

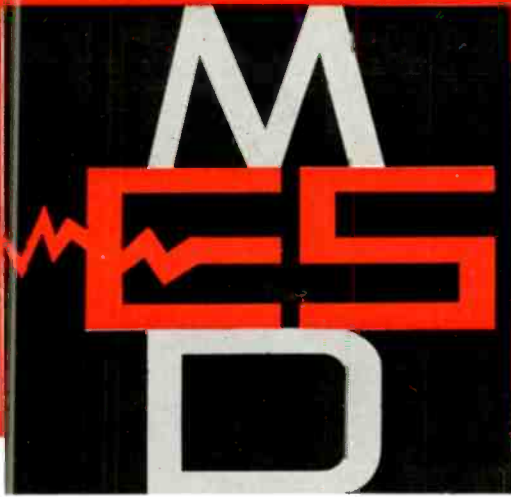
MODERN

electronic service dealer

THE OFFICIAL PUBLICATION OF THE CALIFORNIA STATE ELECTRONICS ASSOCIATION

VOL. 1, NO. 8

DECEMBER, 1961



MR. SERVICE DEALER . . .

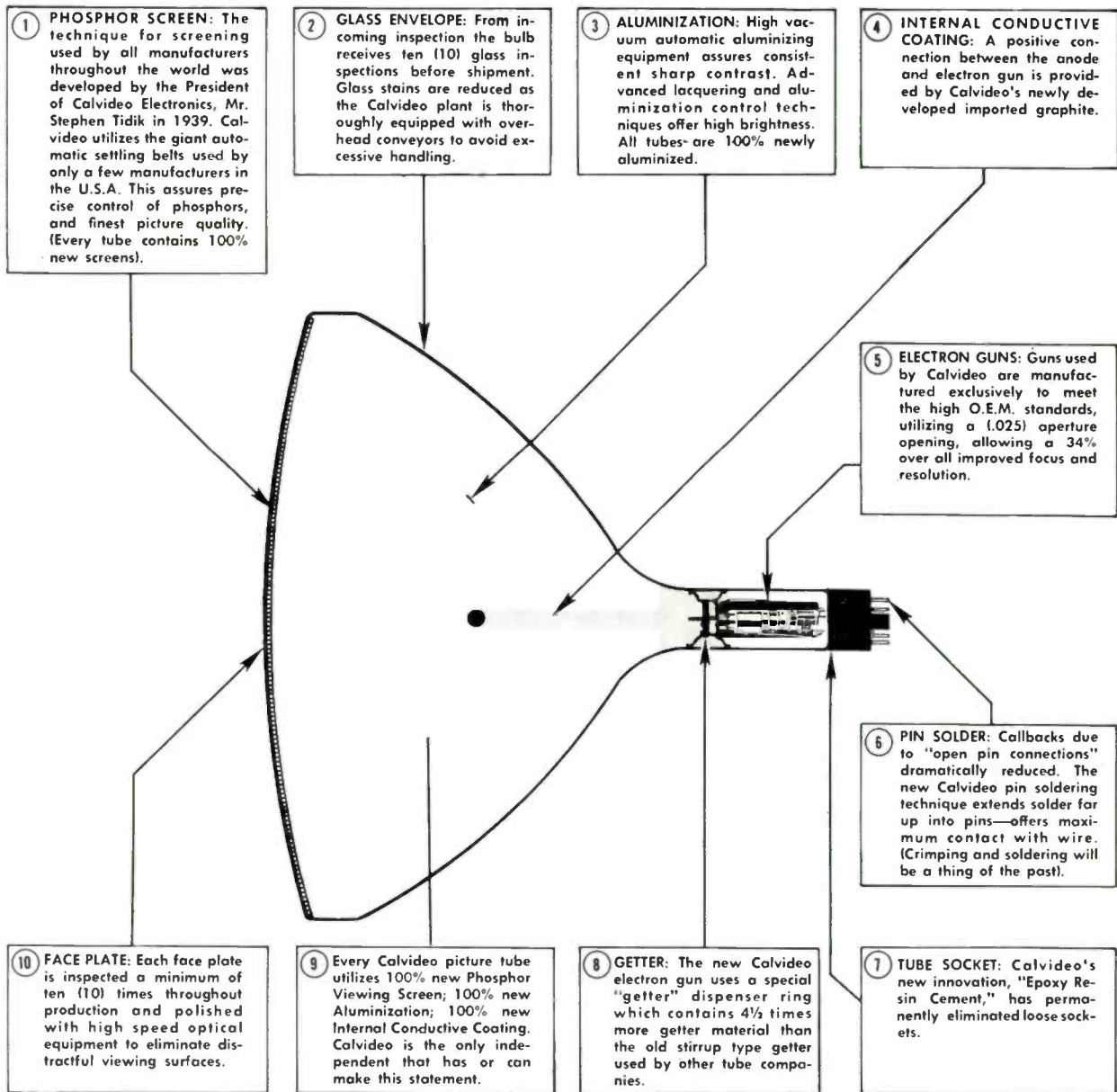
KEY TO THE
FUTURE

OF
COLOR

PAGE 13



TEN GOOD REASONS WHY CALVIDEO IS NO.1 IN SALES



AS A BONUS FEATURE ALL CALVIDEO TUBES COME PACKAGED IN THE NEW EASY TO HANDLE "TUBE TOTER" CARTON.

the largest independent picture tube manufacturer, supplying the replacement field



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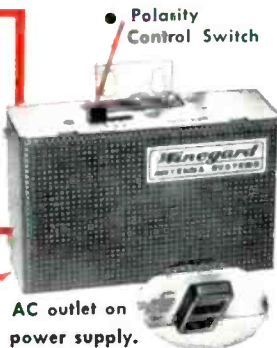
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RADIO PRODUCTS SALES INC.

1501 So. Hill St., Los Angeles, Calif.
RI 8-1271

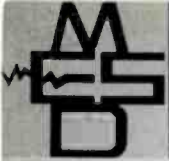
HURLEY ELECTRONICS

Main Store: 1429 S. Sycamore
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Stores in: Oxnard, Long Beach, San Bernardino, Ontario, Oceanside

RCA VICTOR DISTRIBUTING CO.

6051 Telegraph Road Los Angeles 22, California
RA 3-6661



DON MARTIN

EDITORIALLY SPEAKING

Evolution in the Picture Tube Industry

During the past few months and even weeks a revolution has been going on in the Picture Tube Industry that has ranged from a new pricing system by Sylvania to a new package first used by Calvideo and Admiral. These changes are so important that I thought it might be a good idea to bring the dealers up to date.

NEW PRICE SYSTEM

In recent years pricing of picture tubes to distributors has been a chaotic, spasmodic confusing situation for all distributors as well as many picture tube manufacturers. Picture tube pricing seems to have no sensible base or justification and could be likened to a snowball going down hill gaining momentum but always going down. In recent weeks Sylvania has developed a zone pricing program which looks to us like a big step in the right direction. Actually what they have done is to take into account warehouse and manufacturing points and cost of delivery to distributors through out the fifty states, and has priced their tubes differently in all of these zones proportionately, based on the actual cost of getting the material to the distributor. A good example is that all manufacturers charged distributors in Hawaii the same price as a distributor a few miles away from a manufacturing facility. This is contrary to basic economics. We are glad to note that now all Hawaiian distributors must buy F.O.B. port of embarkation closets to the factory or warehouse. I am sure that all distributors will agree that there is a need to stop all the under the table discounts, bonus and stabilize pricing in the picture tube industry so that a distributor and manufacturer can plan ahead. The only point that we may disagree with the Sylvania plan is they seem to have started with the price of tubes at their furthest point and worked backward towards the factory. We certainly do not know their costs but what has actually happened is that this furthest point is paying the same or about the same as before for tubes with the end result being an almost \$3 reduction in price to the distributors in the areas surrounding the factory. Some of these same local distributors, that we have talked with, stated that although the percentage of profit is about the same with the new pricing the dollar volume is decreased. All in all, the idea is good, logical and can not help but help the industry in the long run.

TUBE-TOTER PACKAGE

It has been interesting to note the progress of the Tube-Toter picture tube carton since it was introduced a few months ago, and now being used by Calvideo Electronics and Admiral. This carton is a sensible approach, by a picture tube manufacturer, to solve problems that have been building each year for the distributor and service dealer as well as the manufacturer. With the broadening of the tube type availability in picture tubes each year, the problem

of inventory has compounded itself for the manufacturer and distributor. It is estimated that by the end of 1962 there will be close to 160 picture tube types available to the service dealer trade through the distributors. This has necessitated many distributors enlarging their warehouse facilities to carry even minimum inventories of types. The introduction of new picture tube types has paralleled the growth in the receiving tube availability. The cost of transportation of television picture tubes has been a chronic problem of manufacturers and distributors for years.

I have received a great deal of correspondence as well as phone calls from distributors through out the western states, discussing this new design change in picture packaging. It was difficult for some distributors to recognize the advantages over the old carton in the early stages of the use of this carton. This was primarily due to the fact that they had not received enough of the new cartons to really begin to have the advantages show up early, but as their inventory of old cartons depleted and they were rapidly replaced with the new cartons the advantages were quick to show themselves. A few distributors told me that they were planning on warehouse expansions because of the growth of picture tube types, but now felt it was not necessary because they were able to save almost 40% area and still maintain the same basic level of inventory of picture tubes with the new cartons.

TUBE FACE PROTECTION

We have also noted that a few picture tube manufacturers have taken steps to improve the accessory packing or filler material used to protect the face of the picture tube in cartoning. Calvideo Electronics, for example, has utilized a urethane sponge pad to absorb the shock of the picture tube as well as prevent the face of the picture tube from developing scratches. Westinghouse has developed a polyethylene film which looks to be similar to what our housewives use to wrap their food stuffs. Both of these new concepts are progressive steps in the right direction.

STANDARDIZED TUBE TYPES

There is also a movement to stabilize or standardize tube types. A good example is the 21FLP4 produced by General Electric which replaces 13 types offered by most picture tube manufacturers. Since the introduction of this type other manufacturers have disclosed that they plan on following suit with other types to reduce a great deal of the cumbersome duplication of tube types in the industry.

SUMMARY:

Naturally, all of these advancements are major in their importance and together have and will advance the Picture Tube Industry many years. Their importance to the dealer will be measured by satisfied customers, repeat business and greater profits.



MODERN

electronic service dealer

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DECEMBER, 1961

FEATURE ARTICLES

13 Mr. Service Dealer . . . Key To The Future of Color

Is the Independent Service Dealer preparing for Color? Will our present shops be adequate for the new field? Does color provide an opportunity for a service re-birth? Do you see in it a new chance for standing and revenue? These are the questions and the answers are controversial and provocative. It lets you the independent service dealer make up his own mind.

BUSINESS BUILDERS

11 Ask Si?

15 The Route to Retailing by The Old Timer

Here is an article written by a real oldtimer in the business that bares no holds in this straight from the shoulder approach to retailing in general. It takes into account the service dealer and his future if he will take a good look at himself, his methods and his ambitions.

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FORUM

The Question:

DO YOU BELIEVE THAT THE FUTURE OF THE SERVICE DEALER WILL EXTEND TO COMMERCIAL AND INDUSTRIAL SERVICING AS WELL AS CONSUMER PRODUCTS?

Claire W. Lanam
Lanam Radio & TV Co.
Berkeley

No. The approach to the consumer, versus the commercial or industrial type of servicing, is entirely different although the knowledge or technical part may be the same. As in many industries, this is a much more specialized segment of an overall industry. There will always be a few dealers doing a small amount of industrial service work, but the majority of the work will be done by firms specializing in this type of business. This is typical of most industries.

Wesley C. Keys
Walnut Creek TV
& Appliance Inc.
Walnut Creek

I do not believe that the future of the service dealer will extend to commercial and industrial servicing to a very large degree, and that, due to the increased inventory and personnel involved, the shops could not extend into that field, also there will be companies set up to do that type of work and nothing else. This is a specialized type of business. I do not think that the average service dealer can service both the industrial accounts and the public efficiently as the shops are not large enough to house both departments. There will be plenty of work for everyone, whichever way a dealer wants to go, but it is very hard to ride two horses at one time.

Darrell Petzwal
Petzwal's Radio & TV
Sales & Service
Sacramento

I feel that it should and it may very well do so if properly pushed, but I am a bit pessimistic about the profit potential as an *independent dealer*. Our experience so far has indicated that the commercial people want an *employee* or a *sucker dealer* if they don't already have a factory service deal.

Kenneth G. Preston
A-1 Television & Radio
Stockton

In some respects. Certain products will be handled—smaller units such as small computers and RF cooking, closed circuit TV and control systems. Due to increased reliability of TV and low cost of small radios, some other source of revenue must come to the dealer who will be able to stay in business. The present boom in color may help, but it cannot be expected to take up all the slack.



* dates

* programs

* dealer news

CSEA GROUP TO HOLD ANNUAL HOLIDAY BANQUET



Bob Karl and his gang

The Glendale Burbank chapter of the California State Electronics Association will hold their annual Holiday Banquet and Cocktail Party at the Five Horsemen Restaurant on Riverside Drive in Burbank the night of December 14th.

This annual affair has always attracted the attention of all members of CSEA and they are certainly all invited to once again join in the fun and fellowship.

This year an outstanding program of entertainment has also been set with Bob Karl, one of the nations finest

This year an outstanding program of masters of voice, heading the show. Mr. Karl's routine of comedy and fun is centered around four characters and reaches its climax as all four voices plus his own all engage in song at the same time.

NEW DEALER GROUP JOINS CSEA

It was with great interest that the Board of Directors of CSEA heard from Executive Director Kieth Kirstein that the Association is growing at the rate of close to 40 members per month and that he looks forward to a goal of some 2,000 members by the end of 1962.

