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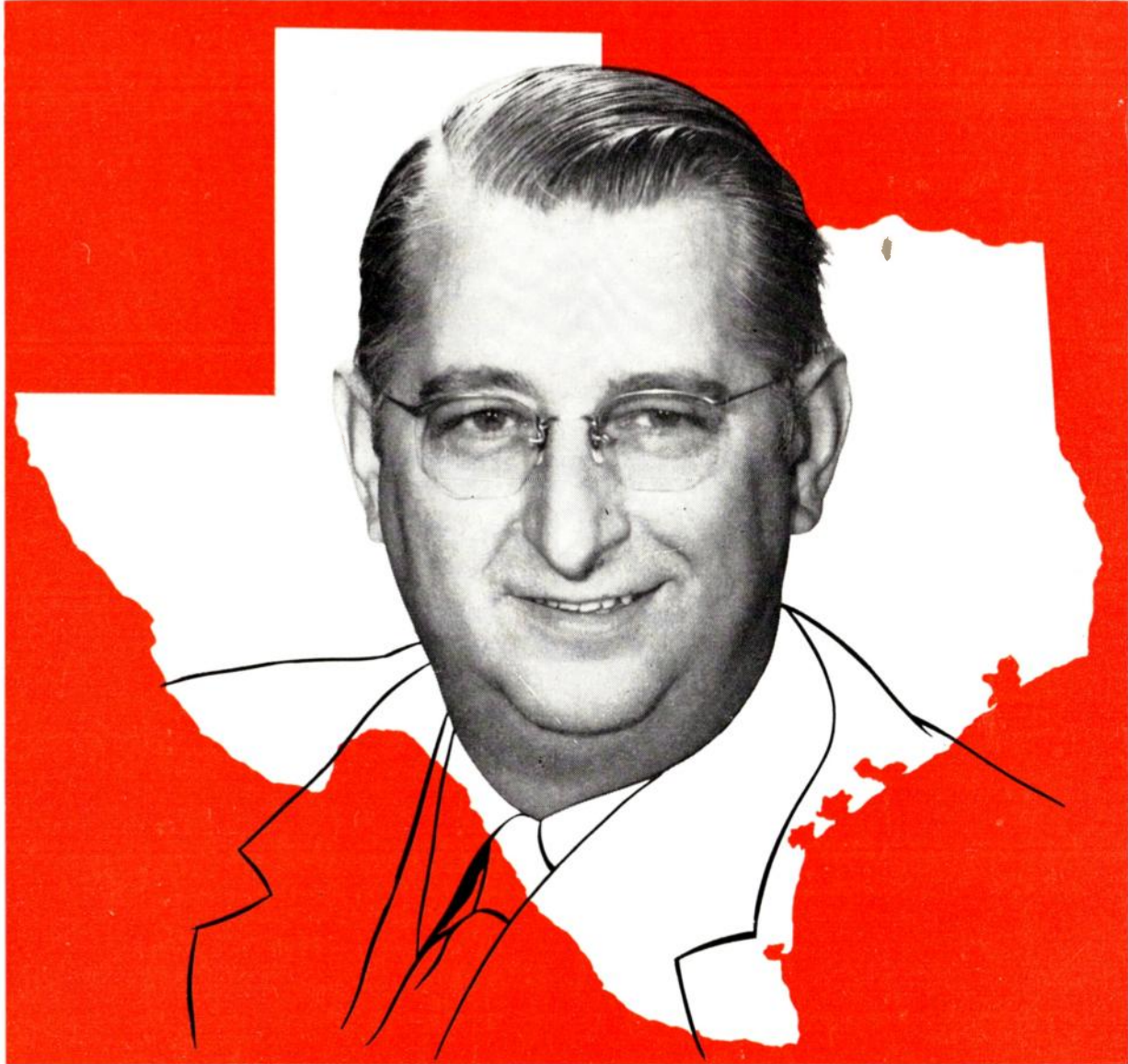
Volume 3 Number 1

October, 1953

**THE TEXAS
SERVICE STORY
PAGE 8**

**ESTIMATING TV
SERVICE CHARGES
PAGE 12**

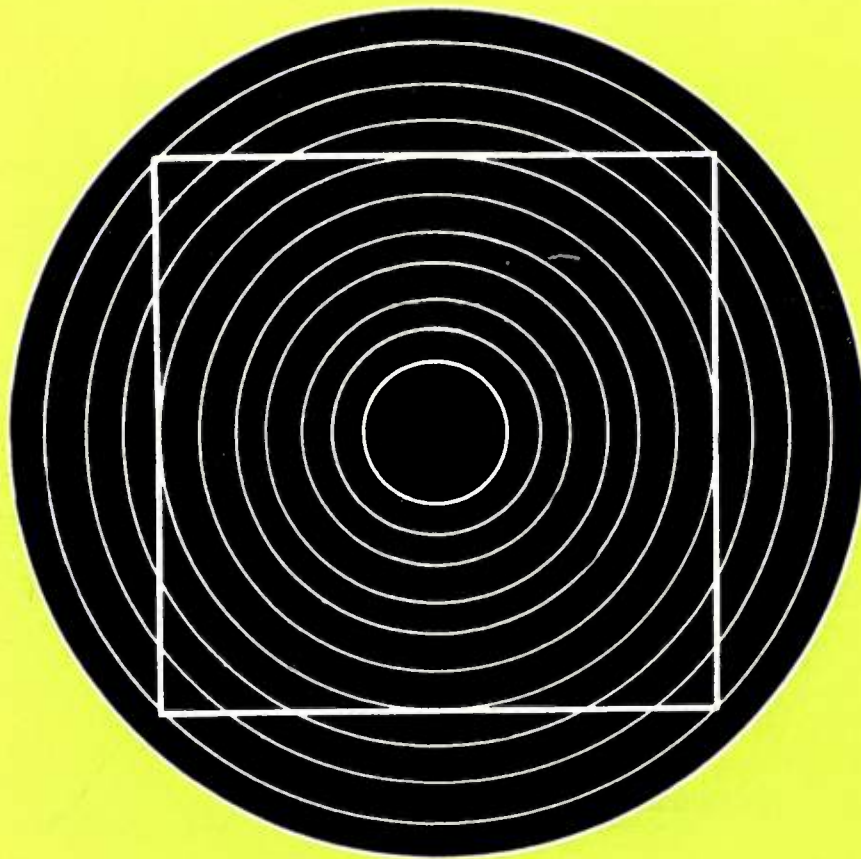
**TUBE INVENTORY
CHECK LIST
PAGE 22**



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things are NOT as they seem...

This is a perfect square within the circle
— it is an optical illusion that the sides bend.



Things are not as they seem . . .
These two fuses look alike . . .
But they are not.



This fuse may burn out anywhere along the length of the filament even in the cap—this blown fuse is impossible to detect visually.



This Littelfuse has a controlled blowing point—the filament is plated throughout its length except in the very center—the fuse will always blow here. A blown Littelfuse can be detected immediately—a Littelfuse feature.

Littelfuse holds more design patents on fuses than all other manufacturers combined.

LITTELFUSE

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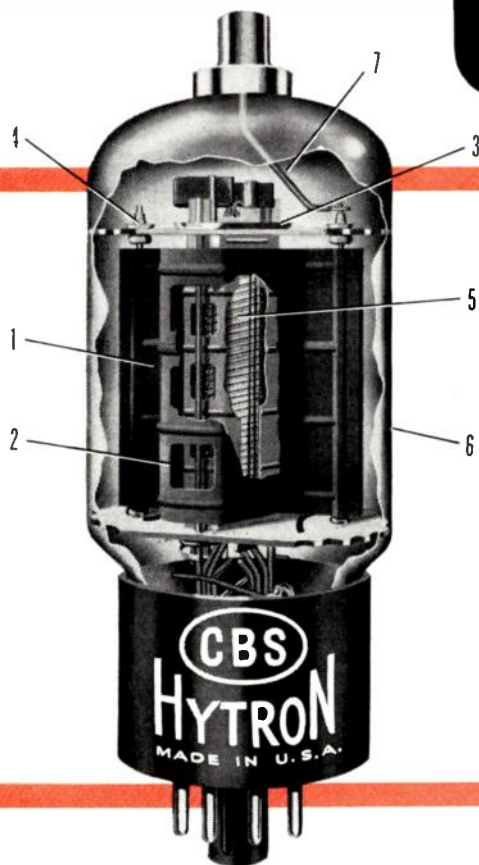
ANOTHER CBS-HYTRON CTS-RATED* FIRST

***CTS-RATED:** Rated for Continuous Television Service. In TV receivers, five tubes work . . . like transmitting tubes . . . *hard!* You know them: rectifiers, deflection amplifiers, damper diode. Larger-screen sets aggravate the problem. CBS-Hytron recognizes your need for huskier tubes for these sockets. Brand-new designs, not just improved tubes. CTS-Rated 5AW4 already answers your 5U4G low-voltage rectifier problem. Here is your new replacement for the 6BQ6GT: The new CTS-Rated 6CU6. Yes, more CBS-Hytron CTS-Rated tubes are coming. Watch for them.

FORGET: } RUN-AWAY PLATE CURRENT
HIGH-VOLTAGE ARC-OVERS
SHRINKING TV PICTURES

Replace 6BQ6GT with New Work-Horse

CBS-HYTRON 6CU6

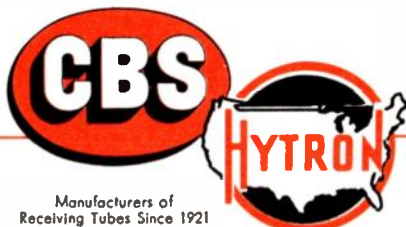


MECHANICAL FEATURES OF 6CU6

1. Heavier-gauge plate with large radiating fins.
2. Vents in beam plates and plate aligned for maximum radiation of heat from grids.
3. Anti-arc rings for uniform distribution of electrostatic field.
4. Anti-arc mica eyelets.
5. Gold-plated control grid to kill primary emission.
6. T-12 transmitting-type bulb.
7. Plate connection: "hard-soldered" and positioned to reduce heat conduction and arcing.

Cut your call-backs by up to 40 per cent with CBS-Hytron 6CU6. It's directly interchangeable with the 6BQ6GT. It's rated the same as the 6BQ6GT. *But* the new CTS-Rated 6CU6 will *live* under 6BQ6GT maximum ratings. How? The 6CU6 has generous *margins of safety* for: plate dissipation . . . plate current . . . high-voltage insulation . . . and high-line protection. The older 6BQ6GT is a good tube. But remember it was originally designed for 10- and 12-inch TV sets. Today it carries the load in 21-inch sets. Furthermore, it must combat the accumulated dissipation caused by: line-voltage variations . . . faulty receiver adjustment . . . and shifting values of components due to age and overload. Result: the 6BQ6GT may actually be operated well above its maximum ratings in many TV receivers.

In the new CBS-Hytron 6CU6, you have a tube that takes this rough treatment. And continues to ask for more. High voltage and heat meet their match. The weakest link in the TV tube line-up becomes the strongest. And your call-backs plunge downward. Bet you can't wait to try the CTS-Rated 6CU6. We couldn't. It's a honey! Watch for it soon at your CBS-Hytron distributor's.



CBS-HYTRON Main Office: Danvers, Massachusetts

A Division of Columbia Broadcasting System, Inc.

RECEIVING . . . TRANSMITTING . . . SPECIAL-PURPOSE AND TV PICTURE TUBES • GERMANIUM DIODES AND TRANSISTORS

Service Management

PAUL H. WENDEL, Editor and Publisher

VOLUME 3, NUMBER 1

OCTOBER, 1953

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LEONARD R. SMITH

President of the Texas Electronics Association . . . says: Let's band together . . . See page 8.

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Letters to the Editor

BOUQUETS

You have quite a following among our dealers in this area. They are very interested in your articles on business management as well as technical subjects. Along these lines, I have talked with . . . TV association groups . . . in Spartanburg, Greenville and Columbia. These groups meet regularly to discuss and iron-out mutual problems.

In nearly every instance 100 per cent of the service dealers belong to their local association. They have numerous times expressed a desire to have qualified persons speak or give demonstrations at these meetings. I am in turn passing this request to you . . . would it be possible for your magazine to send some one qualified in managing a service business successfully . . . I will be glad to contact each group for a meeting at any time you specify. . . .

H. McElhenney
McElhenney Company, Inc.

Spartanburg, S. C.

The copies of SERVICE MANAGEMENT you sent, were received by the library today. Thank you so much for all the material you have so kindly forwarded. We have found it very helpful. . . .

Hortense F. Richardson
Librarian

Albany, N. Y.

New York Department of Commerce
Once again we are pleased to receive our copy of SERVICE MANAGEMENT.

Your frank, vivid and clear analysis of current interests are just a few of the reasons why I read SERVICE MANAGEMENT. . . .

E. L. Shaw
Distributor Sales Manager
Federal Tel. & Radio Co.

Clifton, N. J.

The 1953 Radio Trade Supply Jam-boree was its usual huge success. Much of the credit belongs to you and we want to personally extend our thanks for your splendid cooperation.

Crandall Lassaux
Mark A. Hanick
Radio Trade Supply Co.

Des Moines, Iowa

Letters should be addressed to Readers Report Editor, SERVICE MANAGEMENT, 501 Fifth Avenue, New York 17, N. Y.

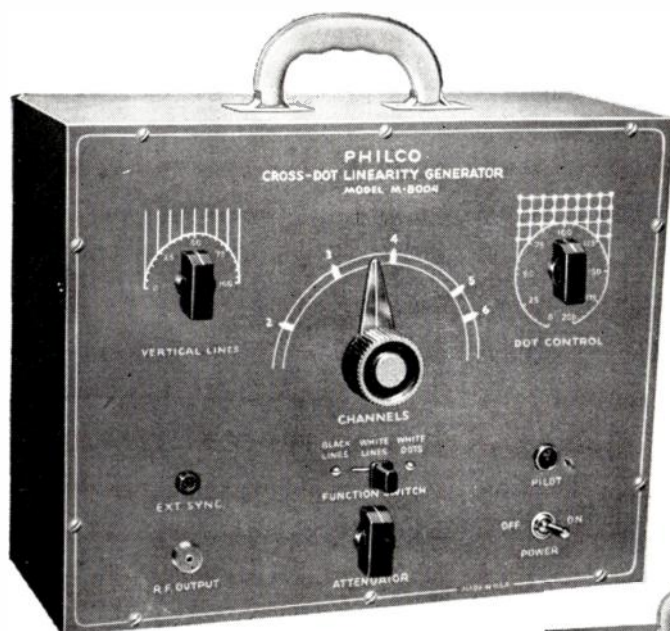
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NEW!

Exclusive!

PHILCO[®] Cross Dot TV Linearity Pattern Generator

More Stable Operation at
1/3 the Cost
of Comparable Generators



Model G-8004

Specifications: — Self stabilized oscillator • Variable output frequencies • Power consumption approximately 10 watts • Power supply—105-125 Volts, 60 cycles • large easy-to-tune dial • high level output controllable with variable attenuator.

Again . . . Philco leads the field! For the finest possible linearity adjustments without station pattern, here is the all new *cross dot* linearity pattern generator. This unit not only lets you make TV linearity adjustments more quickly and accurately but also permits precise routine adjustments and trouble shooting with amazing economy of operation . . . Light, rugged, portable, heavy gauge steel case . . . finished in durable gray hammertone . . . See your Philco distributor now or write Philco, Accessory Division, "A" & Allegheny, Philadelphia, Pa.

*Now Yours on New
Special Payment Plan*



Model M-8104—TV Field Strength Meter • Offers more features than any unit at this popular price . . . Super Colorado Tuner for low noise and high gain . . . May be used to check TV boosters, antenna combinations, interfering signals and picture signal strength.



Model 7008—Visual alignment Generator • Combines in one economical unit functions ordinarily found only in a cumbersome collection of costly devices . . . Includes extra sensitive built-in oscilloscope . . . AM, FM, and audio generators. Sweep output flat to within .2 DB/MC.

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and more
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Editorial

"OUR OPINION"

DURING the summer just passed the mortality rate in the electronic servicing business was probably the highest in the history of service. Yet, paradoxically, the better service business enjoyed a good summer's business and are going into the Fall season in excellent shape.

These tangible developments in the business of servicing are the crystallization of a trend that set in with the TV Service "boom" ushered in by the interest in the national political conventions last year. This "boom" lasted until shortly after the inauguration when TV service volume gradually tapered off into the conventional lethargy of summer.

The convention-inspired TV Service boom gave stable service business the "second wind" they needed to orient their businesses to the practical realities of consumer product servicing. The "squeeze" during the first half of 1952 had brought the final, sobering realization to owners of service businesses that the golden days of TV Service were finished. Many of them went through a rocky time for several months paying the price of over-expansion and over-buying in supplies and equipment.

That experience gave those who weathered the storm a hard-won lesson in basic business economics. It was experience they applied wisely when the upsurge of business, in the wake of the presidential election campaigns, gave them respite from their financial pressures.

One of the basic facts that TV Service executives learned was that they must not rely entirely on TV for their business volume. Consequently when the election boom tapered off most of them were prepared to solicit business on auto radios, AM radios, hi-fi units and the woefully neglected servicing of record players.

Just of the several indications of this trend that deeply impressed your editor was the great number of requests from service operators for copies of the reprint of an article on the record changer replacement market that initially appeared in the April 1952 edition of *SERVICE MANAGEMENT*.

Who are the men that have been failing in the TV Service business?

When the election year upsurge in TV Service set in most service businesses were swamped with calls for service.

Having been "burned" once by over-expansion to handle boom-proportion business, most of the wise heads did the best they could with their established technical forces. They refused to expand madly on the basis of this apparent short-lived upsurge in business.

With more service calls available than the established companies could handle easily, many technicians seized upon it as an opportunity to launch their own one-man service businesses. Although under-financed and poorly equipped with servicing gear they were able to get by fairly well during the life of the "boom" on some of the surplus and unwanted business the older companies were missing.

The pressure on these poorly equipped and under-financed service operations started when the service volume of the established companies fell off to the point where they again went after service business aggressively. At today's costs of living and operating a man cannot long exist in an activity that gives him a submarginal income. When the summer slump in TV Service sets in in earnest most of these boom-born one-man businesses folded up.

The most significant thing about these developments in the business of servicing is the proof it provides that the bulk of the servicing of home electronics products is now handled by firmly established service businesses. Further proof is evident in events like the State-wide service convention held by the Texas Electronics Association, the annual NATESA convention this month in Chicago, the merger of all service technical and business associations in Philadelphia into a service-dominated committee, and up-coming service events in the works in several other States.

The independent service businesses that dominate service today were molded, largely without industry interest or assistance, in the fire of harsh competition. Accustomed to shift for themselves and to fight their own battles, these businesses possess a rugged individualism but they are rapidly learning that they can accomplish much by working together in association projects.

The one fact that was crystal clear at the recent annual NEDA convention was that the replacement parts industry

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\$24⁹⁵
VALUE
for only \$5.00
and 30 Sylvania
Premium Tokens . . .

