

JULY 1961
40 CENTS

TELEVISION HORIZONS



DEVOTED ENTIRELY TO TELEVISION RECEPTION

Al Bowdy, KCOP Television
915 N. La Brea Ave.
Los Angeles 38, Calif.

SPECIAL ISSUE—

**ANNUAL CABLE TELEVISION
CONVENTION**

"A Horizons Report"

THE **JERROLD**[®] HOME RUN KINGS —WINNINGEST COMBINATION



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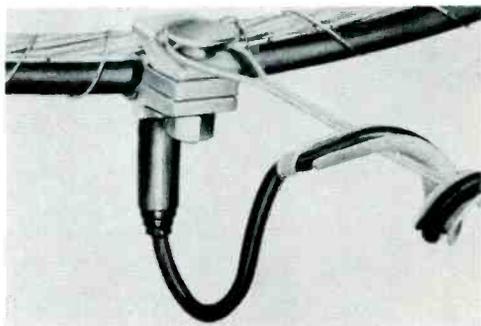
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Exclusive and Late News of the TELEVISION RECEPTION INDUSTRY

NCTA Convention—Another Year

Worn out . . . out of steam, pooped; *But*, definitely wiser.

Feeling the pangs of five days (and nights) of down to earth serious business sessions, nearly 650 cable TV operators and interested parties departed the city by the Golden Gate and returned to several hundred hamlets and villages in more than forty states, filled with the knowledge that no matter how invigorating and challenging the past ten years may have seemed, the next ten will surpass in every way the first ten in this vital-growing industry.

As conventions go, this year's NCTA meet was one heck of an education! For the details, turn to page 4. *Television Horizons* was there, and we hope you were too!

Pay TV—the Real Challenge Of the '60s?

Throughout the entire NCTA convention conversations inevitably drifted back to the topic of pay television, and the problems it holds in store for the nation's cable TV constituents. Time and time again operators were heard to remark, "*if pay TV promoters would quit worrying about the equipment and spend more time working up programming really worthwhile, I would be much more anxious to give it a try.*"

Equipment, we have been assured, is not a stumbling block. Our industry has all of the component parts already developed; it is merely a matter of assembling them into a proper package.

But no CATV operator is going to be smooth talked into trying a pay TV system when the system's promoters themselves are still talking programming in such vague terms as "first-run

movies on one channel and special events on the second channel."

In the final analysis it will be the subscribers who determine the acceptance and success of the system, and to the subscriber, the program content is the *only* matter for consideration.

Showmanship, not engineering, will sell the idea. And, as we noted last month, *P. T. (PAY TV) Barnum, where are you?*

TelePrompTer Tests Key TV System

TelePrompTer Corporation announced June 21 that it has begun "extensive field performance tests" of the audience response features of its Key TV participation television system, using lab and cable facilities of the Western Union Telegraph Company.

The initial phase of the several week test involves a five mile cable circuit between the headquarters at 60 Hudson Street, New York City and Columbus Circle, Manhattan. A later test will utilize more than twelve miles of cable running under the Hudson River to New Jersey, and back again.

The Key TV system was first unveiled one year ago at the Miami, Florida NCTA convention.

Prior to the just concluded Tenth Annual meeting TPT President Irving Kahn mailed a letter to every CATV system in the country "reminding all" that his key TV system offers "many advantages" over other pay TV (or subscription TV) systems.

More Money—More Systems

H & B American Corporation announced June 15th the purchase of the Palm Springs, California cable TV system, comprising some 6,600 subscribers. The previous owner of the system, Carl B. Lesserman, was considered "an outsider" in the CATV field and had



SPECIAL SUBSCRIBER TV demonstration staged by Home Entertainment System Tuesday evening during the NCTA San Francisco convention featured a talk by HES engineers and a layman's description of the HES method of "home entertainment pay television." HES method of pay TV was discussed at some length in the June TV Horizons.

numerous difficulties with his system in the California resort town. Reports to TVH indicate the system had been up for sale several months before purchase by H & B American. The "television problem" in Palm Springs (where pay TV began, under the control of Paramount) is the subject of a special three-part series which begins in this issue of *Television Horizons* (see PART-TIME TV, page 21).

H & B American also announced they plan to utilize the Palm Springs system for further "closed circuit pay TV tests" in the field of sports and special events programming.

Jerrold Enters Microwave

According to an announcement by Milton J. Shapp, President, Jerrold Electronics Corporation has entered the field of microwave electronics.

The company's first public display of the microwave equipment was held in San Francisco at the NCTA convention, June 19-23.

The new equipment is presently designed for use in the six Kmc band, to handle 600 line definition closed circuit or CATV relay video information. Full one watt output is featured, and the entire transmitter and power supply, or receiver and power supply occupies but seventeen and one-half inches of rack space.

Collins Microwave to the Rescue

On May 19 an explosion of propane gas tanks completely demolished the microwave

terminal of the Kimball, Nebraska Community TV system. The terminal handled three channels out of Denver, Colorado.

Acting with particular haste the Collins Radio Company delivered a complete replacement terminal station on May 26, and had the unit working "as normal" by May 30.

Daniels Sells Some More

Already off to a speedy start for the 1961 year, Daniels & Associates, Denver, Colorado CATV brokers announced three additional sales at press time, bringing to twelve the total number of sales for the year.

Late sales include the Cisco, Texas CATV systems (sold to Rio TV Cable Co., Del Rio, Texas); Eastland, Texas CATV system (also sold to Rio TV Cable, headed by Jack R. Crosby) and the Martinez, California CATV system (purchased by N. K. Harris, Casper, Wyoming).

Next Month—In TVH

"*Translators Are My Business,*" a special report about a man who believes in thinking in terms of five and six figures with UHF translator installations, "giving the viewers the best possible signal, and no holds barred."

"*What You Need to Know About CATV Microwave,*" and, an important announcement about the future of closed circuit "instructional television."

Be with us, won't you?

R.B.C.



HORIZONS

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TABLE OF CONTENTS

GENERAL

SPECIAL CABLE TV REPORT

"Tenth Annual NCTA Convention" 4

INSIDE THE FCC'S UHF FILES

"Four FCC Target Areas for 1961" 16

INTERVIEW WITH CHARLES SAMMONS

"JJ Learns About CATV Investments" 13

EXCLUSIVE—TRANSISTORIZED CATV LINE AMP

"AMECO's Surprise" 14

WHAT SHOULD THE FCC DO?

"Part-Time Television—Right or Wrong?" 21

TECHNICAL

THE ANSWER TO TRANSLATOR ANTENNA PROBLEMS

"Skewing Translator Transmitting Yagis" 19

HI-FI ON YOUR COAX

"Let's Add FM to CATV!" 24

THE DEMON STANDING WAVES

"Antenna Pre-Amps"—part two 32

DEPARTMENTS

CHANNEL ONE

"Industry News" 1

TRANSLATOR TOPICS

"Special Rules for Broadcaster Translators" 26

UHF HORIZONS

"Collecting Translator Subscription Funds"—part two 30

FOR DXERS ONLY

"The Wildest Summer of DX—Ever!" 34

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"Television Horizons' readers — always the first to know, the best informed, the first to act."

