which Combs heads, works on this point most successfully. When a member shop has slipped up on something chances are the customer takes the set to another service shop and raises heck about the sloppy repair job he received somewhere else.

"This just can't be helped . . . it occurs with the best of us," Mr. Combs says, "but with our local association we have developed a plan to help one another handle it. When this customer comes in we make such a repair or adjustment free, and carefully explain how it was not the other member's fault. We have worked successfully for several years this way and are proud that all of us have refrained from trying to take customers away from one another, and how, by belonging to a good association, we have kept our price schedules uniform."

Every repair job in Combs' shop is accompanied by an itemized bill for all parts used. When it is returned to the customer, the old parts are given to him at that time. This itemizing is done in every-day language. No technical terms are used. The place and purpose of each part is explained to the customer at the time of delivery.

"The best idea I ever had was returning old parts," he adds, "99 out of every 100 customers will leave them with me



Ted Combs considers off-street parking essential to the success of the modern TV-radio service shop.

but they all like the idea. It builds a great deal of confidence in our shop and its service."

He also finds it advisable to keep the list price catalog of a Wichita jobber right on the counter to show these customers whether they ask to see it or not. That also builds confidence, he points out, and adds to the customer's assurance that he or she received their money's worth.

Remembrance Advertising

Each year Mr. Combs purchases 500 leatherette calendars and mails them to a select list of customers. The rest he keeps on hand and every time the shop delivers a repaired set to a customer he places one of the calendars on the top of the radio. Most of them stay there or some other place in the home, he has found.

Another promotion that has built business for him has been the donation of baseball suits to one youngsters' school each year with the idea being primarily to "build future customers for my business" as he puts it. He is also active in all local amateur radio organizations and particularly in scout work as it pertains to amateur radio.

Combs' service men always leave the cabinet of a set in the home when they pick up a radio or television set to be repaired. "There's no sense in taking it," he explains, "and also you have to remember that the cabinet is a piece of furniture to that woman and she has an empty space in her room layout when you remove it.

"We also make a practice to always polish the cabinet and clean the dial glass. We prefer to do this in front of the woman customer rather than in our shop. Then we know she realizes this extra service we are giving her.

"Also we always make a practice to ask for a dust cloth with which to do the job even though we carry them in the car. In that way we are certain she definitely notices what we are doing. This sort of thing takes only a few minutes but it is very important to the housewife. She will show her appreciation by calling your shop every time she needs some work done."

It is most important in doing this to make certain that you clean the dust off the inside of the radio dial for this she can never reach in her housecleaning, Mr. Combs adds.

The service man also carries an extra cloth with him when he makes the pick-up call and lays this in front of the cabinet so that he can place the chassis on it (and not the woman's rug) when he takes it out of the cabinet. He also warns the housewife to put the knobs to the set in a safe place, "because everybody's youngsters like to play with them. When they do they usually lose

them before we can put it back together again."

Combs' shop has a policy of refusing to make a pick-up call on the small table model radio sets or on portables except for invalids or old folks.

"The OPS prices," he explains, "which allow us only \$1 each way are so low, when applied to a job on these little sets, that you can't break even picking up and delivering them. Some of your customers may object at first but after the first time they will think nothing of it. You'll be surprised how many will understand when you explain why you can't give them pick-up and delivery service on the little sets."

Whenever the shop picks up a big console for repair which will take more than a day, they take along a late model radio set in its original carton and leave it with the customer.

"We sell an awful lot of small radios this way," Mr. Combs declares, "and generally sell them as second radios where the customer has only had one in the house before.

"If you do this make certain that you deliver it in the original carton and have all the factory tags attached to it, so that the customer will be convinced the set is a new one and not just a demonstrator.

"This has worked out not only as an appreciated service from our customers' standpoint, but it has amazed us how many of these new sets it sells. We make no selling talk on them whatsoever . . . just explain it's for their use until we can get their set back to them and that's all. They sell themselves."

Custom Installations

Mr. Combs has developed consider-

able business by working closely with Wichita architects, most of whom call him regularly for information and advice on custom installations of radio and television sets they are planning for homes being designed in their offices. The net result has been that he has most of this custom business in the area.

"All you have to do is call on the architects and let them know you'll be glad to help them with this problem any time it comes up," he points out, "but I've learned from experience it is best not to take on any cabinet work . . . it's not profitable for a radio service shop. We just sell them the chassis and other materials and come out with a nice profit."

The Sprague Products Company booklet "Your Money's Worth in Good Radio and Television Service" is considered by Mr. Combs as the best business-building piece ever developed for the shop owners use.

"This does a wonderful job of explaining the service man's problems in everyday language," he declares, "for it helps your customer to understand the other side of getting his radio or television set repaired. We give a copy of the booklet to every customer who has a set in our shop for repair. We have had scores of them comment that after reading it they understood, for the first time, what our shop did and how it was done."

Mr. Combs has found one of the surest ways to make more sales in small parts and accessories is to label the "Special" without changing prices. He cited the case of some batteries

(Continued on page 24)



Every repair job in Ted Combs' shop is accompanied by an itemized bill for all parts used. Note parts returned on top of customer's radio cabinet.

Ouachita Service Philosopher

By JACK DARR

There's one aspect of "customer relations" which is often overlooked. In all the words that have been written about this vital subject, few have been devoted to the phase which deals with making the customer think you're as good as you actually are! You might say, "Oh, well, that's just showmanship; that hasn't anything to do with the repairing of radios or TV sets." It has, brother, it has! It makes not a bit of difference if you're the very best technician in the town, if your customers don't think you are, you're licked!

Far too many men in our profession have let that aspect of the business go by default. They perform a first-class maintenance job, get the set into better than new condition, then forget some piffing detail that sours the whole job. The lady (for instance) gets the set back, and the first thing she says is, "Oh, just look at the dust! I'll bet that man didn't do a thing to it, just wiggled a wire or something, and it played, and he charged us four dollars, and —" on and on. Although I say "lady" above, don't think for a moment that the men are immune to this disease. Customers of both sexes are prone to attacks of it now and then.

This leads right into the subject matter of this diatribe; fix 'em completely! Don't overlook any of the little details that may appear unimportant to you, which loom large in the owner's eyes. Remember, it may look like a piece of junk to you, but it's his radio; he paid out good money for it, and any slurs cast upon it reflect upon his business acumen in buying it! Therefore, he doesn't want it criticized; just fix it and shut up! We've been abiding by this principle for several years now, and it's been quite successful.

Here's the deal: when a set comes in for repair, check it over. If an estimate is required, hike it about fifty cents or a dollar over what you have been charging. Now, test the tubes; as you do, wipe the dust and dirt off with a rag. Take a brush to the chassis, and get out dust between IF cans, around the speaker, etc. Take a vacuum cleaner to

it, and don't forget the cabinet. An old toothbrush is handy for getting the dust out of all those little flutes, grooves, and assorted decorations that the designer thoughtfully put there to catch dirt. If the cabinet is plastic, use a wet rag and some soap. Oily type furniture polishes won't give plastics a good shine, and in addition they leave an oily residue which gathers dust rapidly.

The set will be much nicer to work on, now that it's cleaned up, anyhow. For instance, it's got a tube and an output transformer out. When you replace the tube, put the date on the chassis, near the socket, with pencil. (This stops the arguments about "You just put that tube in last week!" later on.) When replacing the transformer, do just as neat a job as possible. Lots of times, it's quicker to solder one end of the mounting bracket down than to drill another hole, and a lot safer, especially near the speaker. This is OK, but be sure and do a very neat job! Don't leave any blobs and gobs of solder hanging around. It looks messy, and it is!

You've got it to playing. Now, let's go over it. Look for all those little troubles that are so often overlooked, but are very noticeable to the owner. Check the volume control; clean it if it's noisy. Look at the speaker; it might be loose around the edges, and rattle. Cement it,

and patch up any holes in the cone. See that the dial drive cables are tight enough, no slippage, and no frayed spots. Check for binding in the dial drive. See if the band-switch is noisy, also the tone control, phono switch, etc. If the set has a separate dial scale, with figures on it, clean it thoroughly with Glass-Wax or an equivalent cleaner until it gleams. (Careful with that stuff; some of those numbers aren't too good; you don't want to polish 'em clean off!) Clean up the flecked dial-backing, which is a good dust-catcher. Check the dial-lamps. Pull them out and hold them against a piece of white paper. If the glass looks dark or blackish, replace 'em; they're near the end of their life.

Now, check the alignment. It won't be necessary to give each set a full alignment job; if it appears to be far enough off, use a signal generator, but most of 'em will only require touching up. Check alignment of oscillator and loop trimmers, especially with the smaller sets and the portables. If the calibration is too far off, reset the oscillator. A word of caution here: watch out for old ladies, with ancient sets. They usually have their dials memorized, regardless of accuracy; they know right where every one of their favorite programs comes in, regardless of calibration! You change it, and you're in for it! I had to undo a good alignment job just recently



X-Ray Inspection in Shipbuilding

Radiographs taken with this 140,000-volt Westinghouse X-ray equipment are used to locate defects in welded ship hulls, such as imperfections that may serve as concentration points for stresses. X-ray inspection thus aids in the elimination of defects in critically stressed hull sections and by improving average weld quality.