At this meeting the board accepted the application of a new Association from Stanislaus County, which includes Turlock, Modesto, Oakdale, etc., and unanimously endorsed their program of certification in CSEA with all of its privileges.

CSEA GROUP TO FEATURE A SERIES OF SEMINARS AT FEB. PETS

The California State Electronics Association will sponsor a series of Business as well as Technical seminars at the coming Pacific Electronics Trade Show to be held in February at the Shrine Exposition Hall in Los Angeles.

According to Robert Whitmore, CSEA President, "We are planning something different and unusual that will make attendance at the PETS event one no Service Dealer will want to miss. First of all, we have planned a series of seminars that will be held EVERY OTHER HOUR for one hour each. This will give the dealer a chance to schedule his time in order to take in a particular seminar with a view of the show just prior to or immediately after the session. To our knowledge, this is the first time this has been done and we feel sure it will be successful."

The exact schedule of speakers has not been completely set but announcements will be made in time for advance planning. The seminars will begin at 10:00 p.m. Friday and run until 9:00 p.m. Friday night. Saturday they will be held from 10:00 p.m. to 6:00 p.m. Sunday will be free of seminars.

The all industry Banquet will be held this year at the Disneyland Hotel on Saturday night at 8:00 p.m. Further details will be published in the next issue of MESD.

WAKEFIELD APPOINTED TO BOARD OF CSEA

The board of directors of CSEA in their meeting of November 18th received a communication of resignation from Howard Singer with regret but immediately moved to appoint past secretary of the Association, Jim Wakefield as representative to the board in the absence of a director from area D, until April 1, 1962.

Other official action by the board and appointment by president Bob Whitmore were the following committees and chairmen

Rules Committee	Ed Fort
By-Laws Committee	Don Reed
Finance and Budget Committee.....	Russ Hamm
Publication Committee	Ralph Johannot
Membership Committee	Executive Director
Public Affairs Committee	Darrel Petzwal
Apprenticeship Committee	Ralph Johannot
.....	Executive Director
Public Relations Committee	Executive Director
.....	Executive Director
Nation Affairs Committee.....	Executive Director
Insurance Committee	James Wakefield

SLOGAN WANTED

CSEA members have been invited to suggest a slogan that is unique and will identify the service industry. What

they're looking for would be the equivalent for the service industry to the florists' "Say it with flowers," or the plasterers' "Knock on the wall." Suggestions should be sent to CSEA state headquarters.

KMLA FM STEREO (MULTIPLEX) SCHEDULE

REGULARLY SCHEDULED PROGRAMS

SPECIALS

Monday	— 4 to 6 PM	
Tuesday	— 4 to 6 PM	Christmas Eve (Dec. 24) 9 PM to 1 AM
Wednesday	— 4 to 6 PM	
Thursday	— 4 to 6 PM	
	7 to 8 PM	
Friday	— 4 to 6 PM	New Years Eve (Dec. 31) 9 PM to 1 AM
Saturday	— 4 to 6 PM	
Sunday	— 3 to 4 PM	

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NORTHERN CALIFORNIA

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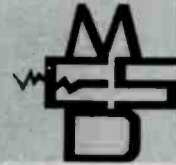
Woodmen Accident
and Life Company

Lincoln, Nebraska



The
Protecting
Hand

A MUTUAL LEGAL RESERVE COMPANY • ESTABLISHED 1890



MODERN
*electronic
service dealer*

PRESIDENT'S MESSAGE



ROBERT WHITMORE

*A Very Merry
Christmas
And A
Happy
New Year
To All!*

Federal Reserve Bank
COMPARATIVE SALES INDEX
of Department Store Volume

Percentages of changes in the value of Department Store sales for the periods shown are comparisons with the corresponding periods a year ago. Figures are taken from the weekly reports of the Federal Reserve Bank . . . Statistics being what they are, we remind our readers that in interpreting these figures the significance may sometimes be affected by an unusual situation of one or two years previously; by special holiday selling periods which may not coincide one year with another; and other pitfalls to the analyst. With this caution in mind, this monthly chart is an excellent weather vane of the retail sales trends

Metropolitan Area, Center or FRB district	% CHANGE FROM SAME PERIOD LAST YEAR		
	One week ending Nov. 1	4 weeks ending Nov. 1	Cumulative from Jan. 7, Nov. 1
LOS ANGELES-LONG BEACH AREA	- 2	- 2	- 1
DOWNTOWN L.A.	-14	- 9	- 6
WESTSIDE L.A.	+ 1	- 1	0
SAN DIEGO AREA	+11	+12	+10
SAN FRANCISCO-OAKLAND AREA	+ 6	+ 4	+ 3
SAN FRANCISCO	+ 8	+ 4	0
OAKLAND	+ 2	- 3	+ 5
SACRAMENTO AREA	+10	- 1	+ 7
SAN JOSE AREA	+ 4	+ 3	+ 5
PORTLAND AREA	-12	- 6	0
SEATTLE AREA	-10	- 2	0
TACOMA AREA	+ 1	- 3	0
SPOKANE AREA	- 1	- 3	+ 3
SALT LAKE CITY AREA	+ 1	+ 7	+ 3
TWELFTH DISTRICT	- 1	- 1	+ 1
UNITED STATES	+ 6	+ 3	+ 1

CSEA SAN DIEGO AREA NEWS

VOL. 1, NO. 2

DECEMBER, 1961

Editor: HAROLD BALDWIN

CSEA SAN DIEGO

EDITORIAL

by

Ed Fort, Director

Zone G

CSEA has finally come of age. The last few months have proven that we can run our state office as a business should be run. We have a bona fide office with a full-time Executive Secretary and a full time office secretary. The kicker in this whole deal is that, with more than two months experience under our belt, we've proven that it is economically feasible. When this situation was first proposed, I was of the opinion that, even though it would be extremely beneficial to the Association in the long run, we could not yet afford these luxuries and still remain solvent. I wish to take this opportunity to admit publicly that *I was wrong*; and, believe me, this is something I don't admit to very often.

The advantages of an office were immediately apparent. To begin with, the correspondence, which used to take weeks, is now returned in days. Communication from state to zone and thence to chapter was immeasurably improved. Having our state office in the state capitol adds considerable prestige to our organization and greatly improves our position on the licensing program.

Membership has also shown a sudden upward trend, indicative of the efforts put in by Keith Kerstein, our Executive Secretary, and various zone directors. So many good things are happening that it is almost unbelievable.

Keith has had a number of meetings with state administrative offices including Civil Defense and the Attorney General's. These contacts are certain to bear fruit in the future. More and more, people in positions of importance are beginning to recognize the problems confronting our industry, and when this happens nothing but good can result. Statewide coordination of activities such as Project Cleanup greatly increase their effectiveness, both on the state level and in the individual areas.

We have just grown our wings and, from now on, there's no limit to how high we can fly.

—Ed Fort

FOURTH COLOR SESSION SET FOR TUESDAY DECEMBER 19th

NEWS NOTES . . . FROM KOGO-TV SAN DIEGO

Most San Diego area TV servicemen are aware that Channel 10 transmits a color test stripe during monochrome transmissions. This vertical stripe shows on the extreme right edge of the raster as a yellowish green, on a properly operating color set. This provides you with a good indicator when installing a color receiver.

The engineering department of the KOGO stations is always at work improving or installing equipment. At this time we are busily installing a new microwave relay system which will bring our TV network signal from Los Angeles to San Diego. There will be a link from the Burbank studios of NBC to the NBC location on Mt. Wilson. From there will be another link to Mt. Soledad (KOGO-TV transmitter). San Diego. The third hop is Mt. Soledad to the KOGO-TV studio. The link from the transmitter will provide picture at the studio for monitor and TV tape delay purposes of NBC shows. The actual signal will be routed directly into the transmitter system at Mt. Soledad but will be done by remote control from the studio, using a subcarrier tone control on our studio to transmitter microwave. All equipment for the new system is being supplied by RCA.

—LeRoy A. Bellwood,
Director of Engineering

The fourth session of our 18-hour course on servicing color television receivers will take place on Tuesday, December 19, 1961 8 p.m. to 10:30 p.m. at KOGO-TV, Channel 10, Studio, Highway 94 and 47th St. Since an attendance record will be kept, please be sure to get signed in at the door before the beginning of the class.

Chapter President E.H. O'Brien issued the following invitation to the service fraternity:

"As president of Chapter 13 of C.S.E.A., I would like to extend an invitation to all technicians in the television industry to attend our course on color television. The purpose of the course is to improve our knowledge of color television so we may increase our productivity, thereby increasing our income.

"As conscientious technicians, we have an obligation to upgrade our industry and this is one method of doing just that.

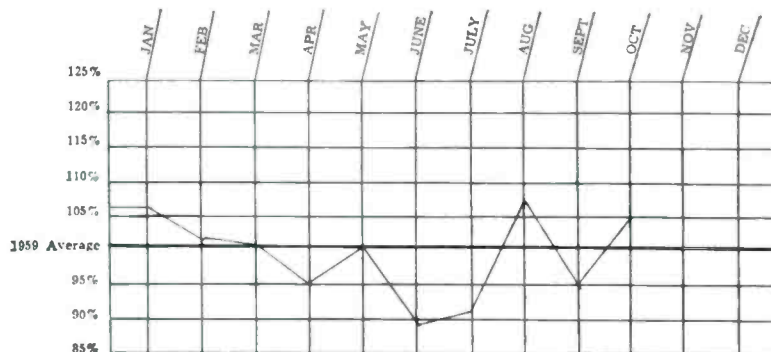
"I would also like to remind you that this course is being offered through the initiative of C.S.E.A. This is only one of the many ways in which your Association can benefit you and I urge you to take advantage of it.

"Technicians not presently members of C.S.E.A. may take this course for only two dollars a lesson—a small investment for a more profitable future."

CALL YOUR CHAPTER OFFICE.

We may not have the answer immediately, but we will try our best to get it for you. You may be struggling with a problem that another member has already solved. Why not let them help you?

—Harold Baldwin, Editor



This is a Business Average compiled of combined averages of a 1 Man Shop—2 Man Shop—3 Man Shop—6 Man Shop

CSEA Chapter News Roundup

SAN MATEO

18 Second Ave., Suite 210
San Mateo

Third Monday of the Month
McDowell's Restaurant, San Mateo
Pres.: Lloyd Williams
Sec.: Francis McCarthy

The Television Service Dealers Association of San Mateo County has inaugurated a credit service program for its members. To be called the "Green Sheet," these lists will contain the names, addresses and amounts of "90-day," "dead beat" and "problem" accounts. As information is received, lists will be compiled and sent to the members of TSDA.

Another activity of prime importance is the formal protest made to the Telephone Company with regard to misleading advertising in the Yellow Pages of the Classified Directory. A request has been made that the Telephone Company do not accept any advertisements which do not show the address of the TV repair firm or those which offer services which they cannot prove.

At the November 20th meeting, Amile Forni, Al Barbor, Frank Hufford and Le Roy Conyers discussed Zenith's stereophonic FM.

—Raymond E. Morris,
Executive Director

BURBANK-GLENDALE

North Glendale Station
P. O. Box 4012

Meets the 2nd Thursday
of Each Month
At Pickwick Bowl,
921 W. Riverside Dr., Burbank
Pres.: Everett Pershing
Sec.: Ralph Singleton

Zenith Corp. and Sues, Young & Brown put on a fine meeting for us on Nov. 9. They were ably represented by Colon Phillips, field engineer for the factory; Lou Bender from the service department of Sues, Young & Brown; Larry Atchison, service manager; Hal Brasher, assistant general manager; and Jack Houseman, factory sales manager for this area.

Mr. Phillips opened the technical part of the meeting by discussing the new Zenith color TV circuits in general and their differences from other color TV chassis, both in design and in construction. Mr. Bender then went into each circuit in more detail.

A crowd of 140 dealers attended the meeting which was presided over by Glendale-Burbank Chapter President Everett Pershing. In addition to Mr. Pershing and those attending from Zenith, at the head table were Ralph Johannot, State Director for CSEA, and Dudley Andrews, President of SRTT, San Fernando Valley, and Hugh McClellan, Program Chairman for SRTT. Buzz Seal, Program Chairman for the Glendale Burbank Chapter completed the head table and presented the program. Mr. Johannot gave a report on the

state CSEA and Mr. Andrews reported on the SRTT group.

The meeting was attended by a number of guests not only from the immediate area but from other chapters of CSEA as well. Pasadena, Los Angeles, San Mateo, and South Bay were some represented there. Some of the boys from Ventura also came down.

President Pershing gave a strong pitch on membership and cited the need for dealers everywhere to join in a strong state organization. Application blanks and CSEA information were provided. A number of new members are coming into CSEA as a result of this meeting.

The next meeting will be at the same place December 14. It will be a Christmas party and Ladies Night. Social hour 7 p.m. with dinner at 8. Price: \$4.50 per person. Everyone is again invited to participate. Top entertainment will be provided. Every dealer and TV technician in the Los Angeles area is invited to bring his wife and join with us at this meeting.

—Ralph Johannot

SANTA CLARA VALLEY SANTA CRUZ COUNTY

467 A Porter Building, San Jose
Meets 2nd Wednesday of Each
Month, location announced

Mel Haurly, Morgan Hill tv shop owner, was elected president of Santa Clara Valley and Santa Cruz County Chapter, CSEA, at a Board of Directors meeting last month.

The chapter's new top official replaces M. L. "Pete" Peterson who headed up the local group during its 1960-61 session.

Other officers named by the chapter's directors were Ervin Daniel, vice-president, and Clyde McCool, secretary-treasurer.

Pres. Haurly took over the gavel from outgoing Pres. Peterson at the Board of Directors meeting, after the former chief executive praised members of the board who served with him, citing them for a full year of intensive effort to advance the cause of local chapter business.

The outgoing official wished his successor well in his new job, and promised full support during his coming year on the board as past president.

