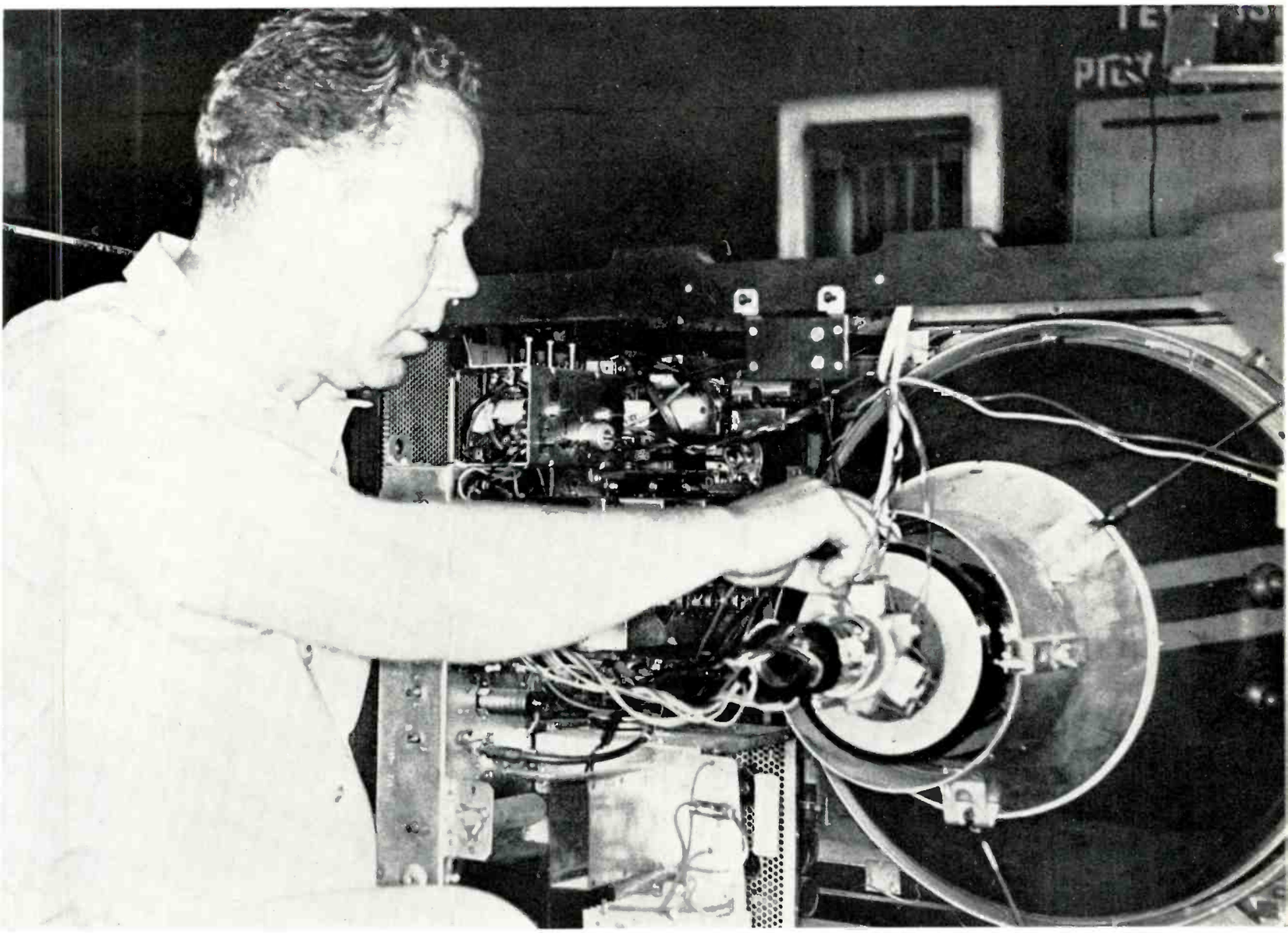
MODERN
electronic service dealer
THE OFFICIAL PUBLICATION OF THE CALIFORNIA STATE ELECTRONICS ASSOCIATION

VOL. 2, NO. 11 MARCH, 1963



Inglewood Dealer Dave Garner Asks . . .

COLOR CRT REPLACEMENTS—METAL OR GLASS?

Page 15

AS OF OCTOBER 22, 1962—THE

(*it ended the day JFD introduced the Log-Periodic LPV $\frac{L_{(n+1)}}{L_n}=\tau$ TV antenna)

Wave goodbye to all the Rube Goldberg contraptions with their "Chinese puzzle" combinations of collectors, directors, reflectors.

Now you can solve **any** reception problem with **one** compact, precisely-engineered antenna—the **first** TV antenna based on the geometrically-derived **logarithmic-periodic** scale developed by the Antenna Research Laboratories of the University of Illinois for the U.S. Air Force.

Because it is inherently frequency-independent, the JFD Log-Periodic LPV delivers **the same superb performance on every VHF channel**—performance comparable to that of a single channel Yagi. And delivers it not only in black-and-white, but in Color, and you get FM stereo too!

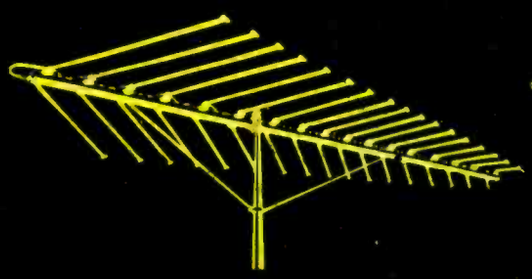
THE LOG-PERIODIC LPV ACTUALLY **TUNES ITSELF** TO EACH RECEIVED FREQUENCY—RESULTING IN:

- **HIGHEST** GAIN—as high as 14 db. in the LPV 17!
- **SHARPEST** DIRECTIVITY—on high bands as well as low!
- **HIGHEST** FRONT-TO-BACK RATIO—up to 35 db.
- **LOWEST** VSWR—as low as 1.2 to 1—with constant impedance across the full bandwidth!
- **FLAT** RESPONSE ACROSS BOTH VHF BANDS—with greater gain on the high band, where it's needed most (average increase of gain in high band over low band: 3¼ db.)!
- **BROADEST** BANDWIDTH—thanks to its unique frequency-independent characteristics!

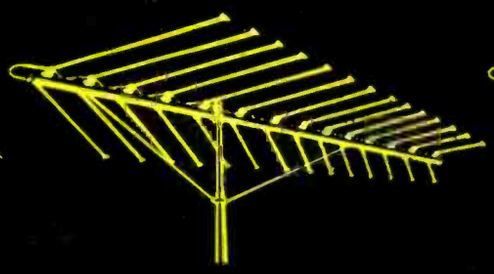
FOR THE FIRST TIME ONE SCIENTIFICALLY FORMULATED ANTENNA CONFIGURATION SATISFIES ANY LOCATION DEMAND:

Harmonically resonant V-elements operate on the Log-Periodic Cellular Principle in the Fundamental and Third Harmonic Modes for unprecedented performance —in color—in black and white—in FM STEREO

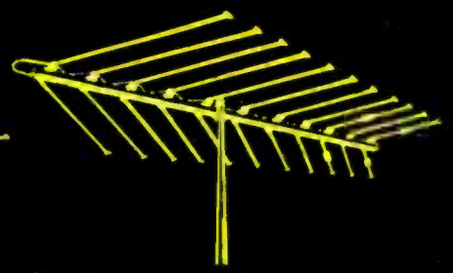
developed by the Famous Antenna Research Laboratories



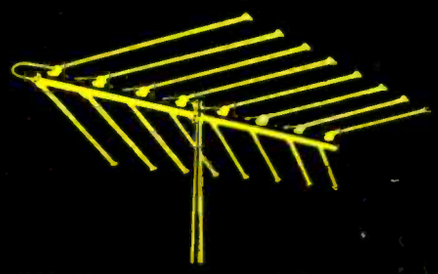
LPV-17: 15 Active Cells and Director System—up to 175 miles



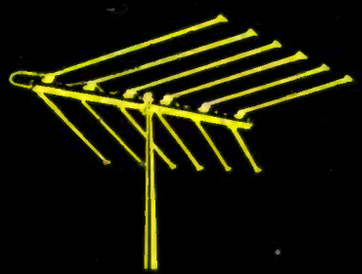
LPV-14: 13 Active Cells and Director System—up to 150 miles



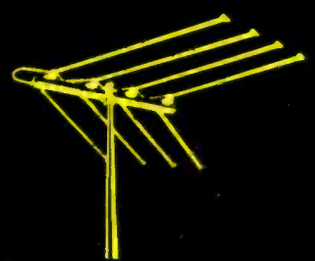
LPV-11: 9 Active Cells and Director System—up to 125 miles



LPV-8: 7 Active Cells and Director System—up to 100 miles



LPV-6: 6 Active Cells—up to 75 miles



LPV-4: 4 Active Cells—up to 50 miles

Adapted to TV and FM Stereo by JFD

✓ ELIMINATES THE NEED FOR AREA-DESIGNED ANTENNAS

✓ 100% PREASSEMBLED "FLIP-QUIK" ASSEMBLY

✓ MASSIVE TANK TURRET BRACKETS THAT DOUBLE-LOCK ELEMENTS

✓ AAA† GOLD BOND ALODIZED TO KEEP THAT BRAND NEW LOOK

✓ EXTRA-RUGGED, DOUBLE-REINFORCED IN EVERY DETAIL

✓ LIGHTEST IN WEIGHT PER DB GAIN

✓ WIND-TUNNEL TESTED CONSTRUCTION

✓ LEAST SNOW AND ICE LOADING

†Attractive, Anti-corrosive Armor

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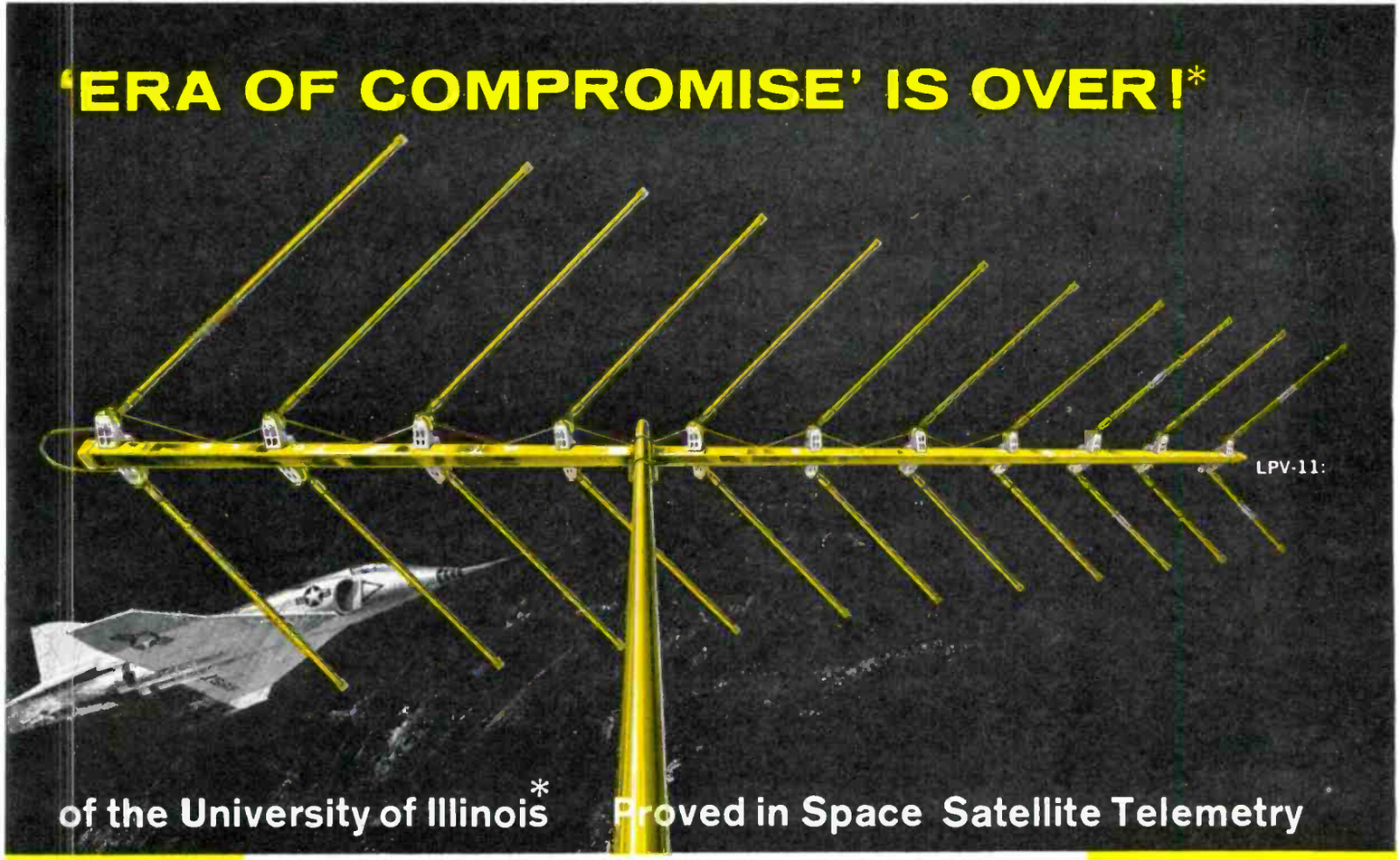
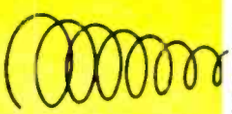
'ERA OF COMPROMISE' IS OVER!*

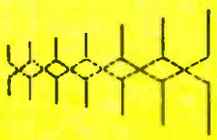


of the University of Illinois* Proved in Space Satellite Telemetry

HOW THE LOG-PERIODIC LPV MAKES ALL OTHER ANTENNAS OBSOLETE



The JFD LPV antenna is a direct descendant out of the logarithmic conical spiral antenna used on the Transit satellite. This basic design is FREQUENCY INDEPENDENT—it works like a conical waveguide to yield almost constant gain, matched impedance and a unidirectional polar pattern across an extremely wide band of frequencies.