The X-ray equipment shown in the photograph is shock mounted in a welded steel enclosure. Control equip-

ment is located in the front of the cabinet and the high voltage transformer is mounted immediately behind it. A compartment above the transformer and behind the control cabinet is used for storage of cable and the x-ray tubehead. The cabinet may be moved to any part of the ship by means of a crane. A 50-foot cable connecting the tubehead to the unit permits radiographic inspection anywhere within fifty feet of the unit.

on that account! I had to put 'em back where they were!

While you're under the chassis, look out for botched jobs, home-repair work, cold solder joints, and the like. These may have been made by the owner, or by some technician not so competent. Remember this: as of now, you're the last man who worked on the set, and any trouble developing in it from now on will probably be blamed on you! Therefore, it is definitely to your advantage to hunt up and correct any sloppy work that may be found. Here lately, there has been an astonishingly large amount of it. Don't know whether the recent influx of "fix-it-yourself" books is responsible or not, but quite a bit of it will turn up. Incidentally, this accounts for lots of obscure trouble, in both radio and TV sets. Things that you'd never look for in normal maintenance work can be very easily caused by careless or unskilled hands. (I have in mind a certain very erratic oscillator; that lo-megohm resistor did not go to the AVC bus, as the schematic showed: it went to B-plus!) As I said before, this can cause trouble, and you'll probably get the blame for it, so hunt 'em up and fix 'em before you let the set get out of the shop.

After you reassemble the set, see that all controls work properly; the dial glass must be clean, pointer not binding on cabinet, volume control clean, and above all put the knobs on tightly. (Don't forget to hook up the speaker, either!) Now, clean up the cabinet, and tie the line cord in a neat hank, just as

it was when the set was new. Never let it dangle behind the set, or wad it up and stuff it inside; tie it up. The basis for all this work is only one thing: by careful attention to small details, to leave the very definite impression in the customer's mind that you are an extremely careful, competent technician, a professional, and that anything you do to a set is just bound to be done right! If you have managed to leave that kind of impression with him, or her, you'll have a lot less trouble with callbacks when they do occur.

When you deliver the set, let the customer know of all the extra work you've done. Not in a loud-mouthed way, but quietly. This will have a quieting effect on the type that thinks all repair bills are too high. Get the set out when he comes in, put it on the counter before him, and while he's admiring the cleanup job you did on the cabinet, get out the bill. When he says "How much?" try saying, "Let's see now, we put in a 50L6 tube, cleaned the volume control, cemented the speaker, lubricated the variable condenser, checked the dial drive, etc., etc." Name over all the little extra jobs which you actually did do. Leave him the impression that you went over that set from one end to the other; that it's in just as nearly perfect shape as possible. Then, tell him the price. You'd be surprised how many squawks you don't get, with this method. The customer feels as if he's getting his money's worth of services, and he actually is. Don't think you're overcharging him. If you'll stop and

think, you have been doing most of this all along; you're just putting 'em down now, and getting paid for 'em!

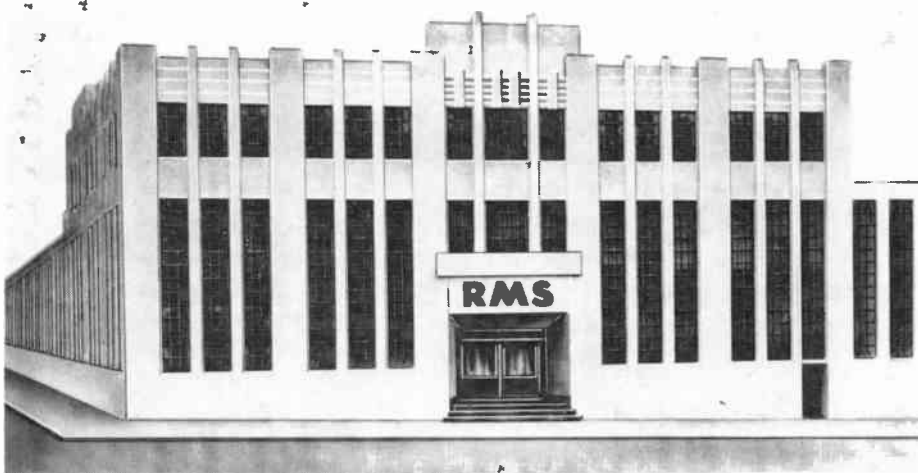
Now comes the payoff; if won't do you much good to do all this extra work, unless you can get paid for it. I believe that this work, though small, is a legitimate part of any maintenance operation, consuming time, which is what we're selling, and it should be charged out. Therefore, when you do this kind of a job, raise the price fifty cents or a dollar extra, depending on how much extra work was needed. If the set had been pretty badly torn up by tinkering, raise it some more! After all it takes more time to straighten out bad repair work than it does to locate and repair normal troubles! You'll never hear a squawk from a customer about the small increase, if you've done a good job and sold him on it. There's an old saying about the quality of the work being remembered long after the price is forgotten, and it's quite true. If you really do a complete service job, clean up the set as it should be, so that it looks and plays like new, the reward of increased performance will be remembered for a long time, and it will bring you many good recommendations, and much more repeat business, and that's what we want!

Texas Appliance and TV Dealers One-Day Clinic

Fred D. Ogilby, vice president in charge of television for the Philco Corporation reported TV progress at a recent one-day clinic held by Texas Appliance and TV Dealers in Fort Worth. He predicted that there's a strong possibility that, in the new areas soon to be served by the network, sales within six months of the inauguration of network service, may represent 50% of the total sales made to date.

He also predicted that uhf will "come to be in 1953" and that a new tuning device will be necessary to give the customer full satisfaction for adjusting his set to uhf service. "A strip will get a uhf station," he said, "but its generally unsatisfactory in picture quality and the number of stations it will bring in." He estimated the cost of the new tuning device at well under \$50.

Warning dealers, Mr. Ogilby said, "Be careful what you sell." He recommended shortening the number of lines handled and concentration on established brand merchandise. "A well-trained serviceman," he stated, "is the biggest asset you can get in your store." The average good, standard set, he said, if installed properly, and the customer is properly instructed, doesn't need more than one service call in 90 days and that cathode ray tube life is over 3000 hours.



New RMS Plant and Offices

RMS, manufacturer of TV antennas, accessories and electronic equipment, is now located in a new 45,000 square foot plant at 2016 Bronxdale Ave., New York 60, N. Y., which was formerly a luxury sports club and swimming pool, according to Sidney Pariser, RMS president. He said that the RMS Antenna

Division will remain at West Farms Road, Bronx, N. Y., and that the former RMS plant and general offices will be retained as a warehouse. RMS claims to be the first manufacturer to introduce video boosters, mast mounting lightning arrestors and several TV antenna designs.

H. B. Price, Jr., NARDA vice president and a Norfolk, Va. retailer, said "a good distributor is as interested in seeing his dealers making sales at full retail prices as he is in selling the merchandise to the dealer. It is the manufacturer's responsibility and obligation to the dealer to see that his distributor is a good distributor."

The distributor justifies keeping his part of the profit dollar by rendering service which the average dealer can't afford to supply, Mr. Price said, adding that the distributor's service should include:

- Maintenance of adequate stocks
- Carrying replacement parts
- Supplying maintenance information
- Contact men that understand dealers' problems
- Supplying sales help and counsel
- Supplying credit

Harry Kelley, appliance sales manager for Frigidaire Division of General Motors, urged dealers to recognize that today's market conditions are normal, and, for the first time in twelve years, intense, aggressive selling is necessary. He pointed out that five major appliances which were not commercially available or had little acceptance in 1940, now represent an annual volume of nearly \$900 million, or more than the total appliance volume of 1940. Appliance dealers, he said, had increased from about 39,000 in 1940 to 80,000 last year.

Mort Farr, president of the National Appliance and Radio-TV Dealers Association told retailers, "We're on our own whether we like it or not. We must fight our own battles against oppressive licensing and taxation, against unhealthy practices at every level of the distribution system, and particularly against false and misleading advertising."

Mr. Farr cited several instances of practices among retailers which were harming the reputation of the industry. He told of cooperation of Better Business Bureaus, the Federal Trade Commission, the trade press and local district attorneys in informing the public about them and helping to correct them.

RTMA Report Reveals Gains in TV Sets Shipped To Dealers in Eighteen States

Recent RTMA reports of shipments of television receivers indicate that shipments during the first four months of this year were at a faster rate in eighteen states than they were, on average, during the whole of 1951. This

shows a changing pattern of TV distribution in which growth in some areas is speeding up while in others TV is growing but at a slower rate.

RTMA also reported that 1,564,516 TV sets were shipped to dealers during the first four months of 1952 as compared with 2,076,124 in the corresponding 1951 period. The trend during the month of April, however, was upward. RTMA reported 287,004 units for 1952 against 261,357 for April 1951.

States in which the growth of TV appears to be most rapid are not concentrated in any one region. They include: Arkansas, Colorado, Florida, Georgia, Idaho, Kansas, Louisiana, Maine, Mississippi, New Mexico, North Dakota, Oklahoma, Oregon, South Carolina, Tennessee, Utah, West Virginia and Wyoming.