The new president, a native Californian who came to Morgan Hill from the San Joaquin Valley, has been a staunch supporter of SCV&SCC Chapter and CSEA policies for many years.

He is the first president of the local chapter who holds both of the industry's highest titles—the State of California journeyman's certificate, and CSEA's Master Technician title.

Pres. Haurly received both designations as a graduate of the Senior Technician's Class last June at San Jose City College.

Pres. Haurly conducted his first general meeting of the SCV&SCC Chapter last month at Adolph's restaurant in Santa Cruz when members heard Tom Aaron, W. J. Lancaster's service manager lecture on circuitry in Motorola's 19-inch transistorized portable tv.

Pres. Haurly also announced that plans were under way for the group's annual dinner dance, tentatively scheduled for the first or second Saturday in March.

RIVERSIDE

P. O. Box 7431
Riverside, Calif.

Meets the 2nd and 4th
Thursday of Each Month
at Cooter's Furniture
in Arlington, Calif.
Pres.: Emmett Mefford
Sec.: Al Barbor

At the Nov. 9 meeting of Riverside Chapter No. 2, due to absenteeism of members, a general discussion was held and a committee appointed to nominate officers for the coming year.

A joint dinner meeting of the Riverside and San Gabriel chapters was held at the Sycamore Inn in Cucamonga. The evening's activities included a social hour before sitting down to a wonderful prime rib dinner. After dinner, door prizes, furnished by Pomona Valley Electronics, Hurley Electronics and Electrical Parts Supply, were drawn.

Certificates were presented by Robert Whitmore to those who completed the 12-lesson transistor course given by Emmett Mefford to both Riverside and San Gabriel Chapters. Mr. Whitmore followed with an inspiring talk on the aim and future plans of the California State Electronics Association and the benefits each individual technical can gain by belonging to his local chapter.

Highlight of the evening's activities was a talk by C. A. Barnes, manager of the Inland Cities Better Business Bureau in San Bernardino, on the problems facing our industry and ways in which we, as a states association, can improve them through public relations, by more chapters working with the BBB and they with CSEA.

Emmett Mefford, President of Riverside Chapter, presided at the Wednesday night dinner, Nov. 8, at which 36 members and guests were in attendance.

STOCKTON

Stockton chapter lived it up this month with two first class visitors—Mr. Gorman Brown, chief engineer channel #6 discussed transmission lines into buildings, antennas, set bandwidth, and answered our questions for an hour.

Mr. Rush, head of Stockton BBB was the second guest. We had a general "bull" session, Mr. Rush telling us of public gripes, and we giving reasons. We all came away smarter.

The Stockton Record, thru the efforts of our chapter committee and the BBB, does not carry any more price (bait) advertising.

Ken Preston told of a local Hi-school that wanted to rent 3 TV's and a temporary antenna installation for one hour for a special program. He thought he would mix charity and advertising so gave them a price of \$25. They were aghast at this extremely high figure. Do our educators need educating?

**ASK
SI**

Interest is rapidly growing in FM Stereo and some of the manufacturers are even beginning to ship a few adaptors into the field at long last! Sometimes it's difficult to phrase the answers to questions most commonly asked by the public, so we'll devote this little discussion to a few of those questions and suggestions on how to reply to them.

Q. Will it be possible to receive FM programs broadcast in stereo on a regular FM set?

A. Yes, but you will receive them monaurally, of course.

Q. Can an AM radio be fixed up so it will receive FM stations' broadcasts?

A. No. They operate on different principles entirely. You'll need a new FM or FM-AM radio.

Q. What is multiplex?

A. This is the technical term for FM stereo or binaural FM broadcasts.

Q. Do I need two radios to receive FM stereo?

A. No, one multi-speaker radio can receive it if it's designed for that task.

Q. What's the distinction between Hi-Fi and Stereo?

A. Stereo is a form of high fidelity reception, differing only in that you hear it in three dimensions as though it were live. Stereo feeds music through two amplifiers into two speakers, one on each side.

Q. Then do I have to sit in one place to enjoy stereo?

A. No. Just forget you have two speakers and listen to the music; it's just as, in a concert, you can enjoy it from any location.

Q. Can I receive FM Stereo by getting an adapter for my FM radio?

A. If you have the basic stereo equipment: amplifier, pre-amplifier and two speakers, all you need is a stereo adapter to receive broadcasts in FM Stereo.

Q. What's the frequency response on FM Stereo? Will it sound as good as my records?

A. Fifty to 15,000 cycles per second minimum has been set by the FCC. Yes.

Q. Can I add an FM tuner to my hi-fi set?

A. Most sets have a small socket connection marked "Tuner" on the rear of the chassis. An FM tuner can be plugged into this. This isn't stereo, though.

Tear Out . . . and return this application for invitations to the

2nd Annual

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Line of TV Antennas

Channel Master works wonders in sight and sound



Because today's fringe area reception problems
cannot be solved by yesterday's antennas...

CHANNEL MASTER

introduces the new **golden**

crossfire

series 3600

First TV antenna to successfully
utilize the principle of Proportional Energy Absorption
to deliver more gain... and cleaner gain...
than has ever been attained before

THE CROSSFIRE

New concepts featured in advanced fringe area TV antenna

by Harold Harris, Vice President, Engineering
Channel Master Corp., Ellenville, N. Y.

* Patent Pending

Unique Channel Master design employs Proportional Energy Absorption, and solves problem of efficient dual-mode operation for superior performance on both low and high bands.

Various technological developments have combined to push back television's fringe area. But—regardless of how far it is pushed—there will always be a fringe area, because it exists by definition: the peripheral area of TV reception, that snowflaked “no man's land” between strong TV pictures and no pictures at all.

Of the three prime factors affecting the area of TV coverage (station power, set performance, and antenna gain) it now appears that the dealer and the public must rely most heavily upon developments in the field of receiving antennas to improve picture quality and to push back still further the boundaries of the fringe area.

Antenna designers have been equal to the challenge. Like scientists in other fields, they have departed from the old ways and turned toward the

development of newer, more sophisticated, more exotic antenna designs. In climbing from success to success, however, the engineer finds that each new development generates a new demand for still more progress.

Progress is not easy. Many difficulties beset the antenna engineer. Foremost among these problems is the manner in which VHF frequencies have been allocated. Because the 12 VHF channels are not allocated in one continuous range, but are divided into a low band and a high band, all-channel antenna design has been rendered exceedingly difficult. The lowest VHF frequency, 54 mc, has four times the wave length of the highest VHF frequency, 216 mc. Because antennas are inherently frequency selective, i.e., they respond best to a limited range of frequencies, high efficiency single-

mode operation of any antenna across both high and low bands has been out of the question. Antenna engineers, consequently, have devoted their efforts toward the development of systems that would provide effective dual-mode operation.

One such approach was a two-band dipole interlaced with high and low band directors. Since parasites inherently cannot cover full band width, this antenna type exhibited its optimum gain only at the higher end of each band. Any antenna design which depends upon a large parasitic array has this same drawback.

A far more successful approach was made in the popular travelling wave antenna. In this antenna type, a highly effective method of low band operation was devised, and then extended to the high band by “vee-ing” the dipoles forward, at varying angles. However, certain difficulties arise in the high band operation of any Vee array because of the erratic impedance relationships which then exist among the various elements. Therefore, on some high band channels, this antenna type does not realize its full potential.

Nevertheless, the travelling wave antenna set such high standards of overall all-channel performance, that it has taken five years to surpass it.



Harry Greenberg
chief engineer

Chief Engineer Harry Greenberg, project leader, is recognized as one of the nation's leading antenna authorities. As head of the Channel Master Development Laboratories since 1949, he has made many notable and original contributions to the advancement of TV antenna design. Mr. Greenberg serves on the FCC Receiving Industry Advisory Committee on UHF TV projects.

Project Engineer Charles Liu received his BS and MS in Electrical Engineering from the University of Illinois, doing graduate work with Professor Y. T. Lo, co-developer of the Channel Master Champion and Rainbow antennas. Mr. Liu specialized in broad-band microwave antenna research, both electric dipole and magnetic dipole—an appropriate prologue to his work on the “Crossfire”.



Charles Liu
project engineer

This article introduces and describes a new TV antenna which most successfully solves the problem of effective dual-band VHF operation, over the entire 4 to 1 frequency spread—an antenna which once again pushes back the fringe area by providing higher gain and higher front-to-back ratios than have heretofore been achieved.

The research project, conducted at the Channel Master Development Laboratories, was under the direction of Chief Engineer Harry Greenberg and included Project Engineer Charles Liu. The antenna they developed is characterized by a number of significant features:

1. It is front fed.
2. There are a number of driven elements, all connected in parallel with a 2 wire feed line, running from the transmission line.
3. The feed line is transposed between each successive pair of elements.
4. The antenna employs the principle of Proportional Energy Absorption, on both bands.
5. The design of the antenna is such that, at any particular frequency, many elements are active simultaneously.
6. There is a short parasitic element in front of each driven dipole, and both dipole and parasite can be considered as a single element unit.
7. The antenna does not have a reflector element.

LOW BAND OPERATION

The key to the high gain of this antenna is the fact that a large group of dipoles functions at any given high or low band frequency.

In approaching the problem, Channel Master engineers departed from conventional antenna design by providing that the active elements in the array would not be individually resonant, each at a particular channel or frequency range. Instead, at each channel, a large number of active elements function cooperatively to increase signal-gathering ability. This is accomplished by graduating the impedances of the individual elements, with the highest impedance at the feed point, decreasing in progression as one moves along the crossarm to the other elements.

It is these critical impedance relationships, and their function in activating large numbers of elements at given frequencies, which produces the extremely high gain of this antenna. Let us view its operation on the low band. And for the sake of simplicity, we will utilize the technique of considering the antenna as a transmitting antenna—which we are permitted to do

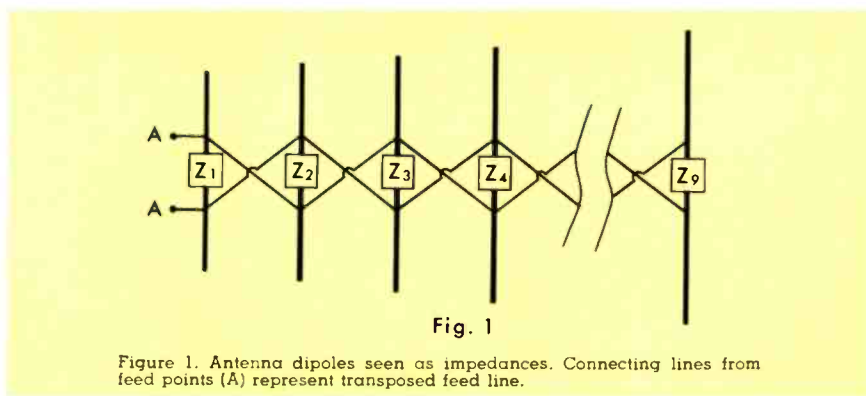


Figure 1. Antenna dipoles seen as impedances. Connecting lines from feed points (A) represent transposed feed line.

by the principle of reciprocity which states that the performance characteristics and patterns of an antenna are identical for both receiving and transmitting.

In Figure 1, each element is represented by an impedance at a particular frequency. We will assume that a signal of Channel 2 frequency is supplied to the input terminals (A). If the impedance Z_1 is very small in value compared to the transmission line impedance, substantially all the unreflected signal will be absorbed in Z_1 , the first antenna element. As a result, all antenna elements further along the transmission feed line will be substantially ineffective. The same is true for the other successive impedances.

On the other hand, if any of the impedances Z_1 to Z_9 were very high in value compared with that of the transmission feed line, then that particular antenna element represented by the high impedance would be relatively ineffective in absorbing energy from the signal. In other words, each impedance may be looked upon as a "valve." When the impedance at any particular element is high, the "valve" is open, there is little absorption, and the energy flows along the antenna to the next "valve." This theory is similar to that employed in the travelling wave antenna. But as will be seen later on, a number of new considerations have been incorporated.

What is important is the relative amount of power flow at the junction of any particular impedance which is absorbed by that impedance. If the impedance values of all antenna elements were equal, the elements closest to the input terminals would absorb a disproportionately large share of the power. Take as an example the case where the impedance of each element is such that it absorbs one half the power supplied to it. Omitting reflections, element 1 would absorb one half the total power, element 2 would absorb one half of the balance (or one quarter), element 3 only one eighth, and so on. This, however, would mean that very few elements would be active at any particular frequency.

It was the aim of the engineers to obtain a predetermined uniform dis-

tribution of power across most of the antenna array. This meant controlling the absorption of each element in such a way so that several elements absorb approximately the same amount of energy at any given frequency. This in turn meant determining the critical impedance values at each element to govern the flow of energy in precisely the desired proportions, with the lowest percentage of absorption at the feed point elements, and the greatest relative absorption for those elements furthest away.

The extraordinary broad-band gain of this antenna is due to the fact that Proportional Energy Absorption from the transmission line is maintained for a large number of antenna elements at all VHF frequencies.