Between Aug. 1st and Nov. 15th

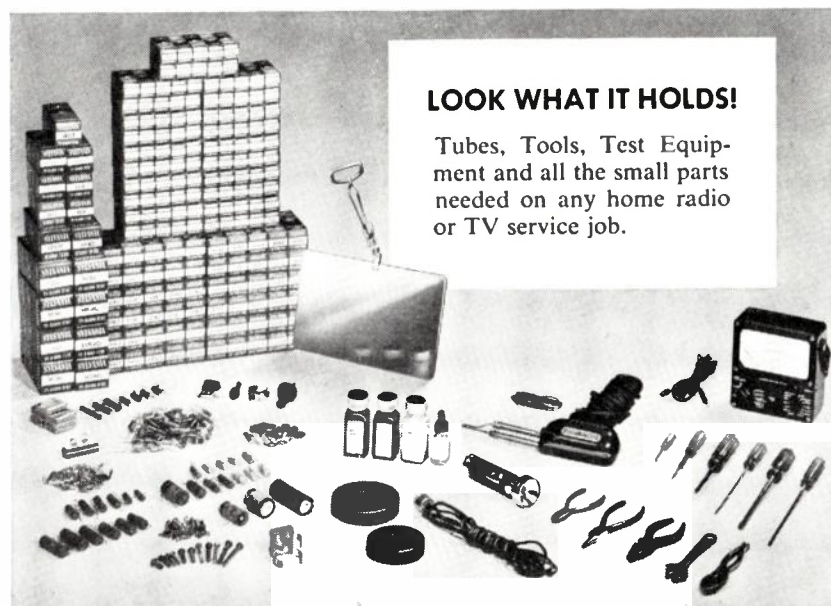
You get both chest and parts tray

Servicemen! Here's Your Sylvania

T-N-T CHEST

(TUBE AND TOOL)

The Most Valuable Service Aid You've Ever Seen!



Talk about a useful servicing aid . . . this Sylvania T-N-T (Tube and Tool) Chest is really it! Carries more tubes, tools and parts than any chest on the market!

LOOK AT THESE FEATURES:

- Bass and fir plywood case
- Waterproof Du Pont Fabrikoid cover
- Holds 187 receiving tubes
- Lightweight folding aluminum tool and parts tray
- Unbreakable plastic handle
- Brass-plated hardware
- Room for mirror and ohmmeter
- It's a complete, portable service shop!

ACT NOW . . . Offer Limited!

This chest is now yours for only \$5.00 and 30 Sylvania Premium Tokens. Offer good only between August 1st and November 15th. See your Sylvania Distributor who has these kits now.

SYLVANIA

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LIGHTING • RADIO • ELECTRONICS • TELEVISION

In Canada: Sylvania Electric (Canada) Ltd.
 University Tower Building, St. Catherine St., Montreal, P. Q.

Remember, you get 1 Sylvania Premium Token with every 25 receiving tubes or with every picture tube you buy.



texas adds stature to electronic servicing

By PAUL H. WENDEL, Editor, Service Management

First fully representative state-wide convention impresses Industry leaders with potency of Service as a Business

"Our Industry is too big, too constructive, too rich in potential, too needed by the public for us to permit ugly, dirty little practices to thrive in it. Let's band together, then, for a cause we know is right, and we can have the satisfying knowledge that we will have all right thinking people with us, working to make a tomorrow we can live in with satisfaction, dignity and pride."

**LEONARD R. SMITH, President
Texas Electronics Association**



Fort Worth Star Telegram Photo

Progress report at the Texas Radio & Television Service Clinic and Electronics Fair. Seated: Hal Chase of Detroit, left, and Truett Kimzey, program chairman. Standing: left to right, Leonard R. Smith, president, TEA, Paul H. Wendel, editor and publisher of SERVICE MANAGEMENT, and Will A. Shaw, executive secretary of TEA.

They did it in Texas. Representative elements of service from every corner of that great state gathered in a history-making three-day convention that gave many industry executives a new concept of the business of servicing as it exists today.

It was a Service Convention from beginning to end. It was planned, promoted, managed and financed by the affiliates of the Texas Electronics Association. Although invitations were sent out to manufacturers, distributors and representatives of the electronics parts manufacturers to participate in the convention by showing their latest products, no pressures were used to coerce anyone to "help pay the freight." Registration fees were very nominal and no resentment was shown or felt against those who did not take advantage of the invitations.

Truett Kimzey of the Truett Kimzey Company of Fort Worth, clinic chairman, expertly handled the extensive series of meetings as master of ceremonies. These business men in electronic service in Texas were serious about their program of meetings. They came by special bus, automobile, train and air from all over the Lone Star State to hear a parade of blue-chip speakers talk about the business of electronic servicing. Delegations registered from Amarillo, Bib Spring, San Angelo, San Antonio, Houston, Beaumont, Tyler and dozens of other cities and towns scattered over the far reaches of that great state. They packed the

(Continued on page 36)



Advertising

By H. G. KRONENWETTER,

that sells service

Manager of Advertising Distribution Sylvania Electric Products, Inc.

Cooperative campaigns focus attention on the TV Service Organization for increased sales

Modern business practice evolves an increasing responsibility on management because almost every business is now a group of specialized activities. These activities require co-ordination so that individual specialists may perform their greatest service at lowest possible cost. The TV Service business is no exception. No longer can a service operation thrive if emphasis is wholly on technical abilities.



The management of a TV Service organization must select, train and direct the operation of technicians. That is a part of management responsibility. Another part, and a very important part, is to create acceptance for the technical staff. That means that TV Service managements must do an aggressive, modern selling job. TV Service selling begins at the top of the organization. It is the number one responsibility of TV Service managements today.

The importance of this concept of management responsibility has been shown, time and time again, in some of the larger TV Service organizations that have risen to prominence—not through technical background—but through the ability of businessmen who have organized and built large operations on sound business principles—with emphasis on sales promotion. Other good examples are evident in cases of small engineering groups that have grown into great electronic industries through the application of sound business principles—with emphasis on the importance of selling.

ATTRACT CUSTOMERS

Progressive managements realize that

the time has long since passed when people would beat the proverbial path to the better mouse trap. Today a business, and a TV Service business is no exception, must attract customers. To attract customers the TV Service organization must use modern selling methods. This means advertising, to spread an attractive, effective professional message to the greatest number of prospective customers.

To avoid excessive cost the TV Service management must sense the market, select the media, must direct it closely to its market, must take care to keep an active, constant flow of sales appeals.

Progressive brand-name manufacturers realize that this is their problem as well as that of the TV Service organization. The manufacturer's attitude is not charitable, it is simply a matter of good business practice. The manufacturer realizes that many dollars are spent continually to appeal to the consumer, that many more dollars are spent to stock distributors. But this

money is wasted unless his goods move to the consumer because the TV Service organization sells them as a part of service rendered to the consumer.

CUT ADVERTISING COSTS

Aggressive TV Service organizations recognize that this situation gives them an opportunity to do a more effective selling job and increase their sales and profits with lower advertising costs. They realize that this cooperative process increases their stature as a business, by associating their service with big brand-name companies, without loss of their individual, local identity.

The responsibility for recognizing and putting cooperative advertising to work is the responsibility of TV Service managements. It should not be relegated to the status of an unimportant activity. TV Service management time is valuable. Recognizing this, progressive manufacturers prepare complete advertising programs, geared to the needs of TV Service organizations, so that they can be put to work in the

(Continued on page 34)



A section of Sylvania's advertising distribution operations at Buffalo, N. Y. is devoted exclusively to imprinting advertising that sells service.



MARTIN BETTAN, director of sales and engineering for Radio Merchandise Sales, Inc., has been elected president of the Antenna Manufacturers Association. . . . **DR. WILLIAM R. BURWELL**, president of Brush Electronics Co., has joined the board of directors of the Stanford Research Institute. . . . **DOUGLAS CARPENTER** has been appointed chief antenna development engineer for JFD Manufacturing Co. . . . **CAROLYN CHORLTON** has been appointed as a physical chemist in the Aerovox research department. . . . **JOHN B. COULLARD** has been appointed sales engineer for the General Electric Components Department. . . . **L. BERKLEY DAVIS** has been appointed general manager of General Electric's receiving tube sub-department. . . . **KING DENDY** has been appointed to the research staff of the engineering div. of Edwin I. Guthman Company. . . . **G. E. DITTMAN** has been appointed manager of the east central renewal sales district of RCA Victor's tube department. . . . **A. CAMERON DUNCAN** has been named manager of merchandise operations of the home instrument department of the RCA Victor Division. . . . **WILLIAM DUNN**, vice president in charge of sales and engineering for Raytheon's Television & Radio Division, says: "Let us in manufacturing never forget that thousands of loyal, hard-working dealers have built billions of dollars in sales." . . . **ALLAN EASTON** has been elected vice president and general manager of Granco Products, Inc. . . . **EDWARD FINKEL** of JFD Manufacturing Co., has been elected secretary-treasurer of the Antenna Manufacturers Association. . . . **HENRY FOGEL** has been elected president of Granco Products, Inc. . . . **EDWIN A. FREED** has been appointed manager of operations for General Instrument's plant at Elizabeth, N. J. . . . **JACK GRAND** has been elected chairman of Granco Products, Inc. . . . **DONALD H. GRULKE**, author of the "Master Speakers Handbook," was a guest speaker at the third quarterly meeting of NEDA's Northwest Chapter. . . . **LLOYD A. HAMMARLUND**, president of Hammarlund Manufacturing Co., Inc., has been elected to the executive board of the Electronic Manufacturers Assn. . . . **EARL HART** has been made vice president in charge of RCA Distributing Corp. divisions at Kansas City, Mo., and Wichita, Kan. . . . **MALCOLM C. HUTCHISON** has been elected a director of the General Instrument Corporation. . . . **KARL W. JENSEN**, vice president of Jensen Industries, Inc., has been elected chairman of the Association of Electronic Parts & Equipment Manufacturers. . . . **I. J. KAAER**, manager of engineering for General Electric's electronics division, says: that such advances as the automatic factory, color television and a nationwide order service and warehouse inventory with all paper work done automatically by electronic business machines will come. . . . **ABRAHAM G. KALSTEIN** has become assistant chief engineer for the Aerovox Corporation. . . . **EUGENE M. KEYES** is the new president of Edwin I. Guthman Co. . . . **EDWARD L. LAPE** has been appointed general merchandising manager for United Motors Service division of General Motors Corporation. . . . **ROBERT E. LEE** has been named general manager of General Electric's cathode ray sub-department. . . . **WILBUR E. LLOYD** has been appointed controller of the engineering products department of RCA Victor Division. . . . **DONN MASON**, personnel analyst, trainer and counselor, discussed the hiring and training of proper personnel at the recent NEDA Convention. . . . **JOHN C. McGRANAGHAN** of St. Louis, has been appointed a district sales manager for General Electric replacement tube sales. . . . **SEYMOUR NAPOLIN** has been elected vice president and chief engineer of Granco Products, Inc. . . . **DONALD PEASE** has been appointed chief draftsman for Clarostat. . . . **J. HARVEY PICKETT** has been appointed chief engineer for the Aerovox Capacitor Division. **HAROLD W. POPE**, formerly chief engineer at Convair's Guided Missile Division, has been elected fourteenth associate of Sanders Associates, Inc., of Nashua, N. H. . . . **JACOB J. REPETTO** has been appointed assistant sales manager for Clarostat. . . . **E. W. RITTER**, vice president of the Westinghouse Electric Corporation, has been elected to the Board of Trustees of Elmira College. . . . **R. B. SAMPSON**, manager, distributor financial services, RCA, discussed financing for future growth at the recent NEDA Convention. . . . **CHARLES S. SCHLAGLE** of Philadelphia, has been appointed to the sales staff of Snyder Manufacturing Co. . . . **BEN SNYDER** of Snyder Manufacturing Co., has been

(Continued on page 25)

October Sales Tips

The third of a series of guest editorials
by distinguished sales executives.

By **FRANK W. MANSFIELD**
director of sales research
Sylvania Electric Products Inc.

It seem to me that the basic conditions in this industry of ours are such that our horizons are absolutely unlimited. Your future is going to be pretty completely what you make it. I am going to make three or four basic suggestions to make things better for you.

First, have more association meetings. Exchange your ideas. Find out the kind of things you are doing right. Do more of them. Find out the kind of things you are doing wrong. Do less of them. Find out about improvements that can be applied to your technical and your business operations.

Set up contacts between your association and other associations with similar interests. Get in touch with people at RETMA, NEDA and NARDA and others. They have the same kinds of problems that you have.

Engage in a little fact-finding for yourself. Spend some money on market research to find out the facts of your market. There are a lot of things you can learn about what the public wants, what it needs, what it thinks it needs. You will be a better business man when you know the answers.

Avoid getting panicky or excited everytime you hear of a little unfavorable publicity. We have all heard an awful lot about gyp repairmen. There will always be dishonest people in every profession, incompetent people, whether the profession be law, medicine, repair or anything else. But the public isn't dumb—they are going to know the difference between the honest and the dishonest. The public will take care that the dishonest do not last very long. Economics has a very unkind way of disposing of the inefficient, the dishonest and the incompetent.

Spend a few dollars on public relations. It will do you, and the industry, a great deal of good—to know more about what you are doing.

Transistor Notes

The development of experimental point-contact transistors which oscillate above 400 megacycles per second has been reported by the Tube Department of the RCA Victor Division, Radio Corporation of America.

The experimental transistors have already reached frequencies as high as 425 megacycles per second, well into the ultra-high-frequency region utilized by UHF-television and a wide range of special electronic communications and industrial equipment.

The developmental devices, which point the way to an important extension of transistor applications, were described in a technical paper by F. L. Hunter, RCA transistor engineer, before the joint IRE-AIEE Conference on Transistor Research at Pennsylvania State College.

The paper outlined experiments conducted with point-contact transistors made from positive- or p-type germanium crystal. Last year, addressing the same group, B. N. Slade disclosed RCA's development of the first VHF transistors, which had reached a then record-high frequency of 225 megacycles per second.

Most point-contact transistors, including the two commercial RCA types recently announced, utilize negative- or n-type germanium. The n and p characteristics of germanium crystal are determined by the type and amount of impurity deliberately "doped" into pure germanium during processing.

RCA's experiments with developmental p-type point-contact transistors indicate that they are capable of oscillating at a substantially higher frequency than n types, Mr. Hunter said. Tests conducted with transistors similar except for the type of germanium used showed that the median oscillator frequency of the p-type transistors was 33 per cent higher than the median of the corresponding n-type transistors.



ADMIRAL CORPORATION has announced one of the largest molded color plastic cabinets for its new radio-phonograph combination (see cut). . . . **BRITISH INDUSTRIES** exhibit at the New York Audio Fair filled three rooms including one supervised by G. A. Briggs and Harold Leak, two of Britain's most eminent authorities. . . . **CARSON DISTRIBUTORS, INC.** of Saginaw, Michigan has been appointed distributor for RCA and RCA Victor



Admiral's molded color plastic radio-phonograph cabinet

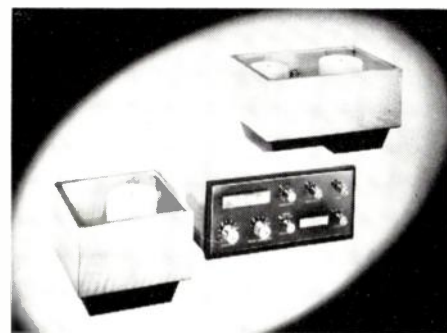
products. . . . **CLEAR BEAM, INC.** of Burbank, California has developed a new TV antenna for use on the outside of any trailer, said to be a high efficiency Rhombat antenna for reception of VHF-UHF signals up to 100 miles. . . . **COOPER SALES CO.** of Trenton, N. J. has organized dealer sales of Brach TV antenna kits being sold through Levittown Home Improvement Corporation of Levittown, Pa.; about 40% are installed by the home owner. . . . **THE DU PONT COMPANY** reports that its federal income tax topped total wages and salaries paid to employees during the first half of 1953 — by a whopping seven million dollars. . . . **EICO** is now offering a new free decal to help TV Servicemen sell technical ability to customers and prospects while identifying them with Eico. . . . **GENERAL ELECTRIC** has announced a new alumnized picture

tube promotion package for service dealers—to tie in with their national advertising; has announced increased production of alumnized picture tubes; has announced the addition of five new high-reliability tubes to its line, bringing the total up to thirty one; reports



JFD ships UHF Antennas to Virginia

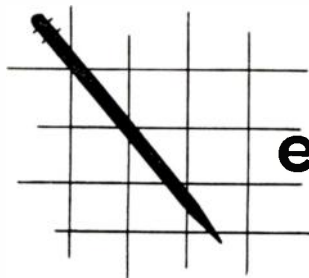
that the average number of tubes in nearly 24 million homes in 21½ for TV and 9½ for radios, 31 in contrast to an estimated 19½ light bulbs; in aggregate 905 million light bulbs vs 964 million radio tubes! . . . **HI-FI** enthusiasts, audiophiles and the public, to the tune of 21,000, braved a Chicago heat wave to attend the first annual International Sight and Sound Exposition. . . . **JFD** recently sponsored a course in employee relations at Cornell University—for its executives; shipped its first two carloads of UHF



Regency Hi-Fi home ensemble

antennas to Virginia parts jobbers (see cut). . . . **JONES & LAUGHLIN STEEL CORPORATION** has announced a superior corrosion resistant plastic coated electric welded steel tubing for TV antennas—in five and ten foot lengths with 16 and 18 gage wall-thicknesses. . . . **K-G ELECTRONICS CORP.** of Chicago has moved its factory and offices to a new modern building. . . .

(Continued on page 25)



estimating tv service charges

By WILLIAM "BILL" LEONARD,

Service Business Consultant

Of all the evils that have infested the TV service business by far the worst have been associated with the pricing of service jobs. There are, and probably will continue to be, outright crooks in the electronic service business. Yet these men of easy conscience are responsible for only a small percentage of the set owner unhappiness with TV service. Their petty larceny minds sooner or later get them into enough serious trouble to squeeze them out of the business.

The real enemy of stability in the independent service industry is ignorance—the day to day fumbling of normally honest men who are miserably uninformed on the simple fundamentals of the cost of doing business. They have not bothered to learn there is only one way to build a stable business—through forthright dealings with customers.

The most common mistake made by technicians who start service business of their own is that they can charge less for their services than the larger service companies because they have less "overhead." Actually, a one-man service operation **must get more money for the labor of its owner** than a 3- or 4-employee outfit, if it is to return an income comparable to what he could make as a technician working for a larger company.

OVERHEAD COSTS

When a business is started to employ its owner full-time, a clock-work, money-eater known as "overhead" begins to clutch for money on the very first day the business opens. This is true whether the business is operated from a storeroom, a residential garage or a room in the technician's home.