For the benefit of readers interested in overall trends in distribution of TV sets, Service Management has compiled the following tabulation in which a state by state comparison is made between RTMA figures for total TV set shipments for the year 1951 with shipments during the first four months of this year. The trend indicated by the total for the first four months of 1952 appears to be consistent with the total predicted earlier this year or an annual rate of approximately 4,500,000 during 1952.

State	1952 Four Months	1951 Twelve Months
Alabama	19,367	41,938
Arizona	4,077	12,561
Arkansas	4,786	8,581
California	146,434	437,172
Colorado	799	64
Connecticut	39,722	122,815
Delaware	5,573	15,796
District of Columbia	14,153	59,561
Florida	21,144	51,305
Georgia	33,313	65,828
Idaho	27	52
Illinois	87,757	350,643
Indiana	66,806	160,176
Iowa	30,773	85,702
Kansas	10,326	24,513
Kentucky	23,085	61,284
Louisiana	14,479	27,715
Maine	2,379	5,019
Maryland	26,324	95,492
Massachusetts	69,692	231,755
Michigan	67,087	281,515
Minnesota	23,742	78,094
Mississippi	3,943	6,525
Missouri	42,526	151,188
Montana	18	123
Nebraska	13,928	45,301
Nevada	6	122
New Hampshire	6,517	15,848
New Jersey	62,331	237,171
New Mexico	2,005	4,225
New York	185,820	776,419
North Carolina	33,790	80,158
North Dakota	26	42
Ohio	130,357	475,043
Oklahoma	21,729	45,717
Oregon	79	40
Pennsylvania	149,849	540,489
Rhode Island	11,228	38,241
South Carolina	7,960	18,349
South Dakota	139	922
Tennessee	21,896	47,918
Texas	56,071	123,952
Utah	9,086	22,673
Vermont	1,579	3,062
Virginia	29,121	71,920
Washington	18,889	55,412
West Virginia	17,806	30,331
Wisconsin	25,920	86,614
Wyoming	52	77
All States	1,564,516	5,095,563

TECHNICAL TOPICS

(Continued from page 9)

The real ardent FM fan occasionally employs an FM Yagi and small rotator, Fig. 1. An indoor Directronic is ideal for FM reception — tape elements can be cut down to 30 inches for better pattern uniformity, Fig 2.

To favor long range reception in a given direction, Fig. 3, two of the tape elements can be extended (or a short piece of 300 ohm line added to each element) in a long V in desired direction. With this antenna it is possible to direct the V toward the long distance direction and use other positions for local reception with signals arriving from differing directions.

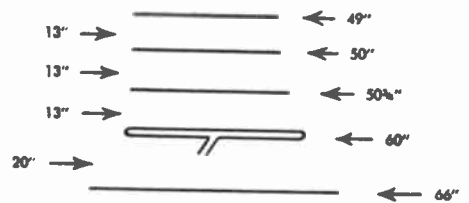


FIG. 1. FM Band Yagi.

When an outdoor high gain antenna such as Yagi or long V are used for FM reception, it should be oriented carefully toward weak station direction. Signal pick up for local reception is generally sufficient though antenna is directed off true. In fact to minimize interference from a strong local station, when reception is desired on a long range station on a nearby channel, the antenna must be oriented for a minimum signal from local station. It is a fact that antenna pattern minimums are much sharper than the maximums and it is often expedient to orient for a minimum on interfering station rather than a maximum on desired station — objective with good limiter action is not necessarily peak signal but maximum signal-to-interference ratio.

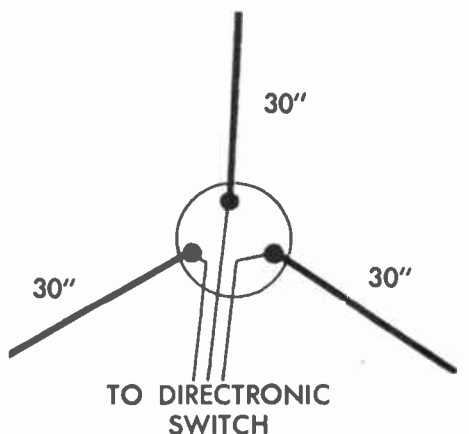


FIG. 2. Indoor Directronic cut down for FM reception.

FM Reconditioning Activity:—

Many FM receivers have been neglected for years — especially FM facilities associated with the usual radio console. Dial calibration is so pathetic on many of these receivers, the customer could not locate a desired station if he wanted to. Alignment is so necessary, what should be high fidelity music, sounds like a tin kitchen band. This is not the way to treat FM.

Often the customer says, "Don't bother with the FM section we never use it." The easiest reply for us to make is to agree with his attitude. We should, however, take a stand with, "We wouldn't be without FM in our house" and, then, go on to explain the advantages of FM.

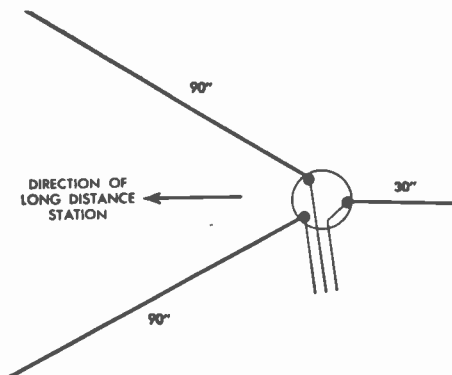


FIG. 3. Long V Modification for FM long range.

When a radio comes into the shop for repair, retouch and correct FM as well as AM alignment. Tie a small printed or mimeographed sheet or card to the receiver explaining that the FM facilities have been adjusted for peak operation. On same card recommend that customer listen to a few of the local high fidelity broadcasts on FM — show the scheduled times of a few of the more outstanding high fidelity broadcasts. Tell customer to try FM during the next thunderstorm.

Summer Business:—

Frequency modulation is another summer activity that can perk up your business. Some well-planned advertis-

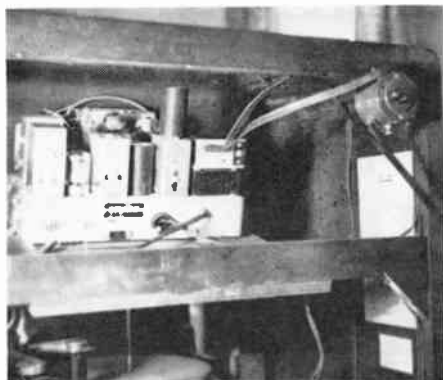


FIG. 4. Breathing new life into FM-AM console.

ing and an invitation for customer to come in and hear FM at its best can open the way for sales of new FM items or reconditioning of present models.

Your high fidelity audio and record fan is a customer with his ears pre-tuned for music quality and low background noise. He is perhaps your best prospect for FM tuner sales.

An Invitation:—

We like to hear from you who have been carrying the ball on FM. Let us hear of your problems and successes. Write to the technical editor of Service Management, 501 Fifth Ave., New York, N. Y.

ERROR

In the illustration of the wideband Yagi presented in this department in the May issue the driven element is a folded dipole. Excuse the illustration error.

G. E. Official Predicts Rapid Growth for TV And Industrial Electronics

During a recent talk before the Robert Morris Associates, an investment banking group, at Syracuse, N. Y., Dr. W. R. G. Baker, vice president and general manager of General Electric's Electronics Division, predicted that there would be 53 million TV sets in operation in homes by 1960, and that industrial electronics will be one of the major increases in the applications of electronics.

While making these predictions he described them as facets of the "electronic evolution" that will triple TV set ownership and result in between seven and ten million homes with two TV sets by 1960.

Predicting that one of the major increases in the use of electronics will be in industry, he indicated that it may even eliminate one of the solid institutions of the electrical age — the man who reads household watt-hour meters. Meter information, he said, would be transmitted automatically to electronic business machines which would make out light bills.

"Such applications, although costly," Dr. Baker stated, "became feasible as industry and commerce seek methods of cutting the cost of goods and services." He then outlined four reasons for boosting the use of electronics in industry: First, we are carrying on an experiment in intended growth in productive strength; second, we are attempting to increase our standard of living at the same rate it was increased from 1940 to 1950; third, the broadening of markets has made it necessary to increase capital investment per worker; and fourth, the increase in the number of highly skilled and professional

people, due to mechanization in industry, tends to create even greater demands for goods and services.

Hansen Says "Don't Fear UHF"

The uhf-TV signal can be controlled and put to useful work provided TV Servicemen are properly trained, adequate test and proper installation equipment is used — and we get rid of the idea that uhf is completely unpredictable, Russell C. Hansen, manager of contract section of the Motorola Service Department, told those attending a recent meeting of the Elkhart, Ind. TV Council.

Mr. Hansen described the similarity between the uhf-TV signal and light by explaining that, where intervening objects shielded the receiving antenna from the broadcast signal, reflected signals could frequently be used to bring about satisfactory reception. He also discussed and demonstrated the design of uhf antennas, low-loss transmission line and the new Motorola uhf tuner.

Referring to the problem of service management, he said that TV Servicing can and should be a sister to the merchandising program, not subordinate to it. But that the serviceman, whether a member of the retailer's staff or that of a contractor, must first have professional status recognized and respected. Service must be handled profitably. Mr. Hansen warned, but with all profit fair and just. Good business principles must be used throughout operations.

