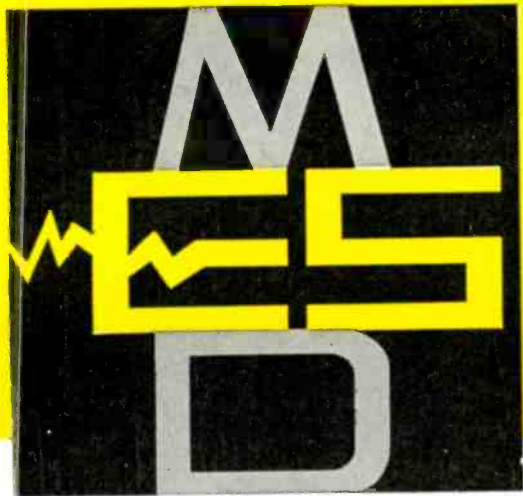


MODERN

1963 "WSBP"
Award Winner



electronic service dealer

THE OFFICIAL PUBLICATION OF THE CALIFORNIA STATE ELECTRONICS ASSOCIATION

VOL. 3, NO. 12

APRIL, 1964

MULTIPLE TROUBLE... Final—Elements of Sweep Circuits

PAY TV UNDER FIRE BY STATE GROUP

Statewide Report of UnRegistered Dealers Being Sent To Bureau

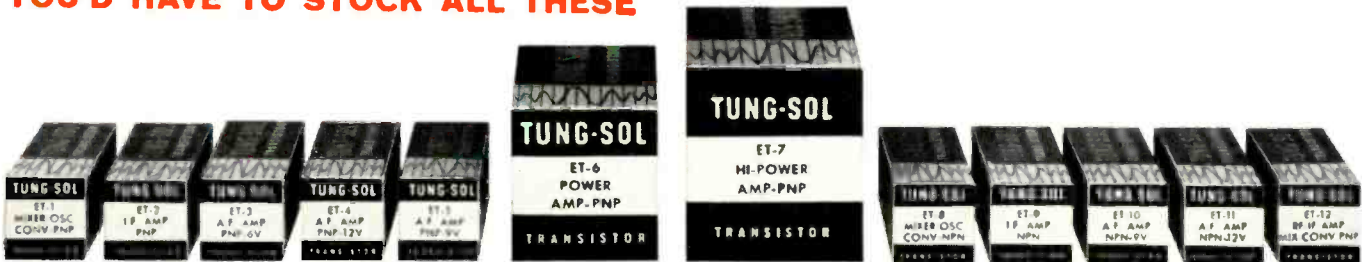
SERVICE SUGGESTIONS.... *A New Monthly Feature*

Bureau Ruling Does Not Exempt Contract Service Firms From Law

EDITORIAL POLICY OF MESD



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ET2 IF amplifier			ET9 IF amplifier
ET3 AF amplifier 6v.			ET10 AF amplifier 9v.
ET4 AF amplifier 12v.			ET11 AF amplifier 12v.
ET5 AF amplifier 9v.			
ET12 RF-IF amplifier Mixer/converter			
			

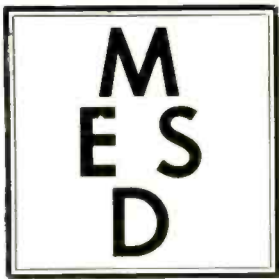
TELL YOUR SUPPLIER YOU'D RATHER HAVE

TUNG-SOL
ET TRANSISTORS

CENTER LINE



MODERN ELECTRONIC SERVICE DEALER



MODERN ELECTRONIC SERVICE DEALER

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Modern Electronic Service Dealer is Published Monthly at 2930 W. Imperial Hwy., Inglewood, Calif. Phone: 755-5261 by Associated Publications. Controlled circulation postage paid at Las Angeles, Calif.

Western Society of Business
Publications Member



APRIL, 1964
VOL. 3, NO. 12

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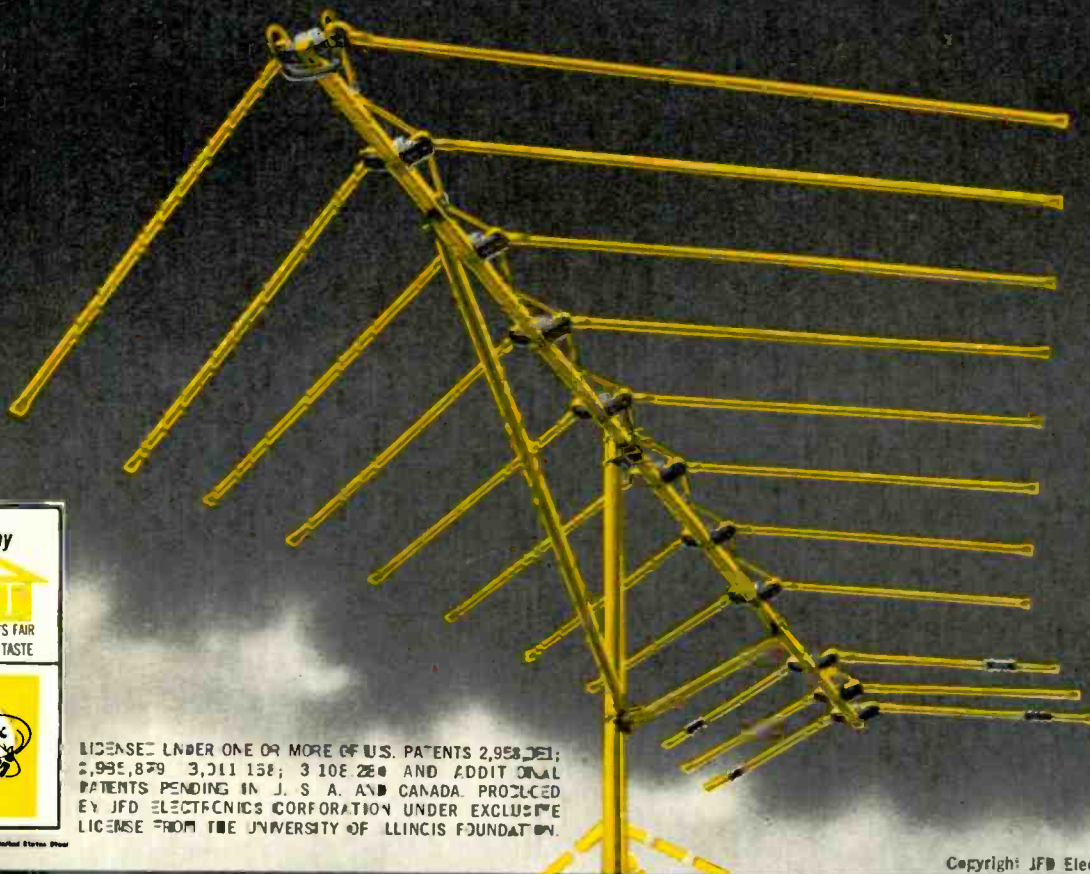
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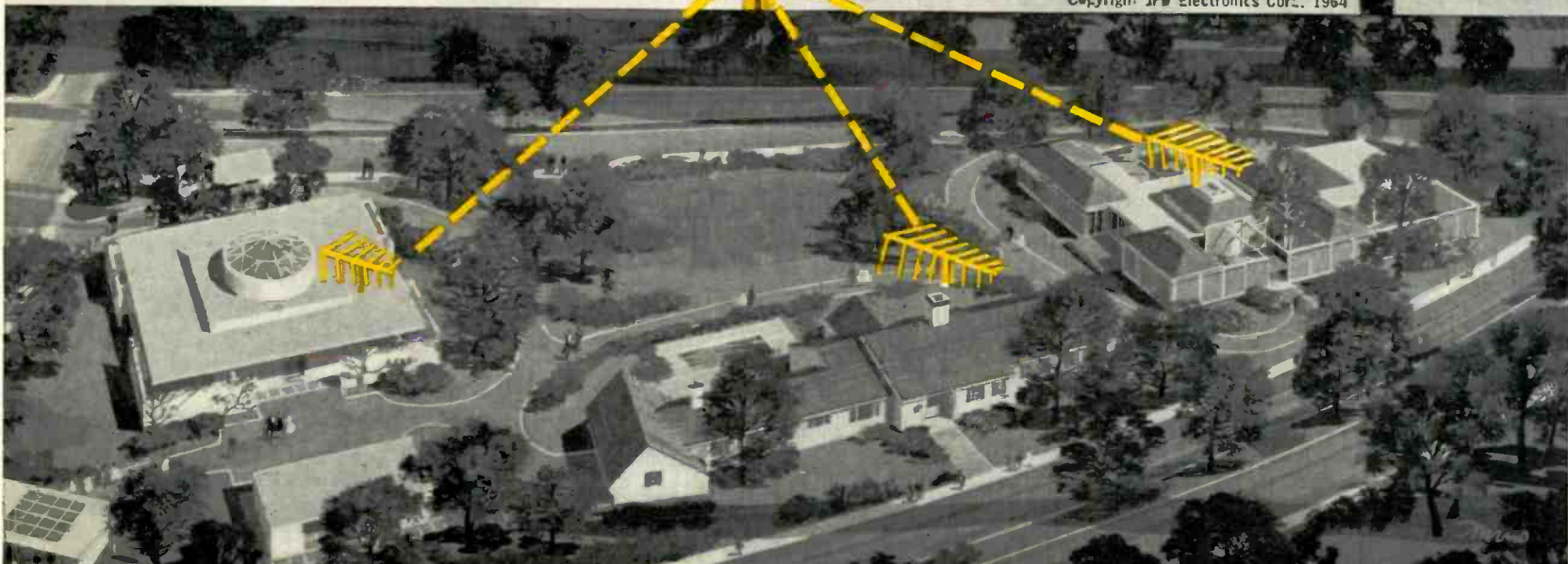
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DON MARTIN

EDITORIAL POLICY OF MESD

In recent weeks I have received several complaints and compliments on my editorial stand in regards to the Receiving Tube Dilemma (December 1963 Issue) and my seemingly favorable stand in regards to the Los Angeles County law that requires an estimate before a set is taken from a home.