Dipole version of spiral antenna has elements whose length and spacing is determined by formula derived from conical spiral geometry, so that antenna acts like a spiral with parts of coils missing. A logarithmic scaling multiplier ties the dipoles together into active multi-element cells for each frequency. Crossed phasing harness inserts a 180 degree phase shift between dipoles that cancels signals from rear, reinforces signals from front.

JFD's LPV antenna for TV and FM goes one step further—increases gain and front-to-back ratio while maintaining frequency independence. Forward V-ing of elements shrinks rear radiation lobes, narrows forward beam for sharp directivity, helping to eliminate ghosts and adjacent channel interference. Forward V also permits low band dipoles to contribute to high band gain by operating on the third harmonic mode.

For example: Operation of the JFD LPV-11 on the low band: The larger dipole cells resonate to the low band TV frequencies at their fundamental wavelength. Within each cell, one dipole absorbs the greatest amount of signal for any particular channel, adjacent dipoles pull in 60% more and the next two dipoles add 30% more signal. Many active dipoles working on each channel with constant impedance guarantee high gain.

– – – – *indicates current distribution on fundamental mode.*

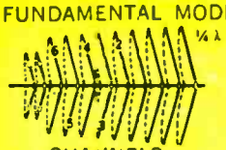
On the high band: The third harmonic cell forms at the rear of antenna for channel 7 and as the frequency increases toward channel 13, the active region moves toward the apex of the antenna. It is this third harmonic operation which guarantees as much as 3¾ db. additional gain. Continuous and co-linear directors sharpen forward pattern and give peak performance across the entire VHF TV band.

– – – – *indicates the current distribution for the third harmonic mode which will be received on all elements.*

. . . . . *indicates the active region for channel 10, i.e., the different efficiencies with which the elements of the LPV-11 act on channel 10.*

The actual gain curves measured for the LPV-11 in the JFD Antenna Research Laboratories confirm this fact: Within the band for which it is designed (the principle will also be adapted for UHF and other uses), the log-periodic LPV's impedance, polar patterns and front-to-back ratio are virtually constant—with gain for each channel as high as that furnished by a comparable-sized single-channel Yagi.

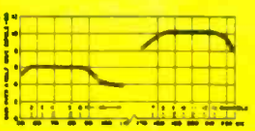
FUNDAMENTAL MODE



CHANNELS

THIRD HARMONIC MODE

CHANNELS



Each antenna in the LPV series consists of an array of resonant V-dipoles and crossed phasing bars, constituting a group of "cells." The size of each cell differs from the one before it by a Logarithmic factor. For any particular frequency, the active portion of the antenna centers on the resonant dipole (equal to one-half wavelength at that frequency), with the adjacent elements also absorbing significant signal energy. The resonances of adjacent cells overlap, so that as the frequency increases or decreases, it is transferred smoothly from one cell to the next.

In effect, the signal is passed along as the frequency increases—the active area moving toward the apex or small end—until, as the fundamental harmonic reaches one end, the other end approaches resonance in the third harmonic. Conventional wide-band antennas are like rows of compartments, one for each channel desired, with sharp cutoffs. The log-periodic antenna is like a continually moving belt that accepts smoothly any frequency that hops aboard.

*U.S. Patents 2,958,081—2,985,879—3,011,168. Additional Patents Pending. Produced exclusively by JFD Electronics under license to University of Illinois Foundation.

SEE THE JFD LOG-PERIODIC LPV AT YOUR JFD DISTRIBUTOR NOW—AND BE THE FIRST ONE IN YOUR AREA TO INTRODUCE AND PROFIT FROM THIS NEW ERA IN TV RECEPTION.

THE BRAND THAT PUTS YOU IN COMMAND OF THE MARKET

JFD

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JFD International, 15 Moore Street, New York, N.Y.
JFD Canada, Ltd., 51 McCormack Street, Toronto, Ontario, Canada
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Chico - Merced - Modesto
Pittsburg - Walnut Creek - Fresno

RADIO PRODUCTS SALES CO.
Los Angeles

WHOLESALE ELECTRONICS SUPPLY CO.
Ventura - Santa Barbara

WESTERN RADIO & TV SUPPLY, INC.
San Diego

MODERN electronic service dealer

VOL. 2, NO. 11
MARCH, 1963

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

FEATURE ARTICLES

TECHNICAL SECTION

DEALER NEWS

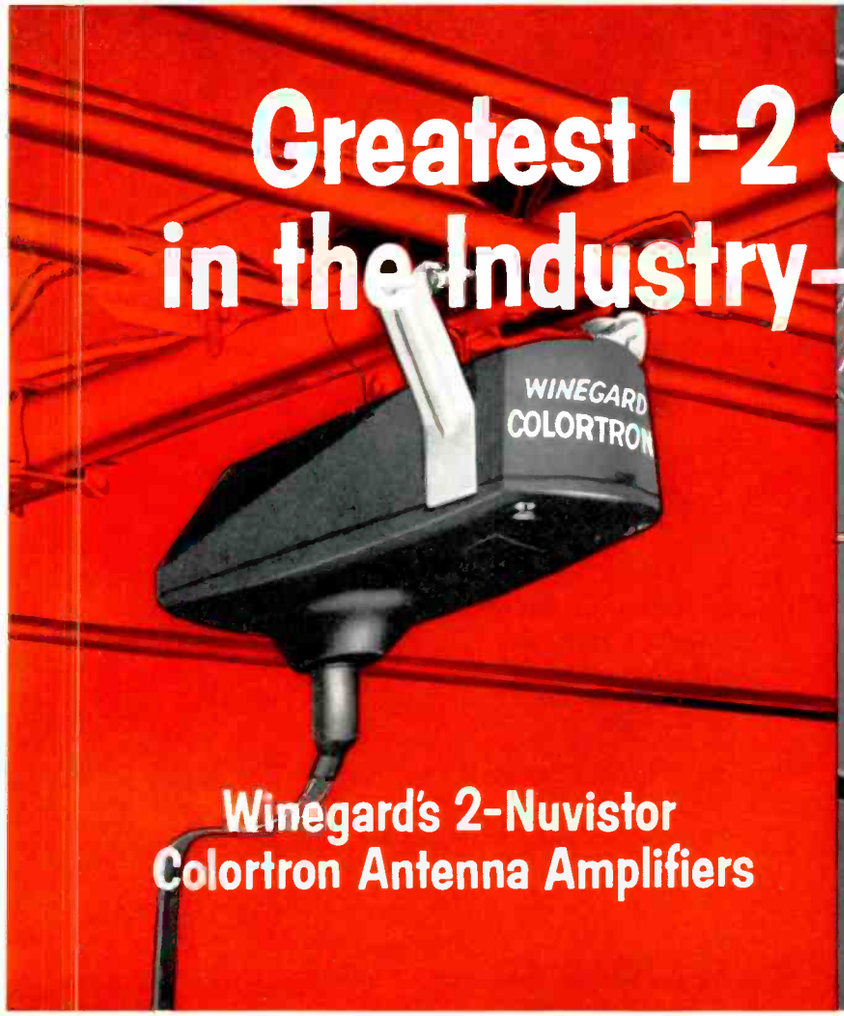
DEPARTMENTS

SPECIAL FEATURES

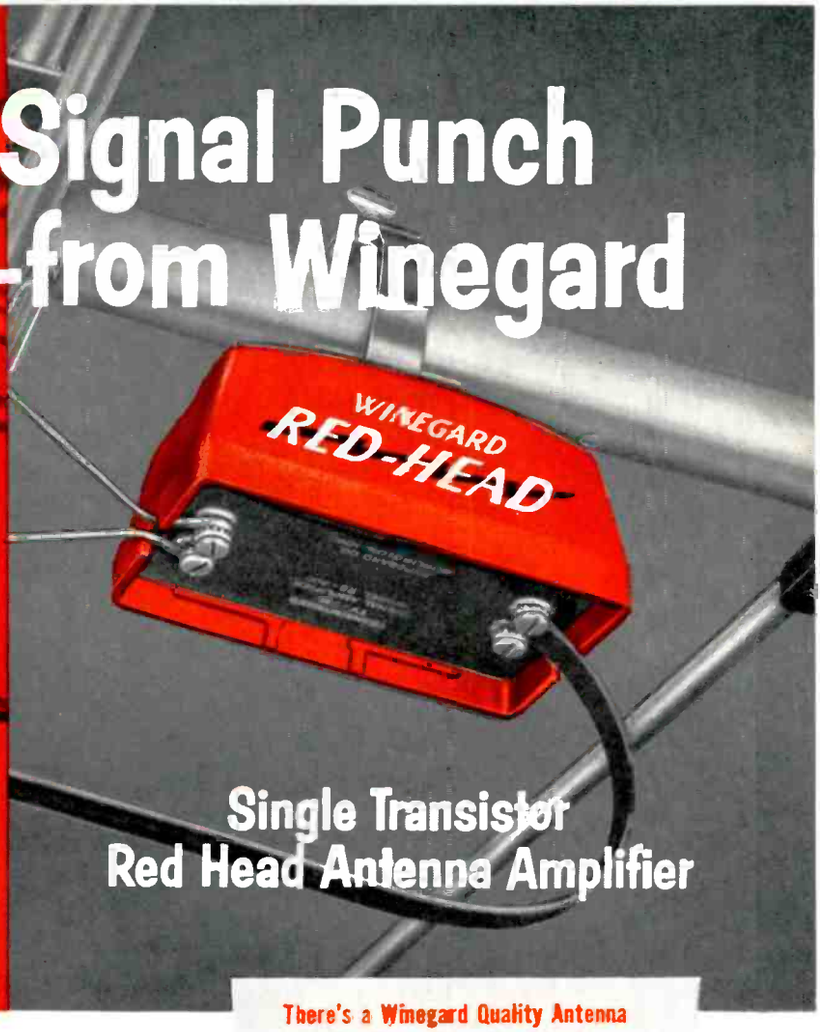
COVER

Pictured on this month's cover is Mr. Dave Garner of Dave's TV, 818 Centinella, Inglewood, California. His question of whether or not to use glass CRT's as replacements for Metal is an interesting one that more and more dealers are going to face within the near future. The problems and pitfalls are discussed in this article.

Greatest 1-2 Signal Punch in the Industry—from Winegard



Winegard's 2-Nuvistor Colortron Antenna Amplifiers



Single Transistor Red Head Antenna Amplifier

Take your choice of Winegard's 2-nuvistor Colortron or single-transistor Red Head antenna amplifiers — both great — both trouble-free! Both work with any TV or FM antenna. Here's the story!

COLORTRON ANTENNA AMPLIFIER . . . ONLY $39.95 • EXCELLENT FOR COLOR • WON'T OVERLOAD • TAKES UP TO 400,000 MICROVOLTS OF SIGNAL

FINEST ANTENNA AMPLIFIER MADE . . . Because the COLORTRON amplifier takes up to 400,000 microvolts of signal input, strong local signals won't overload and cause interference on distant fringe stations. It takes 20 times more signal input than any transistor antenna amplifier and without compromising its ultra low noise ability to pull weak signals out of the snow.

A special "lifesaver" circuit gives the 2 nuvistors an expected life of 5 to 8 years. It's the only amplifier that's completely weather-proof —nothing exposed, even terminals are protected. Install it and forget it! Fits any TV or FM antenna.