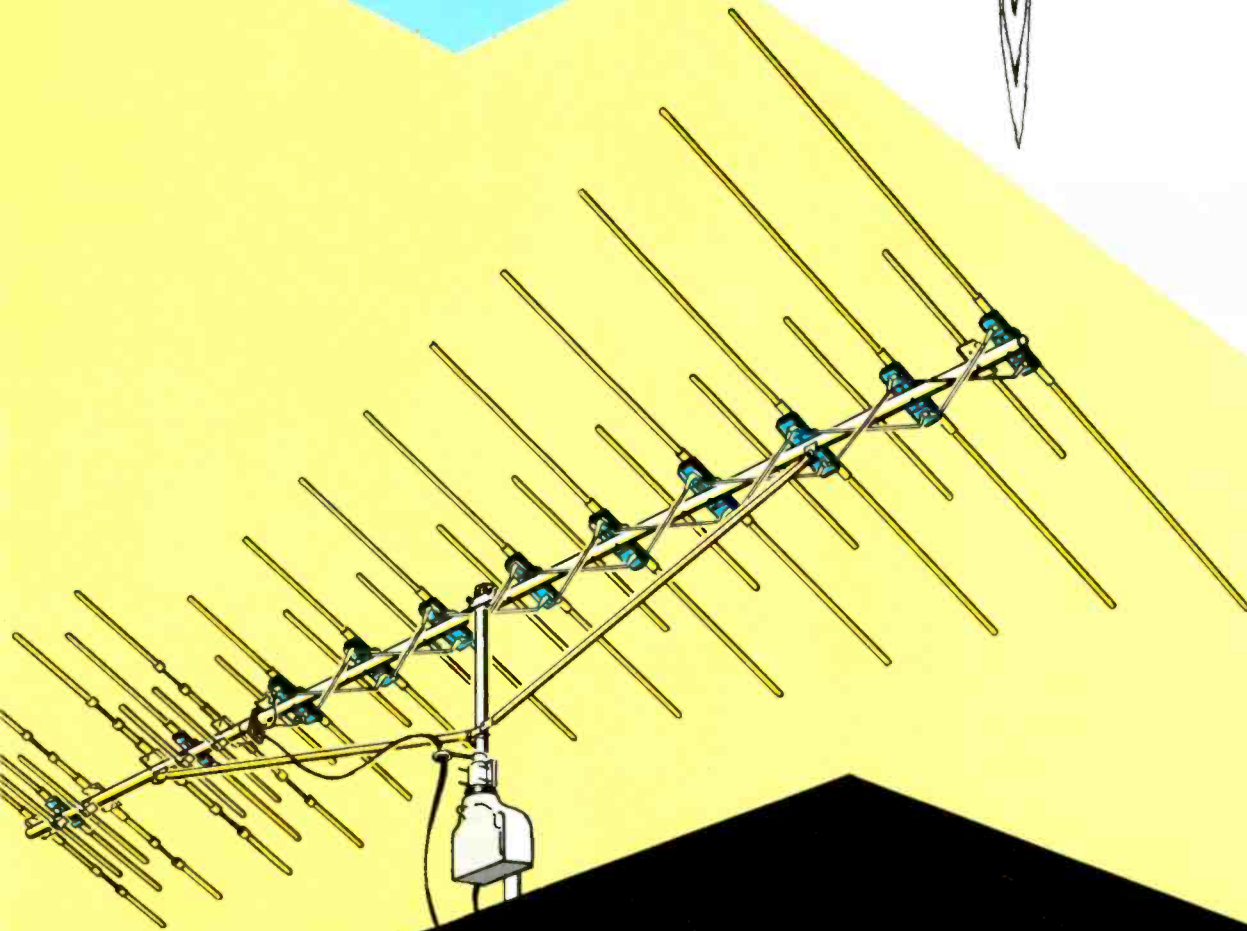
This system is inherently frequency-independent. If left as is, it would provide almost identical gain and pattern for each channel across both bands. However, since more gain is needed on the high band, Channel Master engineers proceeded to their next and most important step: to extend this principle to harmonic mode operation.

HARMONIC MODE HIGH BAND OPERATION

Effective high band operation of this antenna could not be obtained merely by using dual-band elements of the customary type, like Vees. Important impedance relationships in the low band would not inherently exist in the high band, where each active dipole element operates in a harmonic mode and hence at a different region of its impedance characteristic. In the new antenna it was made possible to utilize a front-fed end-fire array on the low band and the high band, by use of features providing proper impedance relationships on both bands. ON THE HIGH BAND THIS FEATURE CONSISTS OF A RELATIVELY SHORT PARASITIC ELEMENT SPACED CLOSE TO, AND IN FRONT OF EACH DRIVEN DIPOLE. Both dipole and parasitic may be considered a single dipole unit. The short parasitic elements do not affect the operation of the low band dipoles. On the low band, the impedance of the parasites is so

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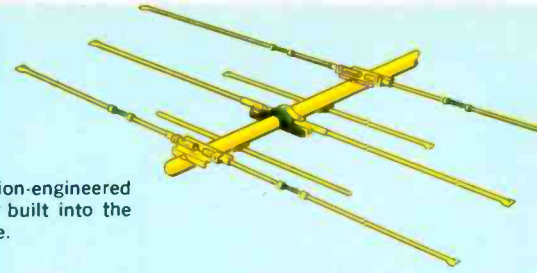
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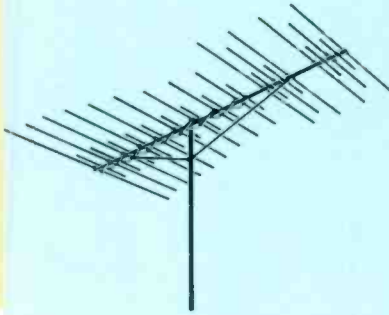
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crossfire features

DIRECTOR POWER GROUP—a precision-engineered package of low and high band directors, built into the two largest fringe models of the Crossfire.

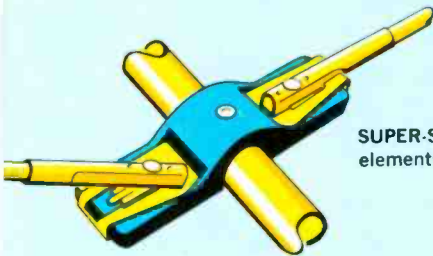
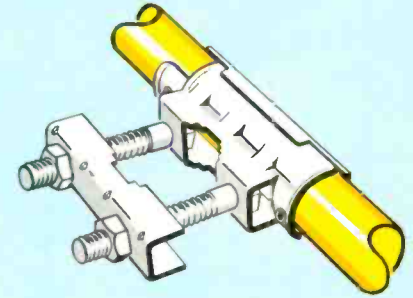


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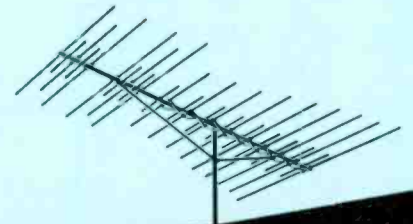
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1. Preassembled unit saves installation time.
2. Heavy duty $\frac{3}{8}$ " bolts, pre-fastened to crossarm bracket.
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SUPER-SEMBLED, new type self-locking elements require no tools.

BOOM BRACING (on longer models). Unlike other methods, Channel Master boom bracing not only eliminates cross arm bounce, but also helps keep antenna on target by providing another point of firm contact with the mast.



The Crossfire is **GOLD**
at no extra cost.

Our exclusive E·P·C Process makes an important difference!

Applied to a television antenna, a gold coloring must have three important properties. It should:

1. Enhance the antenna's appearance to give it merchandising and sales appeal.
2. Protect the antenna against the corrosive action of the atmosphere.
3. Conduct electrical energy so that metal parts make good contact with one another.

Anodizing is one method for coloring an antenna. BUT—the anodized surface is an electrical insulator, and must be removed by abrasion wherever metal to metal contact is required on an antenna. Thus, there is absolutely no surface protection on the very parts of the antenna which require it most! Channel Master's new E·P·C Process protects the entire antenna. It is the very last step in the manufacture of the antenna before it is boxed. There is no "Achilles heel" exposed to corrosion. And—best of all—you do not pay one cent extra for this protective golden luster!



SELF-HEALING!

Only E·P·C "heals" itself. If coating is scratched, the exposed aluminum becomes re-covered with protective film from the surrounding area.

This same aluminum-protecting finish (without gold color) is required by government specification on virtually all jet aircraft and missiles.

Channel Master E·P·C protects the antenna for years, especially in corrosive, salt-water areas.

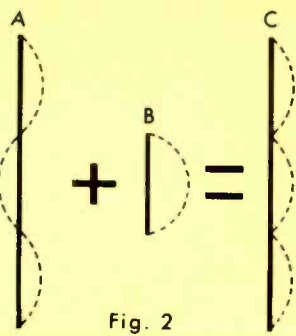


Fig. 2

Figure 2. High band operation of Channel Master's "dual-element" dipole system. Out-of-phase current flow on driven element (A) is counteracted by large in-phase current flow of high band parasitic (B), and produces in-phase harmonic operation (C).

Figure 3. "Director group—a unique package of parasitic elements used on the larger fringe-area models of this new antenna. On the low band, element A functions alone as low band director. On the high band, element A is "suppressed" by two short stubs on either side of it, and co-linear elements B function as 6 high band elements.



Fig. 3

high that they have no effect on the signal and behave almost as if they were not physically present. Therefore, the individual dipoles can be cut to size for optimum low band operation. Figure 2 illustrates how this dipole system enhances harmonic mode operation on the high band. Figure 2A shows out-of-phase high band current distribution on a low band dipole. Figure 2B shows the strong forward current flow of the high band parasitic element. Figure 2C shows the combined effect of both these elements where there is now an in-phase current flow on each section of the driven dipole.

At high band frequencies, the parasitic elements provide a sharp directivity pattern for the active elements and hence for the array as a whole. In addition, the length of each parasitic element and its spacing from its respective dipole can be *individually selected* so that the impedance of the dipole-parasite combination on the high band can be determined independently of the dipole impedance at low band frequencies. Thus the close-spaced parasites provide an independent parameter for determining impedances (and consequently, the degree of energy absorption) at high band frequencies.

One further engineering refinement for adding still more gain to this antenna, is a "director group" (Figure 3). The group consists of a low band director, two co-linear high band director elements, plus two short "suppressors" on either side of the low band director to prevent interference with high band operation. Operationally, therefore, the director group

consists of one low band element and six half-wave high band elements.

OBTAINING HIGH FRONT-TO-BACK RATIO

This new antenna design, utilizing a transposition-type of interconnecting feed line, provides extremely high front-to-back ratios on both bands—even better than the travelling wave antenna which until now has been considered the outstanding antenna in this regard. Again consider the antenna as a transmitting antenna. A signal fed into the input terminals will be partially absorbed and radiated by the first element, the remainder will continue along the feed line and be partially absorbed and radiated by the second element. Obviously, it is desirable that the wave radiated from the second element toward the first element should add to the radiated wave of the first element. Three major factors affect this relationship: 1) the length of the feed line between the two active elements, 2) the free space distance between the two elements, 3) the 180° phase shift imparted by the transposition in the feed line. The first two of these factors can readily be adjusted so that the total phase shift is 360°. The forward waves radiated by the first and second antenna elements will then be of the same phase and amplitude. The same considerations apply to the remaining pairs of elements.

To achieve a high front-to-back ratio it is, conversely, desirable that little or no energy be radiated toward the rear of the antenna. This can be accomplished if the radiation from the various elements is approximately equal, and if the radiation from adja-

cent elements is 180° out of space phase. Since the velocity of propagation in the feed line is equal to the velocity in free space, and the length of the feed line is equal to the space between the elements, the phase delay of the wave from the first element to any point differs 180° from that of the second element *due to the phase shift in the transposed feed line*. It should also be noted that this anti-phase condition applies without regard to frequency, and therefore provides excellent front-to-back ratio for all channels. Because of the inherently high front-to-back ratio of this antenna design, it is not necessary to use a parasitic reflector.

It is this transposed feed line which inspired the new antenna's name—the "Crossfire".

IMPEDANCE RELATIONSHIPS

It has been seen that the impedance relationships which exist between the active elements of the antenna are the key factors which determine its effectiveness. A better understanding of these relationships may be obtained by studying Figure 4. These are Smith Chart impedance diagrams, on which are plotted antenna element impedances. An impedance consists of resistance (indicated by the horizontal line in the center of the chart) and reactance. Inductive reactance is indicated by the area above the resistance line, and capacitive reactance by the area below. The impedance plotted is that relative to the characteristic impedance of the transmission feed line.

Each chart illustrates the percentage of energy absorption for each antenna element at a particular frequency, as indicated by the solid-line circular curves.

In Figure 4A, showing the impedance relationships of the antenna elements for Channel 2, it will be seen that the power absorbed by various antenna elements is least for element number 1 (nearest the antenna feed point), and increases for elements farther from the feed point. Elements No. 8 and 9 are inside the 67% circle of absorption, while elements 1 and 2 are outside the 10% circle of absorption. The illustrations for Channels 6, 7 and 13 (Figures 4B, 4C, 4D) show

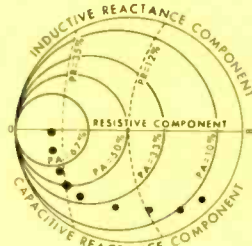


Fig. 4A

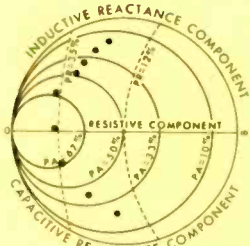


Fig. 4B

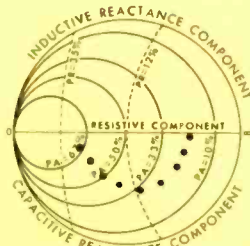


Fig. 4C

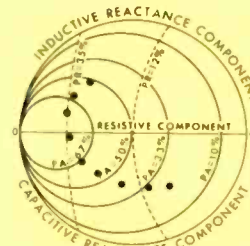


Fig. 4D

Figure 4. Smith Charts plot impedance characteristics of each antenna element at various frequencies. Figure 4A, for example, shows impedance of each antenna element on Channel 2. Horizontal line represents resistance co-ordinate, zero to infinity. Circles represent degrees of energy absorption for each antenna element. For example, element 1 absorbs approximately 5% of the total energy on the antenna, element 2 absorbs 10% of the balance, element 3 absorbs approximately 20% of the balance, etc. Dotted line arcs, A and B, indicate reflection levels.

how the impedances of the various elements change at other frequencies, and thereby alter their relative absorption. Elements which are ineffective at some channels become highly effective at others. By cutting and spacing elements so that they follow pre-determined impedance paths on the Smith Chart, Channel Master engineers were able to fulfill the necessary conditions for obtaining proportional energy absorption—on both bands for the first time.