Dedicated to the Cable

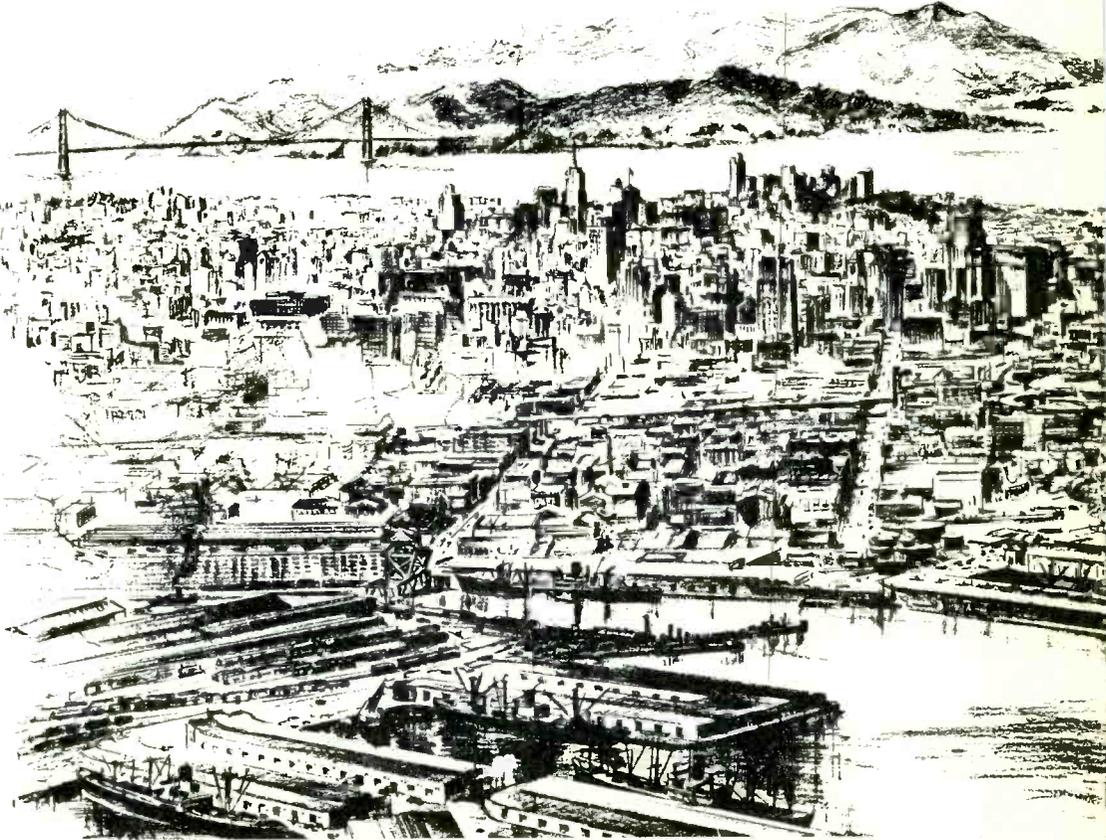
TENTH ANNUAL NCTA CONVENTION

Report prepared by
R. B. Cooper, Jr., Publisher
Jackie Johnson, Staff Reporter

A competitive "general trade" publication (not devoted to the "CATV industry") reported on June 19 "CATV CLAN GATHERS — OLDER, WISER, STRONGER." This, we must admit, struck the nail squarely on the head.

Horizons Publications approached the San Francisco CATV convention with mixed emo-

tions. On one hand, we were the first to admit that this was *our first* such meeting (although certainly not the last). On the other hand Horizons and the industry have considered TVH "the trade publication" for the North American CATV operators for some nine months now, and we therefore felt "well prepared" for anything and everything which we might encounter. The CATV industry has accepted TVH with a sincerity and reverence that has many similar "trade" publications agog. We feel so much a part of the industry that we are actually hurt when (on very rare



Television Industry

"A Milestone in Progress"

occasions) we meet a CATV personality who remarks, "Television Horizons?"

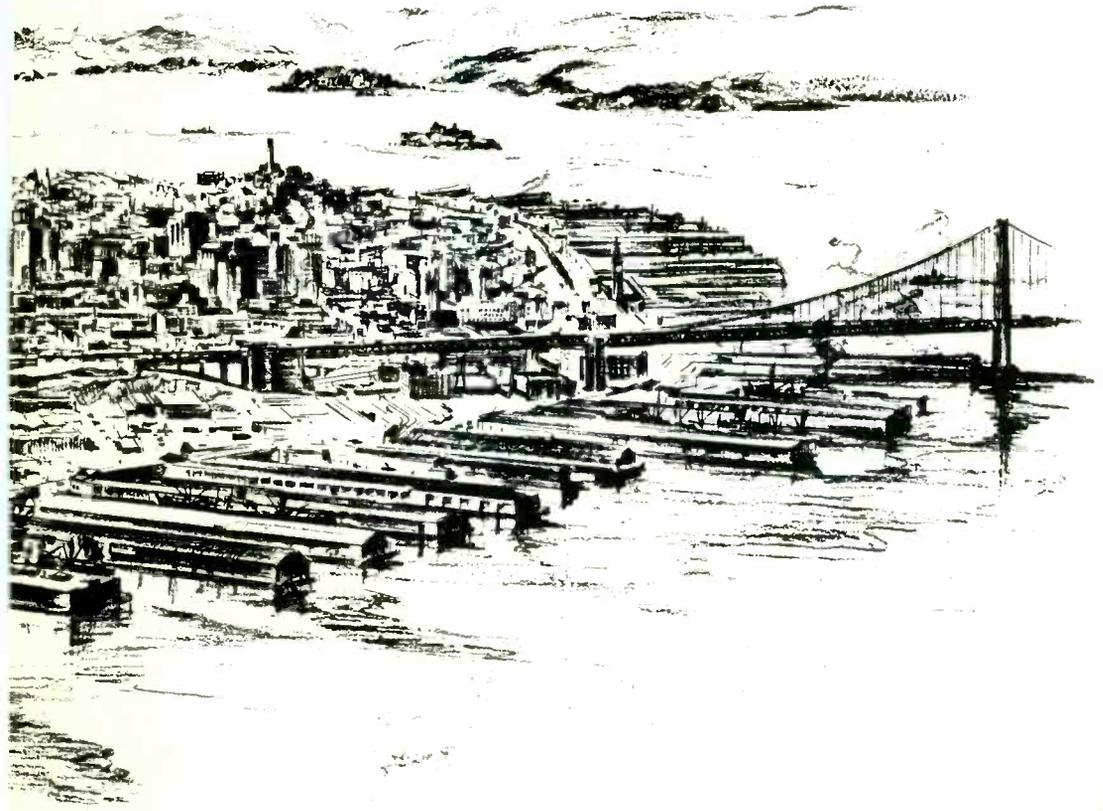
With these thoughts in mind, we feel this report should be written almost as a memo, from one friend to another, *Television Horizons to you*, a member of the CATV fraternity.

So grandiose and so successful was the just completed meeting that it will be weeks before any type of final results or decisions can sift down to the field level.

Essentially, the convention was a management seminar. Few engineers or technicians were in evidence, unless of course the system

owner himself had extensive engineering or technical experience. The reasons for this one-sided display are numerous. Primarily, it reflects the stages through which the CATV industry has passed during the past ten years of organized growth. In the early days our industry fought with inadequate equipment, industry regulation and problems of maintenance.

The problems of industry regulation continue, equipment is still a prime topic, while maintenance problems have dropped to a fraction of their former stature.





ALL WORK—and then some play. Daniels & Associates' Alan Harmon was putting the finishing touches on the Daniels' booth when the TVH camera happened onto the scene.

At the same time depreciation, tax and investment (or re-investment) problems have moved to the foreground. This, in itself, was reflected in the program of events which made up the tenth annual meeting.

Working our way amongst the convention delegates, TVH heard snatches of conversations which we have attempted to piece together in categories. You may recognize some of the comments as your own. The quotes to follow, we feel, reflect the trends within the industry and progress to be expected in new fields in the years ahead.

□
"We began our closed circuit educational broadcasts last month . . . and you ought to



ONE OF THE EARLIEST CATV PROBLEMS is still a problem, as evidenced by the interest in this Pole Line Attachment session. Left to right, NCTA attorney Robert L'Heureux, Jerrold President Milt Shapp, and Colifornia CATV operator Lewis Lemieux.

see the public support we have now!"

□
"They offered me \$340,000 for my system. I guess I should take them up and then start all over again. Capital gains seems to be the only answer to my tax problem."

□
"I've fought with the telephone company for seven years. First they wouldn't let me on their poles, and then public enthusiasm forced them to give me pole rental. Recently I approached them to carry local origination television. This they opposed for awhile until I got the local college to back my program for instruction via TV. So then they finally gave in on a trial basis. That was last spring, and the educational-instructional television ran for two months. Now we are closed down for the summer, and quite frankly I'm not sure how the telephone company will approach us this



MONDAY EVENING'S TOP EVENT was the opening of the mezzanine booth display area, well attended by the entire convention throng, a portion of which is shown here before the Blonder Tongue booth.

fall. We intend to go ahead with renewed programming however . . . and let public interest carry the ball with us at Ma Bell."

□
"Boy do I like microwave! You know I could count on six bad antenna failures a year until I put in a microwave circuit last summer. I haven't had one outage on any of my Dallas-FortWorth channels in that year's time, and man you should see the pictures!"

□
"Did you see it?"
"Yeh . . . all transistorized."
"Suppose it works?"
"It must . . . everything else they make does."
"How long do you think it will be 'fore they come out with a complete transistorized system?"
"Next year . . . I bet."

Two great names in
community television systems

BLONDER-TONGUE & BENCO

combine their engineering and
manufacturing resources to provide the most complete
line of CATV equipment in America

For the CATV operator planning to build a new system or extending one now in operation, the combined Blonder-Tongue and Benco CATV equipment line (available from Blonder-Tongue in the U.S., from Benco in Canada) offers: superior performance; economy of operation; long-term maintenance-free performance and flexibility for future

expansion. Also available is all the assistance required for a top quality system; free layout planning; field engineering assistance at cost; local installation and maintenance. It's easy to understand why more and more CATV operators are relying on the most complete line — Blonder-Tongue and Benco.

BLONDER-TONGUE & BENCO CATV EQUIPMENT

HEAD END Low noise preamplifiers, crystal-controlled converters, high output amplifiers, filters, mixers and traps. Typical are the Benco CA, Benco PA and Blonder-Tongue MCS-c. Single channel amplifiers.