Approximately the same "fixed" overhead will carry a three-man organization as is required for a one-man operation. This means that in a 3-man company each man must carry only $\frac{1}{3}$ as much expense "dead weight" as the technician operating alone. Further, there are certain essential "operating expenses" that will carry five men at

the same cost required for a one-man business. That means that the technician working alone must carry five times the expense dead-weight as each man working in a 15-man company.

REPLACEMENT PARTS SALES

Another big illusion that betrays men who start service businesses with very limited capital is the prospective income from the sale of replacement tubes and parts. On an average, the sale of \$500 worth of tubes and parts per month will provide a gross profit of only \$175.00. That will hardly cover the operating expense, maintenance, depreciation and insurance on a car or truck necessary for TV service work.

And further, assuming that it was possible for one man working alone to consistently handle enough service to sell \$500 worth of replacement tubes and parts per month, he would have to have a minimum stock of two thousand dollars worth to work from in his own shop. Otherwise the frequency of the trips he would have to make to parts jobbers would rob him of too much effective working time.

FIELD SERVICE CALLS

Recently a service business man in one of the larger cities sent the following breakdown of his costs of field service calls to the editor of SERVICE MANAGEMENT. In figuring these costs, it was necessary to take into account the technicians' time spent checking in and out, time spent in exchange of parts, etc. On 1000 calls the time per call was $1\frac{1}{2}$ hours. Since the minimum wage for competent technicians in that area is \$2 per hour, here is the way the per call cost figures out:

$1\frac{1}{2}$ hrs @ \$2.00	\$2.25
8 miles @ 7c per mile56
Dispatch and management of routes40
Clerical, bookkeeping, rent, heat, light and miscellaneous76
Advertising50
Depreciation & Investment18
Total cost per call	\$4.63

Of course, there has been a lot of

confusion about how to charge for TV Labor among men who are honestly trying to build substantial, stable businesses and who want to be implicitly fair to their customers. This is understandable to everyone familiar with the eccentricities of electronic assemblies. Very few service businesses can afford to hire cost accountants to guide them in setting up tables of equitable charges.

LABOR CHARGES CHARTS

The original SERVICE MANAGEMENT Standard TV Labor Charges Chart, which appeared in the May 1953 issue, was welcomed by service dealers in all sections of the country. To most of them it provided a yardstick to measure the adequacy of their own charges and as a basis for estimating service jobs.

The accuracy of the SERVICE MANAGEMENT chart was checked with competent service businesses in all sections of the country. Typical of the responses received was the following addressed to the editor from Harold R. Robbins, head of the highly rated Paramount TV Service Co., of Des Moines, Iowa:

"After checking your price sheet against ours we find the picture very accurate. The cost of doing business today is different than in the past. The average shop doesn't realize that it costs them about 42 cents to process an invoice.

"Perhaps the most difficult task for a service technician is to get a legitimate price for his work. Normally he works on the basis of trial and error and has too little confidence in himself."

In the interim since the first chart was published, the need has arisen for a schedule of charges that would make the estimating of service jobs easier to handle. Also, many service executives have felt that a differentiation should be made between the charges for technical knowledge and analytical ability and that for the time and labor required to replace an identified defective part.

This chart was developed with the cooperation of the Cost Committee of the Television Service Association of

(Continued on page 32)

Service Management

REVISED FOR ESTIMATING

Standard Labor Charges for Television Service and Repairs

This schedule of standard prices covers labor charges only but includes all testing necessary to locate faulty part or circuit. Prices for replacement parts and tubes used are extra. Only standard brand parts, accessories, tubes and batteries are used in effecting repairs.

GENERAL SERVICE

Home Call	
1st ½ hour.....	\$ 5.00 minimum
After 1st ½ hour for each 15 minute period add \$1.25	
Home call, pickup, delivery, pull, install and adjust up to 21" ..	7.50
24" - 27"	8.50
Projection	10.00
Call Backs	
Call backs other trouble.....	5.00

SHOP SERVICE

Basic technical fee	12.50
For diagnosis or analysis only (includes cleaning, testing tubes, checking alignment and circuitry check)	
Phono TV combinations add	4.00
Additional technical fees for installing parts, (materials extra)	

Bench	
Hourly rate	5.00
Minimum ½ hour — shop	3.50

AC Interlock	
Locate and install.....	1.50

Antenna	
Install built-in	3.00
Locate and repair broken wire (built-in).....	3.00

Alignment	
Audio Section	
IF	2.50
Discriminator	2.50
Ratio detector	2.50
Complete	4.50
Video section	7.50

Beam Bender	2.00
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Capacitor — by pass and coupler	each 1.00
Filter unit	2.50

Choke Coil	each 2.00
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Controls	
Audio section—volume control, single	\$ 2.50
dual	3.50
Video section	2.50
single	2.50
dual	3.50

Clean controls	1.50
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Connection	
* Loose — locate and repair	2.00
(* Except tuner)	

Dial	
Dial cord replacement	2.50
simple	2.50
complex	3.50

Estimates	
Minor check only — Min.	\$5.00
Plus — Pick-up & delivery charges	

Modifications	Pts.	Labor
Modify to remove retrace.....	.65	2.50
Modify to prevent blooming	2.00	2.00

* Picture Tube	
Resolder pins	1.00
Install and adjust CRT up to 9"	3.00
10" to 17"	7.50
18" to 21"	8.50
Projection — 24" - 27"	10.00

Rectifiers	
Selenium—replace	2.50

Resistor	each 1.00
-----------------------	-----------

Short	
* All circuits — locate and clear	2.00
(* except tuner)	

Transformer	
Audio section	2.50
Power section—mounting charge	4.50
(plus 25c per connection)	
Sweep section — output — horiz.	5.50
oscillator, horiz.	Standard \$3.00
output, vertical	
oscillator, vertical	Special \$4.00
IF transformer, video	

Tuner	
Pull and install	12.50
Clean, lubricate and adjust contacts	2.00
Locate and replace defective capacitor or resistor	7.50
Locate and repair loose connection or short	3.50
Yoke	4.50

ANTENNA INSTALLATION AND SERVICE

Installation	
Installed complete with, not to exceed 50 feet of 300 ohm lead-in, all necessary standoffs and mounting base, with 6 ft. mast on private two-story home	27.50 minimum

(This is outside installation of lead-in wires. Any fishing of wires between walls or special installation will be quoted on request and there will be additional time charges at \$7.50 per hour, plus material.)

Installed on chimney with bracket and 6 ft. mast	30.00 minimum
Installations on large private homes and apartment buildings, prices are quoted.	

Antenna Work	
All antenna repair work—one man	hourly rate 7.50 minimum
All antenna repair work—two men	hourly rate 9.00 minimum

HOW THIS CHART WORKS — On shop jobs add pickup and delivery, basic technical fee and installation fee for additional parts, plus the list price of parts used.

Example: Set requires 1—100 ohm resistor, 1—.02 mfd 600 volt capacitor, AC interlock and volume control.

Home call, pickup and delivery ..	\$ 7.50
Basic technical fee	12.50
Install resistor	1.00
Install capacitor	1.00
Install AC interlock	1.50
Install volume control (std.)	2.50

Total labor	\$26.00
Parts	2.80
Total bill	\$28.80

Note * on picture tube only, no basic technical fee is charged.

Add: Pickup and delivery and installation fee

This schedule of suggested labor charges for the servicing and repairing of television receivers was compiled by the Editors of **SERVICE MANAGEMENT** magazine and the Cost Committee of the **TELEVISION SERVICE ASSOCIATION OF MICHIGAN**. These charges are based upon time studies and cost analyses of time required to accomplish the listed service operation on a wide variety of television receivers with the work performed by competent service engineers.

The charges listed in this schedule are for correcting troubles that appear steadily without interruption. They do not apply to circuit faults that appear intermittently and which require additional time for testing and observation. Charges for servicing intermittents will be higher based upon the additional time required to locate and repair the faulty circuit.

Form TVL2 — Wall Charts of this schedule, printed on 11" x 14" Bristol Board, are available from your Electronic Parts Distributors at 50 cents each.

The **SERVICE MANAGEMENT** schedule "Standard Labor Charges for TV Service and Repairs" reproduced in this issue is available in the form of a Wall Chart. These Wall Charts are printed on 11" x 14" Bristol Board.

If your Distributor does not have them, send \$1.00 to **SERVICE MANAGEMENT** business office for two copies — or one copy each of the two price charts now available.

Printing mats suitable for making up mailing pieces to publicize the **SERVICE MANAGEMENT** schedule of TV Labor Charges, are available at \$2.00 each.

These mats will reproduce the schedule for an 8½ x 11 mailing piece.

A copy of this printing mat may be obtained by sending \$2.00 to: **SERVICE MANAGEMENT**, Circulation Department, 161 Luckie Street, N. W., Atlanta 3, Ga.



legal action vs service frauds

By **HON. HOWARD M. FENDER**, District Attorney, Tarrant County, Texas

Adapted from an address to the Texas Radio & Television Service Clinic and Electronics Fair

There is a general feeling that lawyers and magicians are somewhat akin in that they are always hiding everything behind one hand and working with the other. In order to be off on an even basis with regard to any feelings you may have toward lawyers, I will point out that I acquired, about a year and a half ago, a television set, and just about a week ago something went wrong with it and a man came in and fixed it.

That night I was watching the Kid Gavilan fight. I saw only about half the fight. The other half I watched the snow storm, so I had formed an immediate opinion of television repairmen about that time. Time has somewhat tempered that, and I am back where I can speak civilly of them now. The neighbors were not at home and I didn't get to see the end of the fight. We had gotten rid of our radio, so we had to wait for the newspaper the next morning to find out who won.

COLLECTIVE ACTION

Truett wrote me a letter and asked me if I would cover the state laws that may apply to any gyp service stations or legal action possible against any serviceman who charges for parts or tubes that are not put in a television set being repaired. Of course the answer to that lies in the fact that the enforcement of any law in that regard depends largely on the collective action of you gentlemen.

We who are in law enforcement have definite limitations placed upon us with regard to what we can accomplish in our courts. We must receive evidence which we can present to the jury, before a judge. In a matter of this sort, we will need expert evidence and a testimony which will definitely prove that charges have been made for services that were not performed.

My investigators would look rather ridiculous if they went out and poked their face in the back end of a television set and tried to ascertain whether or not certain repairs had been made.

They would be in the same position as you if you opened a strange law book and tried to pronounce the law after reading one or two pages. So it will be necessary that you do a certain amount of soul searching among yourselves and decide just how much you want to put these people out of business.

Then, through your proper committees and any other service organizations that you may belong to which are connected with the television sales and repair industry, you must determine what code of ethics you want to set up—what level of integrity you want to establish in your industry and then when your members fail to live up to that, it is necessary for you, through your hired representatives, to collect the evidence and bring it to the proper legal authorities.

LAWS ARE ADEQUATE

I can assure you that the law is already adequate insofar as registering a complaint and taking someone in and trying them before a criminal court for charging someone for services not performed or for parts that are not put in. It doesn't specifically state that he who shall fail to put in a tube shall be fined \$10.00, but we have laws covering fraud that would adequately protect all individuals if they were to be imposed upon.

And there we get to the missing nails in the horseshoe. If an operator gets a reputation for doing improper work, and charging for something that he didn't do, then you can very easily set a trap for that man. You can merely take a television set with something a little bit wrong with it to him. You all can determine that very simply. You could probably make the necessary adjustments to do that.

Occasionally you are accused of doing that on a service call so that you will have to come back, but I don't think that is generally true. Anyhow you could put it slightly out of adjustment and simply have some individual call the suspect out to their house to make

the so-called repairs. After they leave, the serviceman that had just made that adjustment could check the set to see what had been done to it. Then, if the bill comes in for parts that were not put in or services not performed, the solution would be right in your own hands.

You could bring it right down to the District Attorney's office. We could file a complaint. Bear in mind that you should check first before you start something like that with your law enforcement agency. Come to my office and we will be glad to cooperate with you. There are limitations to what you can do to entrap someone in that manner, but it would be a very simple thing to work out a proper solution. I can assure you that we don't want those people any more than you do.

You are primarily interested in stamping out this sort of thing because it gives you a bad reputation, makes your public relations more difficult, and as a consequence hurts your business. We are interested from the standpoint that our office, together with the policing organizations, the sheriff, city police and others are charged with the burden of maintaining peace and quiet in the community.

I hate a cheater worse than almost anything else in the world. Our violent criminals are at least open-handed about their business. A man who goes out with a gun and walks into a filling station and pokes it in the pit of the filling station attendant's stomach and says "give me your money" is at least carrying out his crime in a straightforward manner. He is taking his chances, and if we catch him we can send him to the penitentiary. But a man who will take advantage of the ignorance of his customers in order to perpetrate a fraud upon them is less than nothing in my sight, and I have no use for him. I am personally willing to bend whatever energies are present

(Continued on page 34)



ASSOCIATION NEWS

TRANSCRIPTS FROM SERVICE MANAGEMENT'S PARTY LINE.

BY PENNY MARTIN

WHY AN ASSOCIATION?

Every person in business needs a medium of expression . . . a "voice" to speak in his behalf. That need for a "voice" was the beginning of associations. That is why down through history men in business, professions, crafts and trades have banded themselves together. Their associations have become a permanent and strong part of the American economic, political, and social structure.

An association is a democracy at work. To make democracy work . . . takes **work**. It takes sacrifices—voluntary sacrifices of many personal advantages for the good of the group. Success in a democracy doesn't come easy. It has to be worked at constantly. That goes for an association, too.

YOU NEED AN ASSOCIATION. . . IT NEEDS YOU!

The need for associations is especially true in the radio and television industry today. Growing by leaps and bounds, snowballing so rapidly that sometimes it seems to overtake itself, the many ramifications of these endeavors become more and more complex.

New lines are added; parts are modified; technical knowledge is taxed to the limit; manufacturers' specifications are changed; new equipment becomes necessary . . . all these are a part of your day to day operation. Television service is a business . . . a big business . . . and growing bigger. The need for a place for exchange of ideas and knowledge is greater than ever.

Without an association you are "alone" . . . unrepresented . . . without a medium of expression . . . without an opportunity for an interchange of ideas with others facing the same problems.

THE ADVANTAGES OF AN ASSOCIATION

As W. A. Cry says, the surest thing an association can provide is fellowship. "By meeting your fellow craftsmen, getting to know them, feeling free to take up with them personally any gripe or suspicion that would other-

wise foment in your soul. . . .

"In a word, you will be surprised to find that most of them had mothers who were **married**, after all."

Many associations have started because there was a mutual need for fellowship among dealers or technicians. But, like many another, the ELECTRONIC TECHNICIANS ASSOCIATION OF TOLEDO found social organizations do not get very far because the men eventually lose interest. Secretary Orville G. Santeau, 626 Pleasant Place, Toledo 9, Ohio, writes: "We are now operating on a strong Business and Technical program . . . the need for such an organization with these objects in mind, is great.

"We would appreciate any information in regard to constitutions and by-laws drawn up by the various associations who are operating with success in their cities." Mr. Shanteau asks—Can you held him by sharing your knowledge?

OBJECTIVES OF ASSOCIATIONS

The legal structure, operation and objectives of an association can be compared to those of your own Chamber of Commerce . . . except that where your chamber works for the good of the community at large, the Association confines its endeavors to the appliance and radio-TV industry, suggests the UTAH ASSOCIATION OF RADIO AND TELEVISION SERVICEMEN.

This newly organized association is growing by leaps and bounds thanks to the energetic, leadership of its president, J. F. Burns and his board. Despite the apparently difficult task of membership promotion in the middle of the summer, the Utah Association closed its Charter August 31st. with over 135 members.

Dean Pieper, General Manager, would like to develop a good cross-exchange of bulletins and newsletters from other organizations and associations. His address is 418 Frick Building, Salt Lake City 1, Utah.

HARMONY IS A KEYNOTE

Some associations are made up of dealers only . . . some of servicemen

only . . . but more and more dealers and servicemen are realizing how much their success depends upon the others and have joined for a closer working harmony. But whether they work together or separately, associations are becoming a vital factor in the job of improving the knowledge and efficiency of its members, improving relations between the customer and the industry, providing consumer education about the value of brand names, and ethical dealers and servicemen. They are supplementing the work of local Better Business Bureaus and Chambers of Commerce.


In smaller towns where there is no Better Business Bureau, the Chambers of Commerce are welcoming new trade associations. As Libby Blissell of the New Kensington, Penn., Chamber of Commerce said, when informed of the newly organized ALLE-KISKI VALLEY CHAPTER OF NARDA, "A Chamber of Commerce in this city is often called upon to do the policing job that ordinarily comes under the duties of the BBB, which we do not have the facilities or personnel to do. The television industry is new and therefore is giving a lot of headaches to a good many people. I hope this local organization will become strong enough to do its own policing and promote higher standard among the dealers and servicemen in this valley." . . . Good aims for any organization!

BETTER BUSINESS BUREAU HELPS

The Better Business Bureau of Minneapolis, Minn., in cooperation with the TWIN CITY ELECTRIC APPLIANCE DEALERS ASSOCIATION of 525 South Seventh Street, Minneapolis 15, Minn., has prepared a pamphlet titled: "Suggested Standards for the Advertising, Selling and Servicing of Home Appliances, Radios and Television Receivers."

"The average retail appliance, radio-TV dealer is now fighting for survival. He is pleading for relief from the evils
(Continued on page 28)

P RODUCT REVIEWS



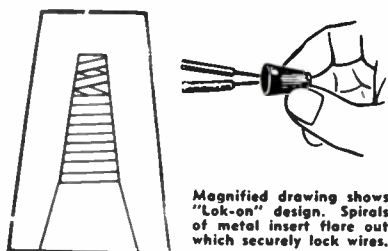
Portable Inspection Lamps

Stocker & Yale, Inc., Marblehead, Mass. has announced two new fluorescent inspection lamps with or without magnification. Localized fluorescent lighting provides a cool light source that is particularly useful wherever close viewing is required.



Volt-Ampere Tester

Pyramid Instrument Corp., Lynbrook, N. Y. has announced a snap-around ammeter that provides accurate voltage readings when test leads are used. Available meter ranges include: 0-10 amperes, 0-125/250 volts, a-c; 0-25 amperes, 0-125/250 volts, a-c; 0-50 amperes, 0-125/250 volts, a-c; and 0-100 amperes, 0-125/250 volts, a-c.



Magnified drawing shows "Lok-on" design. Spirals of metal insert flare out which securely lock wires.

Bakelite Wire Connectors

Holub Industries, Inc., 413 DeKalb Ave., Sycamore, Illinois has developed new compact bakelite screw-on wire connectors for #16 and #18 wire. The connectors consist of a bakelite shell and a cone-shaped metal spring insert.

A feature of the design is said to be the spring insert through which wires are drawn and locked. Wedging action secures the connector on the wires and makes the connection vibration-proof.

Resistor Outlet for Master Systems

Blonder-Tongue Laboratories, Inc., 526 North Ave., Westfield, N. J. has announced development of a simplified resistor outlet box for UHF-VHF master TV systems for dealer showrooms, TV Service departments and other multiple installations. The compact unit has a bakelite case. No soldering or power is required for flush or wall mounting.