Three evidences of a good service organization, according to Mr. Hansen, include: adequate, good-quality test equipment; a well-chosen parts and tube inventory; and maintenance of training of all members of the service department.

BETTER TRAINING

(Continued from page 10)

who have faith in the intent and ability of the service organization to render competent service at reasonable rates. The cash investment is small compared to the improved workmanship that may be expected.

The risk of losing the better trained technician to a competitor is certainly less, measured in income and good will, than the risk of losing dissatisfied customers and getting a bad reputation due simply to slipshod servicing by poorly trained men. In the coming months it is the farsighted service company, ready and willing to make a reasonable investment in the training of its personnel, which will get and keep a major share of the servicing business within its area.

Ethics Versus Solvency

BY
MATTHEW MANDL

Author of
MANDL'S TELEVISION SERVICING*

For the newcomer as well as the old-timer in the television and radio servicing business, there are a number of business practices which must be learned. The exercise of good judgment and logical reasoning can often spell the difference between continued success or a gradual business decline. For the newcomer, it is particularly important that a number of factors be learned early. Ignorance of such principles is the contributing cause for the high percentage of business failures during the first years of business operation.

Primary factors of importance are that the newcomer has a fundamental knowledge of the type of business in which he is engaged, has sufficient financial backing, and conducts the business so that he can make a reasonable profit above taxes, overhead, and other business expenses. With regard to the factor mentioned first about knowledge of the business, it is assumed that the businessman either knows the technical aspects of repairing himself or can hire competent men. Only if the work is turned out in short order can the business be made to pay. If the customers must be charged for time consumed in finding simple troubles, the necessary exorbitant charges will ultimately mean loss of revenue because of the lack of repeat business from former customers.

With regard to the financial aspects, the newcomer should have enough money to last him at least a year or more. It is during such time that he must build up a sufficient backlog of regular customers to assure continued volume. He should be able to have sufficient capital to maintain a good stock of parts as well as gradually increase the variety of his test equipment so that repair work can be expedited. He must also have enough money to tide the business over during the slack season and during the time it takes to build up a reputation in his neighborhood or city.

With respect to his dealings with customers, the subject becomes more involved. Here, much time and money can be lost by not knowing some of the difficulties which he may encounter in his relationship with customers. Often some of these factors are not learned or understood until it is too late and the business has entered the critical financial stage. In order to keep

solvent, the businessman must learn to protect himself from several psychological factors which often arise during the routine of service procedures. Some of these will be discussed here for the edification of the reader.

The Service Charge

The businessman engaged in repair service soon finds it necessary to make a service charge for each call which necessitated a trip to a customer's home. When one considers that a technician may have to leave the work on the bench to make such a call, the charge should include time consumed going and coming from the call as well as the depreciation for the vehicle used. Depending on the locality and the distance to the outlying customers, service charges may range from several dollars to 5 or 6 dollars. These are charges which are independent of the cost of any parts which must be replaced in the receiver.

Such service calls can, however, arouse customer antagonism if not properly handled. Suppose, for instance, that Mrs. Jones has placed a call and stated that her television receiver does not play. A call at her home discloses that the line cord plug is not in the baseboard receptacle. The technician replaces the plug and tries the receiver only to find it plays perfectly well. If he now charges Mrs. Jones 5 dollars for a service call he is apt to lose a customer. It is natural for Mrs. Jones to resent a 5-dollar call for inserting a plug. It is difficult to convince her that it probably took an experienced technician an hour or more to complete the trip to and from her place. Besides this the time lost in making a repair on some receiver on the bench may have cost more than the service charge. At the same time the cost of gas and wear and tear on the truck are contributing factors.

When the newcomer runs into several such cases in the first few weeks of his business, he soon learns to resort to slight subterfuges to retain the customer's good will. He may remove the back and check tubes, clean the chassis and the picture tube screen. Besides this, he may make corrective adjustments to the controls and inspect the antenna system for loose connections. If he spends a half hour or more making such minor adjustments he finds the customer is less apt to complain about the service charge because it appears as

though the serviceman has done sufficient work to merit the charge.

While the busy service shop may not care to bother with such minor adjustments if the set will work without them, it is certainly a worthwhile procedure from the standpoint of customer satisfaction and repeat business. This is not actually unethical or poor practice because there is no question that the competent serviceman will leave the receiver in much better condition than he found it. The picture may look better and be more steady, and perhaps linearity and other improvements can be made. Surely the time spent is not wasted because Mrs. Jones will feel that she has not been cheated. It is for this reason, too, that servicemen will often take the receiver to the shop without checking it in the person's home. If they see that the plug is not in its receptacle they merely assume that the set was readied for removal and do not ask questions. At the shop the receiver, even though it plays fairly well, can now be thoroughly checked. Tubes which are weak can be replaced and this will, in many instances, save the customer money because it will eliminate repeat calls. All other adjustments can also be made to bring the receiver to peak performance. When the set is now delivered, the customer will pay an 8- or 10-dollar charge while he may have complained bitterly about a 3-dollar service charge which involved replacing the plug.

Of course, this does not hold with receivers within a guarantee period. Here, it is to the serviceman's advantage to make repairs in the home if at all possible. Some technicians will argue that it is too time-consuming to pull each set into the shop. This can, of course, be left to the technician's decision. However, he will find it pays to give the customer the impression that he is earning his money.

The same holds true for receivers which have been taken in for repair. If routine troubles exist which would not result in too high a service charge, the receiver can usually be repaired and the customer billed upon delivery. If, however, major repairs are necessary the customer should be called first and advised of the cost. If the customer is forewarned, he will usually O.K. the repair. If, however, he is confronted with a bill much higher than he had originally anticipated, a customer may be lost because of what appears to be an exorbitant charge for work done.

Sales Practice

Customers resent paying charges for material or workmanship that appears to be inferior. Even though the material and workmanship are first grade, the alert businessman will make sure that

* The Macmillan Co., N. Y.

his customer does not get an erroneous impression and blame him for subsequent failure of parts which were unrelated to the initial service call.

For instance, suppose a radio or television receiver had been repaired by replacing a defective filter capacitor and rectifier tube. The receiver now plays and is returned to the customer. Another tube goes bad within a few weeks and the customer now feels that the initial trouble has returned because the set does not play again. He will not understand that another part has gone bad, but often assumes that since the receiver had recently been fixed a new trouble is nothing more than the old one which had not been properly fixed. For this reason it is well to tell each customer what repairs had been made by itemizing them. They should also be informed that with a complex unit such as a radio or television, other parts can go bad in a day or two or a few months later. This is particularly true if the receiver is a year or two old. If they are warned of the possibility of other parts going bad they are less apt to feel that the initial repair job was not done properly.

This same psychological factor can even enter into the sales picture. If an item is inexpensive and not as good as a more expensive one, the customer should be told of the difference, the performance, the life expectancy of the cheaper item. This applies to the sale of inexpensive receivers, second-hand sets, picture tube, booster, antenna, or other relative items.

A typical illustration will emphasize this point. Right after World War II the writer was a partner in an appliance store. Among the various electrical items we sold as a convenience to our customers, were rubber belts for vacuum cleaners. At that time most of the rubber goods were made of synthetic material and cost about twice what the original item cost before the war. Customers would buy a cleaner belt, complain about the high price and return it a month or two later, broken. They protested bitterly about the cheap material and how former belts would last a year or two. In order not to lose customers, we would replace the broken belts free.

Eventually we resorted to a different sales tactic. When a customer came in for a cleaner belt we would tell her that we had them, but they were made of synthetic rubber and were not very good. We explained also that they were much higher in price than the old rubber belts and would not last as long. In fact, we gently advised them not to buy them because they would last only a few months and if possible, make their old belts do. Inasmuch as their old belts were broken in most instances,

This TECHNICAL INDEX is one reason you need this 28-page volume!

IT'S THE *University* **TECHNILOG**

The new 1952 compilation of valuable information that explains and simplifies the application of loudspeakers. A real time and money saver for dealers, contractors, service men and installation designers. The most authoritative, single piece of literature ever published on loudspeakers. It's yours FREE.

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Not just a catalog!

Includes both technical and product data in factual, concise form with dozens of helpful explanatory photographs, charts and tables. Features much engineering information available NO-WHERE ELSE!



and since no other belts of higher quality were available, they purchased several belts to make sure they had enough on hand when they broke. Thus, we sold more belts and had no returns or complaints as they broke. The people were forewarned about the quality and couldn't accuse us of deliberately selling inferior goods.

This same sales approach is applicable to other items, and the extra effort it requires to explain the difference between the inexpensive and higher quality items always pays off.



New TV Test Equipment Rack

Designed to help the radio service dealer streamline his servicing activity, this four-section "consolidation rack,"

just announced by the Tube Department of RCA Victor, makes an attractive, compact, and convenient ensemble of four RCA television test instruments: the WR-39C calibrator (upper left), WR-59B sweep generator (lower left), WO-56A oscilloscope (upper right), and WV-87A Master "VoltOhmyst" meter.