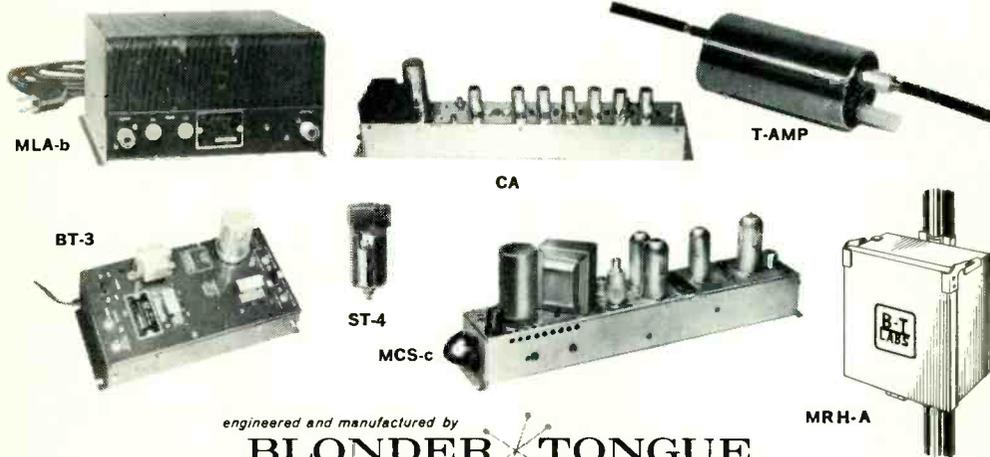
LINE AMPLIFIERS Both vacuum tube and transistor type. The famed Benco T-Amp harnesses the full potential of the transistor to provide durable maintenance-free, easily installed CATV systems. Completely-weatherproof, cable-powered. Eliminates need for costly AC installations or housings along the line. For small systems, the transistor Blonder-Tongue BT-3 is ideal. The Blonder-

Tongue MLA-b is a tested performer adaptable to any CATV system.

TAPOFFS, SPLITTERS, HOUSINGS, ETC.—The most complete line of quality engineered accessories to provide ease of installation and utmost flexibility.

This is just a small cross-section of the Blonder-Tongue and Benco CATV equipment line now providing superior reception in leading CATV systems in U. S. and Canada. In addition, our custom department can design special items for your specific applications. If you're planning a CATV system contact Blonder-Tongue today.

For free system layout, write Dept. HC



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home TV accessories • UHF converters • master TV systems • closed circuit TV systems



MICROWAVE INTEREST ran high throughout the meeting, as TVH's Washington office reports CATV microwave applications are running two to three per week at the FCC. Here the impressive Collins booth gets a final checkover before the convention goers are allowed onto the exhibit floor.

"So we conducted this contest awarding free second drops and six month's free service to the five cable viewers closest to the final series results. Contest ran for two weeks prior to the week the Yankees opened in Pittsburg and we had so many new subscribers sign up that I had to hire an extra truck crew and keep both of my regular crews working overtime for three weeks."

"He said translators may soon be transistorized and sell for around \$200. They might not have to be licensed . . . just buy it and hook it up, like an antenna! I don't know . . ."

"This home television stuff interests me. I've got my poles already and those pay-TV people told me they would help out with the programming in the beginning. Trouble is I'm a little afraid to be first, and I don't want to



AT 6:00 P.M. SHARP MONDAY EVENING, KAREN SUE RANDOLPH did the honors while her parents, sister and NCTA prexy Bill Dalton looked on. The ceremony officially opened the exhibit hall to the convention scene.

jeopardize my system by making it a test case."

"Somebody's got to be a pioneer."

"Yeh . . . but not me!"

"One thing I'll say for that Dalton, he sure is an organizer. Best meeting we ever had. Suppose he can keep us straight in Washington too?"

KEYNOTE ADDRESS WILLIAM DALTON

For the recently installed President of the NCTA, the Tenth Annual Convention presented the first real opportunity for face-to-face meetings with "his people." Dalton's Keynote Address came at a special luncheon on Tuesday, June 20. The general theme of his speech was "become aware of the tremendous challenges ahead" and "make sure you are doing your part to keep this industry progressing."



HOME ENTERTAINMENT SYSTEM'S booth was a focal point of interest Monday evening when convention goers watched the closed circuit color TV display. Once again the opportunity to "see one's self on video" proved to be an overpowering attraction.

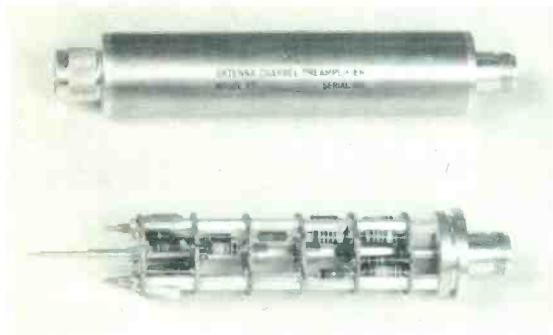
Paraphrasing a small portion of the address, *Television Horizons* noted these strong points.

" . . . You (the CATV industry) serve one out of every sixty American homes, keeping some three million grateful viewers informed and happy.

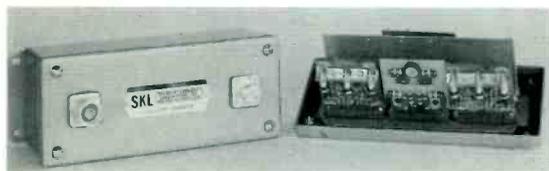
"You are operating truly in the public interest . . . the deep interest of America's growing population . . . by increasingly helping to carry the growing number of educational program opportunities for the youth, and the appreciation of the grown-ups, of our nation. Your interest in educational TV is growing wider every day, and with it your public service consciousness.

"You are composed of specialists and technicians, many of whom have other backgrounds and training. Among you are trades-

AN ENGINEERING BREAKTHROUGH!



Model 271 Antenna Channel Preamplifier



Model 276 Channel Converter



**Equipment For
A Fully
Transistorized
CATV System**

You saw it at the NCTA Convention in San Francisco. You noted its careful, compact design—its practical, plug-in construction—its rugged waterproof housings. And in its concept of strand-mounted line amplifiers, with system-wide equipment powering through the coaxial cable from remote supply points, you were quick to see the incredible economy of its installation and operation.

You saw 16 members of SKL's new and growing family of solid state system components. Each is engineered to SKL's top quality standards. Each is supported by a program of prolonged field test. You will be assured that when you use SKL transistorized system equipment, you will have selected the finest available.

SKL

SPENCER-KENNEDY LABORATORIES, INC.
1320 SOLDIERS FIELD ROAD, BOSTON 35, MASS.



BILL DANIELS and TVH reporter Jackie Johnson go over the fine points of Daniels' "gift to the convention," an ABEL CABLE lapel pin which he has just finished affixing to our staff member.

men, salesmen, radio station owners, financial experts, manufacturers, bankers, lawyers and at least three morticians!

"Your future is bright, (but) with cloudy overtones."

"Let me talk (for a few minutes) about government legislation and government control.

"In some areas of government we are not too popular. In some areas of television broadcasting we are not too popular. In fact there are those in government and in broadcasting who would love to have you tied to a piece of legislation which would hamstring the very essence of your future . . . your collective freedom to do business in the American way. There are those in both areas who think the time has come to clip the wings of this "growing parasite of the broadcasting world."

"We hear talk about freedoms, with a capi-



ENTRON'S BOOTH always seemed to be busy with a hubbub of activity.

tal F, from all sides.

"In government, with a capital G, we hear that there should be freedom to legislate, on constitutional grounds; that there should be freedom to regulate, on the basis of the statute.

"And from broadcasting industry leaders we hear that freedom is needed to survive there; that cameras and microphones belong where the public belongs; that freedom of programming is their right and that they want and need less control, NOT MORE.

"Let's examine freedom here.

"There are those in both of these vital freedom loving camps, government and broadcasting, who want to reduce freedom, but (not for themselves), for you.

"Here's a case to point, right out of today's Washington. Bills have been introduced in the Senate and the House of Representatives that would govern and regulate the CATV industry.

"Briefly, these bills would empower the FCC to regulate a situation that no longer exists! The intent of the bills is to control



INTEC'S TRANSISTORIZED EQUIPMENT and Jim Nishimura made a big hit with CATVers anxious to cut operating maintenance costs while keeping line signal quality up.

CATV, which has no need for control, for the simple reason that CATVs don't do anything for the subscriber that he couldn't do for himself. This alone is reason enough to back up "no-need" for regimentation.

"There are about thirty-five cities, I am told, where there is a single local TV station and a CATV system. BUT, I challenge anyone to point out more than four or five (cities) where there still remains some incompatibility. The rest of the so-called clashes have been eliminated!

"Frankly, I haven't heard the FCC say much about this legislation. Not recently anyhow.

"But broadcasters, through their association

For Reliable, Fast CATV Service

Depend on Daniels & Associates, Inc.

Pioneers in CATV Brokerage

OWNERS find the Daniels' system of evaluation and research a guarantee of top-dollar returns in the broadest possible market. Daniels' appraisal system, combined with careful buyer-screening to establish complete financial responsibility, is your guarantee of a reliable negotiation.