Filament Transformers

Merit Coil and Transformer Corp., 4427 North Clark St., Chicago 40, Ill. has announced ten new filament transformers for use with selenium rectifiers. The line includes units which correctly match all-purpose Federal assembly kits.



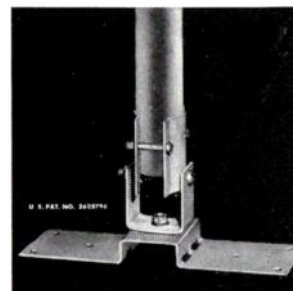
Simpson Volt-Ohm-Milliammeter

Simpson Electric Co., 5200 West Kinzie St., Chicago 4, Illinois has introduced a new volt-ohm-milliammeter that is housed in a seven-inch case and is reported to have a d-c sensitivity of 20,000 ohms per volt, and an a-c sensitivity of 5000 ohms per volt. Accuracy of model 262 meter is 3%, d-c, and 5%, a-c. It is supplied with test leads, removable alligator clips, a 4000 volt d-c multiplier and an operator's manual.



CBS-Hytron Test Adapters

CBS-Hytron Division, Columbia Broadcasting System, Danvers, Mass. has announced the addition of a 9-pin miniature and an 8-pin octal test adapter so TV Servicemen can test all sockets "topside" — without wrestling with heavy chassis. The adapters have low-resistance silver-plated base pins and test points to assure positive contacts.

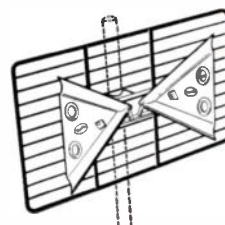


Universal Antenna Mount

Walnut Machine, Inc., South Bend, Indiana has been issued a patent for a new universal mount that permits any type of roof or side antenna mounting. It has a compound universal joint that swivels 360° for mounting any roof pitch or for vertical mounting to side of a building. Its holding clamps are adjustable for masts 3/4" to 2" and have full hinge action for mast raising and guying.

UHF Antenna

Snyder Manufacturing Co., Philadelphia 40, Pa., has announced a new bow-tie reflector UHF antenna for channels 14 to 83. Type UHF-5 antenna is of collapsible space-saver design and is factory pre-assembled. It has diamond embossed



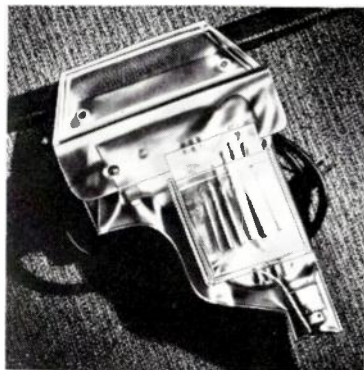
aircraft aluminum elements, an all-welded heavy-duty reflector screen and single U-bolt installation.

Telrex Duoband Antenna

Telrex, Inc., Asbury Park, New Jersey has announced a practical, lightweight uhf-vhf antenna array with one major in-line lobe. The antenna is reported to have good match constant center impedance for high gain, high signal to noise performance from 54 mc to 890 mc. Transition from vhf to uhf is automatic — without isolation or filter networks.

Line Voltage Adjuster

P. R. Mallory & Co., Inc., P. O. Box 1558, Indianapolis, Ind., has announced a new line voltage adjuster and isolation transformer for electronic devices that require line voltage adjustment, line isolation, low voltage or high current output. The new unit, type LVA2, is completely enclosed in an enameled metal case. It provides variable a-c line adjustment from 90 to 130 volts at 1,200 watts; infinitely variable low voltage from 0-40 volts a-c at 4 amperes in the isolation position, or 0-40 volts a-c at 80 amperes in the common line position; and an isolated, infinitely variable 90-130 volt a-c output at 350 volts.

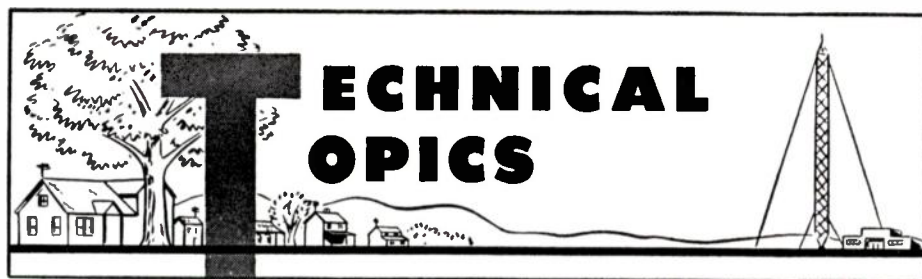


Power Drill Kit

SpeedWay Mfg. Co., 1834 S. 52nd Ave., Cicero 50, Ill., has recently introduced a power drill and holster kit permitting contractors, repair and installation servicemen to carry it on their trouser belts by means of a plastic holster. The holster also protects the tool by keeping it waterproof, dustproof and dirtproof. The kit features a $\frac{1}{4}$ " $\frac{1}{4}$ hp drill with Jacob's Chuck, seven chrome vanadium steel drill bits, assorted aluminum oxide abrasive discs, rubber backer and a lamb's wool bonnet.

Steatite-Cased Capacitors

Cornell-Dubilier Electric Corp., 333 Hamilton Blvd., So. Plainfield, N. J., has developed a new steatite-cased paper tubular capacitor for applications at high temperatures and high humidities. It is of non-inductive design. "Budroc" capacitors rated up to 400 VDCW and above will withstand operating temperatures from minus 55° to plus 100° C. All units are capable of withstanding more than 250 hours of exposure to 95% relative humidity at 40° C. The new "Budroc" capacitors are available in capacities from .0005 mfd. to 1.0 mfd. with ratings of 200, 400, 600, 1,000 and 1,600 VDCW.



The Effect of Technical Developments and Products Upon Your Present and Future Business Activities

By EDWARD M. NOLI

TELEVISION ANTENNA TESTING IN THE FIELD

High frequency propagation and antenna systems do not lend themselves to easy and positive type comparisons in the field. One can not be brief and summarize propagation and antenna performance in a few concrete statements — results never arrange themselves so conveniently. It is certainly not advisable to be dogmatic about a specific antenna after a few superficial tests — in fact, results often remain obscure and inconclusive after a long period of field checking.

One also can not evaluate antenna performance finally under field laboratory conditions where variables are held under tight control. This would be adequate if a majority of our antennas were installed where variables do not exist. Unfortunately, variables are present at the majority of installation sites and, furthermore, in the fringe areas where antenna performance is most critical, we encounter the greater accumulation of variables.

It is our purpose to show how these variables are influencing many antenna comparisons you make, and, show you how to minimize to a degree the influence of variables on your observations and measurements. We do not imply this method is absolute and completely free of variables nor do we infer that the results using this procedure will be duplicated completely at all other test sites. As mentioned, results do not arrange themselves so conveniently when there are a multiplicity of variables.

A number of variables must be considered when comparing antennas in the field. These are position, time, weather, transmission line, and equipment variables. Failure to consider these factors can cause a poor antenna to look good; a good one, poor.

TIME OF DAY

Time of day and weather influence signal levels. It is not possible to compare antennas critically by using one antenna on your receiver one night and

a second antenna the next night. In this 24 hour period in a fringe area there can be a great differential in signal strengths — greater than the gain differential between a dipole and the very highest gain Yagi.

Generally signal levels are stronger in the early morning and after dark and weaker during most of the day. Thus an antenna installed early in the day may seem to be doing a better job than a different type you happen to install at high noon of the very same day in a different location.

In fact in a ten to twenty minute interval, the time required to replace one antenna with another, signal levels can change 2-6DB. By comparison this signal level change could cause a good antenna to appear sensational or terrible. It is apparent how variables make it difficult for the service technician to judge antenna types definitely and quickly.

MOUNTING POSITION

Position variables are pronounced at usual levels of antenna mounting. A shift of antenna mount position just a short distance along an in-the-clear roof-top, same height and length of line, can cause a 2-6DB change in signal level. Thus we do not compare antennas truthfully by using one type on one roof and a different type we happened to install across the street on another roof.

RECEIVER SENSITIVITIES

Equipment variables are pronounced — receiver sensitivities and terminations vary greatly. We can only truly compare antennas by using same receiver or field strength meter for comparison measurements. Overall length of line and its mounting route must be a fixed quantity for true measurements.

Receiver terminations vary from very good to very poor. Generally standing waves are more pronounced with the older and poorer grade receivers. If such a receiver is used for tests it must be stubbed properly. The usual serviceman's field intensity meter has a very

(Continued on page 28)

OUACHITA SERVICE PHILOSOPHER



Talks about Attitudes and Platitudes

By JACK DARR

Well, sir, there is always more to practically ever'thing than meets the eye. I reckon it's more true in the radio and TV business than anything else I know of. They's lots of old sayings, as you might say, floatin' around, but you sure gotta look sharp, feel sharp and be sharp to separate the wheat from the chaff, by golly.

'Specially is it true in advertising. You know what I mean: "More Sensitive!" "More Selective!" "High Fidelity!" "Console Tone!" "More Gain Than A Stacked Ten-Element Yagi!" "Razor-Sharp Selectivity" and probably a million more that I could think of.

ABOUT PLATITUDES

Well, sir, in this business, these are more or less platitudes. Woulda said platitudinous, if'n I'd knowed what it meant. But, you get the drift, anyhow, as the engineer said — when he left out the compensating condenser in his oscillator circuit. Those are just words. Words aimed mostly at your customers, rather than at you, but what they mean is something entirely different.

They mean no more than you make them mean. For example, when you say, "All Work Guaranteed for 90 days," you know what you mean, but does your customer know exactly what you mean? If'n he don't, brother, you'd better take off a few minutes and see to it that he does!

ABOUT ATTITUDES

Now we get to the attitudes. Your attitude toward your customers can make all the difference in the world in whether they believe you when you utter some of these here platitudes. In other words, if they have confidence in you, believe in what you tell 'em, you can spring some of these here old platitudes on 'em and they'll believe you, but — if they don't have confidence in you, if they think, as a feller said the other day, that you're a thievin' crook instead

of a highly skilled underpaid technician, why, then you're going' to have a lot harder time convincin' 'em of the truth of your utterances!

ABOUT CUSTOMER CONFIDENCE

It jist all boils down to that old question of customer confidence, to my mind. If you have a really sincere attitude toward your customers: if you can see that you're really interested in doing a good job of repair work on their particular gadget, whether it's Gram-paw's heatin' pad or their new \$500 TV set, why, you've got 'em. They're your friend for life, and believe me, Buster, there's nothin' better for a radio-TV man than a large an' healthy family of that kind of guys!

To accomplish this highly desirable relationship, though, you've gotta work at it, and believe you me you've gotta work hard! Due in part to the tremendous amounts of unfavorable and I might add, 95% unjustified publicity that we've received in the last few years — we're beginning with at least one an' a half strikes on us 'fore we ever git up to bat.

IT TAKES ME A GOOD WHILE

Seems like half of the new customers that come into my little shop come in with the idea that I'm out to git to 'em, in whatever way I can. It takes me a good while to git 'em out of that notion, 'specially if a few of these danged unforeseen things happen that are always happening to radio and TV men.

You know what I mean: you put in three new tubes, check 'er all over, and she goes out playin' beautifully; comes back two days hence, with one of the old tubes out, or a bypass blowed, or the speaker open: happens with disgustin' regularity to me, and to you, and to all of the world's radiomen. I reckon, even in Russia!

ABOUT SOFT SOAP

Well, here's the only kind of treat-

ment I've ever been able to find that would cope with that kind of situation: a liberal dose of good old-fashioned soft soap! The customer is understandably mad when he comes back; he's paid out good money for a repair job that didn't stand up, according to his way of thinkin', and he's waxy about it. You know how you'd feel, if you'd had your car worked on, not knowin' anything about how the car run, and two or three days later the thing quit again.

You'd go back to that garage with fire in your eye, now wouldn't you? Well, that's the same way he feels right now, so handle him very gently! First, be very, very polite! Ask him what the trouble is, and then when he stops sputterin', find out just how and when it happened. While you're doin' this, be takin' the set out of the cabinet, and checking to see what has really happened.

If you're lucky, it might be one of the tubes you put in. That way, you can replace it, and send him on his way happy, 'cause you won't charge him anything for it on the guarantee. Actually, that is the cheapest way out; it will do more toward good customer relations than anything else, I think. First reason, he's just paid to get that set fixed, and he's highly resistant toward any further charges, no matter how well justified they may be.

Well, assumin' that it was one of the tubes you put in, you change it, and explain to him very politely that these things will happen, due to causes that nobody can foresee, and send him happily on his way. Good idea here: always kinda stall around and give him a chance to ask you, "Well, are there any more charges?" in that kinda voice, meanin' that he almost expects you to charge him again for it.

IN A HORRIFIED VOICE

This gives you a chance to say in a horrified voice, "Oh, Gosh, No!" in the tone of voice that implies that you wouldn't think of chargin' him for it, and so you explain to him that you're glad that he brought it back, so that you could fix it up again promptly — and how happy that it was something you could fix right away, and so on, and so on. Incidentally, it's also a good idea to take care of these guys promptly, even if you have to leave a job set on the bench; the longer they have to wait the madder they git!

ABOUT OLD ONES

Now, if it ain't one of the new tubes, but one of his old ones, which is more apt to go out than a new one by a long shot, why there you are. Now's when you git th' chance to try out some of your native-born diplomacy. by golly. Check it, and tell him, "Here it is. It's one of your old tubes. See. these are

the ones we put in yesterday; see the date we wrote on the chassis alongside each one, so that we could tell when we put them in? That's so we could be sure and replace them if they were to fail inside the guarantee period.

"Come to think of it, this dead tube did show up a little weak when we tested them all the other day, but we didn't think it was going to go out so soon, or we'd have replaced it then. Tubes are just like a light bulb. You never know when a light bulb's going to burn out, now do you?"

And when he says no you don't, as perforce he must, you say, "Well, these radio tubes are just like that; there's really no telling when they're going to go pop and quit." While this is going on, you should have put the new tube in, and have the set playing. "There," you say, "that's all it was, just that old tube. Sure is a shame it had to go out so soon. Lot of trouble to have to bring it back right away. Let's hope it will stay with you for a long time now."

THAT POPULAR FEELING

You're sympathizing with him now, and you'd better be sincere, because he can tell pretty well whether you mean it or not. You should be sorry for him: by golly, his set quit playing, didn't it? Right after he got it fixed, too. Might suggest along about here that you charge him only for the tube, and explain to him that you're leaving off your regular service charge, because he just had the set in so short a time ago. That way, he kinda feels like he's getting something for nothing, and you know how popular that feeling is; if it wasn't for give-away quiz shows, where would radio and TV programs be today?

Well, you're gonna have to change that spiel a little bit to kinda suit the

occasion, but you get the idea, I hope. Get over to the customer the idea that you're only interested in doing a first-class repair job, that you're not trying to gyp him in any way whatsoever, and that you are really sorry that he had trouble with his set so soon, and that you're doing everything in your power to see to it that it doesn't happen again.

Like I said, this ain't gonna be to easy, cause he's already got his feathers ruffled, but by the exercise of a good deal of diplomacy, you can send him away happy, and believin' that you actually are sincere. Of course, you can't make him believe it unless you actually are, so really be sincere in your regrets. You'd dang well better be, 'cause if you ain't, you've lost a customer, and they ain't so plentiful that we can afford to throw any away.

THE TALKING COMMERCIAL

Besides, you've gotta consider not only the loss of this one customer, there's all the people he'll tell, "You know that guy with the radio shop down on the corner? Stay away from there! I took my set there, and you know what he done? Why he———" You can fill in the rest yourself. That's about as bad advertising as you can get, just as a satisfied customer is the best advertising in the whole wide world. People tend to believe word-of-mouth advertising much more than any other kind, whether it be newspaper, television or radio.

Now I'll admit, it might cost you a mite of money right at the start, mostly in lost time, but I believe you'll be well repaid in the long run. Even if you do have to make some small adjustment to the guy's set, or something, I believe it's better if you don't charge him for it. If the set has been in the shop within the last three or four days.

If you have to replace a tube or some part, charge him for it, but don't make him any service charge, and **be very sure to tell him** quietly that you're not charging him any service charge, because the set was just in the shop such a short time ago. That way, you're giving him the feeling that maybe you're not such a bad guy after all; little stupid, maybe, but not an out and out crook! People 'll forgive stupid-ity where they won't dishonest-ity!

ABOUT BIG JOBS

Of course, if this turns out to be a big job, filter condenser, speaker replacement or something like that, you're just going to have to charge 'em for it and explain it the best way you can. But here again, if you explain things to the customer in the right way, there won't be any hard feelings.

That feeling about dishonesty is the thing we've got to fight, and fight hard! That feeling that all repairmen are actually gyps. It's all to prevalent, as I have said before, any your own personal attitude toward your customers is about the only thing that can change it. I kinda doubt if we'll ever manage to stamp it out entirely, but we can sure do a heck of a lot toward it, by the way in which we approach our own customers.

SERVICE ORGANIZATIONS

The service associations are doing a heck of a good job on educating the public. But as long as there's a piece of complicated machinery that the public don't understand and skilled technicians to repair it, there's going to be that attitude to combat. In the end, it all boils down to the individual serviceman and his attitude toward his own customers.

One rotten apple here can spoil
(Continued on page 26)

NEW JFD "3-in-one" LIGHTNING ARRESTER



No. AT110 with hardware for wall or window sill mounting, \$1.50, list.

No. AT110S with stainless steel strap for pipe mounting, \$1.75 list.

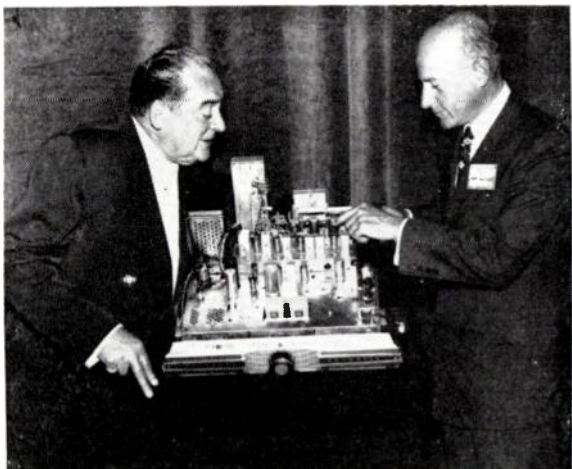
Both feature the patented JFD strain-relief lips which prevent contact washers from ripping the lead-in wires apart!



JFD MANUFACTURING COMPANY, INC

World's largest manufacturer of tv antennas and accessories; Brooklyn 4, New York

Industry News Pictures



C. F. Adams, Jr., right, President of Raytheon, shows VU-matic features to actor Edward Arnold.



Yolanda Chose, a Chippewa Indian, assembles Simpson Instruments in Lac du Flambeau plant.