Industrial TV Training Kits

Industrial TV training kits for progressive service organizations have been announced — to provide practical working instruction on new phases of the electronic industry. Industrial trainer kit #1 can be used as a basic sync generator for an industrial television system. It also provides an effective demonstrator of many television principles and may be applied to servicing. The sync generator trainer kit will be followed by other training kits on video amplifier and camera circuits. The three kits may be combined to form a complete industrial television system for training purposes and limited commercial application. Each kit will include a set of instructive experiments. Kit #1 will include ten experiments. For additional information about participation in this progressive industrial TV training plan, write E. M. Noll, technical editor, Service Management, 501 Fifth Ave., New York 17, N. Y.

PITTSBURGH
PA.

Service Center

By
PENNY MARTIN

“ . . . a Satisfied Customer Is the Greatest Asset Any Business Can Possess.”

If you saw a few flowers flourishing in an otherwise sunscorched field, you would rightly assume those few flowers were receiving extra nourishment. In the television industry, customer relations is that “extra nourishment” that keeps a few businesses flourishing during a period of slump that will see many stores close their doors.

Brushton Television and Appliance Company at 7904 Frankstown Avenue, Penn Township, Pittsburgh 21, Pennsylvania, is one company that utilizes that “extra nourishment.” To inspire the good will of the customer is the prime objective behind both sales and service at Brushton. Mr. Ambrose Stampo, owner, is justly proud of the reputation he has established in Penn Township since he opened his first store in 1934. Last November he opened an additional retail outlet, “The Electric House” at Frankstown and Laketon Roads.

Mr. Stampo had been a radio repairman since the days of the crystal set and when he left his place of employment to start a place of his own, many of the customers that knew the quality of his work, transferred their accounts to his new store. They, and their children, are still among Brushton’s most treasured accounts.

Brushton Television and Appliance Company is a family affair . . . Ambrose Stampo is the owner and general manager; his wife, Catherine, is office manager; their son, Harold, is service manager and has charge of purchasing and promotional activities; another son, Ambrose, Jr., is in charge of antennas and installations.

It is Brushton’s firm belief that a satisfied customer is the greatest asset any business can possess. Accordingly they established a goal, based on the following standards, whereby customer relations can be kept on the highest

possible plane and service obligations fulfilled to the best of their ability:

It is the duty and responsibility of Brushton Television and Appliance Company to stand behind every product sold and every service rendered. To be less than honest, fair and helpful in all dealings . . . courteous and cheerful in all contacts . . . is being unfair to our standards.

Be prepared through carefully selected personnel, constant training, and adequate facilities to render service promptly and intelligently.

Accept every service situation as an opportunity to strengthen customer relationships.

With such high standards they were a “natural” for charter membership when the Television Service Association of the Tri-State Area was organized in Pittsburgh.

“We could have expanded in size,” said Mr. Stampo, “but the margin of profit is greater when a company is just large enough to have adequate facilities to take care of any type of service or sales job; and small enough so that a personal contact is kept with the individual customer.

“A satisfied customer just doesn’t go around looking for another place to buy or to have service done. Our customers know that Brushton stands behind everything they sell and service. We sell only brand names so the manufacturer stands behind his product and we can afford to do the same.

“We employ not only experienced technicians, but men who show an ability for creating good will with our customers. If a customer isn’t satisfied with the work done by one of our technicians and wants to see the manager

Brushton Television & Appliance Co.
 7904 Frankstown Avenue
 Pittsburgh 21, Pa.
 Service Phone: PEnhurst 1-3730

Name.....
 Address.....
 Product.....
 Nature of complaint.....
 Model..... Serial No.
 Material.....
 Labor..... Total.....
 Customer..... Call taken by.....
 Service Man..... Date.....

N: 2092

FIGURE 1.

. . . Harold drops everything and goes to see her. It is a gesture of deep interest that is inconvenient to us at times . . . but it pays off in customer good will.”

When asked why she had traded with Brushton for so many years, a customer replied, “I have always received my money’s worth. I have traded here so long it is almost like trading with one of my own family. You should see the nice gift they sent my daughter when she got married last month!”

Another said, “I think it is because they never have ‘sales.’ There is nothing more discouraging than to buy a major appliance one week and the next have the same store put the appliance on

sale for less than what I still owe. I can buy anything from them at any time and feel fairly certain that, if anything, the price will go up . . . not down . . . before I finish paying for it."

When a call comes in for service a secretary takes the call and fills out the call sheet in triplicate (Figure 1.) Filled out completely, it is possible for the office staff to tell approximately how long the technician will be tied up on that call. This makes it possible to make a schedule for the day for each technician. All calls are handled within 24 hours. Servicemen are required to call in to the shop after every two calls or at least every two hours. The technician is dispatched to a section and stays there for the day. In this manner a large area can be covered by the six technicians employed.

If a television receiver requires a shop job that will necessitate keeping the set more than one day, Brushton places a television receiver in the customer's home so the customer can con-

tinue to enjoy television. This has eliminated, in most cases, a customer making constant calls to find out why his set hasn't been returned. Even if a set is retained for two or three weeks because of parts replacement, the customer isn't likely to complain since he is not without television.

When a console model television receiver costing over \$300 is bought at Brushton, installation is free. The customer pays only for the antenna or special equipment used. This factor has influenced many a customer to buy a larger model than they had anticipated. (Continued on page 25)

BRUSHTON TELEVISION AND APPLIANCE CO.

Television Service Rates:

Policy Service.....	\$ 4.50 per house call 15.00 maximum shop charge 10.00 minimum shop charge
Straight Work.....	\$ 5.00 per house call 50.00 maximum shop charge 12.50 minimum shop charge
One Year Part Policy.....	\$18.95
One Year Picture Tube Warranty.....	\$ 5.95

Television Installation Rates:

Standard outside antenna.....	\$35.00 Includes labor
Inside antenna.....	4.95 Plus labor
Set up of new or old set.....	6.95 Plus aerial
Antenna repair calls.....	7.50 Plus material

* * * * *

Down Payment and Maximum Maturity on Leases:

Television, radio and radio com.....	10% down and 24 months on balance
Refrigerators, ranges, dryers, mangles, etc.....	10% down and 30 months to pay

HELP A DESERVING CHARITY WITHOUT ANY COST TO YOU!

IT'S AS EASY AS - A - B - C

If in need of TV service, call us. We'll give you prompt, expert service and at moderate prices, too!

One (\$1.00) Dollar of your service charge will be given to one of the three organizations listed below. You will absolutely NOT be charged extra for service work.

At the end of the period (June 15th) a count will be made of the "votes" and the organization having the most will receive the entire amount.

IT COSTS YOU NOTHING TO HELP A WORTHY CAUSE

THESE ORGANIZATIONS DESERVE YOUR CONSIDERATION:	WE GUARANTEE RELIABLE TV SERVICE ON ALL MAKES
The New YMCA School Dist. Dental Clinic Rosedale Vol. Fireman (Ambulance Fund)	

If you wish to designate another organization dependent upon voluntary subscription, make your wishes known when our service man completes your service call.

BRUSHTON TELEVISION
AND APPLIANCE COMPANY

7904 FRANKSTOWN RD. PE. 1-8730

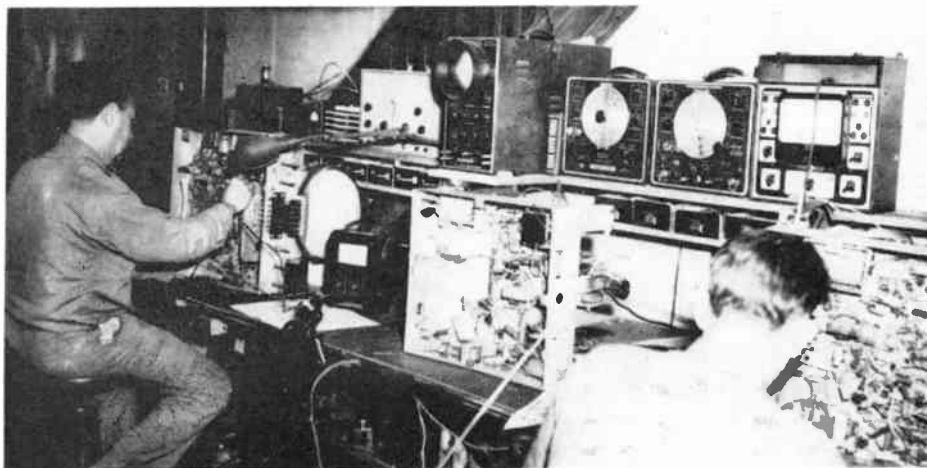
THE ELECTRIC HOUSE

FRANKSTOWN AND LAKETON ROADS

PHONE: PE. 1-7874


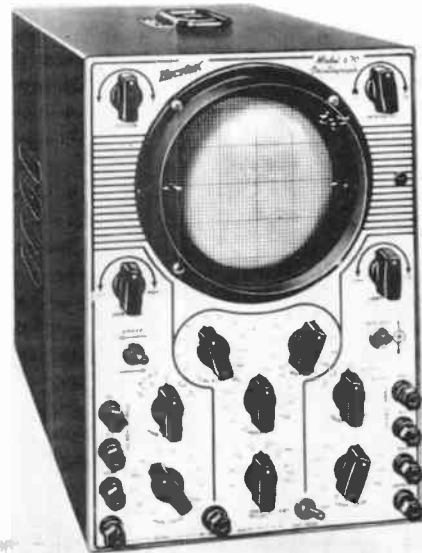


Brushton technicians are dispatched to a section and stay there for the day.