Because of these comments it should be brought out that anything that appears in this column is my own opinion and does not reflect the opinion of the California State Electronics Association or any of its members either as individuals or collectively.

In order to make a publication sound it must be in a position of editorial integrity. It must be able to look at all sides of a question that may or may not be controversial and report its position. Without this it stands for nothing and will soon lose its value to the readers.

In discussing the "Tube Dilemma" I realize that the so-called "big mark-up" on receiving tubes has been in existence since they were invented and that my editorial was not going to change this picture. My report was strictly that the conversation of reasonable tube mark-ups was being seriously talked about by a group of service dealers and that to me it did make some sense. The article must have had some merit since it was reported word for word in the recent issue of the Michigan TSA without mentioning the source or additional comment for or against the stand.

In these editorial columns I try to look at a situation as realistic as possible. It must be remembered that these same editorials may or may not apply in your particular area. Take them for what they are worth and if you do not agree with them let me know. Your comments will be published in the Letters to the Editor column.

In commenting on my position in regards to the estimate law in Los Angeles County I can only say that I am against it from the standpoint that it discriminates against Dealers in a certain part of the state. If this is to be the case it seems unfair that Legislators not involved in Los Angeles can pass a law against the people in Los Angeles. We have but one Senator from Los Angeles County yet Senators from all parts of the State, many not familiar with our problems, pass a law that points a finger at a particular area. To my way of thinking this is not only unfair but illegal and that if it is ever challenged it will be ruled as such.

As for its effect, I can only state that the Los Angeles Better Business Bureau reports that complaints against Television Dealers had dropped from 200 complaints a day to less than 60 per week. The Executive Secretary of CSEA reported at the Board of Delegates meeting that the rest of the State reports very little change since the Registration law went into effect last September.

Does this mean that the Registration law has had no effect and that the Lien law has? Absolutely not. If there was not

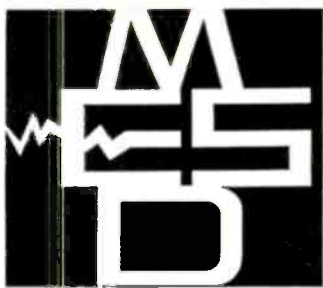
a State law requiring registration, with a penalty of loss of the right to do business, the Lien law in Los Angeles County would have no effect, in my opinion, on the number of complaints. The two go together and each makes the other work.

The only way we can sway public opinion is by reducing the number of complaints. By giving the customer a prior knowledge of the cost of repair we eliminate the chance of complaint that was 99% of the time based on over-charges, whether just or not. Some say that the consumer is getting clipped because the estimates are all high. This is not the concern of the law enforcement officers and your right to charge is guaranteed by the Democratic system called freedom. Freedom to set your own prices so that you can make a profit and feed your family. Everyone has the same right and the ability to be a better businessman than the guy next door will enable you to be a successful businessman. Competition will sooner or later take care of the super estimates and as the system is used more and more it will be to the benefit of everyone and will, I believe, place the Television Service profession in the same light as any other business that is engaged in serving the general public.

One additional "add" on this subject and that is that I am going to survey every District Attorney and every Better Business Bureau in the State in an effort to obtain an answer to the effect of the new Registration Law outside of Los Angeles County. This I will try to report as soon as possible.

REGISTRATION NOT REQUIRED IF LESS THAN TEN SETS REPAIRED

It looks very likely that the Bureau of Electronic Repair Dealers Registration may set 10 as the magic number for registering or not registering. Under recent discussions the Bureau points out that all other industries have a starting point and that this seemed to be a general rule of thumb to make it 10. In our opinion we must disagree very strongly with this position. A hobbyist or next door neighbor may repair one or two of his friends sets but when the number gets to ten he is really in business. If you take this magic figure of ten and you multiply this times several thousand in the state you have a big business going on. We firmly believe that whenever Television, Radio or Sound producing equipment is repaired for a FEE he is in business and should be subjected to Registration. What is to stop a person from fixing ten in his name . . . ten in his brother's name . . . etc. We think that the determining factor should be the repair of these items for money. Anything that is repaired by a friend will usually be done without a labor charge and with this we certainly do not want to take issue. We ask that the Bureau and Advisory Board seriously consider this limitation starting point of ten and reduce it to either nothing and determine the engagement in business on a basis of monetary return, possibly \$100 per year minimum, or set a nominal number of "hobby" repairs at two or less per year. Ten is way off base and will be extremely difficult to enforce.



By-Law Changes Made By Delegates

The Board of Delegates made two changes in the Statewide Association's by-laws during their recent meeting.

Under the new changes (1) Article 5 Section 7 Quorum will be changed to read: "A quorum of Delegates shall consist of not less than a majority of Delegates, or alternates, representing not less than a simple majority of the total membership.

The second change was in regards to the election of the State Association's President. Article 7 Section 2 Election of Officers has been changed to read "The election of the President shall be conducted at the Annual Meeting in the following manner: Delegate voting will be on the basis of one vote for each member they represent. The Directors will vote an equal percentage of the votes from respective zones that are not represented by a Delegate.

The selection of the President and other officers shall be the last order of business of the retiring Board of Directors. The Board of Delegates will sit with the Board of Directors for the purpose of electing the President.

The Board of Directors shall have appointed a nominating committee to select the nominees for the President and each Delegate shall be notified by mail at least 10 days prior to the election of the President with additional nominees open from the floor at the time of the election.

This action was approved by a vote of 260 to 60.

STATE RECORDS INDICATE 6700 REGISTERED DEALERS

The figure just released by the Bureau of Electronic Dealer Repair Registration indicate that there are now a little over 6700 registered dealers in the State with an average of 100 more per day being processed.

According to the report the budget for this Bureau is based on 8,000 dealers each paying \$3.50 per year and because of the low number now in, the fee will have to remain at \$35 per year. It was once again pointed out that the original fee was from September 1963 to June 1964 and that the fee to be paid in June will be until the following June. There had been some confusion that this was actually \$70 since dealers were paying two \$35 fees in the same calendar year.

Apprenticeship Program Draws Heavy Discussion During Delegates Meeting

The Apprenticeship program being backed by CSEA drew a great deal of interest and comment from the delegates attending the annual meeting on March 22nd in Fresno.

In a report made by Bob Reynolds of San Bernardino he pointed out that a great deal of progress has been made in setting up an acceptable program that the State of California will back.

Although only on paper it does have a beginning and is now up to individual chapters to try to set up such a program in their respective Junior Colleges.

A committee comprised of representatives of Labor, Industry and the State has arrived at a set of standards for the subject matter to be taught and a set of standards for qualification for the program.

Some of the requirements include that the applicant must be employed in the industry at the time of application, he must be between the ages of 18 and 26 and that his rate of pay will be 60% of journeyman's wages with a built-in 10% increase per year for the four year training period.

With this basic work completed it is now up to the individuals to make it work and to take a leadership role in setting up a workable program within their community. It is felt that only in this way will the industry be able to produce qualified technicians for the future. It was also pointed out that there will never be a license program in the State of California until a set of standards has been devised and suitable testing procedures formed. The apprenticeship program is the only way in which these set of standards could be written into the law.

At the time of the report a resolution was passed by the group that set a minimum of 1 semester of previous training before a candidate for the apprenticeship program can qualify for admittance.

DIRECTORS' MEET SLATED FOR L.A. APRIL 5th

The next meeting of the CSEA Board of Directors will be held on Sunday April 5th at the Hyatt House near Los Angeles International Airport.

All Board members, and interested members, should make arrangements to attend.

CSEA Insurance Plan Discussed by Delegates

The CSEA Hospitalization and Health plan was under serious consideration during the recent Board of Delegates meeting when it was indicated that some changes would have to be made in the highly successful program.

Two representatives of the Woodman Accident and Health Company were in attendance and pointed out that the CSEA program has resulted in a 108% loss ratio. They pointed out that under this situation it would be necessary to either lower the protection or increase the rate now being paid by the members.

Later in the day, CSEA Executive Secretary Jim Wakefield explained a few of the alternatives one of which would increase the deductible from \$50 to \$100 and reduce the accumulated period of time from a full year to 90 days. The deductible would also be part of the Doctors bills as well. In other words, the Association now has two policies and these would be converted into one with the \$100 deductible and the insurance firm paying all over this at 80%. The hospital room itself allowance was increased, under this proposal, to \$25.00 per day.