RED HEAD TRANSISTOR MODEL . . . ONLY $29.95 • FOR COLOR AND BLACK & WHITE • MOST RELIABLE TRANSISTOR ANTENNA AMPLIFIER EVER MADE.

With the Red Head, you won't have transistor "pop-out" because of its special advanced circuit that protects against lightning flashes, precipitation static and power line surges. Has high pass interference filter, 2-set coupler, fully AC—no polarity problems. Tremendously effective in remote areas where all signals are less than 20,000 microvolts. Uses latest low noise MADT transistor. Bright red amplifier housing gives lasting product identification. The Red Head supersedes Winegard's famous MA-300 amplifier.

For TV or FM—Model No. RD-300, single transistor, takes up to 20,000 microvolts, 300 ohm input and output, $29.95 list.

Colortron Amplifiers are Available in 2 Models for TV

FOR TV—Model AP-200N—twin nuvistor, takes up to 400,000 microvolts, input 300 ohm, output 300 ohm, $39.95 list.

FOR TV—Model AP-275, twin nuvistor, takes up to 400,000 microvolts, input 300 ohm, output 75 ohm, $44.95 list.

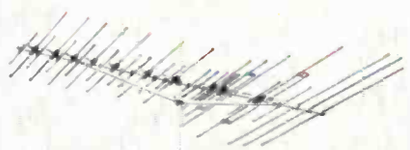
Stereotron Amplifiers are Available in 2 Models for FM

FOR FM—Model AP-320, twin nuvistor, takes up to 200,000 microvolts, input 300 ohm, output 300 ohm, $39.95 list.

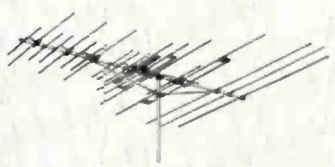
FOR FM—Model AP-375, twin nuvistor, takes up to 200,000 microvolts, input 300 ohm, output 75 ohm, $44.95 list.

Write for technical data or ask your Winegard distributor.

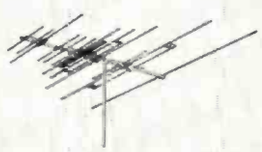
There's a Winegard Quality Antenna for Every Reception Need



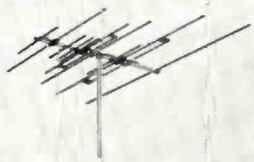
COLORTRON ANTENNA
Model C-44 • Gold Anodized • $64.95



COLORTRON ANTENNA
Model C-43 • Gold Anodized • $51.90



COLORTRON ANTENNA
Model C-42 • Gold Anodized • $34.95



COLORTRON ANTENNA
Model C-41 • Gold Anodized • $24.95

YOU GET AN EXTRA BONUS OF QUALITY AND VALUE FROM WINEGARD

Winegard ANTENNA SYSTEMS

WINEGARD COMPANY • 3024-3 KIRKWOOD BLVD. • BURLINGTON, IOWA

MODERN electronic service dealer

EDITORIALLY SPEAKING

DON MARTIN

PETSHOW RECEIVES MIXED REACTIONS

I don't know how we do it but the Los Angeles Chamber of Commerce should certainly investigate the ability of the Pacific Electronic Trade Show to produce rain. Two in a row record rainfalls is certainly a fete that would rival the Indian Witch Doctors and everyone in California is looking forward to selling our vegetables in Florida this year. However, it was disappointing to the people who worked so hard to produce the show and the net results certainly can be placed in the "mixed reaction" category.

It seems to me that PETS is evolving into a basically dealer show. The evidence this year was even more pronounced with a great majority of those firms participating leaning heavy on the dealer side. The re-action of the dealers who attended was 100% better than in previous years and should lead to an even greater dealer attendance in the future.

The exhibitor's reaction to the show was disappointing in that there were periods of togetherness for them with little viewer participation. The evenings were again the more popular with attendance reaching the maximum around 7:00 p.m. to 9:00 p.m. on all three nights. The vast majority of this late attendance was again in the dealer field.

In our opinion there was a great deal of information available to the dealer trade and anyone who missed it should make a mental note to take it in next year. We are in favor of PETS and sincerely hope it continues to succeed . . . minus the rains . . . in future years.

ADD ON PETS

We were very pleased to visit with Mr. and Mrs. Bud Pritchard of Fallon, Nevada. The couple were introduced to me by George Perry of Kiesub Corp. who told me that the couple had read about PETS in MESD and decided to attend. Bud is the owner of Bud's TV & Electronics in Fallon and brought to my attention a particular problem that may or may not be effecting other dealers in smaller communities throughout the State. His problem has been with the Naval Auxiliary Air Station and 858th AC & W, U. S. Air Force bases near Fallon and the practice of some of the service personnel to go into the TV Service business as a side line. According to Bud, "it seems as though several of these fellows have combined their duty time so that they can offer 24-hour service on TV repair, they have no overhead and have used Government tubes, parts, etc." Fallon, Nevada has a population of 3,500 people and a over-all 20 mile surrounding population that totals about 8,000. There are presently five full time shops serving these people plus the military.

Mr. Pritchard is interested in finding out if anyone else is having a similar problem and would appreciate hearing from them. He can be contacted at Bud's TV & Electronics, 155 Court Street, Fallon, Nevada.

PUBLIC RELATION FLOP ON YELLOW PAGE VICTORY

As most of you know, for months CSEA has been working on a program that would change the Yellow Page regulations in regards to the mandatory listing of a business address. A few months ago this work ended with the passing. by the Public Utilities Commission, of new regulations that will govern this situation.

The need for a CSEA public relations program was never more apparent as the Better Business Bureaus and the APA proceeded to send out news releases that indicated that they had done this job. Our working relationship with these two organizations is very close and through many joint efforts we have been able to relieve the general public of a gread deal of the fraud problems that have existed. However, it still remains that the bulk of the work to regulate business address listings in all Yellow Page advertising stemmed from CSEA with our Association receiving very little credit. It was a great victory and the entire Association can be proud of the part they played in solving one of the basic problems of our industry. It is just a shame that the general public isn't aware of the work that has been accomplished.

CAUTION TO SOUND AND ANTENNA SYSTEM DEALERS

An event of special concern has recently taken place as one Oxnard Dealer is facing the closing of his shop and possible criminal action due to his installation of a sound system in a local school.

Many dealers throughout the state are presently doing a great deal of Sound and Antenna System Installations and unknowingly, may find themselves in a similar situation.

Under the State of California Contractor's License program there is a classification known as "Electronic Contractor" and anyone doing a sound or antenna installation that has a cost of over $100 must be licensed under this section in order to do this type of work.

It seems strange to me that since most contractors, whether electrical or general, have very little knowledge of this type of installation that these categories would be so classified. It also makes little sense to me that a TV dealer must be licensed under the "Electronic Contractor" program in order to do TV antenna system installation work or sound systems and yet there are those who have been opposed to their efforts to become licensed as a group. If any of you are doing this type of work it might be a good idea to investigate your own situation and how it is effected by the "Electronic Contractor" laws.

Fresno CSEA Elects DeLuca New President

Frank DeLuca was recently elected as president of the Fresno Chapter of CSEA. His election came at the annual meeting of the Board of Directors.

Others placed in key positions are; Bob Cobb, vice-president; Frank Mancini, secretary and Al Chesser, treasurer. Fred Mealer was chosen to replace Al Roach as a member of the Board of Directors.

President elect DeLuca asked all members of the group to take a look at the industry and in all ways be an asset to their chosen profession. He went on to comment on the great strides being made in the electronic field and felt that a sincere desire to serve the public should be continued.

The Fresno Chapter has engaged the services of Jimmie Wakefield as Managing Director. He is the former Executive Director of the State Association.

PASADENA GROUP RECEIVES COLOR DIPLOMAS

Diplomas were distributed at the recent meeting of the Pasadena Area Chapter of CSEA. Guest speaker Irv Tjomsland handed out diplomas to those who have completed the Color Class, sponsored by the Pasadena Chapter.

Augmenting the meeting at the VASA Hall was the talk presented by Tjomsland. His discussion was mainly centered around the Calibration of Test Equipment.

CSEA BOARD TO MEET APRIL 7TH

The next Board of Directors meeting of the California State Electronics Association will be held on Sunday April 7th at the Hyatt House next to the Los Angeles International Airport.

Board members are urged to make their own reservations for this date as soon as possible.

Joint Installation Dinner Held For So. Bay Area Chapters

A joint installation Dinner-Dance was held on February 23rd at the Sportsmans Club in Downey for three CSEA chapters and the Long Beach RTA with over 75 members, their wives and guests enjoying the buffet dinner.

Installed as officers in the Los Cerritos chapter were Harold Huffman as President. Walter Rundquist as Vice President and Secretary and Bob Whitmore as the new Treasurer.

From the San Antonio chapter were: Andy Goodwin as President: Burr Deal as Vice President: Fred Bowerman as Secretary and Stan Young as Treasurer.

In the So. Bay Chapter they re-elected Don Reed as the President; Clarence Adams as Vice President; Willard Gravel as Secretary and Jim Hendricks as Treasurer.

The Long Beach RTA has named as their new President Mr. Ray Boswell. Ted McLaren takes over as Vice President and Frank Dishon as Secretary. Harold Barringer is the new chapter Treasurer.

The entire program was M.C.'d by Bob Birdsley of Hurley Electronics in Long Beach. Bob presented plaques to the outgoing Presidents of the four groups including: Harold Huffman of Los Cerritos; Don Reed of South Bay; Frank Kennedy of San Antonio and Fred Ivey of Long Beach RTA.

It was also announced at this meeting that the group will joint sponsor a color and UHF course featuring Tom Clements of Hickok at the Western Club, 15516 So. Western in Gardena on April 3rd. All members and interested parties are invited and there is no charge.

SACRAMENTO CSEA DONATES $40 PER MEMBER TO FIGHT SUIT

The Sacramento Chapter of CSEA has pledged $40 per member towards the cost of the present law suit brought against one of their members and the State Association by a Sacramento Service firm.

The Los Angeles chapter has pledged $100 to this fight and has urged all other chapters to contribute as much as possible. All contributions, whether you are a member of CSEA or not, should be sent directly to the State Office at 3300 Watt Avenue in Sacramento and indicate what it is to be used for. This is a fight for every legitimate service delare in the State and is not just CSEA business. The only way in which the public can be defended and our industry placed on an ethical plain is through a cooperative effort of the entire industry.

Glendale-Burbank CSEA Chapter Elects Officers

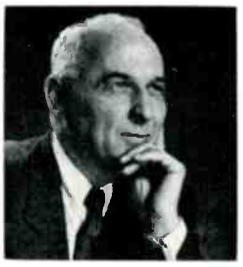
Mr. Earl Sheldon, a representative from Woodman Life Insurance Company, and Mr. Kessinger of Pacific Telephone, served as guest speakers at the last meeting of the Glendale-Burbank CSEA chapter.

A film was shown, and Mr. Kessinger elaborated on how the Telestar was developed, launched in space, repaired in space, and used for transmitting messages and TV programs. Earl Sheldon concluded the discussion, answering all questions on CSEA group insurance.

New officers were elected on Feb. 14, and they are; Buzz Seal, president; Everett Pershing, vice-president; Ralph Singelton, secretary and Jimmy Scarborough, treasurer.

MODERN electronic service dealer

PRESIDENT'S MESSAGE



CLAIRE W. LANAM

Sometimes our opposition is open and brutal in a powerful arrogance that exhibits their belief that they are powerful. Sometimes it is soft and subtle in an attempt to lull us into a sense of well-being.

We are

1. Attempting to better all standards in our trade and by doing so we are protecting the consuming public by the means that we know is safe and sure.
2. Not asking for political favors.
3. Not asking for monetary gain.
4. Willing to pay and carry our load.
5. Asking that the authorities and our opposition be fair, or do they prefer to let the public suffer.

We are asking and it is so little—let us have the tools, the teeth that will make our ideals come true. In some ways we are a small segment of industry, but remember our Radio and Television service business is much larger than Radio and Television sales.

We, in unification, are in command of a vast network of public information, at some time all of us have an entry into all homes, any word from us on a subject that is to their benefit and obviously fair, will be well received.

Opposition will bring our unification. It is time that we move in unison and notify our opposition of our intentions so that the authorities may get a true perspective. Let's put teeth in our regulations or throw them all out. Let's notify those who arrogantly try ot tell us what to do, that we have the capability to oppose them and win. We cannot use any method that will be the subject of official condemnation but we can act as individuals. We can select and approve of only the products which we really believe are good and likewise of the companies behind them.

If other groups want cooperation let them back us, not fight us.

Now is the time to lay our plans, subtle or brutal.

ACTRA Holds Installation Dinner

The ACTRA Chapter of CSEA held their annual installation dinner on February 16th at the Renard's of Alameda Restaurant.