BUYERS find more than fast, reliable service through Daniels & Associates. Complete short-term return on your investment; expertly planned management programming for greater operating efficiency; all part of Daniels' service to you in today's most exciting, expanding industry — COMMUNITY ANTENNA TV!

**In 1961... 12 System Sales through May,
\$8,500,000 in Sales since 1959**

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Complete CATV Service throughout the U.S. and Canada

BILL DANIELS

CARL WILLIAMS

ALAN HARMON

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Fred T. Metcalf — — — — — 25 Crestwood Place, Guelph, Ontario, TA 2-2030



CATV LIASON OFFICER Dorothy Mugford, WNEP-TV Scranton, Pennsylvania was both delighted and pleased to receive this special industry award from the NCTA. A. J. Malin, New Hampshire CATV owner, makes the presentation.

(NAB) seem to be hollering for it.

"And why? For the life of me, I don't know.

"NAB says there are a "few" areas where a clash between local broadcasters and CATV systems exists. To this we agree . . . (but) a very few.

"Does this call for legislation, and the resulting control which government could wield over a conscientious industry?

"The NAB and NCTA have a growing and improving relationship for public good, which



NOW IF I CAN JUST GET THIS PL-259 on that piece of coax, I could do away with line amplifiers! Horizons' staffer Tom Kneitel kids it up with the Times Wire and Cable Company "largest coax ever" display.

should serve both the broadcasters and our members effectively and profitably in the years ahead.

"But . . . it's time that both broadcasters (who are calling for more freedom) and CATVers (who deserve to grow also) should give some careful thought to what's ahead. It's time we join together on this freedom road instead of traveling separate and diametrically opposed paths.

"Here are some reasons:

(1) Although the Senate Bill (S1044) is supposedly innocuous, there is no guarantee that this bill, if passed, would be the same as the one introduced. *It could be harmful to both broadcasters and CATVers.*

(2) Any kind of original legislation for any industry is the first foot in the door towards regulation forever.

(3) The proposed CATV legislation calls for control and regimentation, and from NOW on. Did anyone ever see less control with legislation of this kind?

(4) Why do broadcasters want you to be



COMPETE AND GROW was the theme for this panel which "talked-up" the competition VHF translators are presenting to cable TV operators. Left to right: John Campbell, Dubuque, Iowa; Robert L'Heureux, NCTA Attorney; Horizons Publisher Bob Cooper; panel moderator Charles Clements, Waterville, Washington and Montana engineer Archer Taylor.

regimented by regulation and resulting inspection for "economic impact?" Don't they realize that such inspection calls for careful scrutiny of management, books and profits, *for both sides?*

"There are other questions I would like to ask here, but the answers to some of them I have already learned in Washington and elsewhere. Some of these answers I don't like. Nor would you."

THE DECADE AHEAD

As this was the Tenth such NCTA convention, a certain amount of nostalgia hung over the entire affair. Thursday morning's "mid-

(Continued on page 14)

JJ WITH CHARLES SAMMONS

"Jack Tar Owner Also Systems Owner"

Early this spring this writer learned that the 1961 NCTA Convention Host Hotel had more than a passing interest in the CATV business. The owner of the Jack Tar, San Francisco (and other Jack Tar's from coast to coast, and throughout the Caribbean), is *Charles*



CHARLES SAMMONS and your reporter discussing the fine points of investment in the CATV field.

Sammons, a Dallas, Texas resident who also specializes in other fields of investment.

With his attendance assured we arranged an opportunity to talk with this amazing man who has become a legend in the modern day business world.

Sammons began his investment interest in CATV through a relative who had himself become interested in a Pennsylvania system. Total subscribers to date on all of the Sammons owned systems—42,000.

"Are you planning any further investments in the Cable field" we inquired?

"We have been looking at other systems" was the answer. *"One is quite close to actual purchase, located in the northeast."*

"Why does a system owner sell these days," your reporter asked.

"The reasons are many" smiled Mr. Sammons. *"One of the best is capital gains. With the very high rate of personal income tax, it doesn't pay a man to build up a too high return system, because the government ends up with all of his real profits. However if a man can manage to build a system into something with real capital worth, he can turn around and sell it after tax depreciation has run its course. Then he counts his cash return as capital gain, and he has sufficient funds to begin all over again."*

The Sammons CATV systems are managed by Daniels & Associates, systems management specialists.

J. Johnson

HOME ENTERTAINMENT SYSTEM

for full information
about CATV
adaptation to the
HES system
of pay TV, contact:

HES

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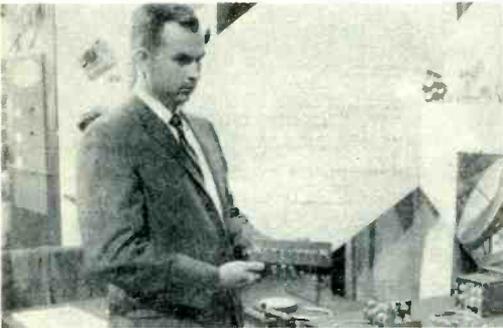
AMECO'S SURPRISE

Early this spring several manufacturers announced (privately) they would be displaying a number of transistorized amplifier units at the convention. In the June pre-convention issue of TVH we noted that "optimism had toned down considerably in the field" as convention time neared. Several of the prototype units were running into design problems.

It was therefore to everyone's surprise (including AMECO's, we believe) that an all transistor line amplifier exhibiting up to 55 db. gain across the range 30-230 megacycles appeared on the convention scene about mid-week, at the AMECO-ANTENNAVISION booth.

Arriving with the new Phoenix bred amplifier was the inventive genius behind the unit, Donald Russell. Russell's unit, he told TVH, had been completed on Monday, June 20, actually after the convention had begun.

ABOUT THE AMPLIFIER



DON RUSSELL and his "baby."

Russell, displaying in hand the new unit (as of yet it has no type number), noted his lab measurements showed the following characteristics:

Fifteen db. AGC, ten db. manual. For fifteen db. of input variation, the output change is one-tenth db. However, Russell noted, "the one-tenth db. output variation may be too tight to write specs for, so let's call it one-half db. output variation for fifteen db. input variation."

Russell ventured "twenty like amplifiers could be cascaded if the output levels are held to forty db., or twenty-five to thirty amplifiers cascaded if the outputs are held to thirty-five db. The unit has a measured noise figure of ten db. at channel 13, and production line models will have fifteen to twenty db. of tilt."

Next step for the new transistorized line amplifier is further field testing in a Phoenix system.

section" however preferred not to look back, but ahead, at the period 1961-1971. Panelists representing *Jerrold, Blonder-Tongue, AMECO, INTEC* and *Spencer-Kennedy Labs* took their turns unveiling views on the problems the CATV operator would face in the coming ten years. One series of phrases from *Ike Blonder*, Chairman of the Board at B-T, struck this reporter as being particularly "on the beam."

Said Blonder, "I feel the CATV industry has not yet awoken to the fact that someday, soon, the entire allocations structure in this nation will be changing. Television will move to all-UHF, and areas which are now doing without local television may suddenly find themselves with TV. BUT, by the same token, there will be many-many regions where passable VHF reception is now passable, where future off-the-air UHF reception will not be possible. Thus I see the CATV picture as one of change, with new "white areas" where CATV will have to move in to assure continued video reception, and "old white areas" where CATV will suddenly have substantial "off-the-air" reception competition.

"CATV operators must also recognize that even if in their particular service area TV service remains essentially status quo, they themselves will need to make adjustments and changes to existing equipment. For instance, all current VHF line amplifiers and VHF head end equipment will need to be converted to an UHF system, or else U to V conversion will need to take place twice, once at the head end (using VHF for the trunk and feeder lines) and again at the receiver. Whatever the choice, extensive re-engineering must take place as the VHF stations change to UHF."

COMPETE AND GROW

Special Assistant *Frank Nowaczek* told



IT'S AN INSIDE JOKE... but no self-respecting pole man ever left the ground without his pole spikes, so NCTA prexy Bill Dalton gets "his!"

Horizons Publications, "When we were outlining the program for the convention, the panel on the subject of translators attracted the biggest interest."

That the rapid—almost fantastic growth of the rebroadcasting device (translator) has presented a few problems to the CATV operator is well known. Moderator for the panel was Charles Clements, of Waterville, Washington.

Panelist John Campbell of Dubuque, Iowa, reported his CATV system is bucking nine off-the-air signals plus a large, high-power UHF translator. He noted that he has lost around 150 subscribers in the past six months which he can trace to the three channel translator system. Campbell stressed the importance of public service operation as a means of successfully meeting the translator competition.

One of the early investigators of the translator picture, Archie Taylor, of Montana, noted that he feels there are five major problem areas to the VHF translator, which singly or jointly can and do inhibit the growth of the units.