The other alternative would be a monthly increase, for the present program and all of its benefits, of \$4.39 on the family plan which most members carry.

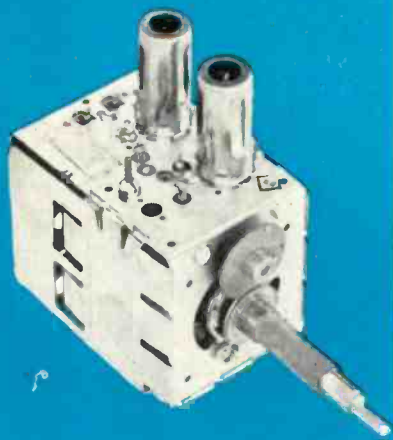
The Board instructed the Secretary to investigate all other firms and programs and to make a report to the Board of Directors as soon as possible.

ALMOND ELECTED AS NEW CHAIRMAN OF BOARD OF DELEGATES

Chester Almond, from the Sacramento Chapter of CSEA, was elected as the new Chairman of the Board of Delegates at their recent meeting in Fresno.

Named as the new vice-chairman of the group was Fred Bowerman from Long Beach and Audie Stiles from Tulare County was elected as the new secretary.

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Bakersfield Chapter Holds Annual Meeting

The Bakersfield Chapter of CSEA held its annual meeting recently at the Caravan Inn and discussed industry problems as well as electing their new officers.

Elected as president of the group was Bill Tanner, Westerchester TV, with Gus Tykis, Withams TV, named as the new Vice President and Herb Olsen, Herb's Radio as Secretary-Treasurer.

Don Wheeler, Wheeler's TV and Augie Soucci of Soucci TV were named as Directors for the organization with John Blackwood named as the chapter's delegate to the state wide association.

ZONE "F" MAKES AVAILABLE ESTIMATE FORMS AT 1¢ EACH

The Zone "F" Council of CSEA has on hand 50,000 estimate forms that are available to members only for 1¢ each. These forms comply with both the State Registration law and the Los Angeles County Lien Law and can be ordered through your chapter delegate to the Zone.

At the same time, it was announced, that dealers who wish to change their heading for labor charges to technical services have been advised that this would be o.k. with the Bureau in Sacramento.

THE PRESIDENT'S MESSAGE

By EMMETT MEFFORD

This month I would like to express the views of our organization towards Pay-TV.

First of all,

We are not in favor of Pay-TV, in fact we are against the principle of Pay-TV. as it is now being explained. The reason I say this is that we do not favor any Syndicate usurping the freedom of free TV and taking from the TV viewing public the vast amount of entertainment as now enjoyed by all viewers, young and old alike.

Our industry has been following the growth of Pay-TV for several years. Originally, Pay-TV was only considered to bring special events, such as sports to those who might want to see them, while the regular television programming was to be unchanged. This type of arrangement was generally being accepted by the public.

The intention now seems to be captive audience and captive service for those who subscribe to Pay-TV. The Syndicate will make the rules and set the prices on programs available. The viewer who subscribes and allows their TV to be connected to Pay-TV cables, as is now understood will not have a choice as to the service company they might want to service their TV.

I see a trend in this Pay-TV situation if allowed to develop as it is going that could drift toward a utility company. This being the only way to protect the public from unwarranted charges for the privileges of viewing TV. The effect this would have on our industry would be tremendous as to Sales and Service. Sales would lose its competitiveness as we know it now and service would be controlled by Syndicates of Pay-TV.

I hope some of these views express our concern about Pay-TV. and that all dealers in the state will join us in this crusade.

Statewide Report Of Un-Registered Dealers Being Sent To Bureau

At the present time there is a State-wide checking process going on in an effort to uncover all un-registered Television Service Dealers.

Lists of all Registered dealers are being distributed by the State and these are being checked against all local telephone books, Newspaper advertising and direct mail pieces. Every dealer that does not appear on the Registration list is being turned into the Bureau of Electronic Repair Dealer Registration in Sacramento and warning letters will be sent out within the near future. Every dealer who has been in business as of September 1963, if he is not now registered, will be billed for the back fee at the time of his first registration. The Bureau warns and urges every dealer to comply with the new law and register as soon as possible in order to avoid penalty and possible prosecution. The fine for operating without a registration permit is six months or \$1,000 or both.

Under this checking system it is virtually impossible to stay "undercover" for any period of time.

Electrical Contractors Must Also Obtain C-61 License To Install Antennas

The Contractor's Board has recently ruled that all Electrical Contractors operating under the present C-10 license must also have a C-61 specialty license in order to do antenna and sound installations.

In a report they stated that prior to 1961 it was unnecessary for an electrical contractor to have the C-61 but since that time all new contractors must have this license and that at this time, ALL electrical contractors must be also licensed under the C-61 in order to perform this type of work.

Many dealers have questioned this and all known violators should be reported to the State license board. It has been the dealers contention that if a Television Service dealer, who knows what he is doing, must be licensed under the C-61 in order to install systems then, by the same token, an Electrical Contractor, who knows nothing about this type of installation, should also be forced to be licensed under this section of the code.

TELEPHONE YELLOW PAGES ONCE AGAIN IN LIMELIGHT

The recent issuing of the new Yellow Pages in the San Fernando Valley brought comments and suggestions from Delegates in Attendance in Fresno on March 22nd.

Ralph Johnnot warned Association members to make sure that they understand the meaning of Trade Mark Listing and Trade Name Listing.

Under the Trade Mark Listing many CSEA, if not all, members are listed under the Trade Mark Listing of CSEA. Johnnot warned that in some cases the chapters in the area are not "closing" this heading and that non members are being listed immediately following this listing and are gaining the benefit of a CSEA program. The only way this can be insured is for the group to buy this space in bulk with a central billing procedure. In this way you cannot add it to your monthly phone bill but it will take care of the problem.

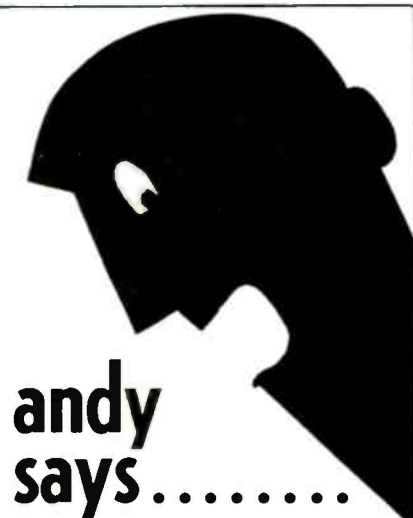
The second point he made was that there is another listing called the Trade Name listing and CSEA members should make sure that this is also closed. The present practice is for other dealers to have their shop placed in the alphabetical listing along with members and then

Ventura Dealer Pleads Guilty on C-61 Violation

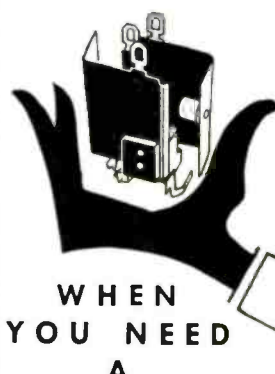
The Ventura Dealer that has been in court over his installation of a sound system in a community center pleaded guilty to the charge and was instructed to obtain a C-61 license within six months.

There were no comments regarding the decision from either side but the findings certainly set a foundation for all future violations of service dealers in the installation of systems.

buy bold face on top of it. This, naturally, places our members in a difficult position and they are not receiving the benefits of this section. All chapters are urged to make sure that this does not happen to their members. All cases of this should be reported to the state office and to the local phone company.



andy
says.....



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Bureau Ruling Does Not Exempt Contract-Service Firms From Registration Law

Service Firms Operating Under C-10/C-61 Contractor's License Must Comply With New Law

In a communication recently received from the Bureau of Electronic Repair Dealer Registration the status of the C-10 (Electrical Contractor's License) and C-61 (special electronic Contractor's License) as it applies to the new Registration law was reviewed.

The problem was originally pointed out by several service companies who also manufacture Television and Sound products that it was their opinion that either or both of these contractor's licenses exempted them from the new Registration Law.

In reviewing the question the Bureau Chief Dan Weston made the following observations and rulings:

Whether or not a person must register in this case is a question which involves two specific considerations. First; is the type of work being done that which falls under the definition of service dealer as set forth in the Chapter? Secondly; if such work is being done, is there a specific exemption available?

Only those persons must register whose activities are embraced by the definition of service dealer as used in Section 9801(g) of the Business and Professions Code (all Sections cited are from the Business and Professions Code.) Section 9801(g) provides as follows:

"Service dealer' means a person who, for compensation, engages in the business of repairing, servicing, or maintaining television, radio, or phonograph equipment normally used or sold for use in the home."

If your activities include engaging in the business of repairing television sets, etc., as defined above, then you must register unless otherwise exempted.

There are three sections of the Act which concern themselves with this C-10/C-61 license. Section 9803 provides as follows:

"When the installation of any television, radio, or phonograph equipment involves a function which is subject to the provisions of Chapter 9 (commencing with Section 7000) of Division 3 of this code, such function shall be performed by a person who is licensed pursuant thereto."