Mr. Kent D. Pursel, Chairman, Alameda County Board of Supervisors was the installing officer for the event that saw Allan D. Crawford of El Cerrito Television and Radio Sales became the new President for 1963.

Other officers installed at the same time were: John Edwards, 1st Vice President; Norman James, 2nd Vice President; Fred Rock, Secretary; and Bob Howard as the new Treasurer.

The evening was open to everyone in the industry and many non-members, Distributors and friends took part in the event that included a prime rib dinner, cocktails and dancing.

Whittier Chapter Elects Orico President

The Whittier Chapter of CSEA recently elected their new officers for 1963. The new president of the group is Mr. Eugene Orico. Mr. George Pensolle was named as the new Vice President and Donald Doyen as Secretary. Mr. Joseph Monck was named to the office of chapter Treasurer.

ZONE "F" OFFICERS RE-ELECTED FOR "63"

The Zone "F" Council, at their February meeting, re-elected the entire slate of officers for the coming year.

Mr. Hugh Wilkins was named as chairman with Everett Pershing retaining the position of vice-chairman and Harry Kiyomura as Treasurer. Mr. Al Aird, last year's secretary was forced to resign his position and Mr. Virgil Gaither was named as the new Zone Secretary.

CHAPTER No. 1 DINNER-DANCE BIG SUCCESS

The El Rancho Hotel in Sacramento was the scene of a dinner-dance, Jan. 26. The gala event was sponsored by the Sacramento Chapter #1 of CSEA.

Chapter #1 hosted the CSEA President and Board of Directors, along with 40 members and their wives.

Introduction of CSEA guests to the general membership was the main purpose of the event.

A speech concerned with the life of a service man was also presented by the local Chapter president.

Board of Delegates To Meet In Fresno March 24th

Mr. Ron Kealey, Chairman of the Board of Delegates has announced that the semi-annual meeting of the Board of Delegates will be held on Sunday March 24th at the Town and Country Motel in Fresno.

Mr. Kealey also pointed out that the first order of business is the discussion of the proposed by-laws change that would demand an annual election of officers at a convention. At the last meeting, delegates were asked to consider these by-law changes and indicate to Hugh Wilkins, the originator of the proposed change, their desires. All chapters are requested to discuss the proposal and to instruct their delegates how to vote on the issue.

Dues Increase Discussed by Zone "F" Council

The proposed dues increase for all Zone "F" members was discussed at the February meeting of the Zone. Under the proposal, the dues would be increased from the present 83¢ per month to $3.00 per month with the funds to go into an all out public relations program as well as to establish a sound zone office.

Since all delegates had not contacted their chapters and since there seemed to be some confusion, action was deferred until the next meeting in March. The Council did take action that would amend the dues increase, if it is o.k.'d by the chapters, to allow up to half of the amount collected $1.50 to be refunded to the outlying chapters for their own program. This was passed and will go into effect when the dues are increased.

CHAPTER OFFICES
SAN DIEGO #13
3318 Idlewild Way
274-2320
San Diego 17
NORTH COUNTY #18
930 S. Santa Fe Ave
Vista, Calif.

California State Electronics Association

SAN DIEGO NEWS

NEXT MEETING
CHAPTER 13
To Be Announced
CHAPTER 18
TO BE ANNOUNCED

VOL. 2, NO. 6 MARCH, 1963 Editor: ED FORT, JR.

Summer Bowling League Being Formed

It will soon be time to start organizing our summer bowling teams. Since everyone had such a good time last year it was felt that there might be enough interest that we could form a full league. We would need only about eight to ten sponsoring shops. The members of each team would not necessarily have to be in our industry. This means if you are currently sponsoring a team in a winter league they could represent you in this league also. If there are any individuals who wish to bowl just call the office and we'll get you on one of the teams.

SAN DIEGO BUSINESS INDEX HITS 92% IN JANUARY

Color and Transistor Sessions Slated For April 1 and 2

Put a red circle around the dates of April 1st and 2nd. These are the dates of the color transistor presentation sponsored by Hickok. April 1st Mr. Shumway will be in north county and in San Diego on the 2nd. C.S.E.A. will co-sponsor both lectures with Hurley's in North County and Radio Parts in San Diego.

This should be an evening well spent. I've had an opportunity to ask a few of the fellows up north just how good this was, and the replies indicated that no one had been disappointed. Mr. Shumway dispenses a maximum of information with a minimum of commercials. His approach to the servicing problems is as a technician instead of as an engineer. You will receive notice as to the exact time and location of each meeting.

San Diego Chapters Make Donations To "War Chest"

At the last board of directors meeting of both the San Diego and North County Chapters authorization was given to send donations to state for our public relations fund. $200 was sent from the San Diego and $75 from North County Chapter. This money will be well spent. There are some unscrupulous forces doing their best to break C.S.E.A. and to discredit what we stand for. This is one of those times when second best is not enough. We must win.

1963 EXPIRATION CODE DATES FOR RECEIVING TUBES

Expires	Standard*	RCA	Raytheon	Sylvania
MAR. 31	62-13	MQ	K-20	JD
APRIL 31	62-17	MR	K-18	JE
MAY 31	62-22		K-16	JF
JUNE 30	62-26	MT	K-14	JG
JULY 31	62-30	MU	K-12	JH
AUG. 31	62-35	MV	K-10	JJ
SEPT. 30	62-39	MW	K-08	JK
OCT. 31	62-43	MX	K-06	JL
NOV. 30	62-48	MY	K-04	JM
DEC. 31	62-52	MZ	K-02	KA

*STANDARD—The EIA standard four digit code number system is used by many brands. The first two digits indicate the year. The remaining two digits identify the month by referring to a week of the year included in that month. Brands using this system include: C.B.S., G.E., Philco, Westinghouse, Zenith.

SIGN UP

for more business

with colorful service signs from RCA

RCA signs for service technicians:

- Identify your business
- Call attention to your services
- Dress up your shop or truck
- Associate you with the prestige and customer acceptance of RCA—the most trusted name in electronics

Metal Outdoor Hanging Sign—double-faced with hanging bracket, 40″ x 28″. (1A1275)

Metal Wall Sign—big 40″ x 28″ size. (1A1276)

All-Purpose Panel Sign Kit—for wall, truck, anyplace. Contains two 40″ x 14″ signs. (1A1278)

Metal Flange Sign—18″ x 12″—for outdoor-indoor display. (1A1277)

Decal—12½″ x 8½″—for wall, window, door, or truck. (1A1279)

Another Way RCA Helps You in Your Business

RCA ELECTRON TUBE DIVISION, HARRISON, N.J.

All available from your Authorized RCA Tube Distributor. See him this week.

The Most Trusted Name in Electronics

AUTHORIZED RCA DISTRIBUTORS

DUNLAP RADIO & TV SUPPLY CO.
Serving the "Heart" of California

RADIO PARTS CO.
2060 India St.
BE 9-6112

ANDREWS ELECTRONICS
1500 W. Burbank Blvd., Burbank
TH 5-3536

WESTERN RADIO & TELEVISION SUPPLY CO. INC.
1415 India Street, San Diego
BE 9-0361

Pictured here is the CSEA Booth at the PETSHOW along with some of the members who attended the booth. The map on the right had colored lights representing the different chapters and the sign on the left told the CSEA story. A closed circuit TV was also in operation in the booth and attracted a great deal of attention. Pictured left to right are: Everett Pershing, Ron Kealey, Ralph Johonnot, Hugh Wilkins, Emmett Mefford and Don Reed.

DEALER WORKSHOP SESSION A PETS SUCCESS

The Dealer Workshop Session, held in conjunction with the Pacific Electronic Trade Show, was considered, by over 200 dealers who attended, as one of the most unusual and best ones ever held.

Under the sponsorship of the California State Electronics Association and its chairman Ralph Johonnot, the dealers saw for the first time a 3-inch deep Television Picture Tube that is due to go into production for the Military within the next two years and commercially within the next five years.

In introducing Dr. Willard Geer, Mr. Johonnot pointed out that in addition to his position as vice-president of the Video Color Corp., in Inglewood, he is a Director of the Physics Laboratory at the University of Southern California and has patents and patents pending in low work function cathodes for the minionic diodes, improved thermionic diodes, basic patents on color TV screens, and developments in the field of fluid and vapor orientation of solar energy collectors, fluid and vapor orientation of satellites and magnetic orientation of satellites.

In his presentation, Dr. Geer pointed out that, along with Dr. Ross Aiken another Video Color executive, they expect to produce a working color picture tube within the next few years. That, at the present time, they are producing black and white results on the 3-inch tube but are interested in perfecting the full color tube before releasing it for commercial use.

Because of the highly technical language of his presentation we have asked Dr. Geer to produce an article for a future issue of MESD. He has agreed to do this and it will be presented as soon as possible.

Color Round Table

Following Dr. Greer was one of the most interesting round table discussions ever held. At the same table and on the same program were three representatives of the nation's top color Television producers RCA Victor, Zenith and Packard Bell.

The panel made up of Mr. Charles Wack of RCA, Mr. Harry Hooten of Zenith and Mr. Paul Pekarsky of Packard Bell each presented a 10-minute speech on their particular products. This, in turn, was followed by direct questions from the floor that ended in a two hour panel discussion between competitors on the relative merits of each product and the dis-advantages of each as well. For the first time, to our knowledge an accusation could be made and answered at the same time. From

(Continued Next Page)

Mr. Charles Wack of RCA, second from right, answers a dealer's question while other panel members listen. At the far left is Mr. Harry Hooten of Zenith. Next to him is Paul Pekarsky of Packard Bell, Mr. Wack and Ralph Johonnot, CSEA/PETS Chairman.

STOLEN MERCHANDISE REPORT LIST

Stolen from	Date	Make	Model	Serial No.
Ludlow TV Sales 9335 Long Beach Blvd. Long Beach, Calif.	1/21/63	P.B.	19T9A	155204
Gillon Radio Palmdale, Calif.	11/9/62			
		Z-TV	K2211J	5960942
		Z-TV	K2717W	7007589
		Z-TV	K2109J	5999532
		Z-TV	K2020J	5881509
		Z-TV	K2005F	5956321
		Z-Stereo	KP580C	0268
Powers TV 3619 Cutting Richmond, Calif.	12/8/62	GE	M502XBN	981336
		GE	R608XVY	634356
		GE	M206XON	549527
		Du Mont	Bon Voyage	296033
Leon Block Radio Service 3801 W. Jefferson Los Angeles	1/2/63	Guide Eye Checker		AE 5369
		Eico 6-12V Pwr. Supply		
		Heath Signal Tracer		
		N.V. Pic. Tube Checker		
		Delco Radio		983945
		20 New Motorola Car Radios		
		200-300 Assorted Tubes		
Hoyt's Corner Superette 9700 Main St. Lament, Calif.	2/9/63	Motorola	421T18M	D140294

TEAR OUT AND SAVE FOR FUTURE REFERENCE!

Stolen Merchandise Report Form

Store: _____

Address: _____

Make	Merchandise Model	Serial No.

CLIP AND MAIL

the results of this program, many CSEA chapters are already putting the wheels in motion to set up similar discussions throughout the State.

UHF

The KMEX story was next on the agenda with David Graham explaining the problems of programing, timing, etc., that must bridge the language and custom barriers of two countries. KMEX has uncovered certain problems that are being corrected including a weak signal in the close areas and a strong signal at a distance. This is being corrected and should be eliminated within the next few weeks.

Mr. Bob Snyder of Jerrold then explained the important part that Antenna systems are playing and will play in the future of UHF reception. Many of the present systems will have to be changed over and it is up to the dealers to learn what can be done to convert these and how they can become a part of this market.

State of the Industry

One of the highlights of the Workshop Session was the "State of the Industry" discussion that took place between Mr. Kieth Kirstein, CSEA Executive Secretary, Mr. Vincent Thorpe, Assistant Attorney General, Fraud Division for the State of California and Mr. Robert Mott, representing the Los Angeles Better Business Bureau.

Out of the discussion the most significant comment was made by Mr. Thorpe who stated that "THERE WILL BE A LICENSING LAW" and that anyone interested in their industry had better become a member of some dealer organization in order to have a voice in how it is written. As you know, the Governor has indicated that he will back such legislation in this session and that it will actually be a "Registration of all those engaged in the servicing of domestic electronic products for compensation." Under this law every service dealer well be required to register with the State of California and a board will be set up to hear cases of alleged fraud that could end in the revoking of this registration and criminal prosecution as a misdemeanor.

Mr. Mott of the B. B .B. re-stated the Bureaus stand in regards to fraud in the TV Service Industry and indicated their full cooperation with CSEA and groups of this nature.