TWA USES AUDIO FOR NEW MOBILE TICKET OFFICES

Billions of miles of travel have been sold at airline ticket offices. Now the ticket offices themselves are traveling. Trans World Airlines has introduced two roving ticket offices, mounted on motor truck chassis, to serve West Coast travel buyers. These mobile offices are equipped to confirm reservations and sell transportation to any place in the world.

The two new units, equipped with **Bogen** amplifiers and **University Loudspeakers**, travel pre-determined routes in and around Los Angeles and San Francisco, bringing the airline's reservations facilities to outlying districts.

The basic equipment is a one-ton **General Motors** truck with automatic transmission. The body provides a side-

panel opening for easy conversation to an outside ticket counter. It is painted with TWA Super Constellation colors — grey and white with TWA red striping and lettering.

For announcements, and for advertising at special events such as the Rose Bowl game, the units are provided with a specially-built public address system. Wide-angle **University Loudspeakers** of Cobreflex-2 design, were chosen for the units because of their ruggedness and superior noise penetration. The speakers, used in connection with **Bogen Amplifiers**, model H-623, can broadcast even classical music over a wide range without distortion and are guaranteed for lifetime performance.

Both mobile ticket offices are equipped with radio-telephone for world-wide reservations, hold-up proof cash



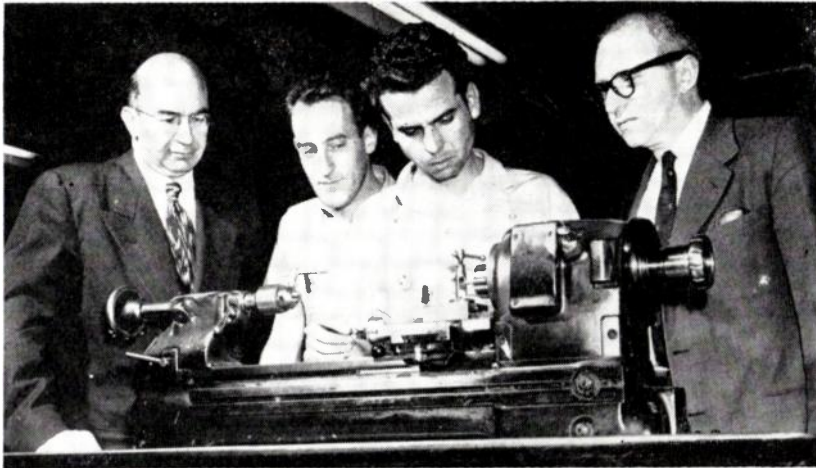
— Trans World Airlines Photo

Ray Jeans, Los Angeles ticket agent for Trans World Airlines, uses public address system in one of the new specially designed mobile ticket offices placed in service in Los Angeles and San Francisco.



— Trans World Airlines Photo

Charlotte Austin (the brunette) and Merry Anders, 20th Century Fox starlets, buy TWA tickets from Ray Jeans while TWA's new mobile ticket office is parked in the outskirts of Los Angeles.



Italians complete work-study training at General Instrument plant as Monte Cohen, at left, and Alois Konecny watch closely.



General Motors "Parade of Progress" stop at Indianapolis with Monitoradio two-way communications prexy Roy G. True (center)

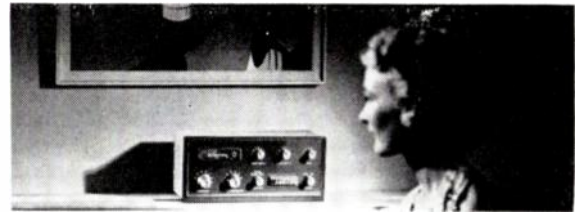
compartment and safe, a comfortable Swing-Way seat for the agent and an upholstered bench for customers waiting inside.

The new units provide a convenient way of purchasing airline transportation to employees at large industrial installations, persons in attendance at special events and others who live or work outside the city proper. By processing the passenger as far as possible at the time he makes his reservation, time is saved and confusion avoided at the airport counter at departure time. The units bring any point along the airline's 33,000 miles of routes in the United States, Europe, Africa and Asia within easy reach of thousands of people.



— Trans World Airlines Photo

Ticket agent Ray Jeans uses radio-telephone to confirm TWA reservations for Charlotte Austin (the brunette) and Merry Anders, 20th Century-Fox starlets, inside TWA's new mobile ticket office in Los Angeles.



Regency Hi-Fi Home Ensemble



Neal Electronic Co. lassie introduces a new television antenna based on radar designs.

TUBE INVENTORY AND STOCK CHECK LIST

By H. E. RUBLE, Srepcu, Inc.

The accompanying tabulation provides a basic inventory control for about 550 tubes. This inventory is usually adequate for setting up a one-man or a two-man shop that retails tubes over the counter.

Tubes are listed that are popular enough for a Television Service dealer to carry. It also provides a thin wide inventory that should take care of 99% of the calls, and it eliminates several hundred types that are ordinarily found on price lists.

The figures given for these inventories are based on our movement of tubes and should be modified slightly in different markets. But the real bases are on those tubes that are listed with quantities of one or two only.

Dealers and TV Servicemen have a tendency to overbuy if they have a fast demand, in a few days, on the types that are nearly obsolete. We run these inventories in our dealers' stores every two weeks, so there is provision here for about five months' inventory. We can make modifications to suit, based on the actual turnover.

The salesman's check list is appreciated by our dealers as a reminder for staple items. *Service Management File Number* for this data is 30.1.2.

Tubes	Basic	Over	Under
OZ4	2		
OZ4G	2		
1A7GT	1		
1AX2	2		
1B3GT	10		
1H5GT	1		
1LA6	1		
1LA4	1		
1LN5	1		
1N5GT	1		
1R5	4		
1S4	1		
1S5	2		
1T4	2		
1U4	2		
1U5	2		
1V2	2		
1X2B	6		
3Q4	1		
3Q5GT	1		
3S4	2		
3V4	2		
5AZ4	1		
5U4G	15		
5V4G	2		
5W4GT	1		
5Y3G	3		
5Y3GT	5		
5Y4G	1		
5Z3	1		
5Z4	1		
6A7	1		
6A8	1		
6A8G	1		
6A8GT	1		
6AB4	4		
6AC7	2		
6AG5	10		
6AG7	2		
6AH4GT	2		

Tubes	Basic	Over	Under
6AH6	3		
6AK5	2		
6AK6	2		
6AL5	4		
6AL7GT	1		
6AQ5	2		
6AQ6	1		
6AQ7GT	1		
6AR5	1		
6AS5	2		
6AT6	3		
6AU5GT	3		
6AU6	10		
6AV5GT	2		
6AV6	2		
6AX4GT	4		
6AX5GT	2		
6AX6GT			
6AZ4			
6BA6	3		
6BC5	5		
6BC7	1		
6BD5GT	1		
6BE6	2		
6BF5	4		
6BF6	2		
6BG6G	6		
6BH6	2		
6BJ6	1		
6BK5	2		
6BK7A	3		
6BL7GT	3		
6BN6	3		
6BQ6GT	10		
6BQ7A	4		
6BX7GT	1		
6BY5G	4		
6BZ7	6		
6C4	2		
6C5	1		

Tubes	Basic	Over	Under
6C6	1		
6CB6	6		
6CD6G	3		
6CL6	2		
6D6	1		
6E5	1		
6F5	1		
6F6	1		
6F6G	2		
6F6GT	1		
6H6	1		
6H6GT	1		
6J5	4		
6J5GT	2		
6J6	6		
6J7	1		
6K6GT	5		
6K7	1		
6K7G	1		
6K7GT	1		
6K8	1		
6L6			
6L6G	2		
6N7	1		
6N7GT			
6Q7	1		
6Q7GT	1		
6S4	3		
6S8GT	1		
6SA7	2		
6SA7GT	1		
6SB7Y	1		
6SC7	1		
6SF5	1		
6SF7	1		
6SG7	1		
6SH7	1		
6SJ7	1		
6SK7	2		
6SK7GT	1		
6SL7GT	2		
6SN7GT	15		
6SQ7	2		
6SQ7GT	1		
6SR7	1		
6SS7	1		
6T4	1		
6T8	4		
6U5	1		
6U8	3		
6V3	3		
6V6GT	4		
6W4GT	6		
6W6GT	3		
6X4	1		
6X5GT	2		
6X8	3		
6Y6G	1		
7A4	1		
7A5	1		
7A7	2		
7A8	2		
7AF7	1		
7B4	1		
7B5	1		
7B6	1		
7B7	2		
7B8	2		

Tubes	Basic	Over	Under
7C5	1		
7C6	1		
7C7	1		
7F7	1		
7F8	2		
7G7	1		
7H7	1		
7N7	3		
7Q7	1		
7V7			
7X7	1		
7Y4	1		
7Z4	1		
12A4			
12A8GT	1		
12AQ5	1		
12AT6	4		
12AT7	10		
12AU6	2		
12AU7	10		
12AV6	1		
12AV7	4		
12AX4GT	2		
12AX7	2		
12AY7	1		
12AZ7	2		
12B4	2		
12BA4			
12BA6	4		
12BE6	4		
12BF6			
12BH7	4		
12BY7			
12BZ7			
12EY7			
12G7			
12J5GT	1		
12K7GT	1		
12Q7GT	1		
12SA7	3		
12SA7GT	3		
12SF7	1		
12SG7	1		
12SJ7	1		
12SK7	3		
12SK7GT	3		
12SL7GT	2		
12SN7GT	4		
12SQ7	3		
12SQ7GT	3		
12V6GT			
12X4			
14A7	1		
14AF7	1		
14B6	1		
14Q7	1		
19BG6G	2		
19J6	1		
19T8	2		
25BQ6GT	3		
25L6GT	4		
25W4GT	2		
25W6GT	1		
25Z5	1		
25Z6GT	4		
35A5	2		

Tubes	Basic	Over	Under
35B5	3		
35C5	3		
35L6GT	6		
35W4	4		
35Y4	2		
35Z3	1		
35Z'GT	10		
40A1			
40B2			
41	1		
42	1		
43	1		
45	1		
50A5	4		
50B5	3		
50C5	3		
50L6GT	8		
50X6	2		
50Y6GT	1		
50Y7GT			
57	1		
75	1		
76	1		
78	1		
80	3		
84	1		
117L7GT	1		
117N7GT	1		
117P7	1		
117Z3	2		
117Z6GT	1		
5642	2		
CATHODE RAY TUBES			
10BP4A			
12KP4A			
12LP4A			
14BP4			
14CP4			
16AP4			
16GP4			
16KP4			
16TP4			
17BP4			
19AP4			
20CP4			
21AP4			
21EP4			
DIAL LAMPS			
40			
41			
43			
44			
46			
47			
50			
51			
55			
SELENIUM RECTIFIERS			
65MA			
75MA			
100MA			
150MA			
200MA			
250MA			
300MA			

SALESMAN'S CHECK LIST

Alignment tools
 Antenna material
 Auto radio accessories
 A-C plugs
 Ballast tubes
 Bolts and nuts
 Batteries
 Boosters
 Cement and chemicals
 Condensers
 Electrolytic
 Buffer
 By-pass
 Mica
 Hi-Kap
 Disc
 Hi voltage

 Coils
 Connectors-Mosley
 Controls
 Crystal diodes
 Cube taps
 Detents
 Dial cable
 Dial lamps
 Fuses
 Ion traps
 Jacks-Plugs-Sockets
 Line cords
 Phono needles
 Phono cartridges
 Phonographs
 Printed circuits
 Recording wire and tape
 Rectifiers
 Resistors
 Service data
 Set couplers
 Solder
 Spaghetti
 Switches
 Tape
 TV
 HO transformers
 Vert. transformers
 Yokes
 Focus coils
 Width coils
 Tuners
 UHF converters
 Tube brighteners
 Weller iron tips
 Wire

 Tube price lists
 Scratch pads
 Want books
 Transformer catalogues
 Control guides
 Twist loc condenser catalogue

Trade Literature

RCA TUBE BOOKLET

A twenty-four page booklet describes 495 receiving tube and picture tube types for radio and television receivers. It has been published to provide information for the selection of the most suitable types for a given application. It contains characteristics of the 495 types and socket connection diagrams. The tubes are listed in numerical-alphabetical sequence, according to types.

Available from **RCA tube distributors**.

PHOTO ELECTRIC SCANNER

The bulletin describes automatic photo electric controls applied to a web of material to maintain transverse position with relation to the processing machine. The control continuously inspects a reference point on the material; provides an electrical signal interpreter and amplifier; a motor that functions according to amplifier output; and a mechanical or hydraulic system to correct material position under direction of the optical scanner.

Write to **Westinghouse Electric Corporation**, Box 2099, Pittsburgh 30, Pa., for bulletin DB 18-530.

SPRAGUE CAPACITOR MANUAL

A forty-four page manual that lists capacitor replacements for 2460 receiver models produced by seventy-eight manufacturers includes a printed circuit guide with recommendations for replacements in products of forty-six TV manufacturers. A color code capacitor guide is also provided.

Copies are available free from all Sprague distributors or for 10¢ from **Sprague Products Co.**, Marshall St., North Adams, Mass.

GAS TUBES IN INDUSTRY

A treatise on the history, development and application of hot cathode gas-filled rectifiers and thyatrons that provides a well-rounded introduction to the many useful purposes of these tubes in industry.

Write to **Electrons, Incorporated**, 127 Sussex Ave., Newark 4, N. J.

SNYDER TENNA TIPS

A pocket-size book treating antenna installations, revised by Edward M. Noll, Matthew Mandl and Edgar Dailey, to cover UHF, Yagis and the indoor **Directronic** TV Aerial system. It includes antenna "do's and don't's," antenna dimension guide, channel frequencies, helpful hints, **Directronic** hints and proper feed methods for stacked arrays.

Send \$1.00 to Mr. Dick Morris, **Snyder Manufacturing Co.**, Philadelphia 40, Pa., or order from your distributor.

SIMPSON MILLIAMMETER BOOKLET

A new fifty-page illustrated booklet that gives detailed technical data on "1001 uses" of a **Simpson 260** Milliammeter, has been published. It may be obtained free on request to **Simpson Electric Co.**, 5200 W. Kinzie St., Chicago 44, Illinois.

CORNELL-DUBILIER CATALOG

A twelve-page catalog that includes descriptions, illustrations and technical data on more than 135 types of **Quietone**, **Feed-thru**, **Pi** and universal filters for use in industrial, marine, aircraft, automotive, military, household and other applications.

Request bulletin NB-148 from C-D distributor or direct from **Cornell-Dublier Electric Corporation**, South Plainfield, N. J.

RMS ANTENNA CATALOG

A new thirty-six page catalog of antennas and accessories including: bow tie, corner array and Yagis for UHF; multi-channel Yagis for VHF; **Neva-Tip** VHF and UHF indoor antennas; base, chimney, wall and eave mounts; 300ohm flat ribbon and tubular lead transmission wires; VHF-UHF lightning arrestors; UHF-VHF antenna couplers; and combination tube and parts carrying case.

Available from distributors or by writing to **Radio Merchandise Sales, Inc.**, 2016 Bronxdale Ave., New York 60, N. Y.

ALLIED RADIO 1954 CATALOG

A new 268-page catalog listing over 20,000 items has been published by the **Allied Radio Corp.**, 100 N. Western Ave., Chicago 80, Ill. It may be obtained on request.

FTR DATA BOOKS

Two new data books have been published by **Federal Telephone & Radio Co.**, 100 Kingsland Rd., Clifton, N. J. The 12-page, 2-color TV picture tube data book provides information on interchangeability considerations, basing diagrams, bulb outlines and dimensions and electrical characteristics, based on data published by RETMA. A 28-page, 2-color data book provides comprehensive information on cables for every electronic application. Copies of these data books may be had on request to **Federal**.

SPRAGUE WALL CHART PRICE LIST

A new condensed price list on all "bread & butter" service capacitors and resistors has been announced by **Sprague Products Co.**, 331 Marshall St., North Adams, Mass. It is suitable for wall mounting or use under desk or counter top glass for ready reference to the most widely used **Sprague** ratings. The price chart is available from **Sprague** distributors or by writing to **Sprague**.

New Roper Poll Reveals TV Set Owners Increasingly Find Technicians Competent, Prompt, Polite

The television service industry continues to receive the hearty endorsement of TV set owners across the country. This is shown in a nationwide survey made by Elmo Roper, noted market research expert.

Results of the study show an even higher public regard for television technicians than was revealed in a similar survey taken by Roper last year. The surveys are part of a continuous study sponsored by the RCA Victor Division of the Radio Corporation of America and the RCA Service Company.

"The results of this survey should be a source of assurance to the public, and a source of pride to technicians in the entire television service industry," E. C. Cahill, president of the RCA Service Company, said in a letter about the study to managers of Better Business Bureaus. "It represents a rousing vote of confidence from the people best able to evaluate TV service—television set owners themselves. The great majority of the 5000 television families interviewed found TV servicemen competent, courteous, and prompt in answering calls, and fair and reasonable in their charges."

A large proportion, almost 90 per cent, of all television set owners who had had experience with TV service indicated approval of the quality of work performed by their service technicians.

Among those who had had service calls, the study revealed that 70 per cent questioned on the quality of work done termed it "really good." Nineteen per cent said the work was "fairly good."

When asked if the technician who called to service or repair a set was pleasant and courteous, only 1 per cent gave a negative reply. Complimentary answers came from 95 per cent, with 88 per cent terming the technician's manner "pleasant and courteous," and 7 per cent considering his manner "all right." Four per cent did not reply.

Questioned on cost of service, more than two out of three customers described the servicemen's charges as entirely reasonable. Only one out of ten considered service bills excessive.

The survey revealed that the public is pleased with the promptness of service. Of those contacted, 75 per cent reported service completed either the same day, or within at least two days of their initial request. Of those who waited one day or longer for service, 80 per cent stated that they thought this was a reasonable length of time.

"With the advent of UHF, which will mean more television for millions of

Americans, maintaining this record of good performance is more important than ever," Mr. Cahill said.

"The need for continued good installation and service for those who are joining the ranks of satisfied TV customers every day stresses the tremendous responsibility people in the television service industry are facing today. The survey clearly shows that the thousands of independent servicemen and service associations, as well as television manufacturers, distributors, dealers, and Better Business Bureaus, have discharged their responsibility with remarkable success.

"I can assure you these organizations will continue their efforts to reduce even the present small percentage of dissatisfied customers to its absolute minimum."

Our Opinion

(Continued from page 6)

is now up to its ears in a buyers market. The easy-going days of the long-lasting sellers market, when all a manufacturer had to do was to get satisfactory jobbing outlets, are gone.

The service market may boom while customers wait for color receivers at a price they can afford to pay. But the man who will be in the drivers' seat in that market will be the independent service businessman who, through his selection of brands, governs whose products go where—if they go at all. His dominance of the whole radio-television after-market will grow as he learns to apply his strength through cooperation with his fellow service businessmen in his community, State and nationally.