This section indicates that when a C-10 or a C-61 license is required to install a television set, then such installation can only be made by a person who has such a license. This section refers to a situation similar to the one where a TV set would be counter-sunk into a wall or other portion of a building. The mounting of a set in such fashion might well entail the cutting and subsequent reinforcing of vertical studs and/or modifying internal wiring to bring power to the set. In such circumstances, the installation of such set would require the services of a licensed contractor to reinforce the studwork and/or the services of one holding a C-10 or a C-61 license for the modification of the electrical wiring system.

This section simply states that those activities for which

a contractor's license was required prior to the registration law are activities which still require a contractor's license after the section's enactment.

Section 9805 provides as follows:

"No person registered under this chapter shall be required to apply for a license pursuant to Chapter 9 (commencing with Section 7000) of Division 3 of this code if such person's activities consist only of repairing, servicing, or maintaining televisions, radio, and phonographic equipment normally used or sold for use in the home."

This section merely points out that if a person's activities are only those of a service dealer as defined in Section 9801, that no additional C-10 or C-61 license is required.

Section 9804 provides as follows:

"No person who is licensed pursuant to Chapter 9 (commencing with Section 7000) of Division 3 of this code shall be required to register under this chapter if such person's activities are *within the scope of his license*; nor shall such person be prohibited from repairing, servicing, or maintaining equipment of any type, the *installation* of which may be performed *under his license*."

This section contains two distinct propositions. (1) If a person does those activities for which a C-10 or a C-61 license is required, this statute imposes no further licensing requirements for those activities. It should be noted that the servicing of TV sets is *not* an activity which has ever required a C-10 or a C-61 contractor's license. (2) The second proposition is to the effect that, when in those peculiar cases where a C-10 or C-61 license is required before a set can be installed, then after the *installation* of such set, the performance of subsequent repair or service on *such installed set* does not require service dealer registration.

Returning to our previous illustration where the imbedding of the set in the wall required a C-10 or a C-61 license because it involved the modification of the wiring in the building, and further assuming that the holder of such license had television repair ability, he could then make repairs on such set without registering.

Nowhere does the statute state that the holding of a C-10 or C-61 license permits a person to engage in the general business of repairing, maintaining, or servicing sets without registering as a Service Dealer under the Electronic Repair Dealer Registration Law.

In conclusion, then, if your activity includes the repair, service or maintenance of television sets, radios, or phonographic equipment, it will be necessary for you to be registered with the Bureau. The only exception provided by Section 9804 is where: (1) Your repair consists only of servicing sets, (2) Which you installed, (3) Where the installation required some form of a contractor's license.

The RCA Victor Studiomatic Stereophonic Turntable

2 Way protection against record wear

Now the automatic turntable developed expressly for RCA Victor Total Sound Stereo Consoles is available as a separate component for custom installation and replacement. Besides delivering brilliant sound in stereo or monaural, the Studiomatic Turntable is a long-term investment in record protection:

1 PROTECTS AGAINST SPINDLE WEAR.

King-Size stabilizer holds records steady and wobble-free — drops them gently with virtually no wear on center hole, thus eliminating a major cause of "wow".

2 PROTECTS AGAINST GROOVE WEAR.

Tone-arm and stylus pressure are so light that no audible scratches are produced if tone arm accidentally slides across record. Precision-angled head assures true in-the-groove tracking over entire record.

RESULT: RECORDS TEST-PLAYED OVER 3,000 TIMES SHOW NEGLIGIBLE LOSS OF FIDELITY

CHECK THESE DUAL STUDIOMATIC FEATURES

You'd expect to find them only on a unit costing far more than the Studiomatic

LARGE TURNTABLE is precision balanced and cushioned to minimize wobble. Its diameter of almost twelve inches supports records across their entire surface.

NEWLY DESIGNED SPINDLE AND "DUAL CENTERING" TRIP / CLIP / NISM minimizes center hole wear and permits smooth, precise drop of record to playing position.

KING SIZE STABILIZER ARM keeps suspended records perfectly steady—no wobble—records drop without damaging center hole.

TRUE TRACK TONE ARM of new design, scientifically angled to insure virtually optimum tracking from outer edge of innermost groove. Feather-light balance minimizes stylus pressure, protects against stylus and record wear. The stylus force is 4 to 7 grams.

"LIVING STEREO" PICKUP with a 0.7 mil diamond stylus for microgroove records and 3 mil synthetic sapphire stylus for playing 78's. Exclusive slide-action lever permits instant selection of stylus.

IN-PHASE STEREOGRAPHIC CERAMIC CARTRIDGE engineered for high fidelity performance has an output of approximately 0.25 volt per channel when playing a 1 KC test recording and feeding the signal outputs into a 3.3 megohm and 100 MMFD load for each channel. Suggested matching networks for several generally common types of amplifier inputs are included in installation-operation instructions supplied with the Studiomatic.

PLAYS ALL SPEEDS, ALL SIZE RECORDS AUTOMATICALLY OR MANUALLY. New selector mechanism allows automatic playing of all size, same speed records intermixed in any sequence—shuts itself off after last record has played. The flick of a switch cuts out the automatic change cycle to permit manual operation. Also has provision for automatic amplifier shut-off.

LARGE RECORD CAPACITY. Automatically plays up to twelve 10-inch, up to ten 12-inch, or up to ten intermixed 7-inch, 10-inch, and 12-inch same speed records. With the RCA Victor 45 RPM spindle (Stock No. 110905) available as an optional accessory item, as many as twelve 7-inch (45 RPM) records may be played automatically.

POWER AND AUDIO CABLES furnished with the Studiomatic include connectors to quickly attach to mating connectors on motorboard. Also supplied are installation-operation instructions, turn plate for mounting board cutout, and mounting hardware.

NEW MOTOR DESIGN. Shaded pole-type with more than adequate torque to maintain constant speed accuracy within close tolerances. Power requirement 105 to 125 Volts, 60 cycles only.

AUTOMATIC DISENGAGEMENT OF DRIVE MECHANISM after last record is played, prevents formation of flat spots on the drive wheel, assuring smooth, constant speed turntable rotation.



The money you save on this precision, low-cost turntable enables you to buy better amplifier and speaker systems—giving you the best component stereo obtainable for the total amount you want to spend.

SEE IT AT YOUR RCA VICTOR DEALER THIS WEEK.

The RCA Victor Studiomatic Stereophonic Turntable

STOCK NO. 12B100 DEALER NET \$35.95
(Includes Diamond Stylus)

SPECIFICATIONS

TURNTABLE SPEEDS	16-2/3, 33-1/3, 45 or 78 r.p.m. Weight—2 lbs.
RECORD CAPACITY	Up to fifteen 7 inch or twelve 10 inch or ten 12 inch or ten 10 inch and 12 inch intermixed.
PICKUP	(Stock No. 110023) Stereophonic Ceramic.
STYLI ASSEMBLY	(Stock No. 110022) 0.7 mil diamond "MG" and 3 mil syn. sapphire "78".
SHIPPING WEIGHT	10 lbs., 4 oz.
MOUNTING DIMENSIONS	Surface area to allow adequate slide clearances are 15 5/8" (left to right) and 13 7/16" (front to back). Clearances of 5 1/2" above and 3" below the mounting surface are recommended.
OPTIONAL ACCESSORY ITEMS available include:	Stock No. 14D100 pre-cut mounting board 14 5/8" (front to back) by 15 1/4" (left to right). DEALER NET \$1.35 Stock No. 14D101 mounting base 14 1/2" x 13" x 4 1/4" high. DEALER NET \$4.70 Stock No. 110905 spindle for 45 RPM records. DEALER NET \$1.90

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For the Beginner:

A NEW
SIX PART SERIES—PART SIX
ELEMENTS OF SWEEP CIRCUITS

technical section

An MESD special feature

Irv Tjomsland, Editor

MULTIPLE TROUBLE !

This is the last of the six part series "for the new man." Reprints of the group of articles will be made available if we receive enough requests. Direct a postcard to Technical Editor Associated Publications, 2930 W. Imperial Hwy., Inglewood, Calif. (est. cost \$3.50)

6-1. MULTIPLE TROUBLE

The easiest service jobs involve one problem and one repair. The most difficult center around several interlocking defects, or multiple trouble.

Hundreds of servicemen have encountered the subject chassis of this section. The receiver first appeared about 1950, and now, fourteen years later, no week goes by without some question about the series.

The receiver, itself, has two outstanding characteristics: First, when operating normally it produces a fine, sharp, high resolution picture, and second: It is subject to five separate, but interlocking, horizontal sweep problems.

The individual problems and the service suggestions will be detailed, not because this receiver is going to be important in your future, but because in this one chassis are found illustrations of almost any combination of two or three sweep problems you are apt to encounter in any service job.

6-2: THE DIRECT DRIVE KCS 68 AND 81 SERIES

You may remember the receiver when you see the rather distinctive flyback and high voltage cage as illustrated in Fig. 6A. You may recall that you brought one version in for bench work when it required a new 6CD6 every month or so.

When you brought it into the shop your first observation was that it ran competition to the furnace. This suggested that the screen circuit should be checked, and when you found the voltage high and the 13,000 ohm screen resistor network running 6,000 ohms you were sure. You installed a new 5 or 10 watt replacement, and sure enough, it cooled down a lot, you ran it the rest of the day and delivered it.