A special thanks was extended to all of these gentlemen by the chairman for their participation in this outstanding program. Mr. Johonnot also pointed out that the post card mailing announcing this event should be credited to Andrews Electronics who supported the Workshop 100%. He also indicated that Anderws Electronics and Dean's Electronics were responsible for the payment of the admission charges to the session itself.

An MESD Special Feature
For The New Man

technical section

An MESD special feature

Irv Tjomsland, Editor

Let's Look At The...

SELENIUM — SILICON CONTROVERSY

The "TV SERVICE" sign on the front of your building is new. The shelves and workbench are freshly painted, the test equipment sparkles, and the replacement tube cartons are clean and bright. You are ready for business.

You notice the car as it stops at the curb. Your interest rises as you see the driver open the trunk and remove—a chassis and picture tube assembly—with no cabinet? Yes, and when he deposits it on your counter with the statement: "This job needs some finishing touches: The hard work is done, but there is "a little" something wrong yet. Can you fix it, now?" you start to worry.

You unconciously reach for a cheater cord when you notice the bare AC receptacle. The owner appears to be waiting, so you gingerly plug in the power and look for the switch. Just in time you remember that the inside shaft pulls out, rather than turns clockwise for "On." When you note the momentary flare-up in the heater of one of the tubes you belatedly realize that the receiver belongs to the "Series Filament" family. Sure, and there are the two—no, not Selenium, but Silicon rectifiers.

At this moment the raster appears. It grows rapidly until it covers the face of the CRT, and then continues to expand until you can see signs of corner shadow. The picture has a rather dull, poorly focused look, so you instinctively reach for the Ion Trap, and suddenly you have a very bright picture.

Your questioning look prompts the customer: "It won't stay like that very long. In about twenty minutes it will pull in from the sides, and if you don't turn it off, the light will go out."

You check further. A brand new can type electrolytic seems to indicate that the power supply has been reworked. You gently raise the assembly to lay it on its side for better viewing of the circuitry, and suddenly the new electrolytic lets go with a popping sound and steam hisses as it emerges from the base. You jerk the cheater cord from the receptacle, and turn to the owner:

"Funny, it never did that before," he comments.

"Better tell me what has been done, and by whom," you suggest.

"Well," he begins, "I pick up parts at a wholesale place for the company where I work, so when the picture on this set narrowed down, I asked the counterman what to do. He looked up the circuit and said that I probably needed new rectifiers, and he mentioned that he had a new kind that made the picture wider. He drew a little chart that showed how to take out the two old parts and replace them with this little block deal, but I must have 'goofed' some place because I couldn't make the set come on until I soldered a wire across this brown gadget. Next, the white stuff started to come out of the can, so I took it out and got a new one from the same fellow that helped me the first time."

You make a spot diagnosis: "Something is radically wrong. and I am going to have to make a thorough check before I'll believe that set is not a fire trap." The customer agrees sadly, and talks vaguely of calling you Monday.

DIAGNOSING THE PROBLEM:

When the customer leaves the store you feel free to attack the problem, and you will do well to review the things "you know for sure" before you go much further. As you think back to the customers story, and your own observations, the bits and pieces line up like this:

ITEM 1: The picture was narrow, not oversize, with the original rectifiers. Did the problem start there, or was there other trouble?

ITEM 2: The replacement filter can heated up, when you normally think of the input filter unit running cool.
ITEM 3: The set would run for twenty minutes and then "pull-in" from the sides and the light (raster?) would go out. Did the electrolytic overheat and stop working or is there trouble in the horizontal output circuit?
ITEM 4: The "brown gadget" (fuse type resistor) is jumpered. Is it just a fuse, or does it affect the rectifier system?
ITEM 5: If you have it fixed Monday, will it stay fixed?

As you review the known facts and the unanswered questions you decide to look for information. You remember the "New Man" article in the last issue of the MODERN ELECTRONIC SERVICE DEALER magazine and the promise to help with technical questions. When you make contact with the technical editor you are primed and ready.

QUESTIONS AND ANSWERS:

YOU ASK: Is it practical to install Silicon rectifiers in a chassis where Selenium recifiers were used as original equipment?
ANSWER: Yes, Silicon rectifiers offer many advantages if you take certain precautions when you make the substitution. (You think: The cost of the job just went down a little.)
YOU ASK: What precautions do you recommend?
ANSEWER: Install enough additional resistance between the AC line and the input to the rectifiers to limit B+ at the rectifier output to the same value as that produced by the original Selenium rectifiers as shown in your Photofact folder.

Since the internal resistance of the Silicon rectifiers is much lower than the original Selenium rectifiers, B+ will tend to be much higher and cause over-dissipation trouble. In addition, the lower resistance will permit higher peak charging current to flow in the capacitors which may cause failure of the rectifiers and/or capacitors.

A good method to overcome these problems is to install a second fuse type resistor in series with the original peak limiting unit, and use a size that will reduce B+ to the original value specified. Incidentally, don't forget to establish the bench line voltage to the value indicated on the schematic before making the B+ adjustments.
(You mentally note that you won't have to ask if fuse type resistors are part of the circuit, not just fuses.)
YOU ASK: I never thought that B+ was such a critical factor, or at least I haven't heard it mentioned before. Is there any guide to how much variation is safe?
ANSWER: B+ will vary with changes in line voltage, and most receivers are designed to permit some line voltage variation. If you make circuit changes that affect B+, you will not only cause changes in height, width, brightness, and sensitivity, but you will probably eliminate the ability of the receiver to cope with normal changes in line voltage. Another point to remeber is that for every volt you raise B+ above specification, you can expect the plate current to increase 1 ma in circuits, such as the horizontal output stage. One volt, or one milliampere will not bother, but twenty volts may cause an increase of twenty milliamperes in the flyback and horizontal output stage, and you have set up a fine chance for over dissipation troubles.
YOU ASK: Are you suggesting that the reason the raster would "pull-in" after twenty minutes was due to high B+, and not to other trouble in the flyback circuit?
ANSWER: That question brings up more possibilities than all your problems so far, but when you "know for sure" where you stand on B+ you can make some very valuable sweep measurements. For instance: If width is normal, boost and high voltage close to spec, and you see no signs of "cooked" screen resistors, width coils, or sweep components, you can expect the receiver to operate without too much trouble.

You should remember that a screen voltage test is not very helpful, because the screen circuit tends to act as a voltage regulating circuit, and small changes in screen voltage may not "tip off" large changes in screen dissipation which are usually associated with "pull-in" troubles.

DOING THE JOB

Now that you have some information you attack the problems. First you break out the circuit schematic and you note that B+ should be 260 volts if the total plate current is 220 ma at a line voltage of 117.

You connect your Line Adjusting transformer, and with the help of your new AC meter you adjust for 117 volts.

You disconnect the "steamed out" filter and provide a substitute by using your bench capacitor box. You adjust this to 150 mfd to substitute for the 140 mfd unit called for in the print.

You switch your meter to "DC Volts, 500" and connect it to the output of the rectifier system.

With your hand on the cheater cord you warm up the receiver again.

The meter indicates about 320 volts at first, and gradually drops to 300. 40 VOLTS HIGH! You disconnect power immediately, and remove the jumper on the fuse type resistor. The original 7.5 ohm unit is open so you replace it.

You reconnect the receiver, and note that B+ is now 277. Still 17 volts high, but closer. You install a 10 ohm fuse resistor in series with the 7.5 ohm. B+ drops to 263 and you try two 10 ohm units to find the voltage reading 260, as called for in the schematic.

You disconnect the output side of the filter choke to measure the total current flow. It is less than 225 when the spec calls for 220. Can't be much of an overload any place, you decide.

You turn your attention to the flyback circuit. The raster appears ot over scan about ¾ inch on either side, and you see no abnormal factors such as drive lines. You check the boost voltage. The spec calls for 450 and you find about 460. High voltage should be 12 KV and you measure 12.4. You check the screen: 115, just as called for, but you go one more step and measure the value of the screen dropping resistor while it is hot, and find it to be 18K as it should be.

You decide to experiment a little: You attach your voltmeter to the boost line and momentarily short out the two 10 ohm fuse type resistors, and before you can check your voltmeter you see the picture has increased in size to where it looks like you have a 90° picture on a 70° tube. The meter indicates 495 volts and you have an idea you know why the output stage over-dissipated and "pulled-in."

You check further: You attach your meter to the B+ line and lower your AC line to 110 volts. B+ drops to 250. You increase the line to 125 and B+ rises to 273.

You begin to feel as though you have control of the situation. You restore the line to 117 and with a sharp eye on the set for changes in width and brightness you let it run. When it performs well for an hour, you relax some of your vigilance, but let it finish out the day on the cooking table.

CONCLUSIONS:

The "Do-It-Yourself" type was a parts changer, and all he got for his effort was trouble and expense.

You analyzed the circuit operation, and with a single change (the correction of the resistance in the AC input circuit), you restored the receiver to operation.

By using accurate equipment, and applying the circuit factors you "knew for sure" you proved that a sticky problem was measurable and the results predictable.

Sarkes-Tarzian, manufacturer of rectifiers, has prepared an interesting booklet on Selenium, Silicon, and Silicon Control circuits. A free copy will be sent to you if you will forward your request to the editor at the MODERN ELECTRONIC SERVICE DEALER, 2930 W. Imperial Hwy., Inglewood, Calif.

An MESD Special Feature
Question Of The Month

Inglewood Dealer Dave Garner Asks . . . . . .

COLOR CRT REPLACEMENTS METAL OR GLASS?

QUESTION:

I have an RCA 21-CT-661 in the shop for replacement of the color CRT. I have ordered a more modern glass version to replace original metal 21AXP22. What problems will I encounter in making the conversion?

THE SOURCE:

Dave Garner of Dave's TV, 818 Centinella, Inglewood, shown with the receiver in the cover picture, asked the question. Because of availability and time limitations he had agreed to accept a 21CYP22A instead of the 21FBP22 he had originally ordered.

A QUESTION OF POLICY.

Dave was concerned with the fact that such a conversion appeared to be in conflict with a basic service principle which holds that a serviceman's responsibility is limited to restoring performance to the standard provided by the receiver when it was new and in good working order. In other words: the purpose is to restore operation, not re-engineer the customers equipment.

To conform to this concept he would have to use a 21AXP22A, with a lower light output, and he could expect that some of the problems discused in last month's MESD article "To Bloom Or Not To Bloom" might develop. Would the advantage of the higher light output glass CRT offset the extra work and responsibility for making the change, or would sticky physical and electrical problems make the job unprofitable?

PHYSICAL PROBLEMS:

The physical specifications were compared and found to be as follows:

CRT TYPE	FRONT DIA.	±	LENGTH	±
21CYP22A	20 13/16	1/8"	25 1/32	3/8"
21AXP22	20 9/16	1/8"	25 5/16	

At the first glance the front diameter of the glass CRT looked like a source of trouble, because the glass tube would have to fit the same cabinet mask as the original metal tube, and by spec was 1/4" larger. However, it was noted that the metal tube was enclosed in a liner and boot and the mask was made to receive the whole assembly which had a greater overall diameter than the glass CRT, and the problem disappeared. The length of the two types was similar, and it was apparent that no major yoke relocation, or back panel changes would be required.

In the original installation the CRT is drawn into the mask by means of a Kinescope Mounting Ring and three pull rods. A yoke shield attaches to the ring, and this in turn supports the yoke and provides for positioning adjustment. It was apparent that the original assembly could be used to position the new glass CRT if danger of the metal ring scoring the glass envelope could be eliminated.

The glass bell had some curvature or bulge, instead of having the straight cone sides of the metal CRT and the mounting area was checked for interferinfie..... .... mounting area was checked for interfering brackets, superstructure, etc., which might make the job difficult. None were found.

ELECTRICAL CONSIDERATIONS:

Tube manual data indicated that two anode contact buttons and a 56K resistor would be required for the high voltage feed. The original brass strip contact to the metal CRT looked as though it could be reworked to provide an

(Continued Next Page)

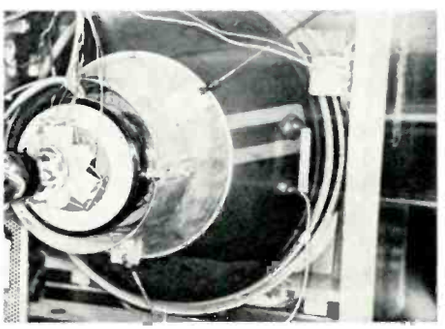


FIGURE 1

aquadag ground.

Specifications for screen, cathode, grid, focus, and other voltages appeared to be similar, and it was decided to by-pass these problems until the new tube was installed.

Before the installation was started the chassis was given a thorough check for poor tubes, rectifiers, and regulator. A horizontal centering pot was replaced and several small tubes were substituted.