PHW

People

(Continued from page 10)

elected vice president of the Antenna Manufacturers Association. . . . **RALPH R. STUBBE** is now assistant chief engineer for the General Instrument Corporation. . . . **ALEXANDER THEEMAN** has been elected treasurer of Granco Products, Inc. . . . **JOHN T. THOMPSON**, manager of replacement tube sales for General Electric's tube department, reports mailing of 40,000 copies of a "How's Your Business?" questionnaire—for a compilation to determine the average service dealer. . . . **HOLLIS R. WAGSTAFF** has been appointed assistant treasurer for the Sprague Electric Co. . . . **NEAL W. WELCH** has become vice president in charge of sales for the Sprague Electric Co. . . . **CLARENCE A. WEST**,

radio amateur and RCA tube engineer, has developed what is believed to be the first "grid-dip" oscillator using a transistor over the five major amateur radio bands.

News Briefs

(Continued from page 11)

KYORITSU DEMPA CO., LTD. of Tokyo, Japan has been appointed exclusive representative for Transvision products. . . . **NATESA** fourth annual convention was attended by more than one thousand members from thirty-five affiliates and about five hundred from Chicago area companies. . . . **NEAL ELECTRONIC COMPANY** of Huntsville, Alabama has announced a new "Paraboray" antenna based on the radar parabolic-type antenna—for channels 2 to 83. . . . **RAYTHEON** has shipped a full carload of picture tubes to Allied Radio and another carload of TV picture tubes to Miller-Jackson in Oklahoma City; has selected Harold Bugbee of Walter B. Snow & Staff, Dr. Ivan A. Getting, Raytheon vice president and Dr. Jerome B. Weisner of M. I.T. to serve as judges for its \$10,000 Transistor Contest. . . . **RCA VICTOR** has announced what is believed to be the smallest alkaline-type "B" battery for personal portable radios, the midget 45-volt battery weighs only three ounces; has announced two new deflecting components for replacement use with 90 degree, 27-inch picture tubes; is conducting a \$10,000 cash prize contest to boost distributor cooperation for their fall schedule of network radio and TV programs; has upped prices of fourteen TV sets an average of 5%. . . . **REGENCY division of I.D.E.A.** has introduced a new professional high fidelity ensemble for the home (see cut); has announced a colorful counter display rack for jobbers featuring its VHF-TV booster. . . . **SIMPSON ELECTRIC CO.** has doubled its production facilities during the past year; employs Chippewa Indians who have proved their industry and manual dexterity at its Lac du Flambeau plant in Wisconsin. . . . **THE SMITH KIDS** won a 21-inch Raytheon TV set during a Chicago presentation of NBC-TV's "The Big Payoff". . . . **SNYDER MANUFACTURING CO.** presented its first UHF-5 TV Antenna to Frank Corbin of the M. V. Mansfield Co. of Pittsburgh (see cut). . . . **STERLING RADIO PRODUCTS CO.** of Houston, Texas reports that high fidelity has come to Houston's Burbank Junior High School via cabinets made in the school workshop, a Bogen DB-10, Webster-Chicago 3-speed

(Continued on page 26)

SELLING SERVICE

By HAROLD CHASE

Criticism is, for most people, hard to accept. Especially if it is accepted as a personal insult. Remember, people have



to complain now and then—it is human nature. Don't get angry or take it as a personal insult, or even as an insult to your firm.

How many times have you heard someone say "today everything

went wrong"? How many times have you been disagreeable to the clerk, the filling station attendant or the bus driver?—when really you were annoyed because your insurance and a large garage bill fell due at the same time—and you were worried about meeting them.

Don't let disagreeable people annoy you. Be thick-skinned, it is a part of selling service. The best way to handle disagreeable people is to listen patiently. Sometimes that's all you have to do. Everyone feels better after they "unload" or "blow off steam." Agree with them with an occasional "I can see how you feel" or "under the same circumstances I would feel as you do." Then say: "but, perhaps I can help you understand both sides of the question."

Some people are chronic complainers, but don't fail to listen to what they are talking about. It will give you points for your selling service job. Analyze each bit of criticism and each complainer. Perhaps you will arrive at a better way to present your story. Complainers are often some of your more intelligent customers.

Because they are more intelligent, they see the flaws in a poorly presented service sales job. Listen to the complainers to help improve your presentation.

Years ago one of the most successful salesmen that I have ever known told me: "no loss of a sale is ever without profit if you discover how you lost it."

Why not hook up a tape recorder and record each time you talk to a customer on the 'phone? Do this for one day, then play it back. I'll wager you can find many things to say differently. Unless I miss my guess, you will be surprised about the job you are doing. I have done this many times. Each time I find where I could have done better.

Take criticism without anger. Listen patiently to the complainer. Check your own story—and you will do a more efficient job of selling service.

I-F AMPLIFIER UNIT FOR TELEVISION SETS

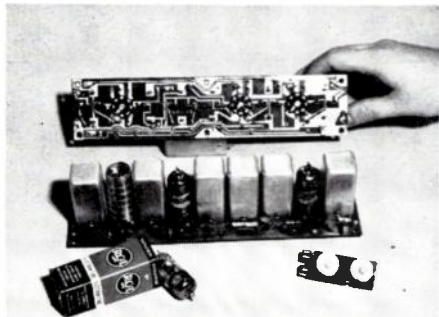
*Compact assembly is mass-produced with printed circuitry,
tubes and components*

By R. T. ORTH
RCA Tube Department

The television industry's first ready-to-use prealigned i-f amplifier, complete with electron tubes and printed circuit components, has been announced by the Tube Department of the RCA Victor Division, Radio Corporation of America.

The assembly, now in mass production, has been designed to help TV set manufacturers reduce production time, eliminate complex assembly and alignment operations and provide high level efficiency for amplifier operation.

Intermediate frequency amplifiers for home TV sets are now constructed and aligned by individual set manufacturers. Such operations are exacting and time-consuming because amplifier tubes, circuits and wires must be assembled on the TV chassis, precisely positioned to assure efficient operation and then connected and soldered by hand.



RCA-207E1 "Tandem" Amplifier Unit

The RCA amplifier is being offered to manufacturers as a finished "package," ready for attachment to the chassis.

The "Tandem" amplifier became commercially practical with the successful application of the special photo-etch "printing" process for the production of wiring patterns and component coils. Accordingly, all hand-wiring operations are eliminated. The "Tandem" amplifier is mass-produced from a series of film negatives covering the wiring panel and the individual printed components.

PHOTO-ENGRAVING PROCESS

Production of the "Tandem" amplifier begins with a photograph of the panel's specified wiring pattern. A contact print of this negative is made on a copper-

clad plastic sheet coated with light-sensitive material. The sheet is then photographically treated to develop the wiring pattern. An etching process removes the unexposed copper veneer, leaving a sharply defined copper reproduction of the wiring pattern.

After processing, components, resistors and capacitors are placed in position and all leads are simultaneously joined underneath the panel by a dip-solder process. This assures bonded electrical contact between the printed wiring and the components and tubes.

The same negative can be used to mass-produce countless replicas of the original wiring pattern. The RCA photo-etch process is so precise that it will faithfully produce circuit patterns having a line width of as little as one-hundredth of an inch. It also assures product uniformity and eliminates wiring and soldering operations.

FOR INTERCARRIER SOUND

The "Tandem" amplifier is a three-stage, 40 megacycle i-f assembly designed for TV sets which utilize intercarrier-sound systems having picture i-f and sound i-f carriers at 45-75 megacycles and 41.25 megacycles. It employs printed-circuit i-f transformers, coils and traps arranged in tandem, three RCA 6BC6 amplifier tubes and a crystal diode mounted on a plastic panel less than nine inches long and two inches wide.

Resistors and capacitors are mounted on top with leads inserted through the panel and dip-soldered to the printed wiring underneath. Attachment is made to the TV chassis by six small screws. When the amplifier is attached to the chassis, an excellent grounding connection is mechanically made by means of flat solder areas around the amplifier-mounting holes. Marked terminals are provided for input, output, B-plus, automatic gain control and heater.

The "Tandem" amplifier panel is impregnated with a special compound to provide high resistance to moisture. Printed-circuit components are encased in metal shield cans which measure $\frac{7}{8}$ -inch square and $2\frac{1}{4}$ -inches high. Adjustments can be made quickly by aluminum screw discs that are accessible from one side of each can.

News Briefs (Continued from page 25)

121-270 and a 6201 University speaker in a Helms-Holts resonator type cabinet. . . . **TELREX, INC.** has announced a new Duo-Band series of antennas for channels 2 to 83. . . . **TRANSVISION, INC.** has announced that it is expanding activities with coin-operated TV receivers built exclusively for hotels. . . .



Frank Corbin and Snyder's Dick Morris

TRAV-LER RADIO CORPORATION reports that sales more than doubled in the first six months of 1953 compared with the same period last year. . . .

TUNG-SOL SALES CORPORATION has opened a new office and warehouse at 755 W. Goodale Blvd., Columbus 8, Ohio. . . . **WESTERN ELECTRONIC SHOW AND CONVENTION** attracted nearly 14,000 for technical sessions and exhibits this year. . . . **WESTINGHOUSE** has launched a new sales promotion campaign to aid radio and television service dealers in acquainting the public with the potentials of UHF.

Quachita (Continued from page 19)

several barrels! Therefore, for the sake of your own business and of the business of all the rest of us, let your customers know that you're being scrupulously honest in every bit of your dealings with them.

I know, and you know, that you're honest as the day is long, but, **do your customers know it?** Nope. You've got to teach them that you are, and the only way you can do it is by maintaining the proper attitude toward them, in every minute detail of your dealings with them. You'll catch a lot of the devil most of the time, but keep your temper down. Remember the old saw: "A soft answer turneth away wrath," and its modern corollary, "A Harsh Answer Turneth Away Customers!"

Y'all come.

KEEP YOUR SERVICE BUSINESS IN THE *BLACK*....

\$ \$ \$ \$ \$

Here is a paper control system that fully meets the needs of the complex TV Service Business. It is the only system accepted on a national scale employing the same standard forms.

Whether your service operations is small or large; whether your account list is 100 or 50,000, Markem Service Systems has a control system to meet your needs. The money it cost you will draw interest just like a savings account. Every day you will see the impact of Markem over your entire business. The profit in television service will make itself felt as never before.



Complete Markem System with desk, tray, and schedule rack allows for efficient handling of service accounts by a minimum of clerical help.



Three operators handle approximately 13,000 active accounts with Markem Service Systems. Firm previously had eight telephone operators and three file clerks.

**Order Your MARKEM
Service System Today...**

Profit By It Tomorrow!

Check or money order — No c.o.d.'s.

**MARKEM
SERVICE SYSTEMS**

145 Hudson Street, New York 13, N. Y.

for as little as

\$ 67.50

You Can Buy

- 1 Markem Desk Tray
- 200 Carbonized Master Sets
- 500 Two-Part Carbonized Receipt forms—blank
- 150 Printed and Taped Out-guides
- 1 Set—A to Z two-sided guides

Markem Service Systems is also available for Air Conditioning Service

MARKEM SERVICE SYSTEMS

1. Will reduce the number of telephone operators required to service a given number of accounts.
2. Will give service technicians a complete case history on each receiver being repaired.
3. Will give your telephone operator a complete case history enabling her to speak authoritatively to customers requesting service.
4. Will eliminate the possibility of sending a service technician to a wrong address.
5. Will enable you to set up all the required service records at one typing or writing merely by inserting the proper number of units.
6. Will reduce paper work and papers and require less space.
7. Will eliminate individual customers' folders and files.
8. Will reduce the time required to route service calls by any pre-designated areas.
9. Will enable telephone operators to do all of the following operations without leaving seat or phone.
 - a. Catch duplicate service calls
 - b. Catch nuisance calls
 - c. Stop service to delinquent accounts
 - d. Identify type of service to be rendered immediately
 - e. Receive, post, and schedule all incoming service requests

To: MARKEM SERVICE SYSTEMS
145 Hudson Street
New York 13, N. Y.

- ☐ \$67.50 Package—Basic Unit (1 Markem Desk Tray, 150 Printed and Taped outguides, 1 set—A to Z two-sided guides), 200 Carbonized Master Sets, 500 Two-Part Carbonized Blank Receipt Forms.
- ☐ \$87.50 Package—Basic Unit (same as above), 200 Carbonized Master Sets, 1000 Two-Part Carbonized Receipt Forms—Imprinted.
- ☐ \$118.00 Package—Basic Unit (same as above) Cover and Lock for Markem Desk Tray, 1 Schedule Rack, 200 Carbonized Master Sets, 1000 Two-Part Carbonized Receipt Forms.

Name.....

Address.....

City.....State.....

Total amount enclosed \$..... Check ☐ Money Order ☐

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pays!

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LIGHTNING ARRESTORS

ALL Completely UNIVERSAL!
for twin, tubular lead and open line

ALL UL APPROVED!
for indoor and outdoor

ALL QUICK-MOUNTING!

Available from your local jobber!



RMS

2016 BRONXDALE AVENUE
NEW YORK 60, N. Y.



Technical Topics

(Continued from page 17)

poor termination and standing waves are very pronounced and extremely misleading. A stub is an **absolute necessity** when trying to compare antenna types.

HOW BEST TO COMPARE ANTENNAS

For the field technician the most suitable and accurate method of testing antennas is by using substitution-relative comparison method, Fig. 1. In this arrangement some common antenna type is used as fixed-mounted standard which can be compared continuously with any other antenna mounted in a second antenna position.

In preparing such a test site, prepare two antenna mount positions with at least 20 foot separation and about same vertical height. Mount standard antenna at its permanent position. Mount **same type antenna** at second position to find correction for position variable. Prepare a rapid change-over test position in the shop after lines have been installed permanently from the two antenna positions.

Attach a ten-inch aluminum foil stub to each line near test position where

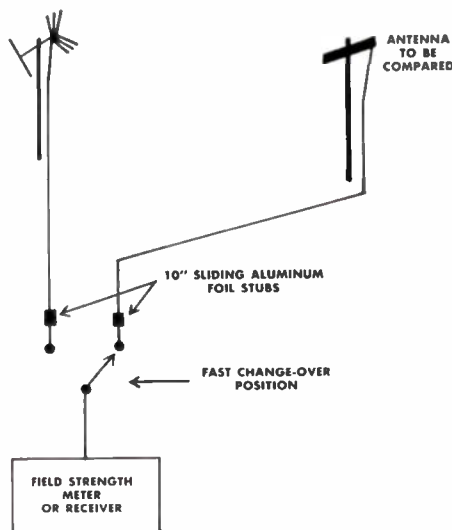


FIG. 1. Antenna Comparisons in the Field

they can be reached and adjusted for maximum readings on each channel. Proceed as follows:

1. Tune in first channel using standard antenna. Tune stub for maximum reading.
2. Change-over to antenna position No. 2 which is now using same type antenna. Maximize reading by tuning stub on second line.
3. Now by changing-over rapidly between two positions, the relative signal

levels can be measured and recorded. Generally the readings will not be identical despite identical antennas because of position variables.

4. Do above steps for each channel with which you are concerned. Prepare chart:

Antenna Types Channel	Standard Position #1 Conical	Test Position #2 Identical Conical	DB
3	8.8	9.1	plus 1 1/2 DB
6	8.6	8.6	0
10	6.4	6.2	minus 1 DB

The above chart would represent a correction for antenna mounting position variable.

Now an antenna to be compared to a conical is attached at the second antenna mount position. In time required to make the antenna change signal levels may have declined but it will not influence accuracy of measurements. Use of standard position #1 avoids this variable.

Take a similar set of readings by changing-over quickly between new antenna and standard conical.

Antenna Type Channel	Standard Position #1 Conical	Test Position #2 New Type	DB
3	8.4	9	plus 3 DB
6	8.1	8.3	plus 1
10	6	6.2	plus 1

Evaluation of Results

A. On channel 3 new antenna reads 3DB higher. However, when the standard antenna was used in test position #2 it read 1 1/2 DB higher because of position variable. Thus new antenna has a gain of 1 1/2DB (3-1 1/2) over standard conical.

B. On channel 6 the new antenna read 1DB higher. Since there was no position correction, the 1DB represents the gain of the antenna above the standard conical.

C. On channel 10 the new antenna also reads 1DB higher. However, the position variable was minus-1DB so new antenna has a gain of 2DB [1-(-1DB)] above the standard conical.

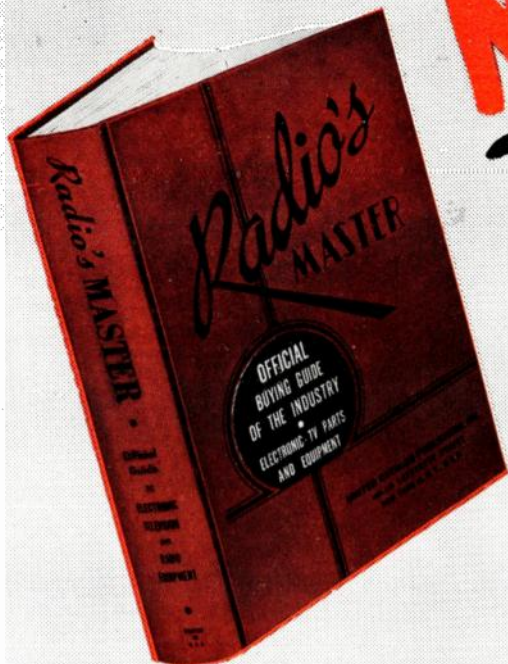
Association News

(Continued from page 15)

of a dirty aborted market. If we are to grow and prosper as an association, and give dollar for dollar value on each membership, we have to do everything within our legal and ethical rights to alleviate this situation," says managing director Tom Sanberg.

The Boards appointed Bud Holmes and Ernie Hintz to work with Sanberg in retaining legal consultation. Committees were set up to make definite recommendations for reorganization to better serve the members. In addition,

(Continued on page 32)



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OFFER SAVES YOU \$7.70**

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publisher's price	\$ 6.50	
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Don't miss such timely articles in "Service MANAGEMENT" as Technical Topics, Office Procedure, Product Applications, Association News, and other important features appearing monthly. It's the "one" magazine in the field written specifically for the top management of Service Dealers. Keep abreast of your ever-changing industry, and successful methods of business operation.