6-3: THE CATHODE CIRCUIT

But sad to say that wasn't the end of the story. It lasted two months this time, instead of one, but back it came. You looked for other signs of trouble, and sure enough you scored: The schematic called for 12.5 volts on the 6CD6 cathode and you found about 4! You measured the resistors, very likely two 220 ohm 1/2 watt in parallel, and read 27 ohms.

You installed a 5 watt 100 ohm wirewound, switched on the receiver, and rechecked the cathode voltage: SIXTEEN VOLTS!

While you were mentally converting 16 volts and 100 ohms into 160 milliamperes of cathode current the last of the wax dripped off the flyback and with a slight sizzle the raster disappeared.

(Continued next page)

MULTIPLE TROUBLE

continued

6-4: THE LIN COIL AND DRIVE

When you were at your parts supplier you asked the counterman if he had any more dope on the problem. He looked up the flyback in his big black book and said yes. You looked over the special service page and realized that you were on the right track but had only just started.

You picked up a new lin coil, two or three high voltage capacitors, and a couple of 10 watt resistors.

When you had installed the new flyback and lin coil, you connected your voltmeter across the cathode resistor and switched on the receiver. The voltage rose to fifteen or sixteen, so you carefully ran the lin coil slug from full "in" to "out". At a couple of points the voltage dropped to 14.5 but the most remarkable effect was the change in width. As you ran the slug out the width changed about 25% and at the lowest cathode voltage the width was greatest. You adjusted the drive trimmer until you could see a slight drive line and continued the adjustment until the line just disappeared with a light raster. You rechecked the cathode voltage, found it to be 13.5 volts. You touched up the lin coil again and there went another half volt.

6-5: THAT EXTRA B+

At least you were making progress, but after a half hour of operation you noted that the flyback wax was softening, and you didn't even have the cover on the high voltage cage, so you know you had to go the rest of the way.

You removed the "dogbone" high voltage capacitor connected between the flyback mounting bolt and the width switch terminal and substituted a 33 mmfd 6KV unit. You checked for the 200 ohm resistor between B+ and the lin coil input, removed it and substituted a 600 ohm 10 watt unit. The original bypass across it looked ok so you left it.

You switched on the receiver and the cathode voltage never rose above 12. You reset the lin coil and drive, the ion trap, and focus adjustment. When you rechecked the cathode voltage you found it read 10.5 volts. You did notice, however, that the raster was a little narrow so you added a 10 mmfd 6KV to the 33 on the flyback primary.

6-6: THE FINAL ADJUSTMENTS

The Service Suggestions contained a note about AGC. The receiver you were involved with used a 6CB6 rather than half of a 12AU7, so when you located the mica capacitor from the 6CB6 pin 5 to chassis you removed it and reinstalled a 91 mmfd low drift substitute.

You checked the original width coil and switch system. You found the link in the widest position, the slug all the way "in" and realized that if they had been in any other position you might have had to make some readjustments.

You measured high voltage and found it to be 15.1 KV. Boost was a few volts under spec, but height and vertical lin were normal.

6-7: SOME EXPLANATIONS

As a new man you may, or may not, have encountered this or a similar problem. You might wonder about several aspects:

Should you tackle such a complicated operation? Yes, if you are willing to make careful measurements and observations. The whole job can be done in about an hour if you are fortunate enough to have complete instructions.

If you have digested the basic factors of horizontal sweep circuit service you may get quite a charge out of solving, once and for all time, a job that has been serviced twenty or thirty times without permanent results.

You might question the reason for lowering B+ with the oversize dropping resistor feeding the horizontal system through the lin coil. The answer is not simple. In trouble-

some receivers you will usually find that B+ is above the original spec. On the bench, with the line set to 117 VAC you will often find B+ at 385 instead of the 373 volts specified for KCS68C, for instance. The most common reason for this increase can be traced to the improved efficiency of the later 5U4G tubes. Higher line voltage is another reason. You may operate it at 135 ma in your shop at 117 VAC, but your customer may have 122 volts and operate at 148 ma. If you follow the service suggestions he will develop only about 115 ma and no problems.

You might feel that the adjustment procedure for the lin coil and drive are questionable: After all, isn't the lin coil intended for linearity adjustments?

As any color serviceman knows, it is much better to think of this coil as an "efficiency" or "horizontal tuning" control than to relate it simply to horizontal linearity. *NO HIGH B+ RECEIVER, COLOR OR BLACK AND WHITE, WILL GIVE ECONOMICAL SERVICE UNLESS THE LINEARITY (EFFICIENCY-HORIZONTAL TUNING) CIRCUIT IS ADJUSTED TO A POINT AT OR NEAR LOWEST CATHODE CURRENT. WIDEST SCAN AND BEST LINEARITY SHOULD DEVELOP AT THIS SETTING.*

6-8: APPLICATION TO OTHER RECEIVERS

You have no reason to expect a run of direct drive service jobs with five interlocking circuit problems, but your NEXT service job may involve two or three of the problems and you should consider the possibility of using the same procedure.

For instance: You may have a customer with overheating problems due to high line voltage. If the voltage is stable you will find it much better to lower B+ to the original spec than to install a fan to get rid of the excess heat. Add a suitable dropping resistor between B+ and the input to the damper and parallel it with a half mike capacitor for bypass purposes.

Or consider width problems: In the above Direct Drive recommendations the width control circuit is disconnected. From that point, width is established by a combination of efficiency, drive, and resonance adjustments. In a new receiver where no width control is provided, individual factory width adjustments are almost always obtained by variation of capacitance in the flyback circuit. This may be a low value capacitor across the damper, or a network across a portion of the flyback, but wherever it is, you should be prepared to vary the size of this capacitor for width adjustment whenever you make a major component change in the horizontal sweep circuit. Of course, it is assumed that you have eliminated other sources of trouble such as low B+, poor tubes, etc. before you make this final adjustment.

Last, but not least, know the importance of adjustments. If you were to install the new parts as called for in the service suggestions, but were not willing to make the adjustments also recommended, you would find yourself in trouble from several sources: Poor width and high cathode current because of drive and lin coil interaction, possible drive line trouble due to improper capacitance in the flyback primary circuit, and inadequate high voltage. Changing the parts may reduce cathode current from 200 ma to 150, but setting drive and lin may take out the most important (and unnecessary 20 to 30 ma. It might be said that this is no job for a "parts changer," but a prime subject for a careful technician.

6-9: SERVICE SUGGESTION SHEETS

The check points of this material have been outlined on the Service Suggestion Sheet. This page could be removed from the magazine and filed with your regular service data by use of the "Reference No." If any interest develops Service Suggestions may be prepared for other receivers where special procedure is helpful.

Service

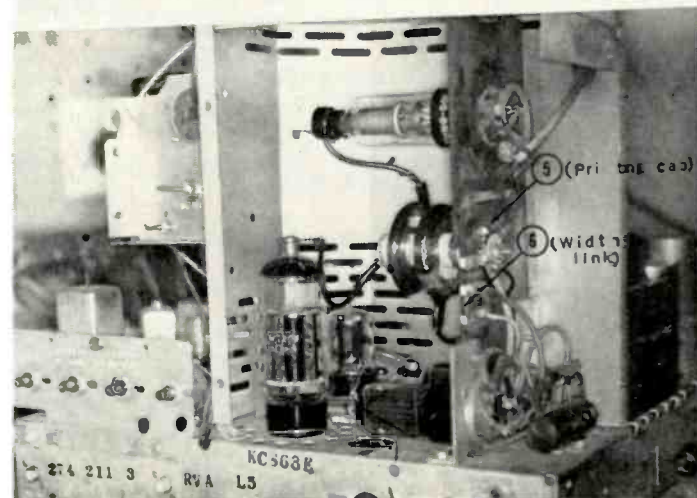
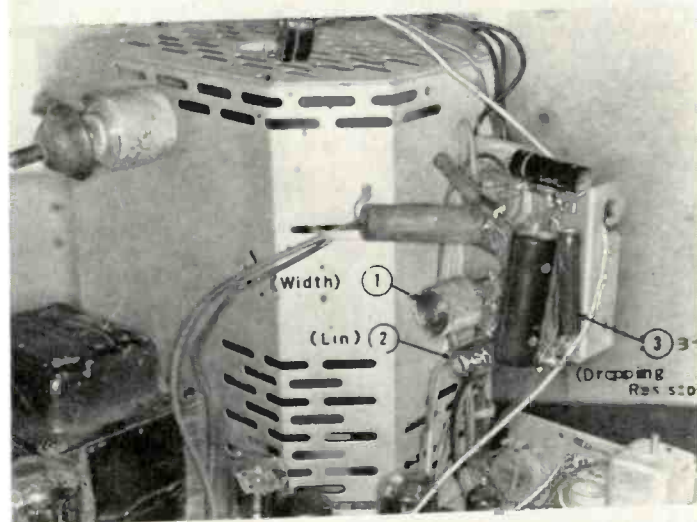
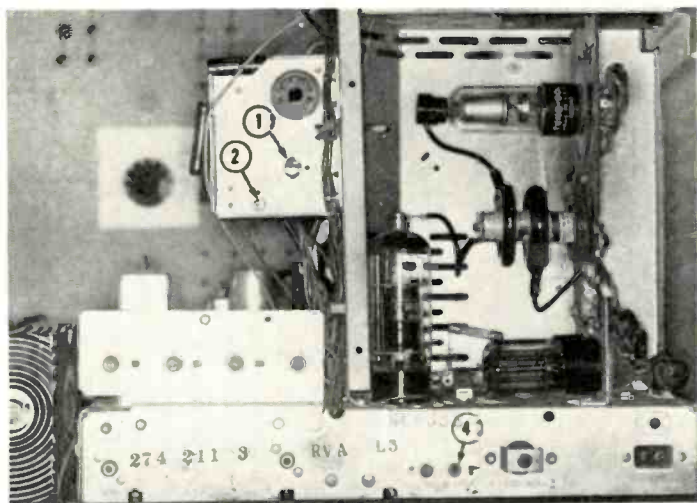
Suggestions