If a television receiver requires a shop job that will necessitate keeping the set more than a day, Brushton places a loan receiver in the customer's home.

P RODUCT REVIEWS

FIVE INCH OSCILLOGRAPH

Hickok Electrical Instrument Co., 10620 Dupont Ave., Cleveland 8, Ohio has announced a new five-inch cathode ray tube oscillograph for visual testing and alignment of f-m receivers and TV equipment. Model 670 oscillograph contains d-c amplifiers to provide good square wave response at high and low frequencies and is designed to provide a sensitivity of 10 millivolts rms per square inch. This extra sensitivity is said to permit proper viewing of TV response curves even when receivers are far out of alignment. Its vertical amplifier is adequate for viewing TV frequencies; d-c to 500 kc.; and up to 2 mc. It is a good test instrument for measurement of a-c voltages; hum; gain or distortion in audio amplifiers. Astigmatic focus control provides trace sharpness making patterns easier to view accurately. For complete information address New Products Editor, Service Management.

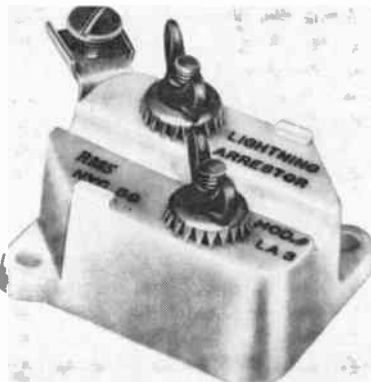
PYRAMID ELECTRIC CATALOGS

Pyramid Electric Co., 1445 Hudson Blvd., North Bergen, N. J. has announced the publication of four new catalogs giving specifications, construction, engineering data, sizes and prices for four classes of capacitors: Catalog PG-1 listing miniature glass seal capacitors PGH, PGM and PGX which are tubular paper units for operation at 55° to 125° C.; Catalog IMP-1, describing molded plastic tubular types that are impervious to moisture and

withstand temperatures up to 100° C.; Catalog MP-2, providing detailed information on ultra-compact metallized paper types; and Catalog J-7, a 32-page compilation of paper, electrolytic, oil-paper and metallized paper capacitors. Copies of these catalogs are available on request to New Products Editor, Service Management.

UHF TRANSLATORS FOR TV RECEIVERS

General Electric Co., Electronics Park, Syracuse, N. Y. has developed a new uhf translator for internal cabinet mounting in TV receivers so that it does not interfere with the receiver's ability to tune to twelve vhf channels. It is claimed that this translator can be installed by a TV Serviceman in a set owner's home without removing the TV receiver chassis from the cabinet. After installation, the translator can be adjusted to receive any three local stations over the entire uhf spectrum, from 470 to 890 mc. To install the translator, the present vhf selector and tuning knobs on the front of the receiver are removed; the new uhf dial is inserted flush with the cabinet; the uhf channel selector slides over the tuning shaft; the vhf tuning and selector knobs are replaced and the translator is mounted inside the cabinet on a bracket. In addition to this new translator, General Electric has announced a continuous-tuner, all-station uhf translator which will operate with all types and makes of TV receivers. These translators will be available later this year.

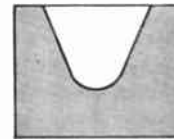


LIGHTNING ARRESTOR

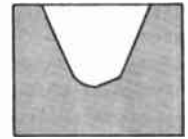
Radio Merchandise Sales, Inc., 1165 Southern Blvd., New York 59, N. Y. has announced the development of a new lightning arrester for twin lead and open transmission lines. Twin lead is secured on the arrester between inner edges of molded guides; open line is secured on the outer edges of the guides. A saw-tooth washer and wing-nut pressure provide contact with the conductors. The LA-3 Arrester is available from jobbers and is approved by Underwriters Laboratories Inc.

Life... (and Death) OF PHONOGRAPH NEEDLES

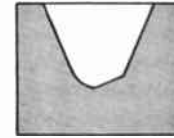
Diagram shows how wearing qualities of Jensen Industries' new "Durosium" Phono Needle compare with diamond, sapphire and conventional osmium points after each has been played 35-40 hours.



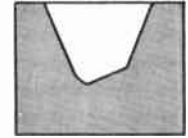
DIAMOND



DUROSMIUM



SAPPHIRE



OSMIUM

IMPROVED OSMIUM PHONO NEEDLES

Jensen Industries, Inc., 329 South Wood St., Chicago 12, Illinois has introduced a new alloy-tipped phono-graph needle called "Durosium" which is available through electronics distributors in three point sizes: 3 mil for 78 rpm records; 1 mil for 33 $\frac{1}{3}$ and 45 rpm; and 2 mil for all-purpose requirements — for every type of needle replacement, including ninety-odd different specifications. The manufacturer claims that durosium needles are far easier on records than sapphire, that their tips never chip.



TRANSMISSION MEASURING SET

The Daven Company, 191 Central Ave., Newark 4, N. J. has announced a transmission measuring set for accurate measurement of the transmission characteristics of audio systems and their components that is a direct reading instrument. The unit is said to eliminate intricate calculations and complex "set-ups", reduce measurement errors and save time. Its circuit consists of a combination of resistive loss and impedance matching networks and shielded isolation coils arranged so that meters and associated range controls can be used independently as VU meters in program monitoring or other applications. A feature of the Type 10B Transmission Measuring Set is provision for feeding noise-distortion meters over a range of 50 to 45,000 cycles from "load" to "distortion-noise" jacks. The unit has a frequency of plus or minus 0.1 db accuracy from 50 to 15,000 cycles. For additional information write to New Products Editor, Service Management.



SINE & SQUARE WAVE AUDIO GENERATOR

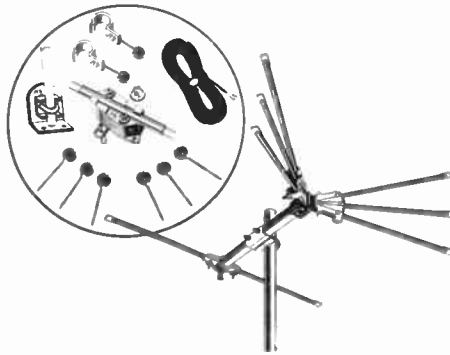
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y. has announced a new, inexpensive sine and square wave audio generator providing sine wave coverage from 20 to 200,000 cycles in four ranges that are individually calibrated on the instrument panel. Square wave coverage, that is read on the same scales as sine waves, is from 60 to 10,000 cycles with a 5% overshoot at 10 kc. Features of model 377 audio generator include: stable bridge-type oscillator; improved cathode follower output circuit; continuously variable power output of 100 mw into rated load of 10 volts across 1000 ohm load; distortion of only 1% of rated output; and hum less than 0.4% of rated output. Model 377 audio generator is supplied in a rugged steel case measuring 11 1/8" x 7 5/8" and is rated at 50 watts; 115 volts; 50/60 cycles input.



PORTABLE POWER AMPLIFIER

Tapemaster, Inc., 13 West Hubbard St., Chicago 10, Illinois has announced the development of a new portable power amplifier providing a response within 1 db at 30 to 15,000 cycles. Total distortion at 5 watts output is said to be less than 1%; peak output, 8 watts; and hum and noise inaudible at normal listening level. Specially designed cabinet, 12" x 9 1/2" x 18 1/2" provides effective baffling for over-all balanced response. For further information write

to New Products Editor, Service Management, for Bulletin No. 102.



"TENNA-PAK" LINE

The JFD Manufacturing Co., Inc., 6101 16th Ave., Brooklyn 4, N. Y. has revised and extended its "Tenna-Pak" line by adding seven new units to its original group of five. The units include antennas, masts, lightning arresters, lead-in wire, stand-offs and base mounts packed in a single box. "Tenna-Paks" now include single and stacked 8-element conicals, folded dipoles, inline hi-lo stacked and single and Vee-Beam antennas.



DIP METER FOR TUNED CIRCUIT MEASUREMENTS

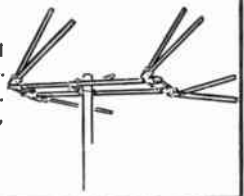
Barker & Williamson, Inc., 237 Fairfield Ave., Upper Darby, Pa. has announced a "pocket size dip meter for measuring resonant circuit characteristics including the determination of resonant frequency of tuned circuits, antennas, feed line systems and parasitic circuits. It is also useful for aligning filters, traps, receivers, converters, i-f amplifiers and for peaking coils. Model 600 dip meter also provides a calibrated means of identifying spurious emissions and their sources. Used in conjunction with components of known value, it will also measure capacity, inductance, "Q" and other electrical factors. The instrument has a calibrated frequency range of 1.75 to 260 mc. in five overlapping bands. It contains a built-in power supply that operates from 110 volt, 60 cycle supply. A bulletin giving complete details is available on request to New Products Editor, Service Management.

(Continued on page 24)

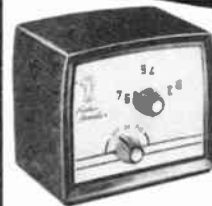


At your RMS Jobber

CVA-500 end-fired array — excellent reception in the fringe. Rugged — up fast, stays fast.