Noted Taylor, "(1) *Allocations*: Very few regions in this country have room for more than a single translator channel, and this usually means translator viewers must go without three or more channel reception. (2) *Power-roads and equipment*: Here the translator operator is often able to rely on volunteer labor and equipment. When he cannot, the cost of

obtaining this material and equipment is often prohibitive. (3) *Equipment cost*: This will always be a problem because there will always be a market for cheap, inexpensive pieces of junk which work . . . but only for a little while. This really boils down to money, or lack of it. Where there are sufficient funds, the equipment purchased is usually adequate. Where there are not sufficient funds, the equipment is poor, and the service is poor. Too much cost cutting may often force the station off-the-air.

(4) *Maintenance*: Again, a matter of cost. If the translator group has sufficient funds, maintenance is not a problem. When money is lacking, so is service. (5) *Interference*: A partial problem of allocations, although as there is no allocations plan or proposal for translators amongst themselves, it can't really be called allocations.

CLOSING

The NCTA Tenth Annual Convention closed Friday, June 23 with the election of the new officers for the coming year. In 1962 the 11th annual conclave will gather in the nation's capital, Washington, D.C.

The newly elected officers (pictured below with other officials) are *Glenn H. Flinn*, Tyler, Texas (new chairman), *Charles E. Clements*, Waterville, Washington (new vice-chairman), *Frank Thompson*, Rochester, Minnesota (new secretary) and *M. Bill Adler*, Weston, W. Va. (new treasurer).



NEW NCTA OFFICERS

(Standing, left to right) Ben F. Conroy, Jr.; Carl Williams*; Al Ricci, Jack Pryor; Ed Whitney*; Ray Schneider; John Walsonavich*; Norman Hendry; J. Holland Rannels; Archer Taylor*; Rex Holmes; Irving B. Kahn*; Lee Stoner; Fred Goddard and Gene Schneider.

(Seated, left to right) George Barco; Dean M. DeVoe; NCTA President William Dalton; NCTA Chairman Glen Flinn; NCTA Secretary Frank Thompson; NCTA Treasurer M. William Adler; Past Chairman Sanford R. Randolph; Milton Shapp and Leon Papernow.

Missing are NCTA Vice Chairman Charles Clements and new board member Virgil Evans. New board members are identified with an asterisk (*).

FOUR FCC UHF



A copyrighted HORIZONS Report

Early in April of this year a study of UHF set saturation versus VHF set saturation was completed at the commission level. The purpose of the study was two-fold.

Primarily, the study was aimed at pin-pointing regions of the United States where UHF television has gained not only a good toe hold, but a good foot hold.

Of secondary importance, perhaps, were the significant things the first portion of the study revealed. For example, there are today more than 110 counties in the United States with seventy-five per cent or better UHF set saturation. The total land area of these counties is roughly equal to the states of Texas and New Mexico rolled together!

And, not all of the regions of high UHF set saturation are regarded as "secondary small town markets." For example, mixed in with the counties which boast better than seventy-five per cent conversion to UHF are Fresno, and Bakersfield, California; Hartford, Connecticut; Peoria and Springfield, Illinois; South Bend, Indiana; Baton Rouge, Louisiana; Youngstown, Ohio; Scranton—Wilkes Barre, Pennsylvania; and Madison, Wisconsin.

The same FCC conducted analysis also turned up other facts about the little known world of UHF set conversion. For example: falling under seventy-five per cent conversion but above the fifty per cent conversion point were such cities as Champaign, Illinois; Saginaw, Michigan; Binghamton, New York; York, Pennsylvania; Knoxville, Tennessee; and Milwaukee, Wisconsin.

Armed with these figures the FCC analyzer went to work checking out how many UHF and how many VHF stations were being received in these regions of fifty per cent or better UHF conversion. In other words, what is

prompting the set owner to spend a few extra dollars for his UHF tuning set and separate UHF antenna installation? Is it the lack of suitable viewing fare on VHF?

Surprisingly enough, there are significant counties (population and set-count wise) which not only have a high percentage of UHF conversions, but which also have a choice of both VHF and UHF programs off of the air.

For example, Limestone County, Alabama with a ninety-one per cent conversion has a choice of five VHF stations and only two UHF stations! Sussex County, Delaware can receive ten VHF stations and only a single UHF station. Yet fifty-five per cent of the receivers sold in this county have UHF tuning provisions!

There were some surprisers on the other side of the ledger also. For instance Knox County, Illinois has a choice of but two VHF stations and three UHF stations. Yet fewer than forty per cent of the Knox county viewers bother with UHF.

In many of the surprise areas where UHF is not showing up strongly, the Commission feels UHF has been undersold.

Even UHF translators show up in the tabulations. For example: Winona County, Minnesota shows a UHF conversion rate of fifty-nine per cent. And yet the county is able to receive nine VHF stations on a regular basis. According to grade A and B contours of existing UHF broadcasting stations, NO UHF STATIONS can be received in Winona County however! Obviously fifty-nine per cent of the people cannot be totally wrong! Here is an example of UHF translators filling in a "white area."

Now other than the pure interest sake in figures, numbers and survey results, what is the Commission planning with the survey? Actually, the survey itself has already served

(Continued on page 18)

FOUR FCC UHF TARGET AREAS

(Continued from page 16)

a very valuable purpose. It has spotlighted regions of the country where UHF set saturation is sufficiently high to warrant removing the existing VHF operations from the area.

For example, the Commission feels that in areas where the set saturation is fifty per cent or better, the changeover from VHF to UHF operation of the existing VHF station would prove no financial hardship on the VHF operator. The Commission points out that in the public interest, all television operations in a given area should be able to compete on what begins as an equal footing. This means operating at least in the same portion of the television spectrum.

Not all Commissioners feel this way. But even those who will not admit fifty per cent conversion is sufficient to order all existing V's in the area to UHF, are quick to acknowledge that seventy-five per cent and better conversion certainly is significant!

It was with this thought in mind that the Commission ordered Fresno, California channel 12 KFRE-TV to channel 30, placing KFRE-TV with two other Fresno stations already on UHF.

And it is with this same thought in mind that the Commission is now in the hearing stage in an attempt to move KERO-10 Bakersfield, California to UHF channel 23. Bakersfield's other two TV stations already operate UHF.

Obviously if Fresno and Bakersfield, California are regions where UHF set conversion is high, and the VHF stations are being ordered to UHF, there must be other similar regions within the country.

There are. And for the first time in print, here are the major target areas which the FCC will consider for formal change-over to ALL UHF within the coming 6-12 months.

Madison, Wisconsin—

Dane County — 74% Conversion
1 VHF, 2 UHF

Champaign, Illinois—

Champaign County — 62% Conversion
1 VHF, 4 UHF

Lancaster, Pennsylvania—

Lancaster County — 63% Conversion
1 VHF, 2 UHF

Hartford, Connecticut

Hartford County — 90% Conversion
2 VHF, 5 UHF

Will the Commission stop with these four "target-areas?" The answer must, at this time, be a resounding NO! Based upon the problems the FCC has (or does not have) in de-intermixing the above four regions, a large number of cities with similar UHF conversion figures can expect like fates in 1962.

Of particular interest to UHF translator and Cable System operators in the four regions listed, however, is the almost certain loss of *beyond grade B reception* by population centers which now must be satisfied with marginal signals on VHF. These regions will be ripe for either translators or cable, because here are people who already know what television is, but who will see their one (or two) channels suddenly taken away in favor of slightly shorter range UHF. The aggressive translator or cable salesman, we believe, will begin to cultivate his markets now, BEFORE the conversion to U becomes an established fact.

R.B.C.



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TRANSLATOR YAGI SKEWING

Operators of translators face many of the same problems that have confronted commercial television stations . . . that of placing the radiated signal where it covers the maximum number of receivers with the most efficient use of the antenna power. In general, this is accomplished by proper design of the transmitting antennas which in turn throw the lobes in the desired direction(s). Herein are presented a few of the numerous antenna "skewing" arrangements available to the translator operator. (This material was taken from Bulletin Number 15, available from Technical Appliance Corporation of Sherburne, New York, to whom *Television Horizons* is indebted for reprinting permission. The complete bulletin is available upon request from TACO.)

Editor's Note: In this transcript, reference

is made to TACO Ruggedized five and ten element yagi antennas having a terminal impedance of 72 ohms. The techniques covered herein are also adaptable to more conventional yagis as used in this service, where the terminal impedance is on the order of 300 ohms. It may be necessary to make minor adjustments in the positioning, but the desired results are obtainable nevertheless.