REFERENCE:

157-8	208-8
197-9	219-7
209-10	230-8

RCA KCS68 & 81 SERIES (Direct Drive with 76501 Flyback)

HO-183
A 8234



1. 6CD6 CATHODE RESISTOR: Remove original and replace with 5 watt 100 ohm.
2. 6CD6 SCREEN RESISTOR(S): Remove original resistor network and replace with 10 watt 15 to 18 K unit.
3. 6CD6 PLATE DROPPING RESISTOR (3): Remove original 200 ohm and replace with 10 watt 600 to 700 ohm.
4. LIN COIL (2): Remove original and replace with 3 to 4 ohm .8 to 3.5 mh heavy duty coil (Stancor WC-6 or equivalent) Observe tie point on original coil and do not connect to a tap on the replacement.
5. AGC PLATE CAPACITOR: Remove original mica capacitor from AGC plate to chassis. Replace with 91 mmfd.
6. FLYBACK PRIMARY TUNING CAPACITOR (5): Remove original dogbone capacitor and replace with 33 to 39 mmfd 6 KV.
7. WIDTH LINK (6): Insert width link in lower two receptacles, or discard.
8. WIDTH COIL (1): Adjust slug to full "in" position.

ADJUSTMENTS:

- A. CATHODE VOLTMETER: Connect voltmeter from 6CD6 cathode to chassis. Each volt equals 10 ma cathode current.
- B. LIN COIL (2): Adjust lin coil slug from full "in" to full "out". Voltage should dip at one or two points and width should vary 25% and be widest at lowest voltage.
- C. DRIVE (4): Adjust drive trimmer until drive line appears and back off adjustment until drive line just disappears.
- D. LIN COIL (2): Recheck as in B.
- E. PRIMARY TUNING CAPACITOR (5): If width incorrect increase capacitance (5) to increase width, decrease to decrease width.
- F. FINAL CATHODE VOLTAGE: At 117 VAC line 6CD6 cathode voltage should not exceed 12 volts (120 ma).

PAY TV

UNDER FIRE BY

STATE SERVICE GROUP

The Board of Delegates of the California State Electronics Association passed a resolution at their March 22 meeting in Fresno that places the Association right in the middle of the fight against Pay TV.

Following a presentation by Jack Cavanaugh of the Citizens Committee For Free TV, the group adopted the following resolution and sent it to the Board of Directors for further action by the State wide Service Dealer Association.

The resolution states, "Whereas the Assembly Bill 2 adopted by the State Legislature in 1963 clears the way for establishment of pay-TV via cable in this state, and whereas information now available to the Association clearly indicates the potential development of a gigantic monopoly in Television sales, service and broadcasting which will adversely affect many thousands of citizens now engaged in these fields as well as the millions who will be financially unable to participate in the so-called benefits of pay TV... therefore be it resolved that this Board of Delegates go on record as opposing the development of pay TV by all lawful means at its disposal until all ramifications and implications thereof have been thoroughly investigated and steps taken to protect the public and existing industries in the television sales, service and broadcasting fields against the unfair and adverse effects resulting therefrom."

In bringing this matter before the Board of Delegates, Cavanaugh pointed out several important points that prompted the resolution action. First of all, he stated, "that the 1963 legislature passed AB 2 in the record time of eight days and that it provided a tax for both State and Federal agencies which probably accounted for the speed of the bill's passage." He also stated that in the report to the Legislature "that the head of Pay-TV estimated that it would cost the average television owner about \$500 the first year and about \$1,000 per year thereafter, depending upon the amount of use." On this basis, he went on, "only about 10% of the people will be able to afford the cost of \$1,000 per year for Pay TV."

It is also interesting to note, in AB 2, that there is no provision for guaranteeing no commercials. Most of us recall that FM radio was supposed to be commercial free but it

certainly hasn't turned out that way. By the same token, there would be nothing to keep the top entertainment stars from jumping out of commercial TV in search of greater rewards through the pay medium. The price of each program can be set by the controllers of Pay TV and they can pay any amount for a particular show. The person that pays in the end is the set owner himself.

It was also brought out by persons attending the meeting that information is available that will actually prove that, at least one Pay TV group had plans whereby the firm would lease TV sets to customers thereby hurting the present sales of sets. That the real gimmick was the lease of color sets as an incentive to join the pay-TV bandwagon. This, of course, is followed by a service guarantee or captive service for the set thereby reducing the service industry to basically Pay-TV employees. The national networks have all gone on record opposing Pay TV but there is also an indication that if they can't fight it they will have to join it, which would certainly mark the end of the Television programming we are all enjoying today.

This is now a real fight for survival many in attendance felt. The hand writing is on the wall and it is up to every Service or Sales dealer to get in and help defeat this new legislation at the polls. The Citizens Committee for Free TV will make available all necessary information in the form of a small brochure as soon as the item goes on the ballot. They are requesting the aid of the Service dealer to distribute these to his customers and to explain the basic problems that Pay TV could cause the general public in the years to come.

The entire atmosphere of the discussion can be wrapped up in a statement made by one representative who said, "what the promoters of Pay TV want is to sell or lease the Television to the Consumer, provide the captive service for that set, operate the cable that brings the program to the set and then control the programming that is to be seen." Many felt that it was obvious that a gigantic controlled monopoly is in progress and was being backed by the State and Federal Governments with the thoughts of "a new source of revenue."

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...static free,
dust repellent

Surefire cleans and polishes any plastic surface while removing the static electric charge, thus rendering the surface *dust repellent!* Since Surefire

will clean and polish glass as well...TV servicemen find it indispensable for cleaning *all* TV screens—used on plastic Instrument dials it insures true static-free readings—It is a must for cleaning aircraft and marine windshields and is recommended for final polishing after Surefire Scratch Remover has been used. Ask for Surefire #950, the handy 8 oz. refillable dispenser flask—Surefire is also available in pint and 1 gal. sizes for economy.



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Wilclean, in any weather, cleans soiled or greasy hands in a flash—*with or without water!* Wilclean contains Hexachlorophene and soothing lanolin to protect the skin and is economical, too! Servicemen carry Wilclean #30, a 1# can, in their trucks and can clean their hands any time, anywhere, *even without water!* For the Repair Shops, Wilclean #30-2 is available, packed 2-5# cans with a handy wall dispenser. Ask for Surefire Wilclean Hand Cleaner from your favorite distributor.

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surefire



INDUSTRY NOTES

NEA-NARDA Tie-Up Still Possible As Meeting Set For September

Latest report on the possibility of a NEA (National Electronic Association) and NARDA (National Appliance and Radio Dealers Association) tie-up indicates that the matter has been "tabled" until the September meeting of NEA.

Although different State groups within NEA have indicated a desire for this NARDA tie-up, others have voiced protests of opposition. Leading the protest, although not a full member of NEA at this time, was the California State Electronics Association, who stated that their chief objection to a national affiliation with NARDA was based on the type of representation the California group would have in NARDA or any other State Association that makes up NEA. It is CSEA's position that until there is an organization that provides chapter-State and then National representation and voice that they want no part of it. CSEA is comprised of local chapters who send a representative to a Zone Council. These delegates then, in turn, elect members from this group to represent the Zone on the Association's Board of Directors and in turn the Board selects the State Officers. In this way,

Brokaw Retires At RCA McLernon New Western Mgr.

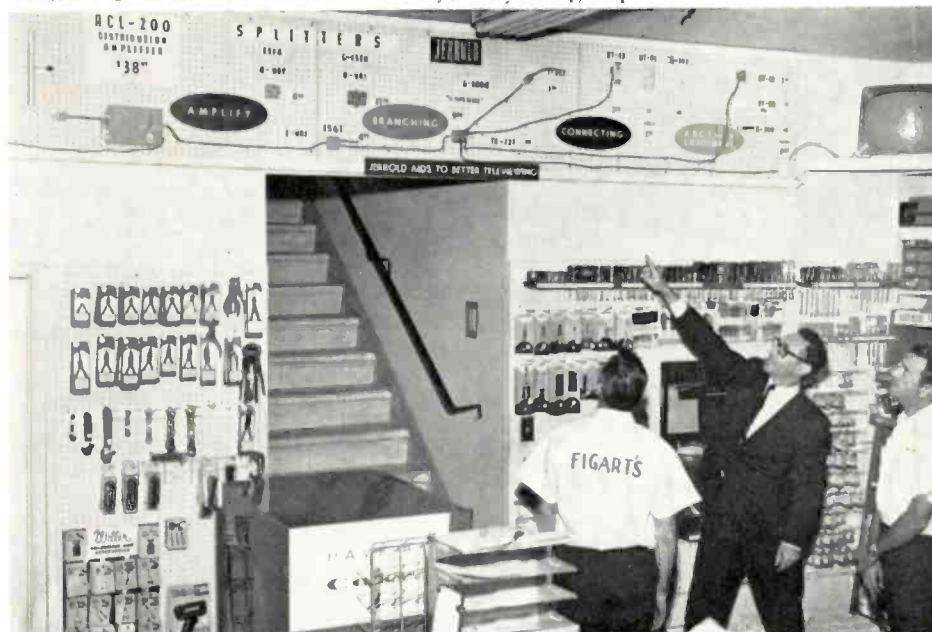
Charley Brokaw, well known RCA District Manager for the past 13 years, will retire from the company this month after 40 years of service.