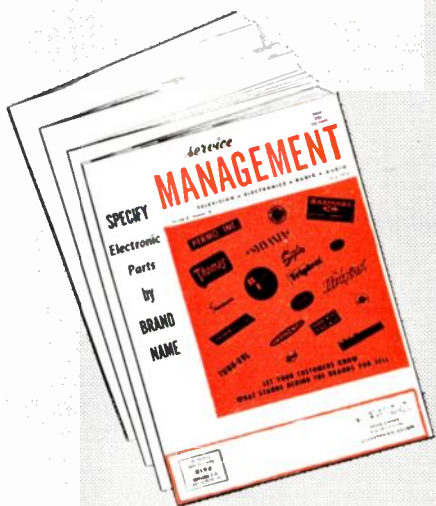
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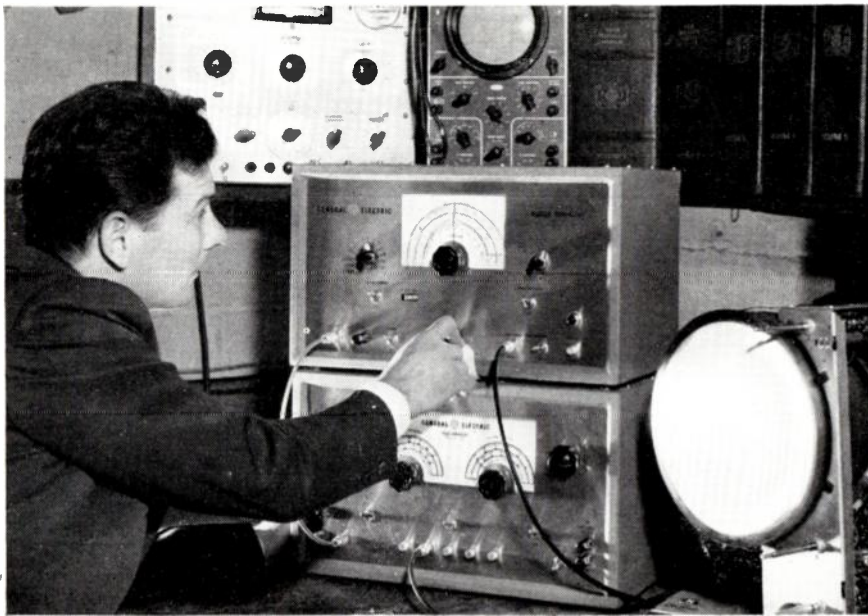
Signed by

Manufacturer of.....

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NOTE: YOU WILL GET A COPY OF FILE 50, TOO!



**"OUR CUSTOMERS TELL US
THAT THE PICTURES ARE
BETTER THAN WHEN THEIR
SETS WERE BRAND-NEW."**

*Says W. T. Gerlach
Roselle Radio and TV Service
1027 Chestnut St., Roselle, N. J.*

"Since the first TV sets were delivered in this area, we've installed almost every type and brand of picture tube, but we've yet to find any that gives a picture like the G-E Aluminized Tube.

"Our tube customers are not only satisfied—they are downright pleased! As a result, more than two out of every three tubes we are installing are G-E Aluminized Picture Tubes."

"2 OUT OF EVERY 3 TUBES ARE G-E ALUMINIZED"

Give your customers TV's finest picture—and make more money!

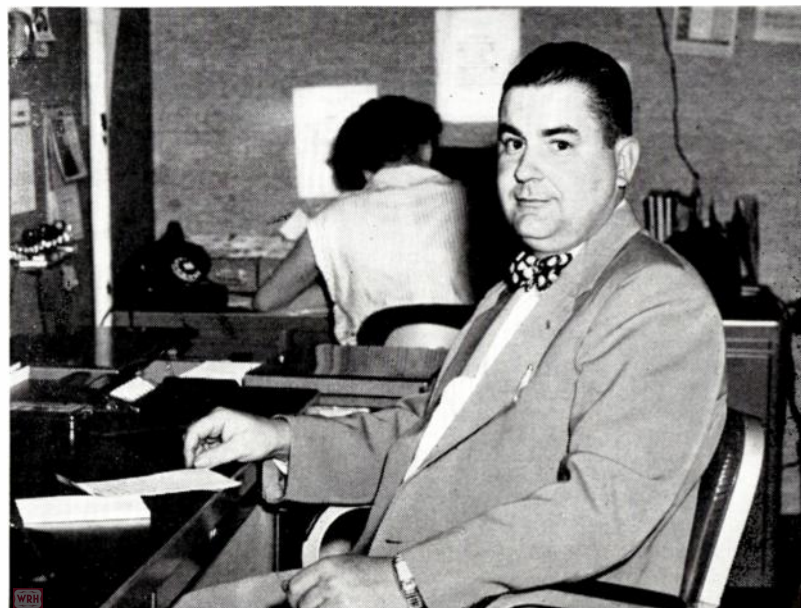
**"65% OF OUR PICTURE TUBES SOLD ARE G-E
ALUMINIZED. ONE OWNER TELLS ANOTHER."**

*Says Kenneth L. Middleton . . . HILLENS
740 N. Garey Ave., Pomona, Cal.*



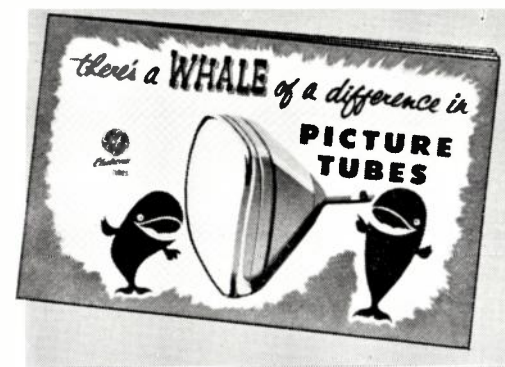
**"GENERAL ELECTRIC ALUMINIZED PICTURE TUBES
ARE ONE OF MY REAL BIG MONEY-MAKERS!"**

*Says Norman Foster . . . Foster Television
2922 Milwaukee Ave., Chicago, Ill.*

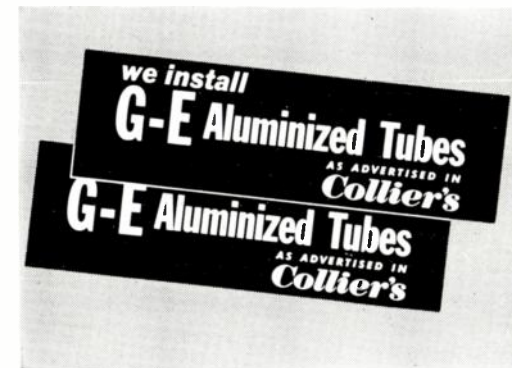


BRAND-NEW MIRROR DISPLAY

Eye-evidence why a G-E Aluminized Tube is up to 100% brighter. The mirror does it! . . . This 3-color display with polished, gleaming mirror sticks front or back to any flat surface—your store-window, door, or wall. A real attention-getter!



FACT-CRAMMED BOOKLET FOR TV OWNERS



COLORFUL STREAMERS

WE INSTALL PICTURE TUBES!"

Ask for new 6-piece promotion kit!

All these helps are waiting for you
at your G-E tube distributor!

GET the full kit of G-E Aluminized Tube sales aids! Use them to sell better-than-new TV! It's a sure-fire way to lick competition from inferior picture tubes offered to your customers.

This mirror, booklet, and other helps will work hard for you, developing profitable tube sales. General Electric further supports your efforts by a strong coast-to-coast advertising campaign to TV owners. Ads in LIFE, COLLIER'S, and TV GUIDE, reaching some 40,000,000 readers, tell why the G-E Aluminized Tube is brighter, better, the finest tube any set can have!

Today many leading TV builders are featuring new-model receivers with General Electric Aluminized Tubes. Demand for replacement tubes will skyrocket as the finer performance of the aluminized tube is made known by enthusiastic set owners.

Take a tip from successful service dealers everywhere! Sell TV's finest picture profitably! Tube Department, General Electric Co., Schenectady 5, New York.



PHONE-SELLING PRICE GUIDE



MAIL CARD THAT BUILDS INQUIRIES



GENERAL  ELECTRIC

WIRE WARNING!

WHY

pay more for questionable quality* tubular TV lead-in wire?

*subject to patent infringement.

LOOK

for highest quality license-labeled* Tubular TV Wire...

*JSC Tubular Wire is manufactured under license of Amphenol Pat. 2543696.

DEMAND

the most for your wire dollar... get BOTH Quality**! AND Low Price**!

**JSC—Highest in Quality... Lowest in Price!

JSC NEW Twin Tubular TV Lead-In Wire...

The best low loss, low cost 300 ohm lead-in for UHF and VHF television.

Rain, snow, dirt or salt deposits do not materially affect impedance and electrical efficiency.

JSC tubular construction contains and protects the concentrated field of energy and reduces to a minimum high ratio signal losses.

Always Look for Orange & Blue Disc of Quality



Association News

(Continued from page 28)

an extensive membership drive headed by Harold Huey, Minneapolis and Bob Johnson, St. Paul, is underway.

MANUFACTURERS AID IN CONSUMER EDUCATION

RCA Service Company has published a 12-page booklet titled, "How to Give Your Television Set the Service It Deserves," that is being sent to independent television service associations and managers of Better Business Bureaus throughout the country.

The television service technician is a respected business man who has spent years in training and made a large investment to provide an essential service to the community. That's the theme of the booklet, with the text in a light vein and cartoon illustrations.

The RCA Service Company credit line is not only very modest but is in itself a very fine tribute to members of the independent TV service fraternity.

These booklets are available to service businesses at the RCA Service Company's cost for 3¢ per booklet. They are known as Form 2244 and may be obtained through R. L. Polk & Co., Inc., 809 Chestnut Street, Philadelphia 7, Pa.

During the past year General Electric has initiated a program directed toward the establishment of better consumer understanding of television servicing. Through their advertisements in *LIFE* and *COLLIER'S*, they portray the investment in equipment, technical knowledge, and other requirements of a qualified service dealer and his technicians to provide service to television receiver owners.

To supplement this program they have prepared a booklet which is available in quantity through their Tube Department distributors.

Manufacturers have acknowledged that organizations strengthen the bond of better business in the electronics trade. Their sales can be no better than your service... so they make available to associations outstanding authorities in the fields of electronics... to better educate the technician who must keep abreast of the new knowledge.

THE CHALLENGE TO TRADE ASSOCIATIONS

Joseph T. Meek, addressing the Mid-Year Meeting of the NATIONAL APPLIANCE AND RADIO-TV DEALERS ASSOCIATION in Chicago said: "The Challenge to the trade association is the major one. Shall individual merchants be aided and advised by their own efforts and the efforts of their own friends and competitors? Or shall we turn it all over to the government to make a real socialistic state of the United States?"

"There are thousands of merchants in the United States today who have more than a sneaking notion that if and when they get into serious difficulties the government will bail them out. These are the merchants who never believed that the rigorous days of the thirties ever happened. They have turned a deaf ear to every effort made by men who remember when to get a person to buy was a distinct art... and a full time job!"

"These merchants have never believed in trade associations; or believing them, they have treated them more as mutual admiration societies and given little heed to intelligent programs of self help which characterize the modern trade association."

Mr. Meek went on to deplore conditions that are leading to socialism. "It is up to the trade associations," he said, "to courageously fight off the clamor of its members for government aid and protection. It is in their power to bring America into socialism, or by their own brand of blood, sweat and tears—and loss of membership revenue, I might add—to keep it open for freedom of choice."

BUILDING YOUR ASSOCIATION

There's one or more in every town! I am speaking of the "free-loader." Who is this person?

He is the dealer, serviceman, or other individual connected with the industry—who does not belong to your local Association. And yet he reaps the benefits of the work, effort, and dues of your members. When better conditions are obtained through association efforts, he profits. But he has not helped support the association that made it possible.

It does no good to complain or to be angry with him. The only solution is to see him and convince him that he will profit more by joining and participating. It's entirely possible that many of them have never had a full explanation of why they should join.

Invite them to your meetings where you discuss and work on matters of direct importance to them. Show them how you exchange the open secrets of the trade—shop talk in which they learn better and thriftier ways to work—show how the association works with other segments of the industry, the Chamber of Commerce, etc., and how better merchandising ideas are developed through the best, up-to-the-minute information. Make them realize the good fellowship they are missing. Make them feel that becoming a part of your organized effort is something they can no longer afford to by-pass.

GOOD LUCK!

See you next month when I'll tell you more about what some of the associations across the country are doing to promote their organizations.

Penny Martin
P. O. Box 283
Brackenridge, Pa.

Estimating

(Continued from page 12)

Michigan. The complete chart is shown as a part of this article.

Since an explanation of how to use the schedule is printed on the chart itself it will not be explained here. It should be pointed out, however, that a job figured on the basis of charges shown on this chart will add up to essentially the same amount if figured on the first chart.

INFORMING THE PUBLIC

One of the big problems of the independent service industry is that of acquainting the public with what they should expect to pay for competent and efficient TV Service. All of the publicity urging the set owning public to patronize only legitimate, honest service companies will not amount to a hoot until someone tells the public two things:

(Continued on page 34)

FREE!

A FAMOUS CBS-HYTRON Soldering Aid to every contestant in this, your **BIG *Certified* QUALITY SERVICE CONTEST!**

CBS-HYTRON SOLDERING AID



FIRST PRIZE
...FORD
PANEL TRUCK

(painted with your name and address and delivered to your door)

9 Other BIG Prizes!

- Second Prize: \$1000 in Savings Bonds
- Third prize: 600 in Savings Bonds
- Fourth prize: 500 in Savings Bonds
- Fifth prize: 400 in Savings Bonds
- Sixth prize: 300 in Savings Bonds
- Seventh prize: 200 in Savings Bonds
- Eighth prize: 100 in Savings Bonds
- Ninth prize: 50 in Savings Bonds
- Tenth prize: 25 in Savings Bonds

Get an ENTRY BLANK with the EASY CONTEST RULES from your CBS-HYTRON DISTRIBUTOR

On this entry blank, complete in 25 additional words or less: "I like the CBS-Hytron *Certified* Quality Service plan because . . ." Sign your name, then *print* your name and address below your signature. Ask your Distributor's Salesman or Counterperson to help you. *Be sure to print his name and company on line indicated.* (If you win, he wins.) Mail to CBS-Hytron, Dept. (A), A Division of Columbia Broadcasting System, Inc., Danvers, Massachusetts.

FACTS ABOUT YOUR *Certified* QUALITY SERVICE Plan

If *you* could advertise nationally, chances are *you'd* do just what CBS-Hytron is doing for *you*. *You'd* tell the world in LIFE and the POST that *you* promise quality TV and Radio service, parts, and tubes . . . and at fair charges. And that's just what CBS-Hytron is doing for *you* with advertisements that sell *you* as a *Certified* Quality Service dealer . . . a dealer in whom the public can have confidence.

You'd identify *your* service repair shop as the one people are reading about in the magazines.

You'd use a *Certified* Quality Service decalcomania on *your* door. *You'd* use a *Certified* Quality Service window streamer and the big LIFE and POST easel display blow-up. Above all *you'd* use *Certified* Quality Service tags that tell *your* customer he is getting more for his money when he

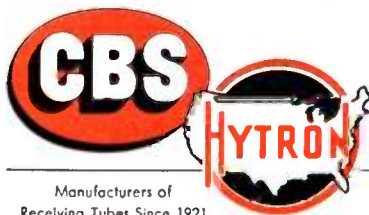
calls *your* service repair shop . . . because *you* *Certify* the quality of service, parts, and tubes . . . and at fair charges.

Yes, by using all this material, and more to come, *you* cash in on *your* big *Certified* Quality Service advertising campaign. Get *your* kit. It contains all the material *you* need to identify *you* as a *Certified* Quality Service dealer. Ask your CBS-Hytron distributor for *special deal*.

To be eligible for Contest prizes, *you* must be actively participating as a *Certified* Quality Service dealer by using the CBS-Hytron *Certified* Quality Service Promotion Kit; including tags, decalcomania, window streamer, and easel display blow-up. Awards will not be made to any dealer or serviceman not participating by December 15, 1953.

GET YOUR KIT AND CONTEST ENTRY BLANK TODAY! ASK YOUR DISTRIBUTOR . . . OR MAIL COUPON,

BUT DO IT NOW!



Manufacturers of Receiving Tubes Since 1921



CBS-HYTRON, Danvers, Massachusetts

A Division of Columbia Broadcasting System, Inc.

A member of the CBS family . . . CBS Radio • CBS Television • Columbia Records, Inc. CBS Laboratories • CBS-Columbia, Inc. • and CBS-Hytron

CBS-HYTRON, Danvers, Mass.

Please rush me the *Certified* Quality Service promotion kit, containing:

1. 18- by 28-inch LIFE and POST easel display . . .
2. New *Certified* Quality Service decal . . .
3. 8- by 23-inch window streamer . . .
4. AND 250 *Certified* Quality Service tags imprinted with MY name and address.

HERE IS MY 3-LINE IMPRINT:

Name _____ (please print)

Street _____

City _____ State _____

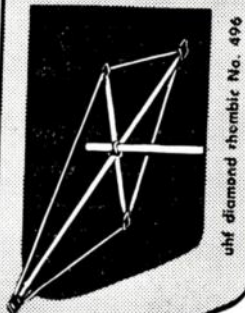
I enclose \$2.00 to cover the cost of imprinting.

Signed: _____

P.S. Please send me also entry blank with easy Contest rules.

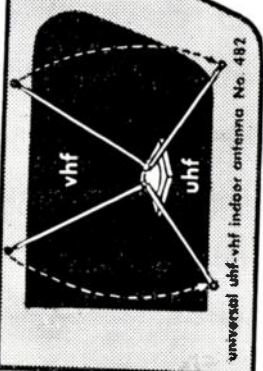
Brach... exclusives! 3-D line

FREE!
write for 3-D
counter display
with glasses



uhf diamond rhombic No. 406

D Develops highest gain
D oesn't flicker
D esigned for service



universal uhf-vhf indoor antenna No. 482

D iversiform peaks on 82 TV channels
D evised eccentric joint does it all
D esigned to reduce uhf skin losses



Manufacturing Corp.
Div. of General Bronze Corp.
200 CENTRAL AVE.,
NEWARK 3, N. J.

Estimating (Continued from page 32)

1. How can you tell which companies are competent, trustworthy service companies?

2. What are legitimate charges?

A number of service companies have been using the original Standard Labor Charges schedule as a mailing piece to acquaint TV set owners with what they should expect to pay for reliable service. This chart is available in mat form and printed as an 8½ x 11 flyer.

While the set owning public is en-

titled to the best possible type of service on their TV sets and other electronic equipment they are also expected to pay adequate charges for that service. Compare the cost of automobile service today with what it was before the war. Even in alley garages that once were "fringe auto service" businesses, you will find their owners using standard labor charges on all the jobs they handle. The smallest garages have learned that you don't have to give your services away. But you must give good service — and stand back of your work.

Legal Action (Continued from page 14)

"I hate a cheater worse than almost anything else in the world . . . a man who will take advantage of the ignorance of his customers in order to perpetrate a fraud upon them is less than nothing in my sight, and I have no use for him. I am personally willing to bend whatever energies are present in my office to prosecute a person of that type."

in my office to prosecute a person of that type.

ASSOCIATION EFFORT

Of course you have the right in your own association to make positive advertising efforts to encourage people to deal only with those dealers who have been, so to speak, approved; those who have proved by their actions over the past that they are honorable, that they are willing to conform to an accepted code of ethics, and that those who deal with such dealers can expect their repair work to be done properly and the charges to be based entirely on work done and parts furnished.

But you cannot go out on an advertising campaign to state that any specific individual is violating that code. Our laws are designed to protect the innocent at all times, and occasionally in so doing, our laws protect the guilty, but you can make the positive action to set forth that. I will use as an example, a real estate agent. They have set up their realty board, and only those who have passed certain examinations and who generally conform to their code of ethics are permitted to hold themselves forth to the public as realtors.