INSTALLATION OF THE GLASS CRT:

Mechanically Dave encountered few problems. Part of the original liner was used to protect the glass envelope at the point where the mounting ring made contact.

To others who make the change, Dave offers these suggestions: The glass CRT will fit into the mask indentations and remain centered if the pull rods are tightened properly. If the cabinet is placed, face down, on a blanket and three shims are used to center the CRT in the mask it will be easy to tighten the pull rods in such a way that the yoke housing will center the yoke on the neck of the picture tube, and purity adjustments will be simple.

Fig. 1 shows the receiver with the new CRT mounted, and the vinyl covered resistor can be seen between the anode buttons at the right of the picture.

The magnetic field equalizing assembly was removed, and with minor degaussing, purity adjustments were simple, and results excellent. Convergence took more time, but Dave felt that the glass tube required less effort for the complete convergence job that the metal tube required for touch-up.

All in all, the complete job progressed smoothly and rapidly, with no unusual problems. Brightness, contrast, and color values were improved markedly, and no lack of adjustment range was encountered in screen, background, or focus controls.

COMMENTS AND CONCLUSIONS:

Many servicemen have felt that the "Magnetic Field Equalizing Assembly" irreverently referred to as the "horse collar" provided a mixed benefit in edge purity control. While it is admitted that edge shading could be controlled, or at least changed, by adjustment of the equalizing magnets, the suspicion lingered that these same magnets also introduced part of the CRT envelope magnetication which caused the original trouble. Since this assembly is not used with the Glass CRT an annoying type of customer complaint is permanently eliminated.

A visiting serviceman remarked that the performance of the 1955 model with the new tube was far superior to his later model equipped with a late run of the metal tube.

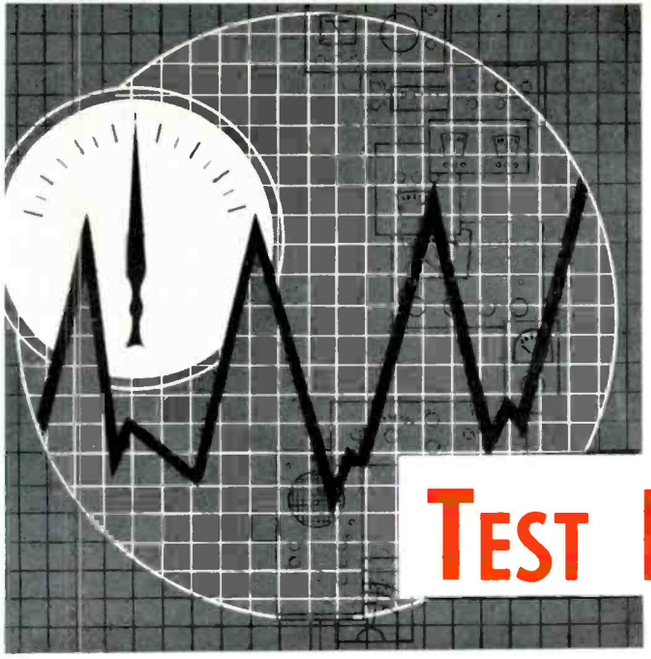
The question will naturally be asked: Would the 21FBP22 (Sulphide) CRT have provided added performance over the 21CYP22A?

The answer would no doubt be determined by the performance of the individual tube. Both use the "Graded" holes in the shadow mask and would tend to respond in a similar fashion to purity and convergence adjustments, but with everything else equal, the Sulphide tube should give substantially more brightness, contrast, and color impact.

As mentioned last month, these advantages become much more obvious when the receiver must compete with daylight or excessive room lighting.

In conclusion, it must be emphasized that color receiver change or conversion should not be attempted without some precautions. It is a very simple matter to become involved in a project where so much special circuitry research is necessary before the job can be delivered that you cannot possibly recover your cost in the customer billing.

In the instance outlined above, Dave was successful, but it must be remembered that he stood ready with a great deal of equipment, experience, and information to attack any unusual problems that might have developed.



TEST EQUIPMENT TOPICS

This Month!

The Impedance Bridge

ONE OF THE LEAST USED—

As long as radio and television servicemen have been in business they have been customers for suppliers of "Little Black Boxes". Some of these devices provide friendly and comforting results: For instance, connect a flyback to one of the more sophisticated items, and almost immediately it will blink "Good" "Good" "Good or "Bad" "Bad" "Bad".

It has been customary to refer to some of the devices, such as the VOM or VTVMs, as the "best known, most used" items in the "Little Black Box" categories.

Now we come to one of the "least known, seldom used" items in the radio and television service fields: The Impedance Bridge.

WHAT IS IT?

A bridge is a device in which an unknown value can be compared to a known value by a "Null" or "Signal Balance" arrangement. In the DC form, the Wheatstone Bridge for instance, the arrangement takes the form of four resistance arms, with the unknown becoming one of the four.

For AC purposes inductances and/or capacitances are arranged in a four leg configuration and an AC signal, frequently 1000 cycles per second, is used to balance the unknown against the known. In the process of determining the inductance or capacitance values, two other AC factors, dissipation (D) or storage (Q) may be determined.

TYPICAL RANGE OF MEASUREMENTS:

Low priced units may provide:

Inductance measurements from 10 microhenrys to 100 henrys

Capacitance measurements from 10 mmf. to 100mfd.

Resistance measurements from .1 ohm to 10 megohms.

Laboratory and higher priced units can be found for many special purposes. Accuracy and range will be related to cost.

SOME SERVICE APPLICATIONS:

Here are a few that come to mind:

An Impedance Bridge can be used to:

1. Detect a single shorted turn in a coil with hundreds of turns.
2. Indicate an oversize, normal, or undersize air gap in a ferrite or laminated iron core.
3. Compare known and unknown flyback characteristics.
4. Check peaking coils for correct inductance.
5. Determine polarity of windings.
6. Provide accurate ratings of very small capacitors.
7. Measure yokes and flybacks for "match" characteristics.

WHO MANUFACTURES BRIDGES:

General Purpose Impedance Bridges are listed by Heath and Eico.

Laboratory and special purpose types are listed by Boonton Radio, Electro Scientific Industries, General Instrument, James Millen, and many others.

WHAT ABOUT THE FUTURE?

As servicemen become more concerned with the AC aspects of receiver circuitry, Bridges will become natural service partners and will make tremendous contributions to more accurate service analysis and, of course, profitable operations.

NEXT MONTH: Test Equipment Topics will present illustrations, data, and high points from a review of latest model Color Bar, and Alignment Generators.

How To Talk . . . . .

ANTENNAS TO YOUR CUSTOMERS

By ROBERT D. RAYNOR
Clearbeam Antenna Corp.

This is the first of a series of articles designed to make it possible for you to explain, in simple language, to your customers basic TV reception problems and the part Antennas play in their correction.

PART 1

The first question most people seem to ask about television is: "How does the picture get from the station to my set when there are no wires connecting them . . . such as in the telephone?"

If we understand that all the telephone wire does is carry electrical energy with varying patterns (which the telephone interprets and converts into sound), we have gone a long way toward understanding how television signals travel from one point to another.

Since we are only sending energy, there are other ways of sending it other than by wire. If you place your hand in the direct sun you will feel a form of energy being sent (without wires) from the sun. Your hand in a sense is acting as an antenna since it is receiving energy and converting it into intelligent information. In this case even if you were blindfolded it would give you a "picture" of whether or not the sun was shining, and how brightly.

Television uses the same method of sending energy from one point to another. The TV station acts as the sun and radiates (sends out) energy. The antenna on your roof acts as your hand in the sun . . . that is, it is sensitive to the energy reaching it. Also, just as the nerve endings in your hand sent information to your brain to tell you how hot or cool the sun was, the antenna on your roof sends information to your TV set which converts it into pictures.

The only important difference between the energy sent out by the sun and that sent out by the TV station is that you can actually see the sun's energy in the form of light. The difference is that just as the human ear cannot hear all kinds of sound (such as dog whistles) the human eye cannot see all kinds of light. Infra red light, X-Rays are just two examples of kinds of light which the human eye cannot see. TV signals are simply another form of light which the eye cannot see . . . but which is present just as much as the sound of a dog whistle is present even if we cannot hear it.

If you will think of a TV station as being a light house sending out a beam of light in all directions and if you will think of the TV signal as being the light from the light house, it will clear up a great deal of the technical mysteries of television. Anything which happens to light happens to TV signals . . . for instance TV signals travel in straight lines . . . they cannot bend or go around corners. Like light, the further away you get the dimmer it becomes. TV signals may be reflected as light is in a mirror or it may be partially reflected as light is from a white wall. Like the X-Ray form of light TV signals can pass through certain materials such as plastic, cloth or wood but are reflected or blocked out by other more dense materials such as sheet metal, or the earth itself.

It is for this reason that if you live behind a hill . . . that is, if you have a hill between your antenna and the TV station, you will have great difficulty in getting television reception.

Also, as can be seen in the drawing at house A the curvature of the earth's surface can block off signals.

At house B the use of a taller mast for the TV antenna extends the distance at which television can be received. This is why you see such tall TV masts when you drive out into the country and are further away from the station.

Also, out in the country you tend to see large antenna arrays and combinations of antennas connected together. These are called "stacked" antennas or "two bay" antennas and are used quite naturally because the signal gets weaker (or dimmer) as you get further away from the station.

SUMMARY

At the TV station pictures are converted into patterns of electrical energy. This energy travels like light from the station to your antenna. The antenna, which is sensitive to the energy, sends it down to the TV set which converts the patterns of energy into pictures.

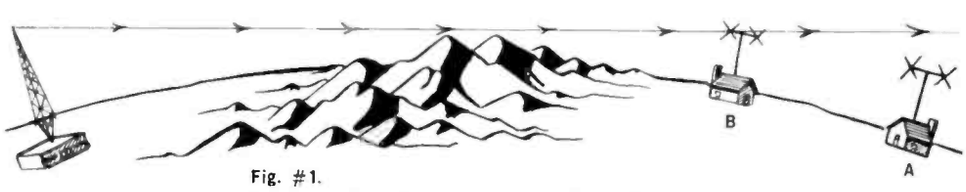


Fig. #1.
Curvature of earth and mountains block TV signals, creating need for tall masts in fringe areas and in hilly regions.

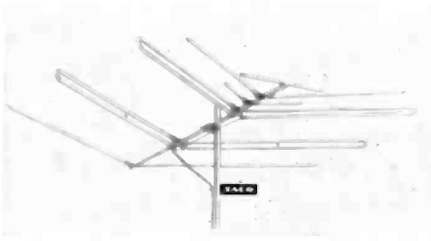
MODERN electronic service dealer

A Round-up Of Products We Feel Will Be Of Interest And Benefit To The Electronic Service Dealer In The West

LEADERS IN ITS LINE . . . of 1963 hi-fi kits by Paco are the ST-55MX FM stereo multiplex tuner and the SA-50 integrated stereo preamp-amplifier kits. Each is new from output circuitry, to exterior design, to the unique packaging system which simplifies kit construction.

The ST-55MX tuner features dual limiters, a Foster-Seeley discriminator and a grounded-grid RF stage to provide performance free from noise and interference. It offers 30db of stereophonic separation with minimum distortion. ST-55MX circuitry incorporates a full-wave power supply, an electrostatically shielded power transformer and 12 tubes (including rectifier). An EM84 tuning indicator is used.

The SA-50 is a 50 watt preamp-amplifier designed to provide top performance and maximum flexibility in any stereophonic or monophonic system. The SA-50 front panel includes 14 controls and switches, among them: two-position equalization switch; seven position mode selector; tape monitor switch; contour switch for Fletcher-Munson characteristic; two speaker system selector switches for flexible control of remote speaker systems; six position input selector, calibrated balance control; loudness (volume) control and dual bass and treble controls. The unit has a frequency response of 30cps to 90kc at ± 1.0db. Harmonic distortion is less than 0.5% at 20 watts per channel output; intermodulation distortion is less than 1% at full rated power.



A NEW, POWERFUL, ALL-WEATHER . . . broadband antenna, the "Color Guard" (Model C-33), which will provide high definition color TV on all VHF channels has been introduced by Technical Appliance Corporation (TACO).

According to Dan O'Connell, Manager of TACO's Consumer Products Division, the new broadband antenna is the first antenna of its kind directed to the color field which utilizes design formerly used only for the powerful reception needs of extreme fringe areas.

The new "Color Guard" antenna has been engineered to deliver outstanding color picture clarity, as well as highest quality black and white picture reception and high fidelity sound to all but deep fringe areas.

"This is an era of large color TV sets containing very sophisticated circuitry," said Mr. O'Connell. "The 'Color Guard' has been developed to meet the discriminating needs of this color market at a promotional price."

The antenna provides an average gain of 10.5 db on the high-band channels and 8.5 db on the low-band channels, with uniformly flat response.