At the same time, it was announced, John J. McLernon will take over as the new Western District Manager in charge of sales for electron tubes, semiconductors, batteries, instruments, citizen band radios and broadcast microphones to RCA distributors in the western district.

the group feels, there is never a loss of local chapter autonomy and a direct pipeline of information and desires is available to the Board of Directors.

NEA, originally, was to be an association of this type of State organizations so that a little chapter in the corner of the littlest State would be guaranteed a right to be heard almost on a national basis.

CSEA Board members recently o.k.'d a program where any of its members could join NEA and would be sanctioned by the group.



A NEW SYSTEM DISPLAY, designed to illustrate a typical Television Antenna system installation, has just been created by Figart's in Los Angeles. This low cost cable system was designed for use in a dealer's showroom and service area. Viewing the new display are (left to right) Ken Burkhardt of Figart's, Dan Levine, Jack Berman Co. and Gid Hallford of Figart's.

BASIC TEST EQUIPMENT AND TOOLS NEEDED FOR AVERAGE SHOP

We have been requested at different times to outline what a typical shop should have in the way of test equipment and tools. For a starting point we have used RCA equipment but any similar equipment by other manufacturers might be substituted.

TEST EQUIPMENT - ALL RCA

WR69A	Sweep Generator	WA41B	Audio Generator
WR99A	Marker	WR61A	Color Bar Generator
W091A	Scope	WV98C	Volt Ohmyst
WR70A	Marker-Adder	WG297	High Voltage Probe
WG307A	Bias Box	WG210	Probe
WR49B	RF Generator	WT115A	Color Kine Checker
	Tube Checker		

TOOLS

Long Nose Pliers	Degaussing Coil
Diagonal Cutters	Allen Wrenches
Spintites	Flashlight
Assorted Screw Drivers	Gas Pliers
Soldering Gun	Tin Snips
Solder	Extension Cords
Soldering Aid	Black and White Kine Jig
Alignment Tools	Color Kine Jig
Wire Stripper	Audio Amplifier
Crescent Wrenches	Speaker, External
Tube Puller	

State Executive Secretary Explains C-61 Contractor's License

In a report to the members of the California State Electronics Association, Jim Wakefield, executive secretary for the group, stated that he had taken the matter of the C-61 license up with the Contractor's State License Board and that basically it is interpreted as follows:

"If, as a dealer, you are constructing or installing equipment as a part of any real property and the total amount of the work being done on that real property is over \$100, then you must be licensed as a C-61 specialty contractor. This does not mean that your portion of the work must be over \$100, but that the entire job must not exceed this figure. This law is applicable even if your portion of the work amounts to the sum of \$1.00."

With this in mind, he suggested, it would be a good idea for every service dealer who does any type of antenna installation work to obtain a C-61 license just to make sure he is covered. The examination itself is basically on business and business procedures with very little in the way of technical information. Dealers should have very little trouble in passing the test.

Jerrold Rep Guest Speaker at Marin Chapter Meeting

Don Thomsen, Jerrold Electronics Representative from the David H. Ross Co., was the guest speaker at the last meeting of the Marin County Chapter of CSEA.

Thomsen's subject was the need for standards and/or specifications in master and community TV systems and covered many problem points. Included in these were the signal strength 1000 to 3000UV, Picture quality, furnish FM, intermodulations, number of channels, pre-amplifier requirements and amount of isolation between outlets.

At the conclusion of the meeting a committee was formed to draw up and submit recommendations for standards and/or specifications for small systems, large systems and community systems.

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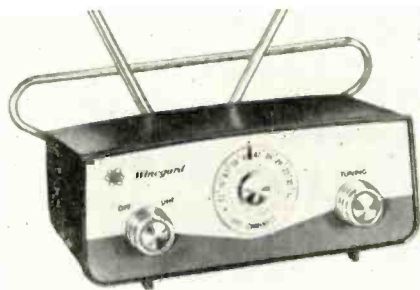
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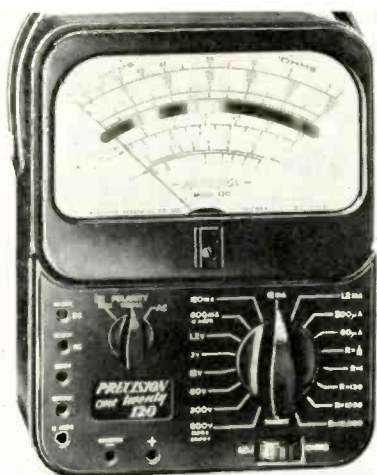
FROM WINEGARD . . .

For the first time, regular and amplified UHF converters, with built-in UHF and VHF antennas have just been marketed.

The cabinets were designed by internationally known Howard Auten and are designed to blend with any TV set.

All models are furniture styled in handsome polystyrene cases in rich autumn brown trimmed with brushed gold. All models feature 3 gang capacitive tuning elements, 6DZ4 oscillator tube, safe cool chassis, isolated power supply with silicon rectifier, low noise 1N82A super diode and completely enclosed cabinets. All models exceed FCC radiation requirements.

Models UC 100A (one tube) and UC 200A (two tube) have built-in UHF and VHF antennas to receive all channels 2-83. Models UC 310 and UC 410 are the first UHF converters made with a transistorized RF pre-amplifier that improves signal to noise ratio up to 12DB. All models have dial light and some models have AC receptacle for TV set with "on-off" control that tunes in TV set and also switches to UHF or VHF. There are six models in all priced from \$29.95 to \$69.95.

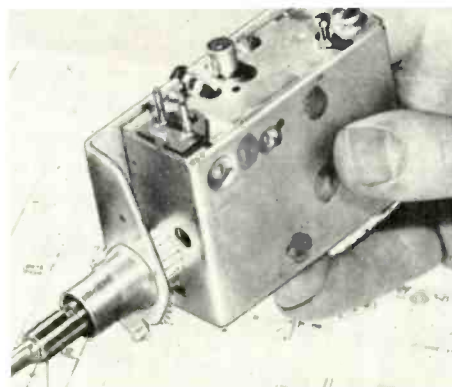


FROM PRECISION . . .

Is a new built-in meter protection feature at no extra cost in all their Model 120 and 120M V-O-M's.

It was explained that a specially designed silicon varistor has been incorporated into the units to prevent damage to meter-movement even when subjected to accidental transient overloads of 1,000 times or more. This will help eliminate burned-out movements, bent pointers and other similar damage that can occur when there is a temporary inadvertent overload.

Already the most comprehensive V-O-M's on the market, these Precision instruments have more total ranges (61 in all) than any other similar V-O-M available. In addition, it has other unusual features such as a larger meter size and a standard mirror scale included for easier, more accurate reading. It was felt that by adding this new protection device at no extra charge, Precision will be helping servicemen still further in their use of these highly popular instruments.



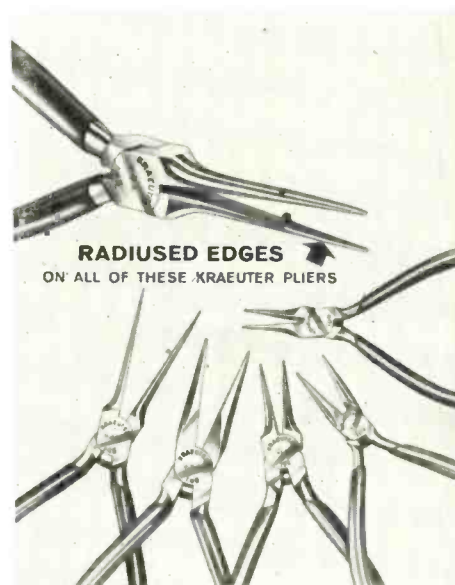
**FROM STANDARD
KOLLSMAN . . .**

The development of a new transistorized Ultra High Frequency (UHF) television tuner, Series UT, for use by television receiver manufacturers, was announced by Standard Kollman Industries, Inc., Melrose Park, Illinois.

According to C. J. Antognoli, Vice President of Sales for the electronics firm, the chief performance advantages of the new transistorized UHF tuner include: compactness, very low noise and drift, easy to mount in the TV receiver chassis, long life, and maintenance free operation. The UT will fit all receivers using standard 43 mc IF. It is the first of its kind to be made by the firm whose tuners are used in the consumer TV sets of 21 manufacturers.