Now people who want to buy real estate and who go to a so-called dealer who is not a realtor, are simply taking their chances and are not entitled to the same protection as those who look to the dealers who have qualified themselves properly. You can give a lot of thought to setting up similar qualifications for your own members.

Advertising (Continued from page 9)

locality with minimum time and expense.

A GOOD EXAMPLE

A typical example is provided in current Sylvania cooperative promotion. We first prepare a comprehensive presentation of the whole campaign in an attractive mailing piece that explains the specialized approaches to sales and how to use the available advertising tools. How they tie in with national advertising at the local level is fully explained. A similar announcement is made in the advertising pages of leading trade publications.

This costly first step is made by Sylvania to save TV Service management time and to facilitate participation for increased sales planning. Almost at a glance, TV Service management can see what has been planned for him, how his business can be identified with a big national sales promotion movement, how little cash outlay is required and how effective the cooperation can be. Convenient order forms are included so that his organization can participate at once. The TV Service management has the power to turn a big million dollar advertising campaign into motion to promote his local business.

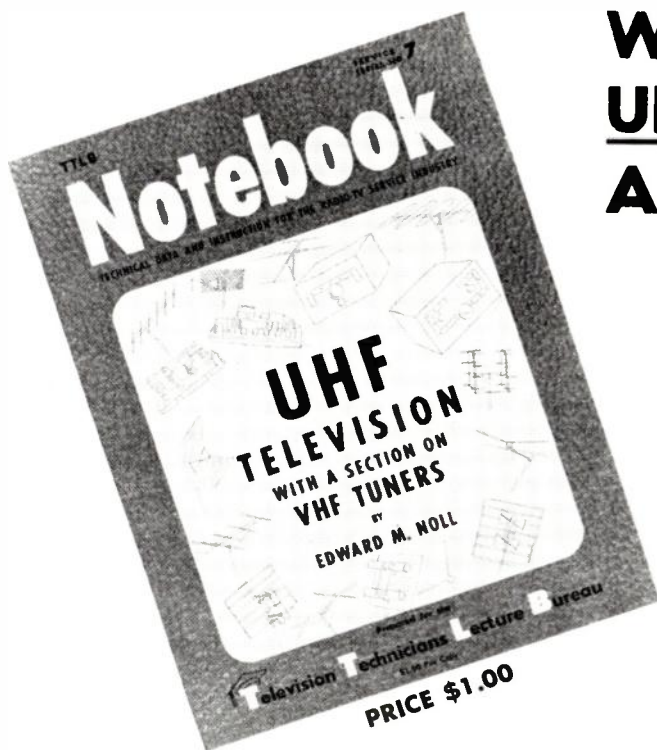
This is made possible by expert preparation of a comprehensive promotion, geared to his needs by advertising managers, advertising agencies, professional artists and outstanding talents in the graphic arts. It will go to work for him through a simple request that will receive prompt attention of a specialized organization that assembles and ships the complete, personalized promotion material to his office.

After these corps of manufacturer's servants have done their work the easy task of hitting the jack-pot is up to the TV Service management. The TV Service management must see that the material is put to work, that the window displays are used, that the mailers are mailed, that the streamers are posted. At this point many TV Service managements let themselves down. They put-off putting their advertising tools to work. They get aboard but they don't go any place!

This is hard to explain. It may be that some TV Service managements fail to recognize that some of the best things in TV Service advertising are **almost free**. It may be that they mislead themselves into thinking that advertising is not many silent salesmen that **make** sales of tubes, of components, of service — even during "seasonal" slow-downs. These TV Service managements

(Continued on page 36)

GUARANTEED TO HELP YOU



WHIP YOUR TOUGHEST UHF INSTALLATION AND SERVICE PROBLEMS

Here is the practical, fact-packed manual on UHF television that will save you many hours of time working with equipment in the new high bands.

Thousands of technicians who heard Edward M. Noll lecture on UHF television ordered copies of Notebook #7 before it was printed. Mr. Noll knows the practical needs of field service technicians. He gives you the vital "how-to-do-it" information that saves your time and eliminates endless hours of wasted effort.

In this 72-page, graphically illustrated manual you will find priceless information that will help you on every UHF installation or service job you have to work on. Here are just a few highlights from only four pages of this idea-packed Notebook.

1. Circuit diagram for a UHF test oscillator that will develop any frequency in the UHF spectrum. Build one of these low-powered oscillators and you will have an indispensable UHF test instrument for your own shop.
2. A simple plan for testing, aligning and servicing UHF converters and sets with equipment you now own. You can eliminate guesswork by following the suggestions given in this section.
3. A plan for making your own transmission line checks.
4. How to make your own antenna performance checks. UHF is tricky. Equipment that works well in one location fails in another. You can eliminate a lot of guesswork by knowing the individual limitations of UHF products by making your own tests of performance.
5. How to align a UHF converter. Step-by-step instructions for converter alignment that will simplify that kind of service when it is needed.
6. A complete table of UHF frequencies with channel center wavelength in inches for all 70 UHF channels.

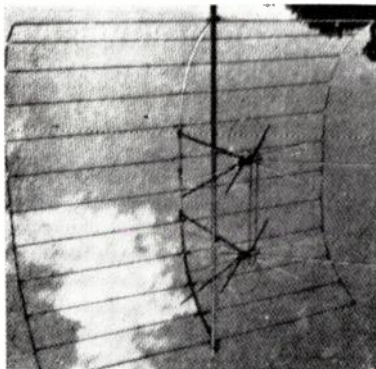
Get your copy of Notebook #7 on UHF Television from your Parts Distributor or use the coupon below to order directly from the publishers:

TYPE OF BUSINESS: <input type="checkbox"/> SERVICE CONTRACTOR; <input type="checkbox"/> DEALER <input type="checkbox"/> TECHNICIAN; <input type="checkbox"/> DISTRIBUTOR <input type="checkbox"/> PARTS JOBBER <input type="checkbox"/> MANUFACTURER OF _____	Paul H. Wendel Publishing Co., Inc. P. O. Box 1321 Indianapolis 6, Ind. Enclosed is \$1.00 (check or M.O.) to pay for my copy of Edward M. Noll's new Notebook #7 on UHF Television. Please send it to the following address (Please print clearly): Name _____ Address _____ City _____ State _____
--	---

Fringe Beam

PRESENTS
THE SENSATIONAL NEW
VHF-UHF
PARABORAY

- High average gain across entire TV spectrum (channels 2-83).
- Based on the radar parabolic-type antenna.
- Dipole of entirely new design that produces sharp pattern and high front-to-back ratio so desirable in the fringe area.



Model FB-P283, List \$39.50

1. No other antenna is necessary with the Paraboray and only one transmission line is needed for VHF and UHF.
2. The outstanding performance of the Paraboray will sell itself.
3. Light weight but ruggedly constructed to withstand the most adverse weather conditions.
4. Will give more performance per dollar than any other antenna on the market.
5. Clear picture in the 100-200 mile range.

Neal Electronic Co., Inc.

Huntsville, Alabama . . . P. O. Box 376

Advertising

(Continued from page 34)

have yet to learn that for the want of a postage stamp, a sale may be lost, merchandise will stagnate on the stockroom shelf—and hundreds of people who need TV Service will have to go without, or go to a competitor, because a big national ad campaign has stalled on their doorsteps.



Hundreds of packages of Sylvania promotional material are shipped to radio and TV Servicemen every day.

YOUR RESPONSIBILITY

There has been a great deal of conversation about increasing sales in the vast billion dollar market for service. There is a good deal of truth in what has been said, but a fact that is often

ignored is the fact that no manufacturer or distributor sells the vast market. The manufacturer's job is to produce goods; the jobber's task is to distribute goods, make them available—for service organizations.

The manufacturer and the jobber provide functions of availability. But the link in the chain that makes the sale is the TV Service organization. It puts the goods into the customer's hands, exchanges the goods for the consumer's dollar—and puts the goods to work. The goods may be a tube or a condenser or a resistor or a transformer—but it does not become a part of the billion dollar market for service until the TV Service organization sells it.

This places a large responsibility on TV Service managements. It means that they must sell all the goods that go into the billion dollar market. This is a large order. It is a very good reason why TV Service managements should eagerly seek and put to work all advertising that sells service.

YOUR SELLING TOOLS

Advertising that sells service is just as important to the TV Service organization as test equipment or other shop tools. Manufacturers provide, at almost no cash outlay, advertising that sells service—because they realize that the TV Service organization is the one link in the distribution chain where a

sale is really made.

Therefore they put their best effort, their most effective talent, into advertising that sells service. They make this advertising easy to use by reducing its cost to a minimum and by making it work almost automatically. They keep it timely by reshaping appeals that fit the season and the needs of service organization customers.

Don't miss the bandwagon by overlooking opportunities to use advertising that sells service. It is yours almost for asking—but it is up to you to take a few minutes a day to put it to work to increase your sales and your profits.

Texas Meeting

(Continued from page 8)

auditorium where the talks were given and in between times just visited with those who had accepted their invitation to participate and show their wares.

With the members of the Fort Worth Radio & Television Association, Inc., serving as gracious hosts, the entire tone of the convention was one of cooperation with all other elements of the Electronics Industry. Parenthetically, your editor would like to point out that the Fort Worth Radio & Television Association is in itself a remarkable organization. With a membership of seventy-four businesses in a city of less than four hundred thousand population, it can probably boast of the highest per capita membership of any service business association in the industry.

Following an address of welcome from Joe B. Ellis, Councilman, place number one, city of Fort Worth, James D. Secrest, capable executive vice-president of the Radio-Electronics-Television Manufacturers Association, struck a responsive chord in the assembled delegates in the keynote talk, "Let's Build Our Industry Together."

Prominent service leaders like Forrest L. Baker of San Antonio, immediate past-president of TEA, Al Robertson, popular service dealer of Oklahoma City, and Hal Chase, head of the Chase TV Service Company of Detroit and president of the Television Service Association of Michigan, spoke on important phases of service business operation and developments.

John Rider, publisher of Rider Publications, Mort Farr, head of A. Farr Better Service in Philadelphia and past-president of NARDA, and W. D. Renner of the Howard W. Sams Company, delivered thought-provoking talks on present and possible future trends in the business of television and electronic servicing.

(Continued on page 38)

You can build a reputation on Tung-Sol Quality



Tung-Sol Picture Tubes have these outstanding quality features

- Gun** made of best grade non-magnetic steel.
- Glass bead** type assembly is stronger both mechanically and electrically—gives greater protection against electrical leakage.
- Rolled edges** in gun minimize corona.
- Custom built stem** with greater spacing between leads assures minimum leakage.
- Low resistance** of outside conductive coating minimizes radiation of horizontal oscillator sweep frequency.
- Double cathode tab** provides double protection against cathode circuit failure.
- Selected screen composition** resists burning (X pattern).
- Rigid control** of internal conductive coating provides utmost service reliability.
- Designed** for use with single or double field ion trap designs.
- One-piece construction** of parts assures better alignment.
- Maximum dispersion** of screen coating assures uniform screen distribution.

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

Texas Meeting

(Continued from page 36)

LOCAL D. A. SPEAKS

Talks given by Howard M. Fender, District Attorney of Tarrant County, Duffield Smith, Managing Director of the Dallas Better Business Bureau, and Howard G. Chilton, General Manager of the Fort Worth Retail Merchants Association, were all of deep interest to these service businessmen. Discussing the legal, ethical and credit phases of the business, each of these men demonstrated a keen understanding of the problems of service business. They contributed a great number of useful ideas and suggestions that, as one delegate put it, "will help me bank some of the money I've been losing."

But while the Texans met in complete harmony with all other elements of the Industry they made certain that everyone would know that all is not a "bed of roses" in the business of servicing.

ADDRESS BY LEONARD R. SMITH

In his address of welcome Leonard R. Smith, President of the Texas Electronics Association, put his finger directly on a number of current practices that are not conducive to the development of a healthy, prosperous independent servicing industry. He said,

"It (this convention) must be a harmonizing of all elements of service to the end that all of us do our work better, in a sounder manner, in a way that renders better service to the public and greater honor to our field. We must improve our individual operations. We must band together as one to erase forever the unfortunate companions of a young industry — malpractice and chicanery.

"I refuse to believe that there is any large element of service which is not dedicated to the highest standards of operation. I refuse to condone any contentions from any source that our field is peppered with racketeers and dishonest practitioners. Yet it would be blindness not to recognize that there are practices which would, if they were destroyed, better the industry and better the calibre of service we can render the public.

INDUSTRY PROBLEMS

"What are these things? Let's just touch on a few:

"When each manufacturer requires that the serviceman maintain a special type of in-warranty parts replacement tag for his brand, he complicates our work unnecessarily. When overlong delays and excessive red tape handicap us in securing parts replacements, an evil grows. When service data isn't available at the time new lines are introduced

our service to the public suffers. When obscure, unknown replacement parts are used to save a few pennies and perhaps force unnecessary added service, a wrong is done.

"False claims in advertising, books that state the owner can repair his own set, distorted statements about the cost of service which compel artificial charges for parts, incompetent men entrusted with advanced technical assignments, installations made with mounting brackets and hardware that are not

Gems from the Texas Convention

The service manager answered the phone and a female voice said:

"My TV set is out of order. How much do you charge to send a man out to fix it?"

"Our charge will be five dollars for the call," said the SM, "plus the cost of parts if it can be repaired in your home."

"That's too much," the f.v. replied. "There are lots of ads in the paper for home service on TV for a dollar and seventy-five cents."

"Oh," said the SM, "we can send a dollar and seventy-five cent man to fix your set, if that's what you want. We have those kind, too — they are inexperienced students. But if you have a good set and want one of our best technicians to fix it, it will cost you five dollars. Shall I send one of our dollar and seventy-five cent students?"

"No, I don't want a student tinkering with my set," exclaimed the f.v. "Please send one of your best men."

The doctor complained bitterly about the \$18.75 charge for repairing his TV set.

"I spent six years in college," he said to the technician, "and two years as an interne before I could practice medicine. But I can't get any fees like that for my work."

"In TV," replied the technician, "we have a couple of thousand models to deal with. Every year each manufacturer brings out at least one new model. We've got to have a big library of technical information and we've got to attend all sorts of technical meetings to keep up with all of the new circuits that are being used.

"But you, doctor," the technician concluded, "are still working on the same model you studied in school."

corrosion-proof and rust-proof, inadequate safety precautions and insurance — all of these things hurt all of us whether we indulge in them or abhor them.

"By educating service people themselves to oppose these practices, by working closely with our suppliers, the Better Business Bureau, the law enforcement officers of our communities and our local organizations, we can strike telling blows against such prac-

tices and create the clean, healthy industry conditions necessary for our forward movement and the customer confidence that must be the very cornerstone of service.

"Banded together as we are, we have great strength. This strength grows as it is used constructively. But let it be used to fix prices, to coerce competition into following dictated patterns, or to in any other way depart from the meaning and the wording of our nation's laws and our strength fades."

In concluding his address. President Smith said:

"We meet in harmony here. We hope that harmony grows to where our parts jobbers wouldn't think of selling to the consumer — often our customer — at the same prices we pay for our quantity purchases. In turn, we must show them the same kind of loyalty we expect from them, buy from our suppliers in our own markets rather than from some surplus jobber who may well betray us on any order they ship.

"Our industry is too big, too constructive, too rich in potential, too needed by the public for us to permit ugly, dirty little practices to thrive in it. Let's band together, then, for a cause we know is right, and we can have the satisfying knowledge that we will have all right-thinking people with us, working to make a tomorrow we can live in with satisfaction, dignity and pride."

MANUFACTURERS SERVICE MANAGERS

The concluding session of the convention a panel discussion, with James E. Palmer manager of the Electronics Service Division of the West Texas Appliance Company as moderator, developed into one of the most interesting and informative service meetings your editor ever attended. Panel members included Russell C. Hansen, manager of the contract service section of Motorola; R. J. Yeranko, General Service Manager of the Magnavox Company; Bill Satterfield, National Electronics Service Manager of Philco; W. D. Renner of the Howard W. Sams Company; and Dan Creato, vice president of the RCA Service Company.

Working quietly behind the scenes to make the convention an outstanding success prominent service executives from all of the Texas Cities took part in the accomplishment of the program. Two from Dallas especially watched the unfolding of this successful venture with a great deal of personal pride and satisfaction. Luther Bradley and Bill Inman, both of whom have been identified with every forward-looking program in the interests of independent service for many years, were a vital part of the team that made the Texas convention such a success.

over **99%***
hit the bull's-eye
for quality!

that's why we call

Federal
PICTURE TUBES

"BEST-IN-SIGHT"

Thousands of famous-name picture tubes were quality-tested by a famous-name TV set manufacturer.* When the scoring was over, Federal led all the brands tested . . . with an "OK" on over 99% of its tubes!

Here's proof, Mr. Serviceman, that it pays to replace with *Federal* . . . here's assurance of top performance . . . of less time wasted on call-backs . . . of more profit per tube replaced!

Federal quality brings to servicemen a tremendous opportunity to create customer-goodwill . . . to build steady replacement business.

Federal quality *stands by* servicemen, because it *stands up* in service . . . backs up their years of experience and know-how . . . their *trained* judgment. That's one of many big reasons why more and more servicemen are specifying Federal "Best-in-Sight" picture tubes.

Join the trend today . . . ask your Federal Distributor about the popular-size line that takes care of over 90% of all TV replacements . . . ! For information, write to Dept. N-35.

"Federal always has made better tubes"

Federal
Telephone and Radio Company



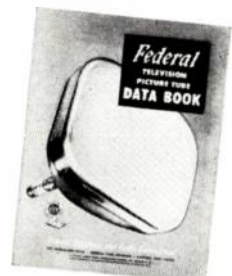
100 KINGSLAND ROAD, CLIFTON, N. J.

In Canada: Federal Electric Manufacturing Company, Ltd., Montreal, P. Q.
Export Distributors: International Standard Electric Corp., 67 Broad St., N. Y.



**Get Your Copy of
Federal's
TV Picture Tube
DATA BOOK**

12-page booklet with information on interchangeability, basing diagrams, bulb outlines, dimensions, characteristics. Address your inquiry to Dept. listed above.



GENERAL INSTRUMENT

all channel UHF converter

FORMERLY THE SILVERLINE

sharpest picture...

For the clearest, sharpest picture, with least interference—make your choice General Instrument. Select General Instrument, the converter that receives *all stations* in your community. General Instrument is the *all channel* UHF converter with the SILVER LINES...outperforms all others...is easiest to tune (all channels are s-p-a-c-e-d evenly around the dial)...features simple plug-in installation.

For the finest UHF converter—General Instrument!

Jobbers:—*Some choice territories still remain open. Write for details.*



General Instrument & Appliance
CORPORATION

Subsidiary of GENERAL INSTRUMENT CORPORATION • 829 Newark Avenue • Elizabeth 3, N. J.