The Smith Chart illustrates another advantageous aspect of this new antenna. Absorption figures discussed so far have not taken reflection into account. Obviously, to the extent that there is an impedance mismatch at the junction of the harness and the antenna element, some reflection will take place. Figure 4 shows that the percentage of reflection is generally less toward the right of each chart. Antenna performance will obviously be enhanced if the reflection is minimized, and it is particularly important that there be a relatively low value of reflection for those antenna elements closest to the antenna feed point, for as one approaches the feed point a greater proportion of the total power is subject to reflection.

Curved lines A and B (dotted lines) show normalized impedance values at which the percentage of energy reflected at the junction of the antenna element and feed line would be 35% and 12% respectively.

The diagram shows that in all cases, the first element is well below the 35% reflection value, and in most cases is below the 12% reflection value. This feature of the antenna provides excellent impedance match throughout its operating frequency range and contributes to its superior signal-gathering ability.

MODELS FROM SUPERFRINGE TO SUBURBS

Antenna design normally starts at the "top" and works its way "down." In other words, engineering is concentrated on creating the most powerful designs possible, which may then (if practical) be scaled down into versions for intermediate and nearby markets. One of the many advantages of this new Channel Master antenna is that its very nature allows it to be scaled down into a series of efficient lower-gain models, each providing excellent performance for its size and cost.

The design principles described above have been incorporated into six different antennas, scaled from a superfringe model down to a compact antenna for suburban markets, as shown in Figure 5:

1. Nine dipole units (each unit consisting of dipole and close-spaced parasitic), and two director groups... 28 elements total.

2. Nine dipole units and one director group... 23 elements.
3. Nine dipole units and a 2 half-wave co-linear high band director... 19 elements.
4. Seven dipole units and a 2 half-wave co-linear high band director... 15 elements.
5. Five dipole units and a 2 half-wave co-linear high band director... 11 elements.
6. Three dipole units and a 2 half-wave co-linear high band director... 7 elements.

To the dealer, this means that he can simplify his handling, advertising, selling, and installation problems by concentrating on only one basic antenna type... known by one name... even if he must stock several different sizes for different reception conditions. This coordinated "family" marketing concept has been successfully employed in a variety of fields.

MECHANICAL FEATURES

Several aspects of the mechanical design of the "Crossfire" will be of interest to dealers. Since the transposed harness is critical to the function of the antenna, special attention was paid to its construction. Utilizing an air dielectric, the harness consists of rigid, corrosion-proof metal rods firmly clamped to the respective dipoles. Perfect performance is thus assured under all weather conditions and in all areas, even coastal locations. The absence of any folded elements minimizes weight and wind loading. The longer models are boom braced. Co-linear elements use fiber glass in-

serts for strength and durability. An entirely new kind of heavy duty mast clamp was designed for this antenna, to allow quicker installation while providing more rigidity and strength than has ever been provided by previous nests. And finally, a protective coating, gold in color, has been applied to the entire antenna by a new process. Unlike anodizing, this new process does not deposit an insulating film over the antenna which can interfere with its function. It does, however, afford extremely long-term protection against corrosion and other atmospheric deterioration, while imparting a brilliant gold color to the antenna which enhances its sales appeal.

It is no exaggeration to state that, for the vast majority of people, television has become a necessary part of everyday life. In this regard, the antenna engineer has been endowed with a serious responsibility—that of continuously expanding the circle inside which TV reception of high quality can be obtained. The record shows that he has, through the exercise of engineering skill and creative imagination, come through whenever called upon. Now, once again, science and art have joined to create what we believe to be the most advanced television receiving antenna of all time... capable of bringing the delights of television into the homes of many that may have been deprived before... improving reception in areas where it has been marginal... and presenting dealers with new opportunities to be of service to the consuming public.

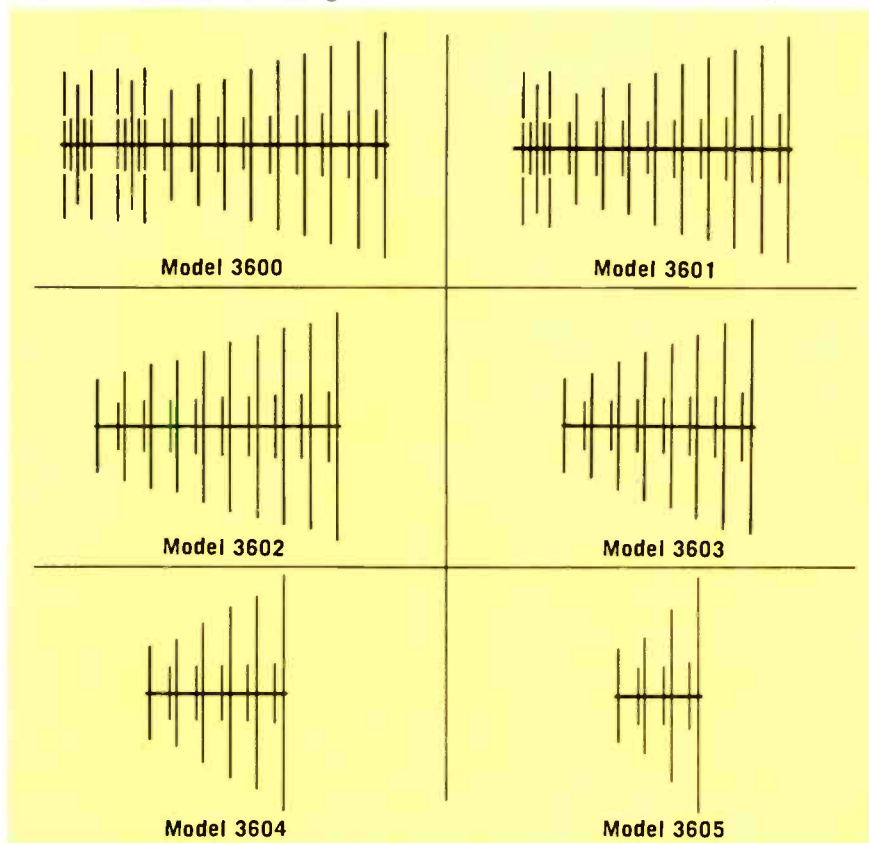
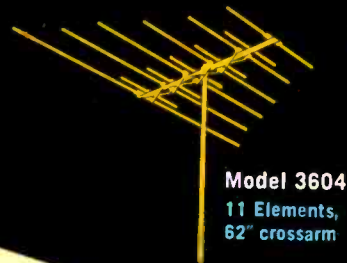
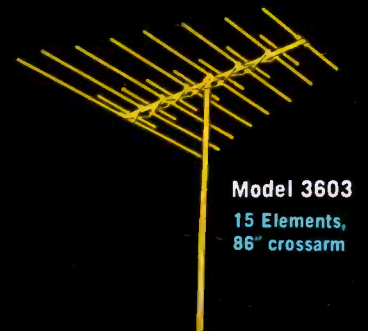
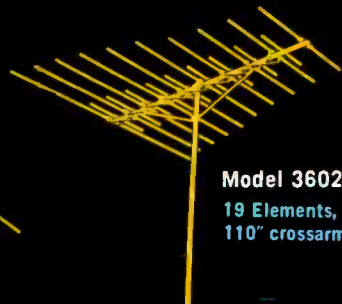
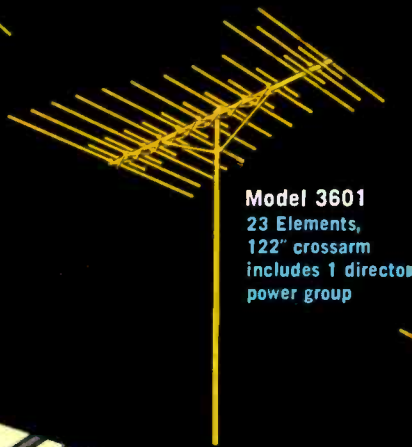
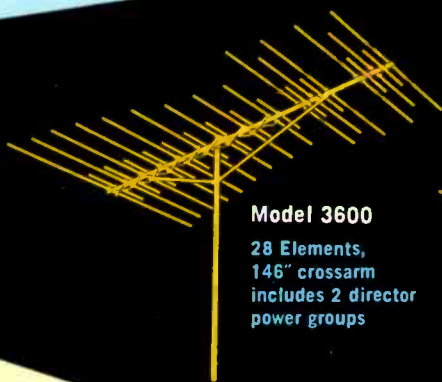


Figure 5. The 6 models of the Crossfire antenna.

Great news for every dealer!

A complete series of Channel Master **Crossfires** for top performance in every area...at moderate cost.

The Crossfire line is distinguished by its compact design...its relatively short crossarm lengths. The crossarm of the biggest Crossfire is several inches shorter than the most powerful competitive arrays, while its gain is substantially greater on all 12 channels. The crossarms of each of the other Crossfires are from 15% to 25% shorter than the crossarms of other antennas with comparable performance. The Crossfire delivers more DB per inch of crossarm; more picture power per dollar.

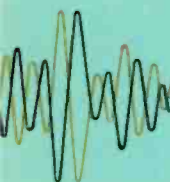


for still more power—add the new
CHANNEL MASTER Jetron model 0020

Antenna-mounted transistorized signal amplifier and set coupler

Adds Electronic Power Boost to any TV and FM antenna... for 1, 2, 3, or 4 sets.

distributed by



CHANNEL MASTER ELLENVILLE, NEW YORK

works wonders in sight and sound

Mr. Service Dealer... Key To The

FUTURE OF COLOR!

Is independent service preparing properly for color?

Will our present shops be adequate for the new field?

Does color provide an opportunity for a service rebirth?

Do you see in it a new chance for standing and revenue?

Last month the RCA Electronic Parts Department invited the entire television service fraternity of Greater Los Angeles to attend the first of a series of educational seminars on color television. They expected perhaps 200 technicians to take part, 250 at the most.

An all-time record attendance of 350 came!

So great was the attendance that when the next part of this series is presented, it will be in two separate locations.

Nor were the people in attendance groping neophytes gaining their first familiarity with a new type of instrument, a new service. Their interest was as strong in advanced types of technical equipment, which they fully understood, as it was in the novelty, the newness of the color servicing problems. The new color test jig, the new color parts rack, the new color bar/dot/cross-hatch generator held as much fascination for them as the 1962 cars did for a motor-mad public.

These men are pros, and they're determined to be better ones by absorbing all the knowledge that they can about the medium, and by getting into the color service work deeply, early in the game.

Not all shops are fully equipped for color by a long shot, but most have at least one tech who has trained himself on circuitry of color sets and have had their initial experience in servicing them. With Los Angeles the second most important color market in the United States, it's understandable. Yet that same intensity of interest, that same drive toward professionalism permeates the service industry throughout all California.

What need remains for factory color TV service in order to protect the public against inadequate skill among independent television service firms is being erased so rapidly that, by the time color reaches its full stride in the Fall of 1962, factory service will have to be recognized as just another competitor, nothing loftier, nothing more noble.

While the number of names of manufacturers purporting to be in color television this year has been increased over previous years most substantially, the quantities most are delivering in late 1961 and early 1962 are surprisingly small in view of the size of the companies. For the forepart of the year, at least, it'll still be largely RCA's show, although the Zeniths and Admirals are starting to at least be sampled on dealer floors as are GEs.

In other words, there's still time for Service to master color between now and the Fall. By then, though, if the service firm hasn't established itself in color, it will be a long, hard pull to become part of the industry. But how to go about it?

From the standpoint of preparing manpower—

- Attend all factory courses offered on color.
- Pick up an old color trade-in and use it for in-shop class work and individual experimentation.
- Subscribe to all the services and publications providing information in the field.
- Make contact with the color set distributors in your area and let them know of your interest in and qualifications for color work; ask their color service man to allow your top technician to work with him for a few days.
- Let your parts jobber know of your interest, and urge him to provide you with any information and training materials that come to his attention.
- Ask the program chairman of your local CSEA Chapter to inform you about any color television service development meetings and activities being undertaken by the Chapter.

• Attend all the trade shows you can to seek further sources of information and to confer with service dealers from other areas to find out how they're training their men.

From the standpoint of preparing the shop—

• As soon as you feel you can handle a color service call, get your name identified with color. Among ways for doing this are: (a) Painting your trucks with a rainbow band around their middles or across their tops and "We fix color TV" in the rainbow, (b) Adding the words "Color TV" to all your ads, including the phone book one and also to your letterheads, business cards and envelopes. These latter can be done with a rubber stamp using a colored ink stamp pad, (c) Arranging with your parts jobber for a sign that proclaims your color identification to go in the window or over the sidewalk, (d) A prominent interior sign, perhaps "Color TV Headquarters" over the counter.

• Get the essential test equipment for color TV as soon as you can swing it so that the men will have plenty of time to get acquainted with its use. You'll probably want at least one of each of the following: Color-bar generator, pattern generator (some combine both of these functions), wide-band scope, three-gun color tube test adapter, marker generator and sweep generator, both video range, low-capacitance and detector probes for scopes and RF and high voltage ones for meters; high voltage, convergence assembly, CRT and yoke extension cables to make bench work less of a strain, a three-switch unit that lets you view each of the three colors separately when connected to the CRT base and the chassis.

Don't get cheap equipment, intending to replace it later. Better to reach a little for the best right at the start; it'll pay off in bench time saved and more satisfied technicians.

(Continued Next Page)

FUTURE OF COLOR

(Continued)

- Lay in a supply of the special receiving tubes color sets require, and remember that, though all use RCA's CRTs, they *don't* all use the same circuitry. Zenith, for example, has several receiving tubes not used in other makes.