Physical "skewing" of vertically stacked horizontally polarized five and ten element yagis can provide integrated patterns up to 130° wide. Polar patterns used to illustrate this article show horizontal patterns for various angles of "skewing." The patterns are plotted in voltage and referenced to a half-wave dipole represented by the dashed figure—"8" pattern. The power gain at the angle of maxi-

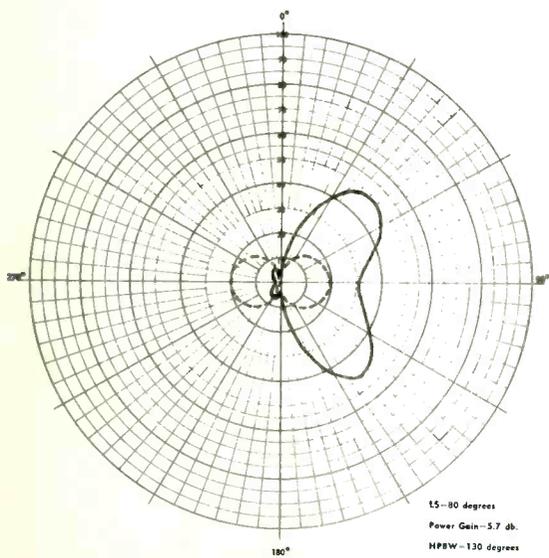
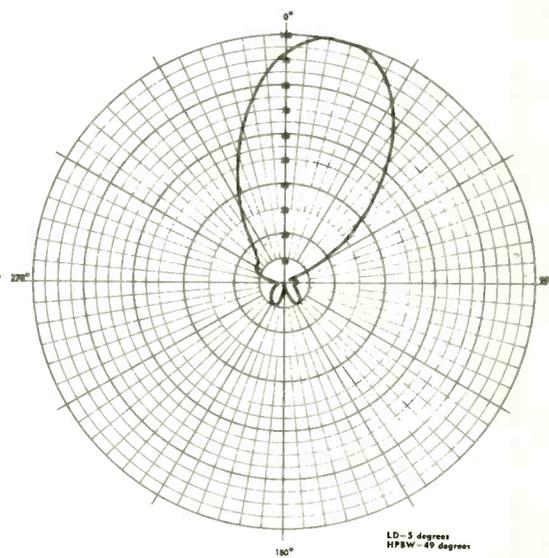


Chart showing 130° Half Power Beam Width obtained with two ten-element TACO Ruggedized yagis, with angular "skew" of 80°.



Polar pattern obtained with two TACO ten-element Ruggedized Yagis, illustrating effects of 30° skew with depression angle of 5° below horizon.

mum radiation, relative to the dipole, is shown for each pattern.

It will be noted that for 80° of skew of a ten element yagi, the nose of the pattern is four db. down from the maximum points at 45° and 135°. This representing a power difference of 2.5. To obtain this plot, a pair of TACO Y103-10 yagis were stacked thirty inches apart on a vertical mast and interconnected with a Y-SL5 stacking line. Horizontal polar patterns were then recorded for every 5° of "skewing" from zero degrees (both cross-arms parallel) to 90° (crossarms at right angles to each other).

A beam width of 45° was recorded for angle zero degrees. Very little expansion of the beam width is noticeable at angles between zero and thirty degrees. Increase of the angle of "skew" between 30 degrees and eighty degrees however result in rapid expansion of the beam width. At skewing angles in excess of 90° the pattern begins to divide into the individual patterns of the separate antennas.

V.S.W.R. measurements were made across the channel for the various angles of "skew." De-coupling between the two bays resulted in slight changes in the V.S.W.R. measurements, as the angle was increased. At angles of more than 70° the change in V.S.W.R. was insignificant. The accompanying chart shows the

measured V.S.W.R. at zero, 30, 50 and 70 degrees of skew.

It should be borne in mind that the gain of the array decreases as the radiation angle increases, therefore gain requirements will dictate the use of arrays having four antennas. The same patterns can be obtained by "skewing" two double bays. This will result in additional power gain of 1.75 (2.5 db.) over the levels shown in the chart.

In some cases, it has been found desirable to have some beam tilt relative to the plane of the earth's surface. A single pair of TACO Y103 yagis will give half-power coverage at a distance of four times the height of the antenna above average terrain. In the case of a double pair (four bays) the half-power point will be at a distance 6.5 times the tower height. Where coverage is desired close in to the tower, some beam tilt can be obtained by physically tilting the nose of the antenna downward. To avoid phase distortion in the array the angle of physical tilt on the mast should not exceed 7.5° for two bays or 2.5° for four bays. Where this is inadequate, the entire array structure including the supporting mast should be tilted as a unit to maintain the physical relationship between the antenna. (*Editor's note:* This is covered in detail in the complete bulletin, together with illustrations and charts).

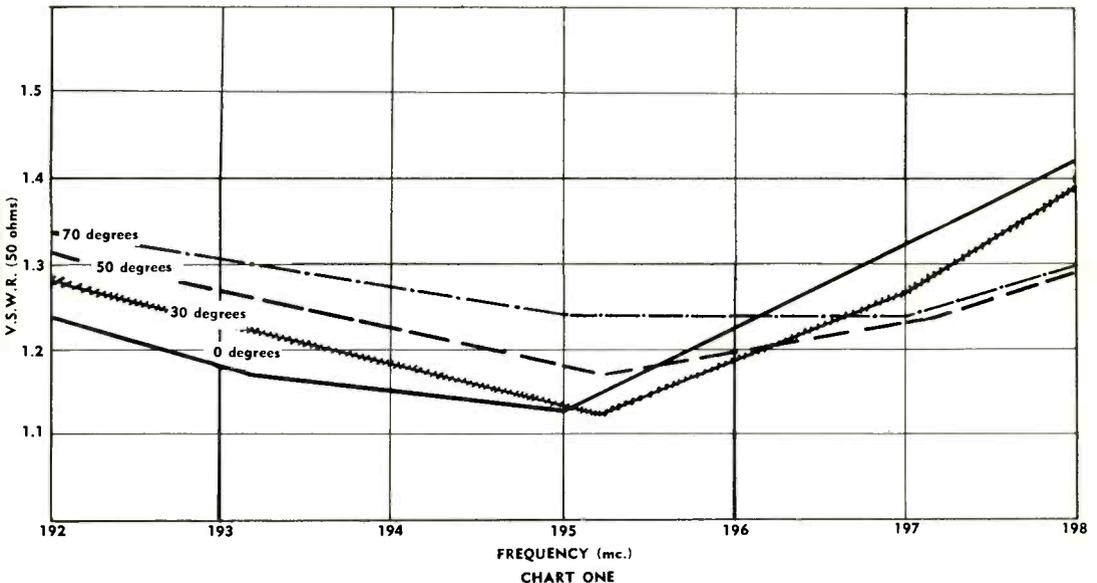
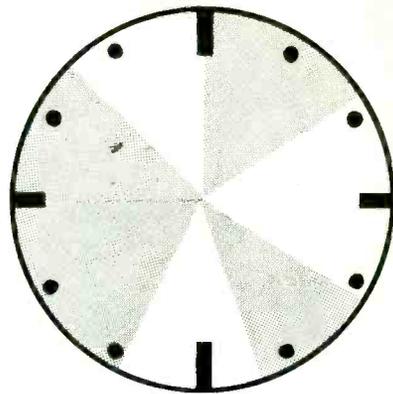


CHART ONE
V.S.W.R. versus frequency for various angles of 'SKEW.' (Zero, 30, 50, 70 degrees)

PART-TIME TELEVISION



One of the most shocking television re-broadcast situations in the country exists in Palm Springs, California. This "bursting" resort city seeths with resentment for a local cable television system which boasts an estimated 6,500 drops. That Cable TV can or cannot provide good television to this community is not the question. That a slugfest battle has existed for years in this city between the Cable system and the Translator city . . . this is the question, and topic for this exclusive Horizons report. We take no sides . . . this is pure journalism at (we believe) its best. We believe that something must be done at the FCC level to correct this situation which has now existed for more than five years.

To re-coin a phrase, "broadcasting is in the public interest . . . and PART-TIME television is NOT in the public interest."

Palm Springs, California is California's number one resort town. In terms of capital spent here annually, it must be very close to the top of the list on a nationwide basis. So closely is this desert town's very livelihood tied in with the resort business that more than seventy-five per cent of the city's 6,000 plus motel-hotel rooms and three out of every five business shops close down from May 15 to October 1 each year, during the "off season."

During the period of the year when the remainder of the nation is being belted with wind, ice, cold and snow, Palm Springs is enjoying wintertime "highs" in the mid 70's and low 80's free from the Pacific Coast storms and a literal haven for anyone with the pesos necessary to get away from it all.

Thus "tourists" are big business. They are the number one "import" and the money they leave behind is the very lifeblood of this town.

But for all of this seclusion and wintertime weather, Palm Springs must pay a "price." And that price is isolation. Palm Springs is due east of Los Angeles, on the northern edge of the "Imperial Desert Valley" of California. Due east in this case means 110 airline miles through a series of mountain ranges which virtually "shut out" all VHF and UHF television signals.

To solve the "no television" dilemma in the mid-50's, Paramount Pictures Corporation (also licensee of KTLA-5, Los Angeles) installed a "pay television" system in the town. The pay part of the system was a flop, but with the cable installed it was only natural for the town to accept the "free" TV portion of same. So the system was sold by Paramount and has been operating as a seven channel cable since the termination of the pay TV experiments.

To fully understand the potential of the Cable System in Palm Springs, it should be pointed out the town has 375 motel or hotel type operations, with another 75 mass housing buildings outside the city limits. All told, these facilities can house in excess of 7,000 "tourist residents."