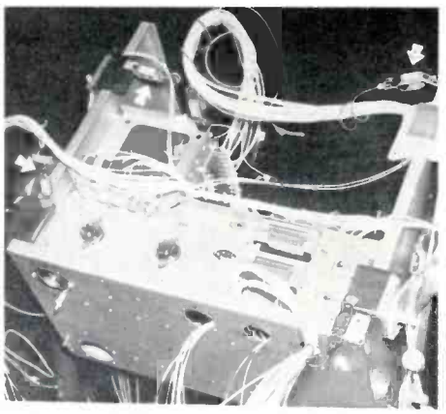
The "Color Guard" features extra rugged, in-line construction, high mechanical strength, balance and stability. These characteristics minimize ice-load and wind resistance problems.

Additional element support is provided by folded dipole construction, with extra heavy phasing brace. The antenna array is manufactured from a chrome aluminum alloy and coated with TACO's new corrosion-proof, gold conductive coating.

The "Color Guard" is listed for $17.95.

THIS COMPLETE KIT . . . of two-part TV & Radio Tuning Knobs, stock no. 1179, has been announced by Colman Electronic Products. Containing parts for over 2700 different combinations, the kit is a simple, inexpensive way for a serviceman to stock replacement tuning knobs in his service truck or shop.

Color-matched to the popular Colman Two-Part Universal Knobs, the new heads will interchange with all stems presently in use.



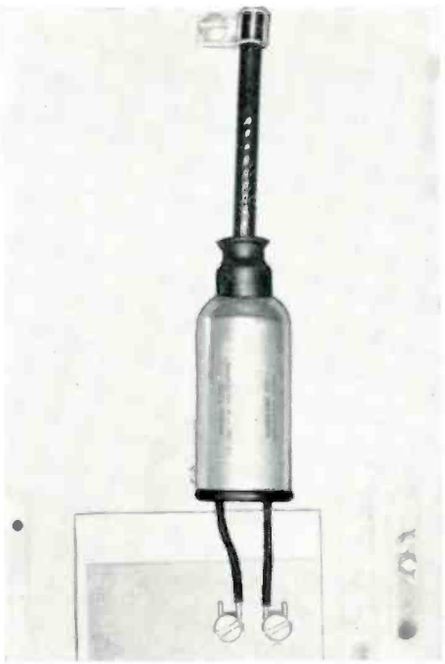
"LITTLE JOE" WYR/STA
BY MACDONALD & CO.

THE PRIMARY USE FOR . . . the new Macdonald "Little Joe" Wyr/-Sta is for holding and retaining all kinds of Conductor Wires. Groups of Conductors may be pre-positioned thus minimizing "rats nests" within a chassis or console, and also assist in the assembly of final operations. Conductor Wires may be quickly wound into Wyr/Sta or inserted and withdrawn by "pulling out" or "unwinding." This new product is now being manufactured and distributed by Macdonald & Co., Glendale 6, California.

Additional Advantages Offered: Wyr/-Sta may be used as a Tool Holder: For Screwdrivers, Pliers, Spin-Tites or Soldering Irons. Wyr/Sta Safety Features include Plastic Pads (or Protectors) to assure: 1—Holding Capacity. 2—Surface Protectors. 3—No deposit or residue. 4—No "pick-up" of paint, etc.

Each Wyr/Sta has a Color Coded Tip and Wire Connector Holder, with a nickel plated middle body. Such finish means No Flaking, Attractiveness, Clean, Readily seen when in use. The smooth surface will not deform, mark or disturb the insulation. Wyr/Sta requires no tools to use. Strong, sure-grip Alligator Type Clips insure against fall-off. They can be clamped or positioned with ease and speed by women operators. Wyr/-Sta is an excellent product for Grouping, Positioning or Routing of Connectors.

(Continued Next Page)

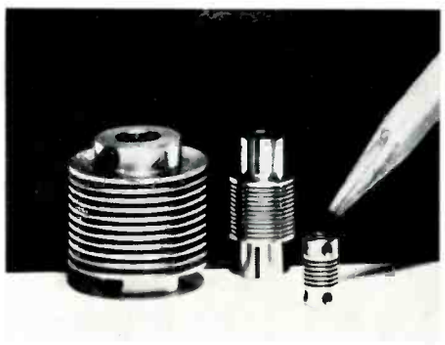


A NEWLY DESIGNED . . . compact matching transformer to facilitate attaching 75-ohm coaxial cable to 300-ohm TV set terminals is now being produced by the Winegard Company, Burlington, Iowa.

Only 2 inches long, the balun-type transformer comes in gold anodized aluminum housing with polystyrene cap and rubber cable boot. 300-ohm terminal wires are pre-attached to the transformer circuit board. A unique feature is that no special tools are needed for connecting the 75-ohm cable to the transformer.

A vinyl cable clamp with screw is included for securing the cable to the back of the TV set. The transformer is for use on 50-250 mc. VSWR is 1.1:1. Insertion loss is ¼ db.

Unit with instructions packaged on new Winegard "skin-pak" board. Model T-73, 75-300 ohm matching transformer, $3.00 list.



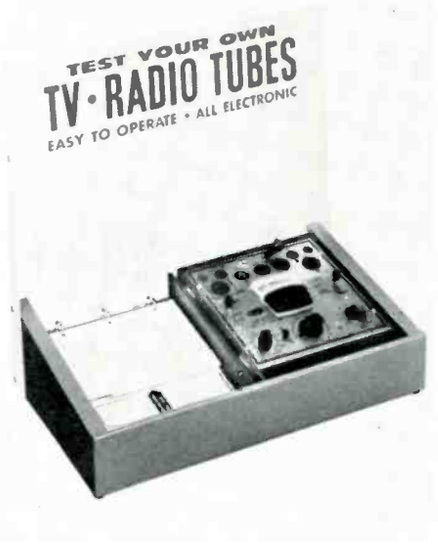
PERFECT COMPONENTS INC . . .

The manufacturer of a line of precision gears, magnetic clutches, electronic hardware, speed reducers and differentials has recently added to its stock an array of EXTRA flexible Bellows couplings unparalleled in the electromechanical components industry. Eighteen different sizes of flexible couplings are available immediately from Component stock.

EXTRA flexible couplings are specially suitable for application in which no backlash can be tolerated. Torque specifications range from 1 in. oz. to 180 in. oz.

The Bellows element of the coupling is fabricated from spring temper nickel and the ends are #303 stainless steel.

Price—$14.99 to -16.99.



A NEW SELF-SERVICE . . . men to promote in-shop do-it-yourself Tub Tester designed to enable service-tube testing and also use on service calls has been announced by Seco Electronics, 5015 Penn Avenue South, Minneapolis 19, Minnesota.

Called Seco—ETA Model 88SS this new instrument is said to be a complete TV Tube Tester and will test all new tubes including 9-pin novars, 12-pin compactrons, 10-in tubes and navistors plus all previous popular TV tube types and all modern radio tubes and hybrids.

The ETA Model 88SS, which stands for Electronic Tube Analyzer, is compact in size—9x10½x5½ inches—enabling the serviceman to simply lift the instrument from counter display and take with him on service calls.

Incorporated in the tester is the patented Seco Grid Circuit Tester plus a reliable Cathode Emission test using a low impedance, low test voltage circuit and a vacuum tube meter. Unit also checks filament continuity and provides an open element test.

Specifications include: 12AU7 two stage DC amplifier, Selenium rectifier power supply, single 5 m.a. meter which indicates results for both grid circuit and tube merit tests, high quality rotary and lever switches for pin isolation and transposition.

The Seco ETA Model 88SS costs $79.50 complete with self-service display and Seco warranty that unconditionally guarantees that adaptor kits or set-up data will be furnished without cost to keep your tester current for one year from date of purchase, the company said.

ALL CITROEN . . .

Electronics Models 550 and 660 portable tape recorders are now being equipped with a 7½ IPS kit for professional applications.

Addition of the kit gives the CEC lightweight models (Model 550 weighs just five pounds, Model 660, five and one-half pounds) three-speed performance—1⅞ and 3¾ IPS in addition to 7½ IPS.

There is no charge for the 7½ IPS kit. Model 550 CEC tape recorder still retails for $129.50. Model 660, a two-speaker portable, for $149.50.

Literature on these CEC portable tape recorders and the new 7½ IPS kit is available now from Citroen Electronics Corporation, 729 N. Highland Avenue, Los Angeles 38, California.

A NEW MINIATURE . . . microphone with the wide range response, high output and ruggedness of microphones hundreds of times its size, has been announced by Shure Brothers, Inc., Evanston, Ill.

Called the CA5A, the new unit is just 1" (25.4 mm) long x .250" (6.35 mm) wide x .100" (2.54 mm) thick. It weighs only three-fourths of a gram.

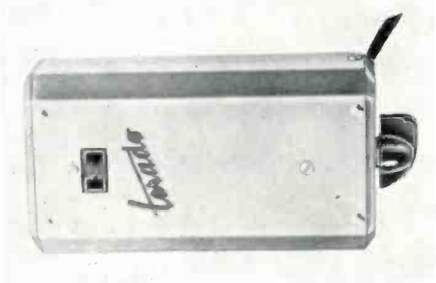
The CA5A's size makes it ideal for use in hearing aids, small head-worn microphones and hand-held transmitters, "hidden" microphone installations, pocket tape recorders and dictating machines, extremely thin lavalier, floor or desk stand microphones and in many other applications of electronic miniaturization.

CHEMTRONICS, INC. . . .

originators of many fine chemical aids to Industry, is currently marketing the latest of their achievements, CONTACT-KLEEN. It utilizes the latest advancements in chemical techniques to provide a positive cleaning and restoration action to relays, actuators, controls, switches, prongs, etc., in use throughout industry.

CONTACT-KLEEN is ideally suited to the Electronics Industry because of its non-corrosive action and leaves no film or residue to build up resistive or capacitive barriers. CONTACT-KLEEN is supplied in an eight-ounce pressurized spray can and is sold complete with a stainless steel extension tube to provide easy access to tight, hard-to-get-at equipment.

Complete with spray extension tube $1.49.



THE TERADO CORPORATION . . .

St. Paul 8, Minnesota, has just announced two new Voltage Adjusters. The Planet, #50-203 handles electrical equipment up to 300 watts. The Polaris, #50-204 has a capacity to 500 watts. Both of these Voltage Adjusters change abnormally high or low voltage to normal. It is pointed out that television, hi-fi and all other electrical equipment operates best at 115 volts for which they were designed.

These Adjusters are especially useful for television in low voltage areas to restore the full height and width of the picture. Also, they stabilize picture sync and increase sensitivity. Stereo and hi-fi equipment is brought to full fidelity. Terado Voltage Adjusters are particularly useful in increasing speed of small motorized equipment such as high speed grinders, routers, engraving and pantograph equipment. Production for such operations can be increased as much as 75%.

For more information, write to Terado Corporation, St. Paul 8, Minnesota, or contact your electronic jobber.

AMPEREX ELECTRONIC CORP. . . .

announces two new frame grid tubes for VHF and UHF television sets, the 6HA5/EC900 RF triode amplifier and the 6GJ7/ECF801 oscillator-mixer. These two tubes because of their extraordinary high gain, will enable TV set manufacturers to lower prices by eliminating hitherto necessary circuitry.

Used as a package the two tubes give gain in excess of 200. When coupled with the widely used 6EH7 and 6EJ7 in a 2-stage IF system, a TV set sensitivity of less than 5 microvolts for 1 volt at the detector can be achieved. This is more than sufficient gain for a TV set, and there being no further need for the 3rd IF stage, it can be eliminated with the cost saving immediately passed on to the manufacturer and consumer.

WEW/PETS ANNOUNCES NEW DIRECTORS FOR 1964

The following members of the West Coast Electronic Industry have accepted an appointment as a member of the 10-man 1964 PETShow Board of Directors:

Three (3) Manufacturers:
Herb Balderson, President — California Chassis Company. (NE 6-7777).

Charlie Brokaw, District Manager Western Region, Distributor Products Sales—Electron Tube Div., Radio Corporation of America. (RA 3-8361).

Bill Woodbury, Western Regional Manager—Sprague Products Co. (870-7531).

Three (3) Association of Electronic Distributors (AED) members:
Norb Dean, President—Dean's Electronics (NE 6-9314).

Ike Krone, President — Federated Purchaser of California. (BR 2-8771).

Cap Kierulff, President—Kierulff Electronics, Inc. (RI 8-2444).

Two (2) Electronic Representative Association AERAO members:
Bert Moore, Chairman Distributor Div. Los Angeles Chapter ERA—Bassett & Moore. (TR 7-7129).

Ellard Strassner, Past-Chairman Distributor Div., Los Angeles Chapter ERA—Ellard E. Strassner Company. (HO 2-0916).