- Find out what others are charging for color television service and work out your own flat job rate chart for the shop as soon as you can. This may cost you a little money while the men are new at it and extra careful and are taking a little time to get better acquainted with circuits, but it will hold your customers for you and eventually bring you a profit.

- Finally, don't hook up too many sets on one antenna. Put up a new one that will bring in a strong, clean signal and use it just for color. And train your men to encourage your customers to do the same when they get their new color sets.

And, from the standpoint of developing business—

- Go out after it; don't just sit there with your hands folded in your lap waiting for it to come to you! Call on every non-servicing retailer within five miles of your shop, bringing them pictures of your shop, your trucks, your men and your equipment to let them know you're well equipped to take care of their color TV service needs. Be sure not to overlook the small dealers. Large quantities of most brands of color aren't available and *in many instances only the small dealers are getting color merchandise!*

- Don't give the retailer a commission on service business he finds for you; you can't afford it and there's not that much extra that can be added onto the service charge. Better to let him know that, when you call on his customer

you will identify yourself as his service arm, compliment the customer on his selection of merchandise and a retail store, and tip the dealer off on any other merchandise needs the serviceman senses in the prospect's home. That's really worth more to him than any rake-off and it doesn't cost you money nor require a padded charge.

- Let the set distributors know of your availability to set up, install, mount antennas and service color sets. They can, if they like you and recognize your competence, throw business your way. Also learn the facts on warranty and length of free service he's allowing in your area.

- Go back to the customer, phoning first, a week and 60 days after the delivery has been made. Perhaps there's a minor adjustment you may need to make for him or his wife needs a lesson in how to tune the set. This can lay the groundwork for future business.

- Use pressure sensitive tapes with your name and phone number on the back of the set, the customer's telephone if he doesn't object and on the telephone book.

- Phone all your old customers whenever things get quiet around the shop, letting them know that your men have taken special color servicing training and are the finest technicians on color in town. A surprising amount of extra business, and not necessarily just in color servicing, will result from this.

Here, in color, is your chance to take part in the re-shuffling of the deck. Show the same kind of aggressiveness, enthusiasm, professionalism that you had as part of your dream when you first set yourself up as an independent businessman. Demonstrate the vitality and fire of a man who believes in himself, his competence, his line of work and his people.

Zero in on color.

It could well add a few extra zeros before the decimal point on your 1962 financial statement.

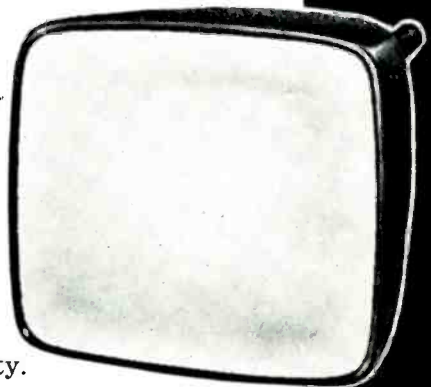
ALL NEW 100% SAFER*



BUY THE BRAND THAT IS
ALL-WAYS NEW! **ZENITH**

Zenith TV Picture Tubes are 100%
NEW from face plate to socket, assuring
you of the highest quality and performance
for every replacement need. Remember,
Zenith leads to long life and finest picture quality.

* **AVAILABLE IN MOST POPULAR SIZES**
SUES, YOUNG & BROWN, INCORPORATED



For your convenience, Zenith parts and tubes, in or out of warranty, are available from the following parts distributors.

HURLEY ELECTRONICS
1429 South Sycamore
Santa Ana, California

HURLEY ELECTRONICS
1501 Magnolia
Long Beach, California

HURLEY ELECTRONICS
501 East Date Street
Oxnard

GROSSMAN & REYNOLDS
1900 West Valley Boulevard
Alhambra, California

ANDREWS ELECTRONICS
1500 West Burbank Boulevard
Burbank, California

ELECTRONIC SUPPLY CORP
2483 - 3rd Street
Riverside, California

My fellow retailers won't appreciate this. They somehow figure they have enough competition as it is. Me, I don't care much now that I'm retiring early next year. But I started out making radios and repairing the neighbors' sets back when we made a fine art of stringing aials and I feel more of an affinity with the men who use technical skills to keep merchandise operative than those who use tricks to steal competitors' customers.

So, your editor and my ability to express it properly willing, pull up a chair and let me sound off to you on how to effect a bridge from your present repair service to the retailing of electronic home entertainment equipment.

If all of your business comes from a non-servicing dealer and you have a good working relationship, don't set yourself up in competition with him. Discuss it with him. Pick out a location far enough away from his store so he'll not be hurt by you, and chances are he'll give you a world of excellent help.

That's usually not the case, though. The usual beginning is your repairing a brand you have learned to respect, your checking it out to make certain that not every back alley operation in town has been franchised to sell it, and then your either being approached by the distributor salesman to buy it or else your contacting the distributor saying you'd like to accomodate some of your customers with merchandise and would prefer that it be his.

That way you're not making any potentially destructive promises to get all your capital plus some future obligations jammed up in inventory. Watch this ever so carefully. It's the surest short-cut to business ruination I know, to tie up too much capital in merchandise. Fight off those special deals they offer you if you take just a few more pieces. Recognize as your enemy the man who dangles a trip somewhere before you as bait to buy more than you can be sure to sell off in a maximum of 60 and preferably 30 days.

Big Difference

There is a big, maturing difference between the fellow making a living by using his hands and the one who does it by selling his executive and administrative skills, supervising others, developing business to keep them employed, buying right for his service shop, keeping the occupancy cost in line with income and having sound business records.

There's a corresponding difference between selling services and selling goods. Capital is more of a factor. You must develop persuasive powers. Having your

The Route To Retailing

by The Old Timer

service background, your customers are going to trust you more than they would a fast-talking, slick peddler. Use this advantage. I don't mean go off into a lot of complicated sounding gobbledygook; just work consciously to make the customer feel surer of himself when he makes his purchase. Give him the backing of your authority in the field—and you do have that, you know—to fortify his own confidence in his decision on what to select.

One of the big chain stores has 38 turnovers of merchandise, that means their total inventory, every year! This is done by not having a lot of merchandise in addition to what's on the sales floor. Instead, the branches work out of a central warehouse. You can and, at the beginning at least, should consider your distributor warehouse your major inventory supply. Explain to him that you'll need to do this to get started, that you feel your primary obligation to your business and him, is to be able to discount every invoice, even more than delivering big volume to him. That can come in time, as your business grows. Then your inventory can grow a little less than proportionately.

As soon as you declare yourself a retailer, expect to be besieged by every brand around. There's a lot of output and distributor quotas are never light. Some of the offers that come your way will be tempting. At the beginning, unless you're loaded more than most men in this business, you're better off sticking to one brand chosen because you honestly respect it, it's not overly franchised and it's priced to fit the incomes of your particular customers. Later you may want a second brand so you can have a price line and a prestige one. Then you'll measure your skill as a salesman by your ability to sell up to the prestige line.

But enough of this rambling. Let me

guide you past some of the pitfalls you're likely to encounter as a retailer. Their very number may discourage you from becoming one!

Credit

CREDIT—One of the best sales tools allowing you to get a fairly good price for your merchandise is terms or credit. Some manufacturers have their own credit subsidiary. Ask your distributor about it. Shop for credit terms also among banks and independent finance companies. You have a good credit arrangement when (1) your paper is handled for you by the institution without recourse, this means they won't come back to you for the money when the customer defaults; (2) you get a kick-back from the financial institution for giving them credit business; figure two per cent is about average here; (3) the credit information your customer must provide isn't overly demanding, and is sought gracefully (I saw one called "Acquaintance Form" rather than "Credit Information."); (4) and they let you know as the account progresses so you'll be tipped off to follow through with a stereo set as the TV's almost paid for. If the customer pays in your store (I almost said "shop"), you have extra chances to sell him something else.

Advertising

ADVERTISING — Every nationally known or significant regional brand allows you a certain amount of co-operative or co-op advertising, usually in proportion to your purchase. You have to add something to this. They also have restrictions as to how the money is to be spent to let you get the co-op money and unless you use up your share, they give it to what they call a "key account" as part of that big operation's buying incentive. Use your co-op. Even if it's just enough for a metro-

(Continued Next Page)

politan classified ad or a few short ads in the community paper.

Tell your supplier you'd like to be listed under his brand listing in the telephone book. That sometimes gives you both service and sales advertising. You may also get some of the co-op allocated to the regular ad you've been running in the phone book.

You can also sometimes get co-op on your own duplicating-service flyers such as multilith or offset or even mimeographed ads. These can be mailed out in the area you serve or distributed as handbills if local ordinances don't forbid it. If you haven't a mailing list, just addressing mailed ones to "Occupant" will do. Have a high school student go around the blocks jotting down the numbers of the places and how many residences are at each number.

Make your ad say something the customer will respond to. "We service what we sell," "A year's free service on every TV, or FM monaural or multiplex set," "Finest, fastest, fairest service obtainable," "We make your purchase aggravation-free"—some message that will help that prospect decide you're just the firm he wants to deal with.

THE STORE—In some cases, there'll be little difference between a shop and a store; in others it's tremendous. You'll need a clean, roomy, attractive window and a sales floor that is inviting and that makes customers respond favorably. By this I mean floors that are swept clean and are even, regardless of their covering, walls that aren't cluttered or of material that looks wrong for a store, a definite rear even if it's the counter at the front of the service shop.

The place requires identification, first with your company name, the name listed in the ads and the phone book, then with the functions you perform, sales and service, and finally with the brands you handle. Neon lights in the window, an over-head sign out over the sidewalk if local ordinances permit it, otherwise a sign across the crown of the front of the store. Get the best, brightest, most attention-getting sign you can afford. It will give you more traffic benefit than it costs.

Personnel

PERSONNEL—It's not necessary to change the employees of the service shop to convert it to a retail store. Just see to it that they and you learn a few rudiments of salesmanship. This is something often—too often—new to the serviceman. If he had a little more selling skill he'd note that the antenna needed replacement or that the FM set owner could afford multiplexing or that these people really needed an extra TV set for the children's room with a family and home and income that large. Then the serviceman would do some-

thing about it. But most just repair the set and check in for the next job, don't they?

Go to the library and read a book or so on sales techniques and motivation. Watch your men try to sell and give them compliments on what they do right and pointers on how they can be improved. Ask your distributor salesman to have them shopped and see what correctives the report calls for. It'll help your whole business.

Business Records

BUSINESS RECORDS — I've sometimes had the feeling that it should be compulsory for everyone who is supposed to head up a business to take an elementary course in accounting. You should be able to read more from your financial statement than the number in the southeast corner. You should know when vehicle maintenance costs have gotten out of line and maybe it's time to trade two old trucks for one new one. You should be able to see subtle fluctuations in inventory, showing when one type of service call is tapering off and another is on the rise. If one man isn't producing as much revenue as the others, maybe he's in need of explanations of how much it costs to operate a business; he might have been knocking a little time off on some of his calls out of sympathy with the customer or fear of that "Why so much?" question they all dread. The books should tell you that, too.

Now when you become a retailer, business records seem to be more critical than ever. Dollars invested in merchandise and store must be recovered plus profits those dollars have earned. If you haven't figured out some way of cost accounting (so you'll know *really* what it costs, laid down in the shop, with uncrating and selling time and delivery and set up and interest on floor planning and everything else including a proportionate amount of your salary and the rent) you may think you're doing better than you are and think you can shade the price a little deeper than you can afford to. That way lies failure.

Be sure you get a monthly statement reasonably early in the month. Ideally it should be by third to fifth. Under no circumstances should it be past the tenth. And when you get it, visit with your bookkeeper or, preferably, CPA. Ask him questions. Seek his guidance. It wouldn't hurt for you to confer with your distributor and your banker occasionally over these statements, too. If they know you care and are doing something about it, they'll feel better. Besides, who among us doesn't like to give advice to someone who thinks we're smart enough for it to be good?

Philosophy

PHILOSOPHY—Behind every business there must be a philosophy, a foundation on which the whole business is run. It could be anything from "We will not be undersold," through "We handle only the best products the best way possible," to "We refuse to permit a customer to be dissatisfied." Properly chosen, this can be the backbone of your business, the reason your customers are given, believe in and will never be betrayed on for dealing with you in preference to any of the competition they might have gone to for their purchases.

The firm that services, that makes good the factory's or its own mistakes, has the finest of all reasons for attracting trade on merchandise as delicate and complicated as that you will be handling as a retailer. Come on in and sell. You are the kind who will be a credit to our industry—and Lord knows it needs such people!

Trade-ins

TRADE-INS—If there's any place the servicing dealer has a clear advantage over the non-servicing one, it's in the matter of reconditioned sets. Knowing what's wrong with the trade-in, how much it will cost to put it in saleable shape, and what you can get for it gives you more latitude than the man who can't make use of the used set of must sell it "as is."

In determining allowances for trade-ins, be sure to figure yourself a profit. It's going to take up space in your store, cost you something to sell, require delivery and set-up just as a new one does and you should have something for your trouble in putting it on your books. So always figure a one-third profit on your trades and work backward from the selling price it'll bring in figuring how much you can afford to allow the customer for it.

At the beginning at least you'll find the Trade-In Blue Book a handy base from which to operate. This is published by National Appliance Trade-In Publishing Company, Madison, Wis.

Do a good job in repairing your trade-ins, but it's good business sense to use a reconditioned picture tube on any sets more than two years old, also use the trade-ins to sell new ones. If the customer returns it in six months or less, let him apply the full purchase price of the set to a new one. Classified ads are powerful salesmen of trade-ins.

There are some retailers who say they make as much money on their trade-ins and reconditioned sets as they do on their new merchandise. You can be one of these if you approach this phase of the business properly.



WESCON Leadership Given to Four S. C. Executives

LOS ANGELES — Leadership of WESCON for 1962 was assigned last month to four prominent Southern California electronics executives.