Now when a tourist arrives in Palm Springs, he is looking (a) for relaxation, (b) solitude, (c) enjoyable weather and (d) all of the comforts (and then some) of home. It is with the latter that Palm Springs falls down.

Naturally, every tourist looks for television when he checks into his motel or hotel accommodations. But what the tourist does not know is that the motel is paying \$7.00 per month *per set* for his cable connection during the months of October through July, and \$2.00 per set during the months of July through October. Thus the average motel or hotel room pays \$69.00 per set per year for the use of the cable signal, even though the room



1,250 FEET ABOVE SEA LEVEL Palm Springs translators look down on the desert valley town below. Mountains in the background form a portion of the range which shields the city from Los Angeles TV signals. Translator site is north and east of the city. Antennas in the foreground are receiving arrays for channels 2 and 4, Los Angeles.

is rented ONLY from October 1 through May 15. In seventy-five per cent of the motel and hotel rooms, there are not only no tourists—there is no activity whatsoever. The establishments are closed down completely.

Not all of the town's motel and hotel rooms are inter-connected to the cable. An estimated 6,500 sets (including private home owners and restaurants, etc.) are on the cable. Factual sources told Horizons another 6,000-8,000 drops could be made in the town . . . *the customer's are there.*

Approximately twenty-five per cent of the town's motel and hotel sets ARE on the cable.

House drops (non-commercial) are equally expensive. If you live in one of the more exclusive districts in Palm Springs (the entire town is exclusive, so how exclusive is actually only a matter of degree) your "underground drop" can run into the hundreds of dollars.

With all of this in mind, various residents of the Palm Springs region were susceptible to the sales talk of a Los Angeles Translator salesman. One of the early backers of the translator system in Palm Springs was Frank Bennent, a long-time resident of the resort city

who remembers when the entire town was "but several blocks long." Bennent's interest in the plight of the town's television stems from his early ownership "of a good piece" of what is now downtown Palm Springs.

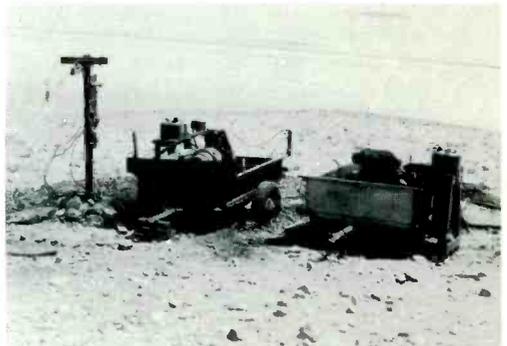
Bennent himself was once in the real estate business, and he has watched (and helped) the resort city grow over a period of several decades.

He told Horizons: "When the motel and hotel owners petitioned the Mayor's office for a study of the existing cable television system, I felt it was time for something to be done. After all our very life blood in this town depends on what we have to offer the tourists. When television reception is kept out of the majority of motel and hotel rooms because of high cost, I decided to back the non-profit translator system."

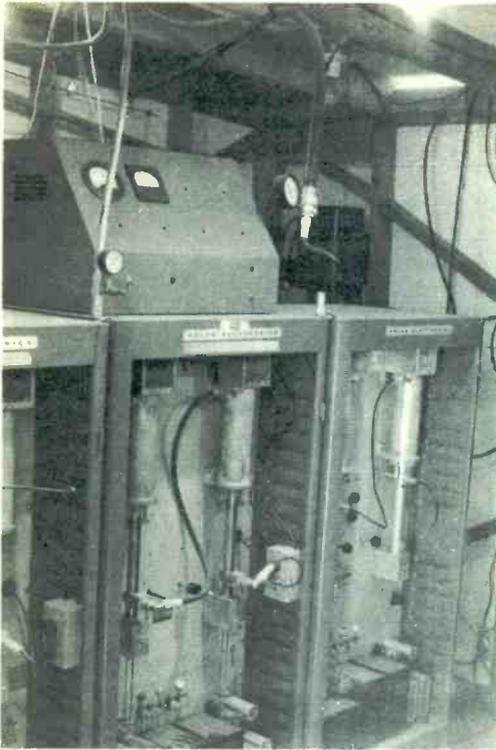
Now up to this point the Palm Springs story is very similar to any number of competitive translator versus cable situations which have sprung up during the past five years across the nation. Horizons feels these facts must be told, however, IF the reader is to have a complete grasp of what is to follow.

Armed with a desire to bring translator television to Palm Springs, Bennent and his fellow Palm Springs citizens set about the legal and financial channels to put the stations on the air. Financially the group showed real promise, with 2,500 set owners (or potential set owners) pledging their \$15.00 per year. The initial money was to be used to put two translator channels on the air. The site would be cleared, the antennas mounted and the translators installed.

But then when the finances were running smoothly, a legal bomb fell in the lap of the translator group. Stations KRCA-4 Los Angeles (owned and operated by the *National*



SO REMOTE is the Palm Springs translator site that all power must be "trucked in." The original generators were run on butane, while this pair operates from gasoline hauled to the top of the desolate peak.



INSIDE THE TRANSLATOR SHACK three Adler units crank out the UHF signals from the two Los Angeles stations and a Tijuana, Mexico station.

Broadcasting Company) and KNXT-2 Los Angeles (owned and operated by the Columbia Broadcasting System) refused the Palm Springs group permission for rebroadcasting! But not all broadcasting, just that portion of the telecasting day which originates in the Los Angeles studios of both stations.

Both KNXT and KRCA were willing to grant rebroadcast permission to the translators for network programming, *BUT not for the local broadcasts*. "Local broadcasts" in this case was taken to mean all film, tape and live programming which originated through the studios of both stations.

Bennet and his translator constituents, knowing full well that other translator groups in the west were not having this kind of problem, prepared to fight through a long round of FCC protests and court battles. But common sense and the desire for "translator television—NOW" won out and the Palm Springs Translator Cooperation filed for UHF units on channels 70 and 73, noting that "the translators would be operated only during the hours of the day when network programs were being broadcast from KNXT and KRCA."

Still Bennet did not give up his fight. First

he filed similar requests for rebroadcasting permission with the other five Los Angeles stations. The ABC outlet (KABC-7, owned and operated by the American Broadcasting Company) refused even permission to broadcast the network programs. Independent stations KTLA-5, KHJ-9 and KTTV-11, being interconnected with no network, and originating only live or local "in studio" television, also refused *any permission*. KCOP-13 (at the time partially owned by Bing Crosby enterprises) first granted permission and then revoked it after the Palm Springs translator had their application in the mail to the FCC.

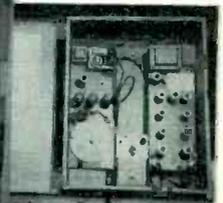
Bennet and his group grew more infuriated by the day when they learned that all seven Los Angeles stations had, during the period 1954-1955, granted FULL rebroadcast permission to VHF Boosters (*illegal yet!*) at China Lake Naval Air Base and Camp Irwin. The letters granting permission to both of the "government installations" are still available for public inspection, according to Bennet.

(Continued on page 35)

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FM on CATV

A community television system is a service organization purveying a community service, and the more attractive that service, the more people will subscribe to the service. Which makes three too many "services," but you know what we mean. And what we want to talk about is how to enhance the value of a CATV drop to the subscriber by providing him with a second service—music.

The great resurgence in FM broadcasting has put FM tuners in many homes, some in cases where the owner cannot use them because of the limited range of FM stations. By adding FM to a cable system these tuners can be provided with signal picked up at the CATV antenna site, or by producing FM signals from AM stations or any other audio source such as a tape. This article is concerned with *how* you do the job of processing and delivering these signals.

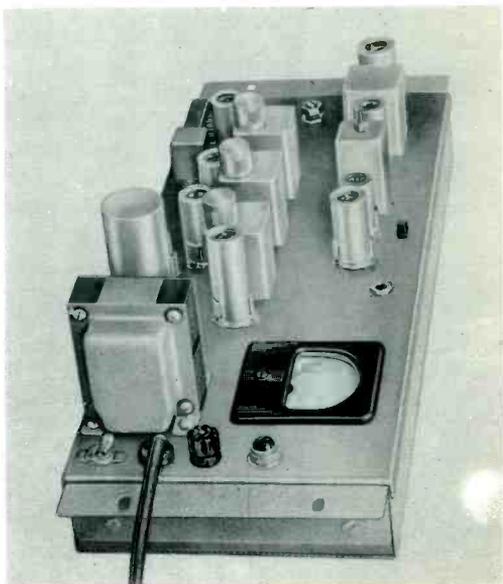
We have no worry about the cable handling FM signals, nor the tap-off units, so our job, then, is to introduce FM into the cable at the head end, amplify it at the amplifier stations and take it off the drop wires in the home for use by the FM receivers.

The largest part of the job is handled by the line amplifiers, and we must determine whether they will handle the FM band. Broad band, stagger-tuned amplifiers can usually be readily "broadened out" in their response until they cover a good part of the FM band (up to 95 mc.) without affecting their performance.