The little man



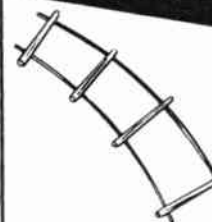
SP-6J Triode Tube Boosters . . . new beauty . . . excellent performance in semi-fringe and fringe. U/L approved.

is always there

SP-6 Pentode Tube Booster with external gain control . . . ideal in the extreme fringe. U/L approved.



with everything



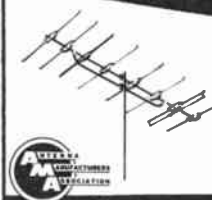
HG-450 Hi-Gain open transmission line is Copperweld . . . far stronger!

you need for

LA-3 lightning arrester — static discharge eliminator for twin lead or open line. Mounts flat or to mast. U/L approved.



TV installation



STYLE 8 and 10 element yagis . . . real uniquely steel-braced.



ask him for RMS products
RMS, New York 60, N. Y.

PRODUCT PREVIEWS

(Continued from page 23)

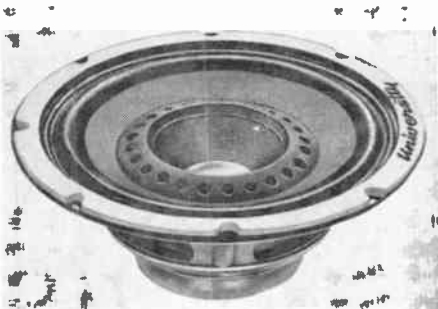
RESISTOR BROCHURE

The Daven Co., Dept. RB, 191 Central Avenue, Newark 4, N. J. is offering a new six-page brochure describing precision wire wound, hermetically sealed and miniature resistors. These products are charted, diagrammed and tabled to provide data on wattage dissipation, tolerances, temperature coefficients and maximum resistance values according to types of wire, physical dimensions and types of mountings. Copies of the brochure may be obtained by writing to New Products Editor, Service Management.



TV AND RADIO TOOL KIT

National Union Radio Corporation, 350 Scotland Rd., Orange, N. J. is offering free, with the purchase of 250 tubes through its distributors, a 17-piece tool kit containing specially-designed socket wrenches suitable for use with regular type handle or right-angle ratchet drive; various screw driver blades for slotted and Phillips head screws. The tools are precision made of the finest carbon steel, fully hardened and finished with rust-resistant plating.



NEW UNIVERSITY CONE SPEAKER

University Loudspeakers, Inc., 80 So. Kensico Ave., White Plains, N. Y., has announced a new 8", wide range, wide dispersion speaker that has been designed to meet the need for a compact, nominally-priced speaker that is suitable for commercial and high fidelity applications. The new "Diffusicone" speaker embodies a recently developed feature which provides dual concentric horn loading of the apex, which is said to extend its high frequency response to more than 13,000 cycles. Normal

beam-like high frequencies are dispersed uniformly. Construction of the Diffusicone-8 speaker, which is rated at 25 watts, incorporates a gold dot Alnico V "W" magnet assembly that is said to be of vibration and shock-proof design. For additional information please address: New Products Editor, SERVICE MANAGEMENT.

WICHITA SERVICE CENTER

(Continued from page 13)

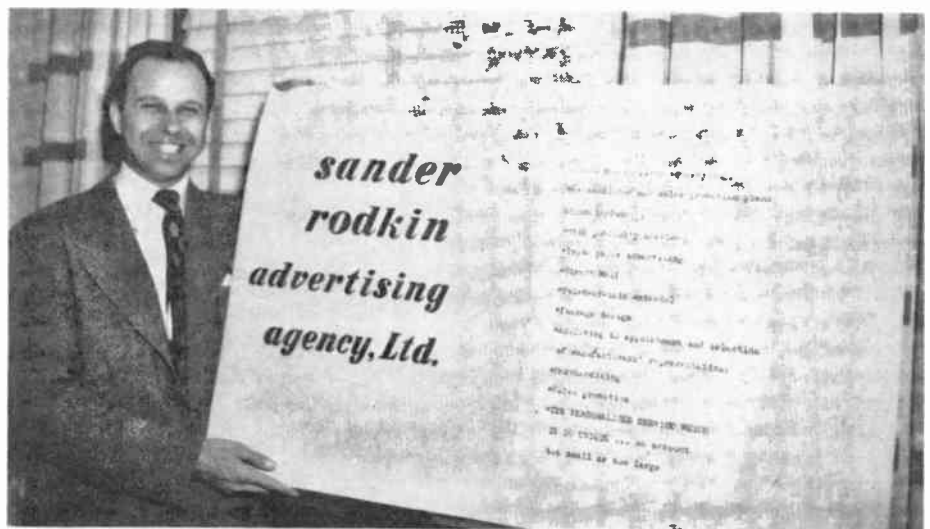
which had not moved until he wrote the word "Special" on the price tag. Immediately they started to sell, although the price had not been changed, the carton altered or ever moved from its original location.

All of these "little ideas" have built a steadily increasing business volume for Ted Combs over the past 20 years but he says they will not produce results unless the shop works hard at doing everything it can to have satisfied customers and reasonable prices. "Find the standard," he says, "and don't try to make a killing off every customer."

Two signs in Ted's shop, for customer benefit, are also of interest. One reads . . . "We guarantee our repairs but not your radio" and the other declares "No visiting please, our time and our knowledge is what we sell."

Agency Exhibit at Parts Show

The exhibit of the Sander Rodkin Advertising Agency, 159 East Chicago Ave., Chicago 11, which serves 19 electronic-TV accounts, is believed to be the first direct ad agency participation at the Parts Show. Purpose of the space, according to Mr. Rodkin, was to provide relaxation quarters for clients, a hospitable spot for publication representatives and to acquaint prospective clients with the services of his agency. Coffee was served to all during twenty hours of the Parts Show day.



New G. E. UHF Transmitters

The General Electric Company has filed specifications with the FCC for a new uhf-TV transmitter said to be the most powerful TV transmitter in the world. The proposed transmitter would be rated at 60 kw. Combined with a new type antenna, developed by G. E., it is expected to provide 1000 kw of effective radiated power — the maximum authorized by the FCC for uhf telecasting.

The new high-power transmitter uses a klystron amplifier tube that is similar to the five kw version used in experimental transmission at Electronics Park more than a year ago. Within a few weeks G. E. expects to install a 12 kw klystron in this transmitter.

G. E. has also reported the development of a small, low-cost, 100-watt unit for uhf-TV transmission in small towns. These units are now in production and are intended for use with a special G. E. antenna which they are said to provide good reception for viewers located up to ten miles from the transmitter.

G. E. TV Receivers Have 45 MC. IF

Shortly after the authorization of the 21 to 21.45 mc. amateur bands by the FCC on May 1, the General Electric Company announced that none of the amplifier circuits in G. E. TV receivers, produced during the past two years, will respond to fundamental frequencies from within the new amateur band. Admitting that some very early G. E. TV receivers did have pass bands close to the new amateur frequencies, a G. E. spokesman said that shortly after G. E. adopted the intercarrier i-f system in 1949, it moved to the 45 mc. region.

(Continued on page 26)

PITTSBURGH SERVICE CENTER

(Continued from page 21)

One of the natural tendencies of a satisfied customer is to show off her new appliance to her neighbors . . . whether it be a television set, refrigerator, range or any other appliance. As a result of these "demonstrations" there are often repeat sales in the same neighborhood. Most companies recognize this but do nothing to encourage these "demonstrations." Brushton sends the customer a gift in proportion to the sales resulting from her efforts. This encourages one friend to tell another . . . the best form of advertising. Such gifts are never advertised in print.

Two or three times a year, in cooperation with Duquesne Power and Light Company, a cooking school is held in the showroom of "The Electric House". A Home Economist from Duquesne Power and Light demonstrates electric cooking, and other electrical appliances, to eight or ten guests who are invited to the buffet luncheon. A door prize is given . . . usually an iron or toaster. After the party each guest is contacted in her home by a representative from Duquesne and offered suggestions on how to make the most of the electrical appliances already in her home. It is done as a service and no attempt is made to sell any product. Before leaving the guest's home, the representative presents her with a french fryer, or some such gift, with the compliments of Brushton. This is one of the most popular and most rewarding forms of promotion done by Brushton. Manufacturers and Distributors cooperate by making special prices for these gifts.

Distributors also cooperate by giving or selling at minor costs such items as perfumes, measuring spoons, ash trays, candy or balloons for the children, and other such "gimmicks" that are given out daily to customers who come in to look around. At times these "gimmicks" have more than proved their worth by being the favorable straw when an undecided customer is weighing the balance.

Like every other merchant in a small community, Mr. Stampo is constantly being sought for contributions to local charities. As every businessman will attest, these contributions don't buy good will . . . they merely help to keep the good will earned the hard way. Besides the financial strain on their advertising budgets, the requests often become a nuisance. It is to Harold Stampo's credit then that he found a way to stimulate trade and take care of his contributions at the same time. He runs an ad in the community's weekly newspaper, "The Penn Prog-
(Continued on page 26)

HERE'S HOW TO

HOLD your customers — and get more!