Assignments to WESCON's executive committee were made by the board of directors during its annual meeting just completed.

Donald C. Duncan, president of Duncan Electronics, will serve as chairman of the 1962 WESCON board, and Bruce S. Angwin, western regional manager of GE's receiving tube department, as chairman of the executive committee.

Edward C. Bertolet, vice president of Behlman-Invar Electronics is convention director, and S. H. Bellue, vice president of Osborne Electronics, is show director.

Don Larson, WESCON manager, is the fifth member of the executive committee.

WESCON will be held in the Los Angeles Memorial Sports Arena August 21-24.

Bay Area members of the eight-man WESCON board include John A. Chartz, Dalmo Victor, and Meyer Leifer, Ampex Instrumentation Products, both newly elected to membership, and Dr. John V. N. Granger, president of Granger Associates, and Calvin K. Townsend, chairman of the board of Jennings Radio Manufacturing, both two-year veterans on the board.

Plans for WESCON in Los Angeles include a 1200-booth technical exhibit, 200 more booths than in 1960, when WESCON was last held in Los Angeles. A 91,000-square-foot pavilion will supplement exhibit areas within the permanent Sports Arena facilities, Don Larson said.

RADIO TV SUPPLY TO DISTRIBUTE NORELCO TAPE RECORDERS

According to an announcement by the Les Taufenbach Company, Manufacturer's Representative firm in Southern California, Radio Television Supply Co. has been named as the Norelco Tape Recorder Distributors in this area. Radio Television Supply Co. is located in Los Angeles.

Radio Products Attracts 200 Dealers To FM-Stereo Meeting

THE FIRST FM STEREO SYMPOSIUM ever presented in this area, was held last month, under the sponsorship of CALBEST ELECTRONICS, KMLA-FM Radio station in Los Angeles and the RADIO PRODUCTS SALES, INC. Over 200 dealers and technicians from various sections of So. Calif. were in attendance at RADIO PRODUCTS to get the "low-down" on the "Whys" and "Hows" of FM Stereo and the clarification of the known problems confronting the industry. The SYMPOSIUM was conducted under the very capable direction of Harold Parker.



Just prior to the FM Stereo Symposium these executives took time out to go over last minute details. Left to right: Mr. Bill Tombarlin, KMLA, Herbert Fremont, Calbest, Harold Parker, Calbest and Doug Dumas of Radio Products Sales, Inc.

ker, Chief Engineer of Calbest Electronics, assisted by Wm. Tomberlin of KMLA; and Herbert Fremont, Calbest Co. A very constructive and enlightening "question and answer" period was held after the general meeting, followed by the serving of refreshments. It is planned to hold a series of these symposiums at times and places to be announced later.

Glenn Higgins Joins Radio Parts Of Arizona

Mr. Glenn Higgins, formerly with Nystrom Brothers of San Diego, California, has joined the sales force of Radio Parts of Arizona in Phoenix to assist the expanding activities of this company in both the dealer and industrial fields.

Mr. Higgins has an enviable career in the electronic parts business, starting in Omaha with Omaha Electronics in 1915. From Omaha he moved to San Diego in 1953 and in his sixteen years in the electronics parts industry, he has worked in almost every possible capacity.

RAYTHEON PURCHASES RHEEM SEMICONDUCTOR CORP.

LEXINGTON, Mass.—Raytheon Company has announced that it had reached agreement in principle to purchase substantially all of the assets of Rheem Semiconductor Corp., a subsidiary of Rheem Manufacturing Company, at Mountain View, California. No details of the planned cash transaction were disclosed.

The new 100,000 sq. ft. leased plant is located on a 20-acre site in a large industrial park with many of the nation's leading electronics and space age firms. It is adjacent to Moffett Air Force Base and 35 miles south of San Francisco.

Richard E. Krafve, Raytheon president, said that the technical depth and scientific strength of the organization as evidenced by the advanced semiconductor products developed and introduced was a major attraction in the proposed acquisition. "Additionally, the Rheem product line supplements and complements, without duplicating or overlapping Raytheon lines," Krafve

said, "and the purchase will extend the scope of our silicon devices so that both silicon and germanium product lines will meet the broad marketing requirements of our semiconductor customers."

Supplementing the existing Rheem channels of distribution, Raytheon's Distributor Products Division will make Rheem transistors and diodes available to electronic parts distributors through its point-source Unimarket distribution system which employs telegraphic ordering, electronic order processing, and same-day shipment by jet freight throughout the country.



PET Exhibit Space Now Available

LOS ANGELES, CALIF.—Applications for booth space in the Pacific Electronics Trade show to be held in February are now being accepted, according to Gene Rothman, PETS president.

The first application was inked with a "quill" pen dating back to the time Benjamin Franklin conducted his famous experiments with electricity during the middle of the 18th Century. A double booth was reserved by Jack Berman, Electronic Representative, for the Bud Radio Company.

"Endorsement by organizations in every segment of the industry has assured the success of the PETS show," stated Rothman, "and 50% of the booths available were committed in the first week after the announcement and reservation forms were mailed to prospective firms."

Rothman, chairman of the board of Hollywood Radio and Electronics, Inc., and recently appointed vice-president of Terminal-Hudson Electronics, Inc., New York, the parent company, indicated he was highly delighted with the initial response from electronic component manufacturers for the show which will highlight the Western Electronics Week, February 3-11, during which time the national and local electronic associations will hold seminars and industry meetings.

OVER 350 DEALERS ATTEND FIRST RCA COLOR SEMINARS IN L.A.

An enthusiastic crowd of over 350 local technicians attended the first of a series of educational seminars planned by RCA Victor Distributing Corp. on Tuesday evening, November 21, at the Montebello Country Club.

The proceedings were opened by Mr. Clarence Malin, General Manager and Vice President of RCA Victor Distributing Corp. He stressed the responsibility of the distributor in keeping the Service Industry informed of the latest advances and developments in the electronic servicing field.

The topic of the evening "Color Servicing Techniques, Part I" was presented by Charlie Wack, RCA Field Service Engineer, Indianapolis, Indiana. With the aid of slides, a dynamic demonstration of color alignment procedure, field servicing tips, and proper use of test generator, Mr. Wack delivered an outstanding and very worthwhile color lecture.

A "Question and Answer Period" followed, moderated by Walt Pasner, Manager of the Electronic Parts Department,



Pictured here during the recent RCA seminar on color are: Left to Right, John J. McLernon, representative, RCA Tube Division, Charles Wack, RCA Field Service Engineer, Walt Pasner, Electronic Parts Dept. Mgr., RCA Victor Dist. Corp. and Clarence A. Malin, Vice President, RCA Victor Victor Dist. Co. Los Angeles.



Mr. Charles Wack, RCA Field Engineer is shown here answering a question presented by one of the over 350 service dealers that attended the color seminar held in Los Angeles.

Raytheon Names Two New W. C. District Managers

HAWTHORNE, CALIF.—Two new district managers have been appointed to the west coast area by Raytheon Company's Distributor Products Division.

Richard H. Bale, former buyer for Burroughs Corporation in Pasadena and Frank R. Sestanovich, former director of creative sales for Haley & Sestan Advertising, San Jose, will be headquartered in Raytheon's offices at 225 North Van Ness Avenue here. Both will serve area distributors with Raytheon's electron tubes, transistors and other electronic components, and citizens band radios.

RCA Victor Distributing Corp. Questions were ably answered by John McLernon, RCA Tube Division Representative and formal discussion rounded out a very worthwhile evening.

Due to the tremendous interest and response shown at this first meeting, Mr. Pasner is planning to hold "Color Servicing Techniques, Part II" at two different locations on successive evenings in January. This will enable the local servicing technicians to attend these important meetings more conveniently.

On display was a complete line of RCA Test Equipment including a just released "Color Test Jig" and also a new "Color—Parts Rack".

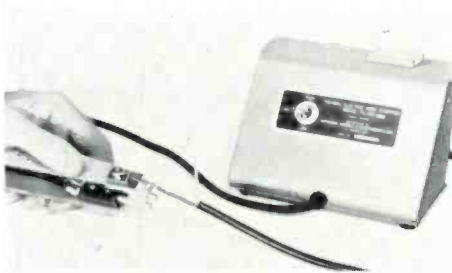
TUBES HIT '61 SALES RECORD

Factory sales in September of TV picture and receiving tubes hit a record high this year, according to the latest figures released today by the Marketing Data Department of the Electronic Industries Association.

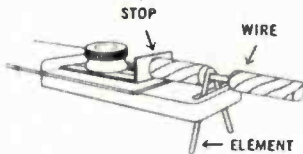
Total TV picture tubes sold in September stood at 946,405 valued at \$18,981,210, against 870,578 worth \$17,239,228 in August.

Receiving tube sales totaled 37,611,000 valued at \$30,472,000. In August the total was 36,907,000 worth \$31,247,000.

Year-to-date totals for both types of tubes continued to lag behind the cumulative figures for 1960.



HOW
IT
WORKS



MODEL TS 400 . . .

is a thermal device for removing the insulation from the ends of wires without cutting or scoring the strands. It leaves no ragged, burned or charred ends and thus assures top quality control. It is now being manufactured by the Ampera Div., National Missile & Electronics, Inc., Los Angeles 45, Calif.

TS 400 is designed for equal facility as a Hand Stripped for Chassis, Harness or Cable Work, or as a Bench Model for production work by placing it in the Slide-on Clip mounted on top of the power unit. By means of simple, minor element adjustments it will handle wire sizes from as large as No. 6 AWG down to as small as No. 36 AWG.

The High-Low Switch provides High Heat for TEFLON and Low Heat for Vinyl, Nylon, FEP Teflon, PVC, Kel-F, Polyethylene, etc.

For hand stripping, the TS 400 is small enough to enable the operator to work in hard-to-get-at and otherwise inaccessible places. A Special Alloy Heating Element severs the insulation quickly with a simple twist of the wrist, and a slight pull leaves the wire clean, bare and ready for installation. An Adjustable Wire Stop is provided to insure uniform stripping lengths up to 3/4". However, longer length can also be stripped.



A MODULATOR

. . . which can replace an entire audio distribution system for hotels, motels,

or institutional use, has been developed by Jerrold Electronics Corporation. Introduced by the company's Distributor Sales Division in Philadelphia, the Audio-Trol (Model AT) which lists for \$325, provides for adding AM, FM, background music or public announcements to any TV distribution system. The new unit eliminates the need for television channels of a standard TV receiver for audio reception.

The source feeding the equipment may be an FM tuner, an AM radio, Muzak, records, tape or microphone. Audio programming is piped from the head-end of the TV distribution system, where the Audio-Trol is installed, to any room in which there is a TV receiver.

The Audio-Trol can feed five separate channels of audio, even in seven channel TV areas, since the circuitry of the equipment has been engineered to prevent cross-modulation between adjacent channels. The channel conversion is achieved by providing a crystal-controlled video carrier and an FM sound carrier. The latter, held precisely at 4.5 mc separation from the video carrier, produces the audio program through the TV speaker.



A NEW LOW-COST

. . . complete tube tester with ten sockets, including sockets for all the newest tubes, is announced by Seco Electronics Inc. of Minneapolis. The new model 88 tube tester permits testing of 9-pin novars, the new 10-pin tubes, 12-pin compactrons and nuvistors, as well as all previous popular TV and radio tube types, including battery types.

The new Seco model 88 tube tester offers complete modern tube coverage in a compact, lightweight unit that is easy to buy and convenient to use.

The model 88 tester incorporates the patented and nationally accepted Seco grid circuit test, plus a reliable cathode emission test. It also checks filament continuity and provides an open element test.

One easy-to-read meter shows results of all tests. The two-stage DC amplifier circuit protects meter from damage.



A NEW REGULATING

transformer designed for use with color television receivers has been announced by Sola Electric Co., Elk Grove Village, Ill., a division of Basic Products Corporation.

The Sola Colorvolt is a static-magnetic AC voltage regulator specially designed to improve television reception. It automatically and instantaneously compensates for variations in line voltage that are often responsible for jitter, flicker and color distortion.

The Colorvolt requires no "installation." Merely plug its cord into an AC wall outlet and the television set power cord into the receptacle of the Colorvolt. Once connected, the unit requires no further attention at any time. It is switched on automatically and off by a relay which connects power to its transformer whenever the television power switch is operated. The Colorvolt is compact and has a convenient handle. It is small enough to be placed within the cabinet of most console-type television receivers.

The unit is designed to serve loads of 240-400 VA. These ratings are based on currently available color sets.



A HANDY TAPING

dispenser that "really works" has been developed by Minnesota Mining and Manufacturing Co. (3M) for the familiar 3/4-inch x 66 ft. roll of "Scotch" brand electrical tape No. 33.

The single-use plastic dispenser is designed as a compact hand taping and

(Continued Next Page)

NEW PRODUCTS

(Continued)

cutting tool to speed on-the-job use of the plastic tape.

Advantages of the new dispenser listed by 3M are: easy cutting of the tough tape; the cutter leaves a clean, square edge for a professional appearance; tape roll is exposed for easy thumb control of wrapping tension, and a convenient end tab of tape remains ready for each new use.

"Scotch" No. 33 in the dispenser pack is available at no extra cost through electrical distributors. The 3/4-inch x 66 ft. roll also continues to be available packed in the traditional metal can.



A NEW "GOLD MEDAL"

line of high performance antennas is being introduced on a nationwide basis by Channel Master. Top antenna in the line is the new "Crossfire," most powerful home TV antenna ever developed. Designed for optimum broad-band reception in deep fringe areas, the Crossfire series, and other antennas in the "Gold Medal" line will be distinguished by a special gold coloring from Channel Master's new E*P*C* process which combats corrosion and adds to antenna life.