One (1) representative of the Industrial Purchasing Community:
John Zetterstrom, Executive Asst. to Vice President Administration and Director Material Components Division—Hughes Aircraft Company. (SP 6-1515, Ext. 6254).

One (1) representative of the Dealer Purchasing Community:
Don Martin, Publisher—Modern Electronic Service Dealer. (755-5261).

Official Publication of the CSEA (California State Electronics Assn.).

The 1964 PETShow Board of Directors will meet with out-going officers, directors and committees within 30 days of the 1963 PETShow to elect their 1964 officers and committees from among the more than 200 manufacturers, representatives and distributors who have supported the 1963 events, and make necessary determinations with regard to the dates and location of their 4th annual PETShow.

Tips for Better Business

COMMISSION COMPENSATIONS

Compensating a serviceman for additional work completed, certainly plants a nice picture in the mind of employees.

This method can make a salesman of each serviceman, and create an atmosphere of a hard-working service dealership, a characteristic admired by customers. This will encourage better relations betwen customer and your organization.

Of course this seems like a utopian technique, and it is, because with every good thing there are little bad points that clutter its effectievness.

If this method is put into use watch out for sloppy wark, resulting in the serviceman trying to limit his time so as to enable him to make more calls than time actually allows. Make sure that the replacement of un-necessary parts is being avoided, and that your servicemen are allowing curtious attention to each and every customer.

CLASSIFIED ADS

BUY, SELL, TRADE, HIRE HERE

HOW TO USE WANT AD PAGE

TO PLACE AN AD

BY PHONE: in Los Angeles call AXminster 2-0287. (This is the number of the Classified Dept. only) ask for GRAYCE KENNEDY.
IN PERSON: Come to 4041 Marlton Ave. in the Crenshaw Shopping Center, next to Barker's. **(This Address is for the Classified Dept. only.)**
BY MAIL: Send your ad to QUINN'S Classified Dept., 4041 Marlton Ave., Los Angeles 8, Calif.

• RATES •

95¢ PER LINE, one time. **MINIMUM** 5 lines.
BOX NO.: Add 50¢ service charge, and allow 2 lines for reply address.
RE-RUNS: 2nd and 3rd times, less 10% each, 4th and thereafter less 15% each. Same copy.
HEADLINES, ETC.: Large headlines, box borders and 2-col. ads available at modest charge.
"POSITION WANTED": Less 15%, payable in advance.

NOTICE: ALL MATERIALS AND PARTS USED IN THE MANUFACTURE OF THIS TUBE ARE NEW EXCEPT FOR THE ENVELOPE WHICH, PRIOR TO RE-USE WAS CAREFULLY INSPECTED TO MEET THE STANDARDS OF THE ORIGINAL NEW ENVELOPE.

What's our BIG difference in 1963?

Regarding our quality, no one builds a better picture tube... the brand names are the same... still manufactured in the same facilities, the largest and most automated west of Chicago... tube reliability and efficiency is checked by the industry's most skilled engineering staff... and still manufacturing tubes for several of the nation's leading T. V. set manufacturers.

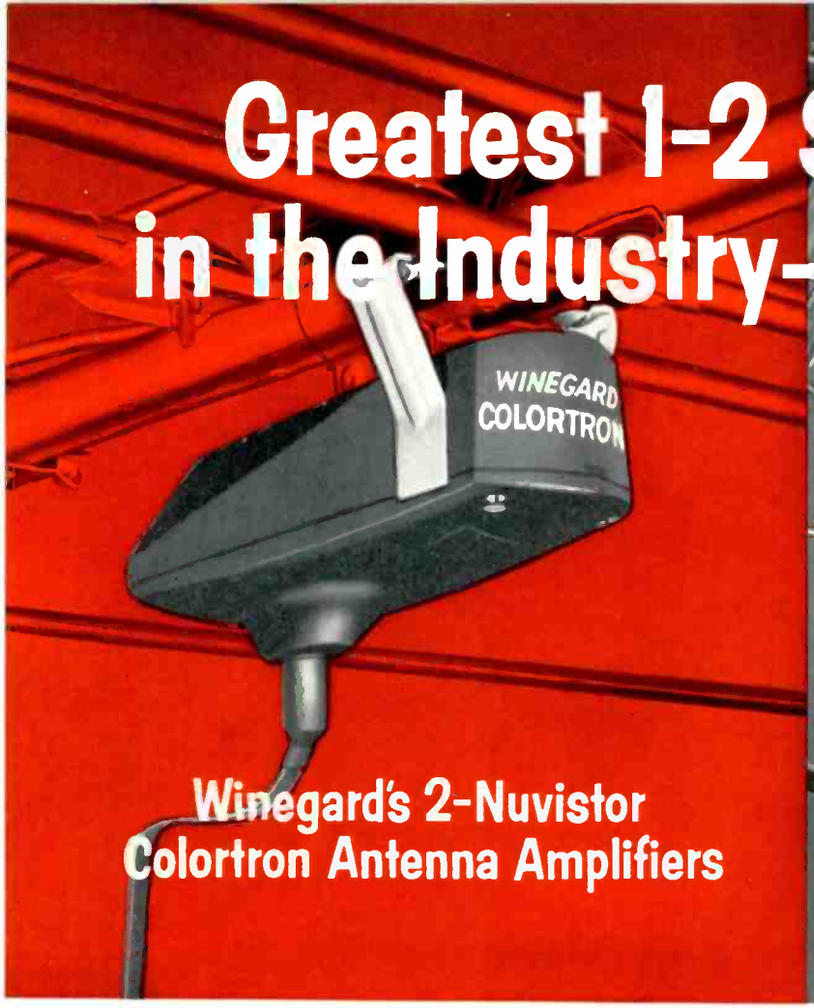
OUR BIG DIFFERENCE IS: (1) A new, sound corporate financial structure. (2) New management and engineering talent have been carefully integrated with energies and abilities of proven personnel, giving the company the strongest executive and technical team in its history. (3) Through acquisition and expansion, new facilities have been added enabling us to offer research and development of cathode ray tubes for numerous industrial, military and commercial applications... and incidentally, we are mighty pleased with our new corporate name...

AMERICAN VIDEO CORP.

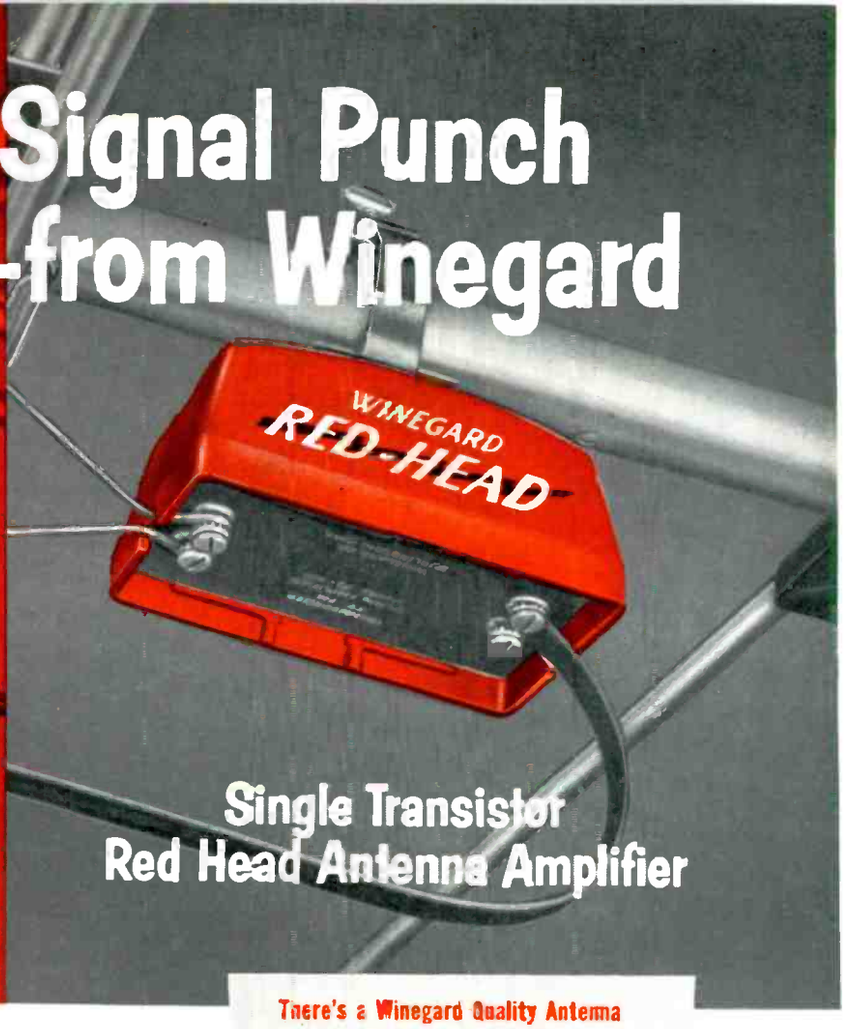
18601 S. SANTA FE AVENUE • COMPTON, CALIFORNIA

Manufacturers of Dumont A.B.D. and Calvideo Television Picture Tubes • *Distributor Marketing of Dumont A.B.D. Receiving Tubes*

Greatest 1-2 Signal Punch in the Industry—from Winegard



Winegard's 2-Nuvistor Colortron Antenna Amplifiers



Single Transistor Red Head Antenna Amplifier

Take your choice of Winegard's 2-nuvistor Colortron or single-transistor Red Head antenna amplifiers — both great — both trouble-free! Both work with any TV or FM antenna. Here's the story!

COLORTRON ANTENNA AMPLIFIER . . . ONLY $39.95 • EXCELLENT FOR COLOR • WON'T OVERLOAD • TAKES UP TO 400,000 MICROVOLTS OF SIGNAL

FINEST ANTENNA AMPLIFIER MADE . . . Because the COLORTRON amplifier takes up to 400,000 microvolts of signal input, strong local signals won't overload and cause interference on distant fringe stations. It takes 20 times more signal input than any transistor antenna amplifier and without compromising its ultra low noise ability to pull weak signals out of the snow.

A special "lifesaver" circuit gives the 2 nuvistors an expected life of 5 to 8 years. It's the only amplifier that's completely weather-proof —nothing exposed, even terminals are protected. Install it and forget it! Fits any TV or FM antenna.

Colortron Amplifiers are Available in 2 Models for TV

FOR TV—Model AP-200N—twin nuvistor, takes up to 400,000 microvolts, input 300 ohm, output 300 ohm, $39.95 list.

FOR TV—Model AP-275, twin nuvistor, takes up to 400,000 microvolts, input 300 ohm, output 75 ohm, $44.95 list.

RED HEAD TRANSISTOR MODEL . . . ONLY $29.95 • FOR COLOR AND BLACK & WHITE • MOST RELIABLE TRANSISTOR ANTENNA AMPLIFIER EVER MADE.

With the Red Head, you won't have transistor "pop-out" because of its special advanced circuit that protects against lightning flashes, precipitation static and power line surges. Has high pass interference filter, 2-set coupler, fully AC—no polarity problems. Tremendously effective in remote areas where all signals are less than 20,000 microvolts. Uses latest low noise MADT transistor. Bright red amplifier housing gives lasting product identification. The Red Head supersedes Winegard's famous MA-300 amplifier.

For TV or FM—Model No. RD-300, single transistor, takes up to 20,000 microvolts, 300 ohm input and output, $29.95 list.

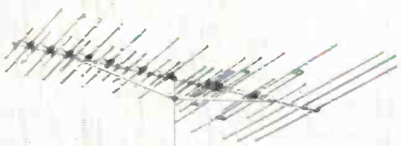
Stereotron Amplifiers are Available in 2 Models for FM

FOR FM—Model AP-320, twin nuvistor, takes up to 200,000 microvolts, input 300 ohm, output 300 ohm, $39.95 list.

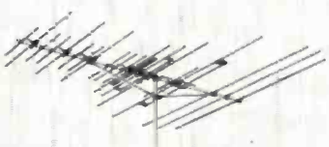
FOR FM—Model AP-375, twin nuvistor, takes up to 200,000 microvolts, input 300 ohm, output 75 ohm, $44.95 list.

Write for technical data or ask your Winegard distributor.

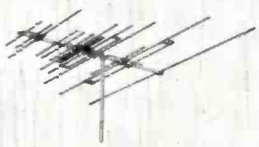
There's a Winegard Quality Antenna for Every Reception Need



COLORTRON ANTENNA
Model C-44 • Gold Anodized • $64.95



COLORTRON ANTENNA
Model C-43 • Gold Anodized • $51.90



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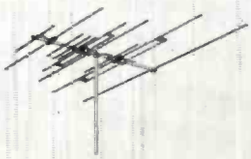

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