The rising flood of responses following announcement of SERVICE MANAGEMENT's "forecast" and other notable issues shows that the mental receiving systems of TV Servicemen are catching all the signals.

Service Management Means Business

They are quick to realize that survival — and growth — depend on *business* skill as well as technical ability. They ask: "How can we improve our financial position?" . . . "How can we maintain closer contact with customers and prospects?" . . . "How can we best control inventories?" . . . "Check up on insurance protection?" . . . "Stop losses"? . . . "Keep books properly and safeguard our records?" . . . "Maintain the goodwill of our sources of supply?"

Service Management Means Business

More and more the Service Industry understands the need for a *business* magazine. SERVICE MANAGEMENT is edited by men who REALLY KNOW the business problems of the Service business from personal, first-hand experience. It is the *one* magazine — in the field of television, radio, audio, electronics — which accents and persistently preaches the importance of business fundamentals as they apply specifically to this field.

In the matter of maintaining solvency, making money, overcoming unfair criticism — growing, prospering — Service Management may well be your most important piece of "equipment." SERVICE MANAGEMENT MEANS BUSINESS. Don't miss a single copy!

Fill In
Coupon
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Mail
Your
Subscription
NOW!

LECTURE BUREAU PUBLISHING CO.
161 Luckie Street, N. W.
Atlanta, Georgia

GENTLEMEN: PLEASE ENTER MY ORDER FOR A SUBSCRIPTION TO "SERVICE MANAGEMENT" AT \$3.00 A YEAR. (TWO YEARS, \$5.00.)

CHECK MONEY ORDER CASH

NAME _____ 152
(Please Print)

ADDRESS _____

CITY _____ STATE _____

SIGNED BY _____ POSITION _____

Type of Business:

SERVICE CONTRACTOR; DEALER
 TECHNICIAN; DISTRIBUTOR
 PARTS JOBBER
 MANUFACTURER OF _____

PITTSBURGH SERVICE CENTER

(Continued from page 25)

ress," offering to give \$1 out of each service call to the local charity of the customer's choice.

Brushon also supports a Little League baseball team, supplying uniforms and equipment. The Little Leaguers in turn boast about Brushon.

Yes, Ambrose Stampo can justly be proud of his reputation as a community businessman in Penn Township.

45 MC. IF

(Continued from page 24)

According to G. E., amateur transmitters may radiate harmonic or spurious frequencies that are not within their allocated frequency but this harmonic radiation will be less powerful than the true frequency and should offer less difficulty. Some receivers may be located so close to interference that the disturbance is noticeable regardless of frequency, G. E. said. In such instances they recommend use of G. E. high pass filter, Model RLW008, which is low in cost and easily installed.

G. E. Radio-TV Service Dealer Contest

John T. Thompson, replacement tube sales manager for General Electric, has announced a new contest to promote increased summer business for radio-TV service dealers. The contest will run from June 15 to August 15. The theme of the new contest will be more business through an annual vacation checkup for TV sets based on the philosophy of preventive maintenance.

Top prizes will include three new 1952 Dodge Panel Trucks. One hundred other prizes will be offered including winner's choice of jewelry, a complete fishing kit or a set of matched golf clubs and nylon golf bag. Entry blanks are available through G. E. tube distributors who will supply ad mats, mailers, streamers and door knob hangers. Participants need not rely on sales aids, according to G. E., but may use any ingenious methods of their own.

Entries will be judged on planning, originality and results including: how well the dealer's program was organized, what methods were used to reach radio and TV set owners and what effect the campaign had on his service business.

Winners will be selected by a board of judges including Mort Farr, president of NARDA; George Wedemyer, president of NEDA; Howard Sams, editor and publisher; John Rider, editor and publisher; and John T. Thompson of General Electric.

SOME INDUSTRIAL ELECTRONICS APPLICATIONS

ELECTRONIC HEATING

Induction Heating

- Induction heating of ferrous and non-ferrous metals
- Induction heating of ferrous metals only
- Induction heating of non-ferrous metals only

Dielectric Heating

- Sterilization, pasteurization, dehydration of foods
- Gluing and drying
- Dielectric heating of plastics and plastic preforms
- Heating, curing, etc., of rubber
- Dielectric heating of sheet material
- Dielectric drying of textiles, papers, etc.
- Dielectric heating, miscellaneous

CONTROL

- Carrier current control
- Combustion control
- Electrostatic precipitation
- Filament carburization
- Illumination control
- Induction heating control
- Level control of liquids and materials
- Electric load control
- Door opening and closing control
- Motion initiating, limiting, and stopping control
- Motor speed control
- Application of coatings
- Register control
- Remote control
- Switching
- Synchronization of power lines and generators
- Temperature control
- Timing control
- Railroad train control
- Welding control
- Relaying
- Humidity control
- Control of flow of materials and fluids
- Control of moisture in materials
- Elevator leveling
- Germ and insect control
- Control of color, reflectance, and gloss
- Fluid and gas pressure control
- Frequency control
- pH control
- Miscellaneous control applications

REGULATION

- Generator voltage regulation
- Skew regulation
- Speed regulation
- Slack regulation
- Voltage, current, and phase regulation
- Process regulation

POWER CONVERSION

- Frequency conversion
- Inversion
- Electroplating and electrolytic processing
- Rectification

COUNTING, SORTING, WEIGHING, INSPECTING

- Inspection
- Counting
- Flaw detection
- Sorting and grading
- Insulation testing
- Metal detection and removal
- Surface analyzing
- Weighing
- X-ray: industrial examination

MOLECULAR VIBRATION USES

- Chemical processing
- Germ and insect killing
- Supersonic inspection

MEASUREMENT AND ANALYSIS

- Balancing of machines
 - Capacitance measurement
 - Color measurement and analysis
 - Conductivity of solutions
 - Electric current measurement
 - Curve tracing
 - Density, opacity, and transparency
 - Dielectric properties
 - Frequency measurement
 - Flux measurement and analysis
 - Gas detection and analysis
 - Geodetic, meteorological, and geophysical measurements
 - Humidity measurement
 - Measurement of impedance and reactance
 - Light intensity measurement
 - Noise analysis
 - pH determination
 - Pressure of gases and liquids
 - Reflection measurement
 - Measurement of electrical resistance
 - Speed measurement and analysis
 - Smoke detection, measurement, and recording
 - Sound level measurement
 - Strain measurement
 - Telemetry
 - Thickness, distance and displacement
 - Time recording and measuring
 - Titration
 - Turbidity of liquids
 - Vacuum and ionization gages
 - Vacuum tube testing
 - Voltage measurement
 - Wave form analysis
 - Electron microscope, X-ray diffraction, etc.
 - Levels: liquids and loose materials
 - Measurement of moisture in materials
 - Flow of liquids, solids, and gases
 - Linear and weight measurement
 - Temperature indication and recording
 - High speed photography
 - Hardness
 - Chemical analysis
 - Vibration analysis and measurement
 - Watt-hour meter testing
 - Quartz crystal orientation, etc.
 - Miscellaneous testing equipment
 - Amplifiers
 - Oscillators, signal generators, etc.
 - Cathode ray tubes, oscillographs, oscilloscopes
- ## SAFETY
- Combustion failure
 - Fire and smoke detection
 - Liquid overflow protection
 - Intrusion alarms
 - Lighting
 - Automatic stopping of machinery
 - Over and under voltage alarms
 - Fume detection
 - Traffic signals, etc.
 - Miscellaneous alarm devices

Sure-Fire Method of CUTTING COSTS

**WITHOUT
SACRIFICING
VOLUME!**

Here is a simple buying and merchandising plan which has been proven successful by just about every profit-making store in the USA!

Perhaps the best way to examine it is in the words of the President of one of America's largest and most successful stores.

He stated recently:

"We recognize the many advantages of...brands in our day-to-day merchandising.

"We know that it is much easier to sell branded merchandise because the advertising has pre-sold the product to the consumer.

"We know that self-service and self selection are possible with brands, thereby cutting selling costs.

"And in a business with a close margin of profit, we are constantly looking for just such ways to cut selling costs without changing the character of our operation."

The consumers of America favor manufacturers' brands by eight to one. Need we say more?

*Brand Names
Foundation*
INCORPORATED

SIX QUALITY FEATURES OF ALL TUNG-SOL PICTURE TUBES MEAN BETTER TV RECEIVER OPERATION



1

Glass head type assembly is stronger, both mechanically and electrically—gives greater protection against leakages and arcing.



2

Double cathode tab provides double protection against failure in the cathode circuit.



3

Low resistance of outside conductive coating minimizes radiation of horizontal oscillator sweep frequency.



4

Fortified screen composition resists burning (X pattern).



5

Rigid control of internal conductive coating materially improves service reliability.

6

Tung-Sol Picture Tubes can be used with single or double field ion trap designs.



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TUNG-SOL ELECTRIC INC., Newark 4, N. J. • Sales Offices: Atlanta • Chicago • Culver City (Calif.) • Dallas • Denver • Detroit • Newark
Tung-Sol makes All-Glass Sealed Beam Lamps, Miniature Lamps, Signal Flashers, Picture Tubes, Radio, TV and Special Purpose Electron Tubes.