For single-channel reception in fringe areas, Channel Master is introducing a new Z-Match Golden Super Yagi, which gives up to 50% more picture-pulling power through new design concepts, including re-engineering of crossarm lengths.

More than 50 Channel Master antennas for all purposes—TV and FM—will be treated with the special E*P*C* coating, which combats rust and corrosion. Used to protect rockets, missiles

and jet planes from atmospheric impurities, thermal shock, corrosive fuels, etc., E*P*C* insures "Gold Medal" antennas of long life and superior performance. The E*P*C* coating is "self-healing" and will spread a protective film over surfaces that have been scratched or marred. The E*P*C* coating also improves electronic performance of antennas since it acts as a conductor, and the coating does not have to be removed from contact points on the antenna.

THE JFD ELECTRONICS

Corporation has introduced a new "S" FM antenna and antenna kit to round out its extensive line of antennas in the 88 to 108 MC range.

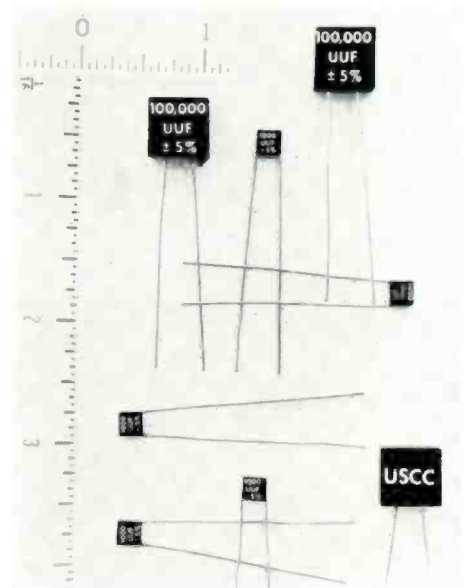
All-direction high-fidelity reception is attained through accurate forming of the tuned dipole in an "S" configuration. Signal at the terminals shows no frequency discrimination regardless of the transmitter direction.

One-half inch seamless aluminum construction assures rugged performance. One-piece design simplifies installation. Anodized in a lasting gold finish, the antenna is attractively packaged in a "carry-home" carton, and includes, "easy-to-follow" instructions, making installation by the service dealer or "do-it-yourself" a simple matter.



CHANNEL MASTER

has introduced a new array of special purpose portable transistor radios to extend its existing line to 15 models in all price ranges. They range from a high-powered FM/AM ten-transistor set for music lovers, to a clock-alarm, standard broadcast, short wave combination for those who like to roam the airways of the world while dropping off to sleep. The Channel Master transistor radio line now goes from small shirt-pocket sets little bigger than a cigarette pack to handsome portable table models for dual use in the home and out of doors.



U.S. CAPACITOR

Corporation have introduced a vastly superior Ceramic Capacitor according to their announcement. Wider temperature ranges up to 175 degrees C, values from 47 mmf to 100,000 mmf, lead materials that can be either spot welded or soldered and fixed parameters for each value are some of the new concepts incorporated into their Ceramic Capacitors as standard items. These innovations will enable U.S. Capacitor Corporation's product to be used on a wider scale of application than hitherto has been possible in the field of Ceramic Capacitors. All U.S.C.C.'s Ceramic Capacitors are built to meet and exceed requirements of MIL-STD-11015B and EIA, SMC-1.

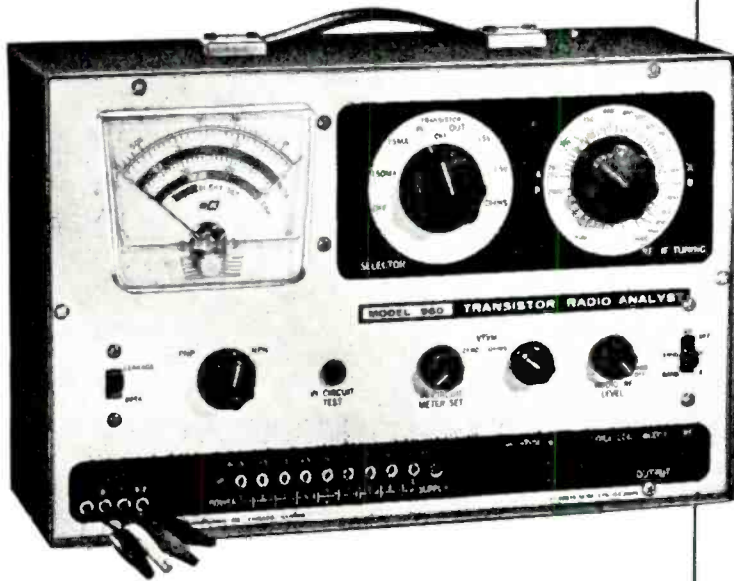
A NEW LINE

of non-polar, solid tantalum capacitors in 40 ratings and in four miniaturized case sizes has been introduced by the Rectifier-Capacitor Division, Fansteel Metallurgical Corporation. The non-polar capacitors are designed for 1) a-c circuit operation where no direct voltage bias exists, 2) fluctuating d-c polarity circuits and 3) d-c circuits having superimposed a-c ripple. They consist of two standard Fansteel Type STA capacitors of identical value, connected back-to-back in an integral case.

Designated Type STAN, the capacitors have ratings ranging from 0.016 to 165 uf at 120 cps, 25° C ambient. Maximum peak voltage ratings range from 6 to 35 volts for continuous operation at temperatures from -55° C to +125° C, with linear voltage derating to 67 per cent above 85° C. Standard production units are available in either ±10 or ±20 per cent tolerance and in either insulated or uninsulated cases.

New TRANSISTOR RADIO ANALYST

makes it Easy and Profitable to Service all Transistor Radios



B&K Model 960

TRANSISTOR RADIO ANALYST

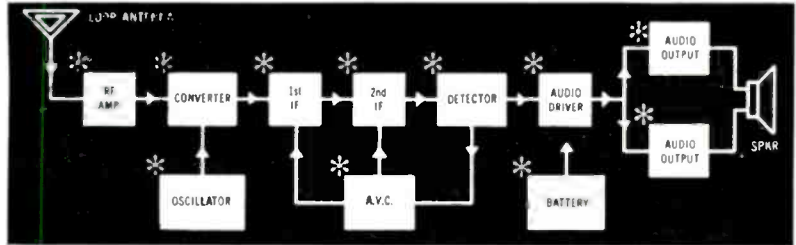
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Single-Point Probe—and Built-in
Metered Power Supply and VTVM

Complete Transistor Radio
Service Shop in One Instrument

Signal-Generator, Power Supply,
Milliammeter, VTVM, Battery Tester,
Ohmmeter, and Both In-Circuit and
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All in One

Check all circuits - Pinpoint any trouble ... in minutes

Now you can profit from transistor radio servicing! This amazing new B&K "960" ANALYST gives you *everything* in one complete easy-to-use instrument. Makes transistor radio servicing *quick and easy*. Nothing else is needed except the transistor radios themselves waiting to be serviced. Brings you new customers for service, parts, and batteries. Makes this new business *yours*.



EASILY TROUBLE-SHOOT ANY STAGE BY UNIQUE POINT-TO-POINT SIGNAL INJECTION

The ANALYST gives you a complete signal-generating source for point-to-point signal injection. Easily enables you to trouble-shoot any transistor radio—check all circuits stage-by-stage—isolate and pinpoint the exact trouble in minutes.

Supplies modulated signals, with adjustable control, to check r.f., i.f., converter, and detector. Supplies audio signal to check audio driver and audio output. Provides unmodulated signal to test local oscillator. Provides separate audio low-impedance output for signal injection into loudspeaker voice coils to check speaker performance.

BUILT-IN METERED POWER SUPPLY FOR EASY SERVICING

Makes it easy to operate radio under test, while you inject your own signals. Provides from 1 to 12 volts in 1½ volt steps. Supplies all bias taps that may be required.

SIMPLIFIES IN-CIRCUIT TRANSISTOR TEST WITH NEW DYNA-TRACE SINGLE-POINT PROBE

Unique single-point probe needs only the one contact to transistor under test. No longer are three wires required to connect to emitter, base, and collector. Gives fast, positive meter indication. Saves time. Makes trouble-shooting simple and easy.

BUILT-IN VTVM

Includes high-input-impedance vacuum-tube voltmeter, which is so necessary for transistor radio servicing.

TESTS ALL TRANSISTORS OUT-OF-CIRCUIT

Meter has "Good-Bad" scale for *both* leakage and beta. Also has direct-reading Beta scale, calibrated 0-150. Assures quick, accurate test. Also automatically determines whether transistor is NPN or PNP. Meter is protected against accidental overload and burn-out.

Model 960. Net, \$99⁹⁵

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PAUL GARRISON NEW G.M. OF TACO

Sherburne, New York—Paul Garrison has been appointed General Manager of Technical Appliance Corporation (Taco) according to an announcement made by Sidney Harman, President of Jerrold Electronics Corporation. Technical Appliance Corporation, a wholly owned subsidiary of Jerrold, is a leading manufacturer of radio, microwave, and television antennas for consumer, industrial and military markets. Within the past five years, it has extended its activities to the design, manufacture and marketing of commercial microwave antennas and specialized antenna systems for the government's space and missile programs.



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BUY, SELL, TRADE, HIRE HERE

BUSINESS OPPORTUNITIES

SUCCESSFUL T.V. Radio Service Shop. Est. 10 year. Across from Safeway. Air conditioned. Have sub. tenant paying \$50 monthly. Three year lease. Tube stock & fixtures. Test Equipment as selected. Moving North. Call: HI 7-6519, Arcadia, Cal.

BUSINESS OPPORTUNITY

Nationally known Closed-Circuit Television and Two-Way Radio Distributorship for sale. For information write Box 15Q320, 4041 Marlon Ave., Los Angeles 8, Calif.

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Figure approximately 6 words to the line.

RATES: \$.95 Per Line. Minimum five lines.

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30-second story on the WISE BUY in picture tubes



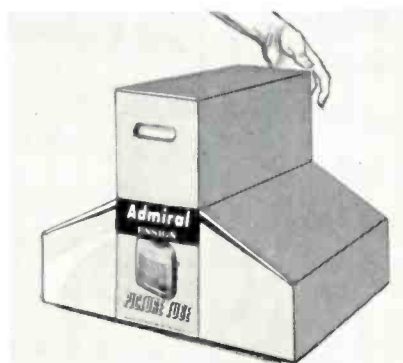
Make \$2⁸⁵ to \$16⁰⁰ more profit on a 21" Admiral Ensign

Now Admiral's vast purchasing power and national distribution give you the one picture tube line with everything: Finest quality workmanship and material... famous brand-name acceptance... attractive list prices... plus the biggest profit margin in the industry.

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NOTICE: All materials and parts used in the manufacturing of Admiral Ensign tubes are new, except for the envelope, which prior to re-use, was carefully inspected to meet the standards of the original new envelope.



NEW Admiral Tube Carton
Remarkable new package is lighter, stronger... has built-in carrying grips... takes 40% less space! Another Ensign "Extra."

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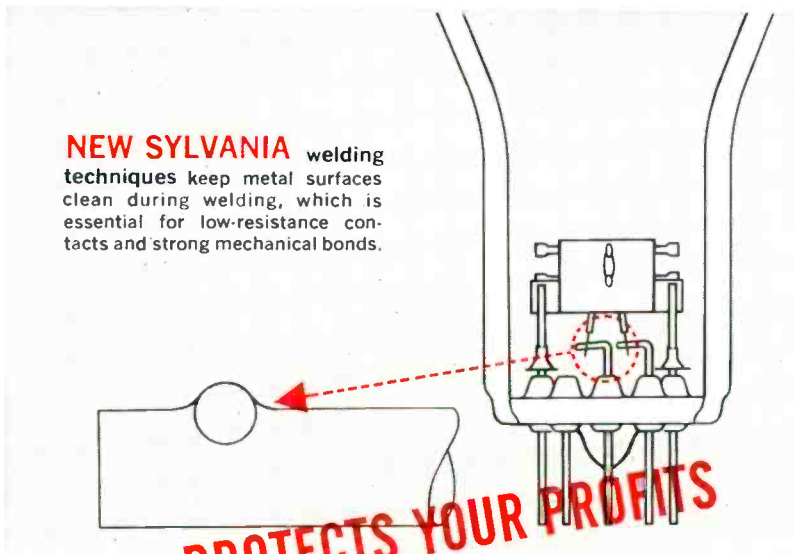
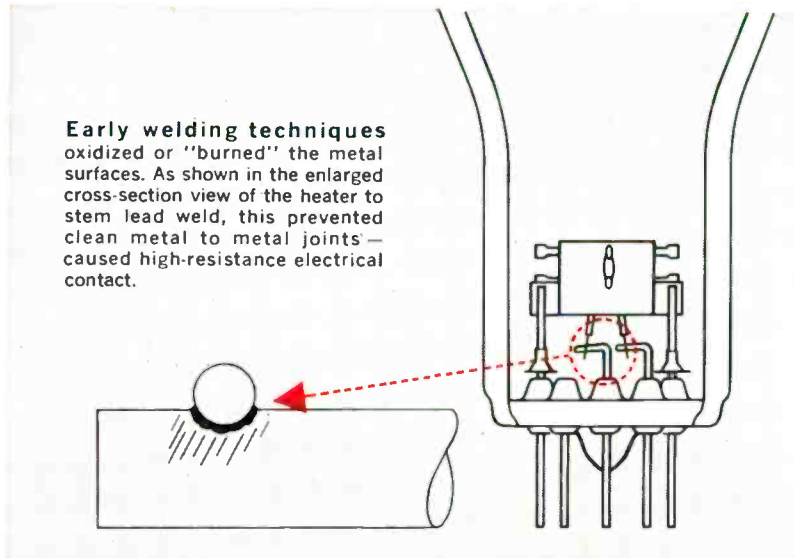
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