The transistorized tuner has a low noise figure averaging 9 db; an image rejection of 35 db minimum; IF rejection is 60 db minimum, balanced and unbalanced. Oscillator temperature stability is +250 kc - 500 kc. It is engi-

neered for use with direct drive or with planetary drives of single or dual speeds. Other versions of drive ratios are also available to television receiver manufacturers, states the firm. The compact tuner is approximately 1.18 wide by 3.60 long by 3 inches high and uses a single nut potentiometer type threaded bushing for easy and rapid mounting into television chassis.



FROM KRAEUTER . . .

Wires become weakened when they are nicked or scored when assembled with rough edged pliers. This problem is eliminated with KRAEUTER'S complete line of 5 new needle nose pliers for every use—supplied with cross coil springs, RADIUS EDGES and SMOOTH JAWS as STANDARD FEATURES.

FROM JERROLD . . .

A 75 ohm coaxial cable TV antenna preamplifier, Model SPC-103, is being introduced by Jerrold Electronics Corporation. The new Coaxial Super Powermate is primarily designed for locations where there are spurious signals or interference problems and for optimum color installation in semi-fringe and fringe areas.

In announcing the new unit, Walter Goodman, Manager of Jerrold's Distributor Sales Division, said "We are now adding a new coaxial preamplifier to our popular Powermate line. This unit displays all the outstanding technical features of the regular Super Powermate plus several other extras."

Mr. Goodman asserted that the SPC-103 preamplifier has coaxial output achieved by a built-in matching trans-

(Continued next page)

NEW PRODUCTS

(Continued)

former. It is contained in a metal weatherproof housing and is usually mounted on the boom of the antenna or on the mast, although it may be mounted on any flat surface.

The accompanying remote power supply, Model 103, contains a choice of outputs—either 75 ohm or 300 ohm, selectable by a switch. It may be mounted on any flat surface generally the back of the television set. The unit plugs into any 117v, 60-cycle ac source.

Mr. Goodman pointed-out that the SPC-103 is ideal for seacoast areas, since the coaxial cable is unaffected by both salt deposits or chemical contaminants in the atmosphere.

He also noted other advantages of coaxial cable over standard twin-lead; no pick-up noise from radiating sources close to the line; ghosts caused by down-lead pick-ups are eliminated; 5 times longer life; no signal loss due to rain or ice coating; cable may be mounted firmly by staples or clamps since proximity of metal does not cause loss.

The unit has an average gain of 14.5 db with a maximum output of 7000,000 microvolts in the low band channels, and 9.0 db gain with a maximum of 200,000 microvolts output in the high band channels.



FROM CENTRALAB . . .

The availability of polystyrene capacitors in plastic packages of five units

each was recently announced by Centralab, The Electronics Division of Globe-Union Inc. Previously these capacitors were available only in boxes of fifty units for industrial use.

According to Gerry Mills, distributor sales manager, this new packaging was introduced to meet the demands of a rapidly developing replacement market. Polystyrene capacitors are being used in a broad range of electronic equipment. In addition, they have many applications as direct replacements for Mylar and mica capacitors.

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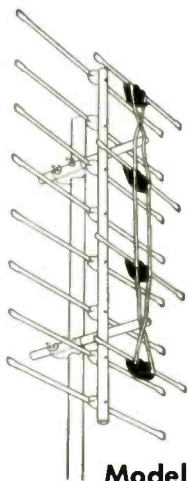
Never before has an all-channel antenna amplifier been available for UHF. Now, at a price that everyone can afford, the new Winegard Model UHF-110 brings to UHF the same sensitivity and low noise reception as VHF! This means you can clear up snowy UHF pictures, get distant stations,

and new clarity to color and black and white TV!

Model UHF-110 employs a new, ultra low noise RF transistor that amplifies UHF signals on all channels 14-83. It works on any UHF antenna and can be mounted on the antenna boom, mast or remote. Has balanced 300 ohm input and output, lightning protected circuit—no transistor burn-out, comes with an all AC power supply. No polarity problems.

For your next UHF installation, try the new Winegard MODEL UHF-110. Ask your distributor or write for spec. sheets.

other UHF products by Winegard . . .



"Ultra-Beam" Antenna

Gold Anodized colinear UHF antenna for all areas including deep fringe. As much gain as an expensive parabolic.

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Gold anodized 16-element UHF Yagi with corner reflector. Extremely high gain with exceptionally high front-to-back ratio. Rugged construction.

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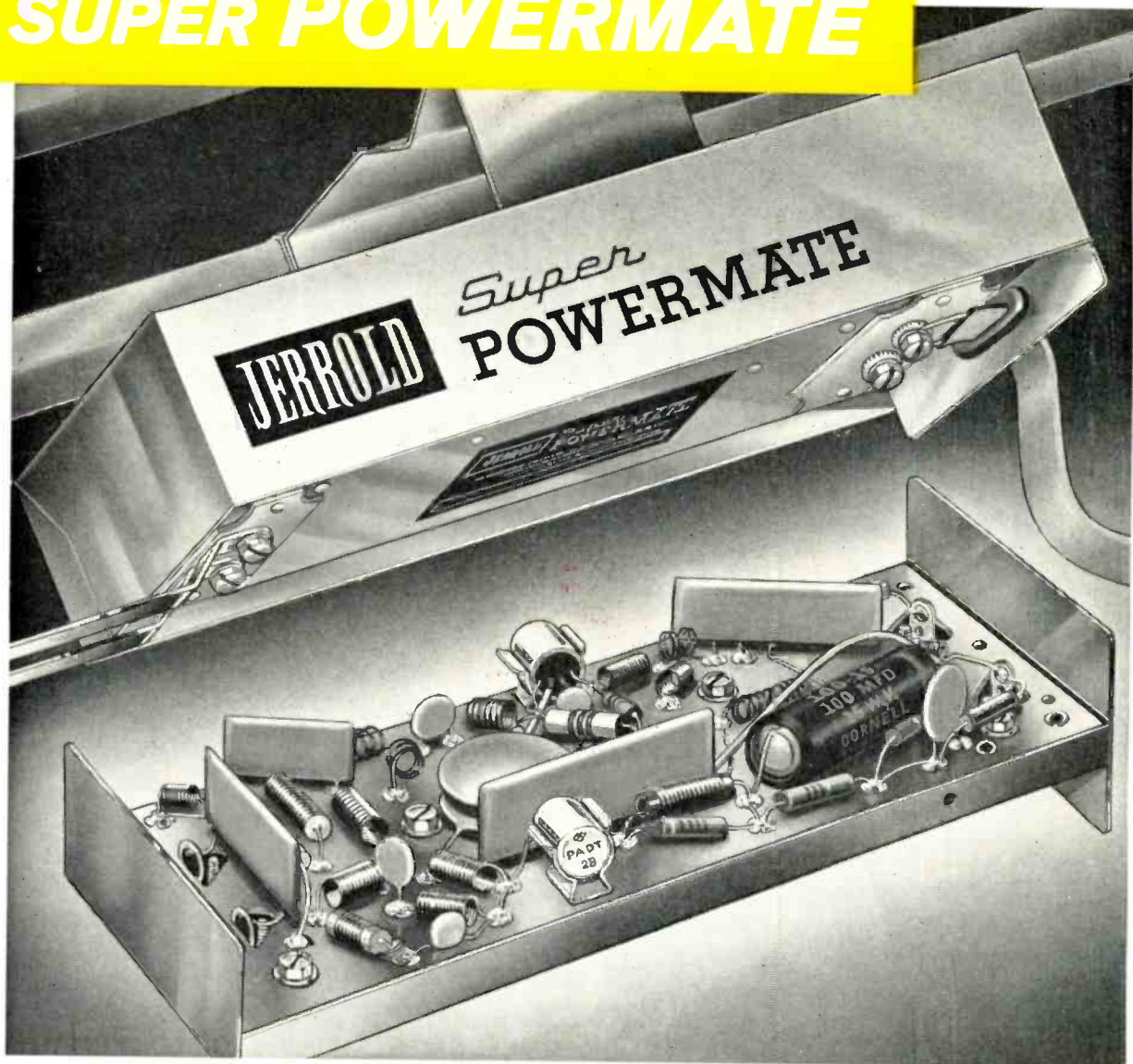
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NEW TWIN-TRANSISTOR SUPER POWERMATE

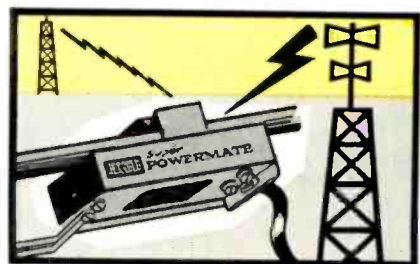


BREAKS THE GAIN/OVERLOAD BARRIER

Servicemen and the public long wanted it, but were told they couldn't have it—a transistorized TV antenna preamplifier with the overload capacity to handle local signals without sacrificing the gain that brings in distant stations.

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Sell new SUPER POWERMATE, the all-channel antenna preamplifier with G/O—the industry's best Gain/Overload capability. List \$44.95. See your Jerrold distributor or write Jerrold Electronics, Philadelphia 32, Pa.



GAIN to reach far distant stations, **OVERLOAD** capability to prevent local-signal interference.

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530 East 8th St., Oakland
TE 4-9185

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2310 Long Beach Blvd.
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