Distributed amplifiers easily cover the FM band, being designed for extreme bandwidths. Taking the more common case of the stagger-tuned amplifiers, with their approximate 95 mc. upper frequency limit, as an example, we can proceed on the assumption that the alignment has been done and the system balanced. We now have the spectrum space from 88 mc. to 95 mc. to use for FM.

We should maintain a .5 spacing between FM carriers. We now have three likely sources of audio for these carriers, FM broadcasts, AM broadcasts, and tape recordings.

Take the FM broadcast first. FM signals are prone to the same troubles that plague TV broadcasts, but the problems are less severe

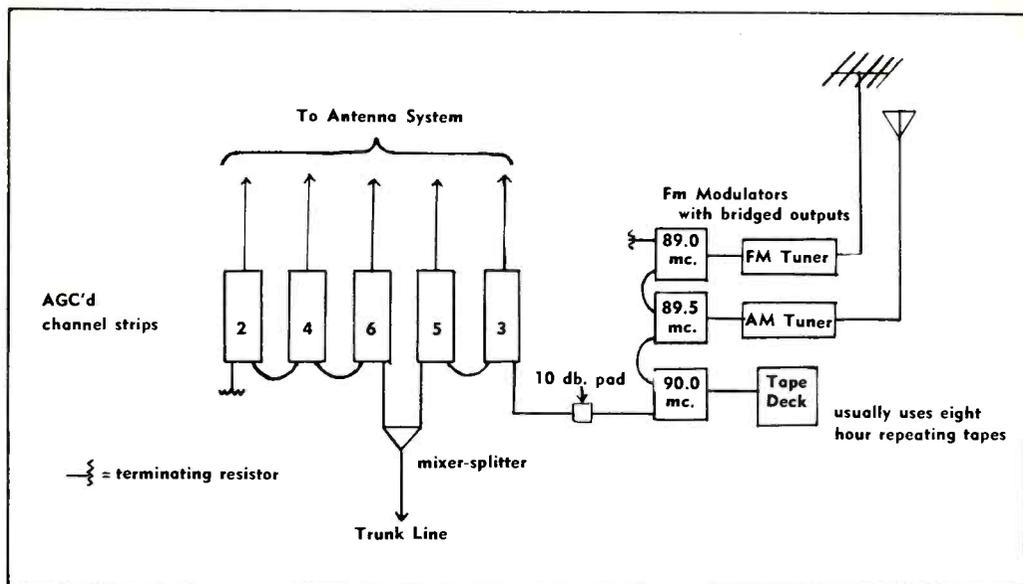


MODEL AFM Audio Modulator

due to the narrow band transmission, 200 kc. FM Yagis are built for pick up of signals with gain similar to TV Yagis, and they are handled the same way. The best handling technique is to use a superior FM tuner designed to have good local oscillator stability plus AFC (automatic frequency control) and lots of surplus gain to provide good limiting action. The output of such a tuner will be very high class audio with relatively low signals, on the order of a few microvolts.

If AM signals are desired, then precautions need to be taken about noise, which means a good AM antenna, properly oriented and coupled to the receiver. The same quality of receiver should be used, including a stable oscillator and possibly AFC. Again the output of the receiver is audio. The tape recorder, of course, will give you audio also.

Now, these audio signals need to be used to provide the modulation for an FM carrier, which calls for an FM modulator such as the one illustrated in Figure 2, which provides an FM output at any frequency in the 72 to 76 or 88 to 108 mc. range. Such modulators should be crystal-controlled. The next step is to mix these signals into the trunk line at the



Typical Head-End Setup for FM Addition

Figure 3

proper level. Figure 3 is a block diagram of a typical head end setup of three channels of FM mixed into a five-channel low band CATV system. This diagram illustrates the general method of connection when the strip outputs are of the bridging type. FM levels measured at the trunk line should be 15 db. below the video carrier of Channel 6 in order to avoid any possibility of cross-modulation in the line amplifier.

An alternate method of mixing is shown in Figure 4, where bridging outputs are not available, or the strips are single-ended. This method uses a directional coupler such which is important to prevent FM signals being split back into the TV amplifier output, which may not match at these frequencies. This eventually could result in standing waves, and possible cancellation of some of the FM signals.

The next job is to provide a signal tap-point for the FM receiver in the home which will not cause TV difficulties. A plain splitter is not good—it reduces the TV signals and it is in the position of feeding two devices, one the TV set—which doesn't match FM frequencies, and the other the FM set—which doesn't match TV frequencies. There is consequent danger of trouble from standing waves.

The only really good method is a frequency selective tap placed in the drop line inside the dwelling which diverts the FM signals to the FM set and passes the TV signals practically without loss. A typical tap of this type

is the Jerrold FMT. This tap shows 9 db. isolation from the TV tap at the FM frequencies and only 1 db. loss to the TV frequencies—both high and low bands.

The high isolation at the FM frequencies is not harmful—FM sets work quite well on ten microvolts. Figure 6 shows the application. Another quite attractive idea is to sell an FM drop only—for doctor's offices, restaurants, etc.

So far things are easy—but let's not avoid realism. Somebody can always goof, and it behooves us to look at what can happen to us if we let penny-wise, pound-foolish thinking sway us.

That FM tuner had better be good! For example, if it drifts thermally we'll be running up to the head end twice a day to tune the station back in. Oscillator stability can be gotten quite well by the use of AFC circuits, and they are good—but aren't the whole answer because an AFC circuit is a little stupid—it doesn't know what station you want. For example, suppose there are two FM stations close together in the band and you want, let us say Station A. Station A goes off the air at twelve midnight, as does Station B. But station B comes back on at 7:00 A.M., a half hour before Station A. The AFC is looking for a station and it finds Station B and promptly locks in on it, and it will stay locked in onto it—you won't hear Station A all day.

Another way it can bother you is if you
(Continued on page 36)

TRANSLATOR

Prepared monthly by
James Beamer
P. O. Box 833
Livingston, Montana

TOPICS

BROADCASTER VHF APPLICATIONS— ACTION SOON

Anxious VHF (and UHF) TV broadcasters have begun to place the pressure on the FCC to turn loose a stack (more than seventy to date) of applications for VHF translators originally filed for by broadcasters themselves. In any number of eastern, midwestern and (in rare instances) western states, TV broadcast station licensees have filed with the Commission seeking to install VHF translators in areas where their direct signals do not reach. In some cases the region applied for is "in the backyard" of other broadcasters. In other cases the licenses have been filed in towns where CATV systems exist, but where direct reception of the station is not possible. In more than one case a UHF broadcaster has filed an application for a VHF translator to cover nearby adjacent regions with a VHF signal. Reportedly these UHF broadcasters feel "if we can't put in enough signal to make the viewers go to UHF installations, give them a VHF signal they can see."

Whatever the case the pressure is on in Washington to "do something . . . almost anything" which will indicate just how the Commission intends to handle these applications.

In early March, shortly after the first CP applications began to move, one broadcaster application from Texas was processed for approval. The Commission withdrew its approval, however, when it recognized the precedent setting such an application would have, and to date not one of the seventy odd VHF translators applications filed by and for broadcasters has been acted upon.

The problem of "how to handle" these broadcaster sponsored applications is one of the most tricky legal snafu's the Commission has ever gotten itself into. First of all, the VHF translator service was established to correct a condition the FCC could not handle,

VHF Boosters. Acting under the theory "if you can't fight 'em, join 'em" the FCC made VHF Boosters legal, PROVIDED the existing and future units would adhere to a few simple regulations.

But once the service of VHF translators was established, the Commission began to hear rumblings from broadcasters which went something like this. "Say, there is a neat way for me to extend my signal to the 10,000 receivers in Glumville, at a cost of practically (to broadcasters) peanuts."

Or, to put it another way, "So the FCC made us stick it out on UHF while our two neighboring competitors have VHF channels. Let's file for a VHF repeater in their town. After all, it's only fair . . . isn't it?"

And finally, "I never have liked that cable system. They won't carry my signal, so I'll fix them. I'll put a VHF translator in their town and give the town my station's signals . . . and then watch the cable system squirm!"

Then the applications for NEW VHF translators began to hit the Commission. Approximately every second NEW application for a brand NEW translator was coming from a broadcaster!

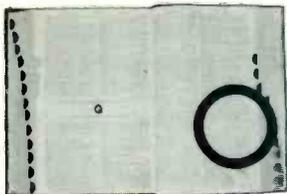
What could the Commission do? Ignore the applications and hope they would go away? Attempt to discourage the applications on the basis of the nature of the applicant? Or, draw up a new set of rules which would OK VHF translators for broadcasters, provided the broadcasters played the game by a different set of rules than those applicable to the citizen's groups applying for translator station licenses?

The Commission chose the latter approach, and for the past sixty days the matter has been one of some urgency at the FCC.

Word from Washington indicates to TVH the following will occur within the next 45-75 days.

(A) The FCC will release a set of rule amendments and additions which will create

Noah Webster Says . . .



QUAL-I-TY 1. That which distinguishes one object from others of the same species. 2. Degree of excellence. 3. Characteristic property.

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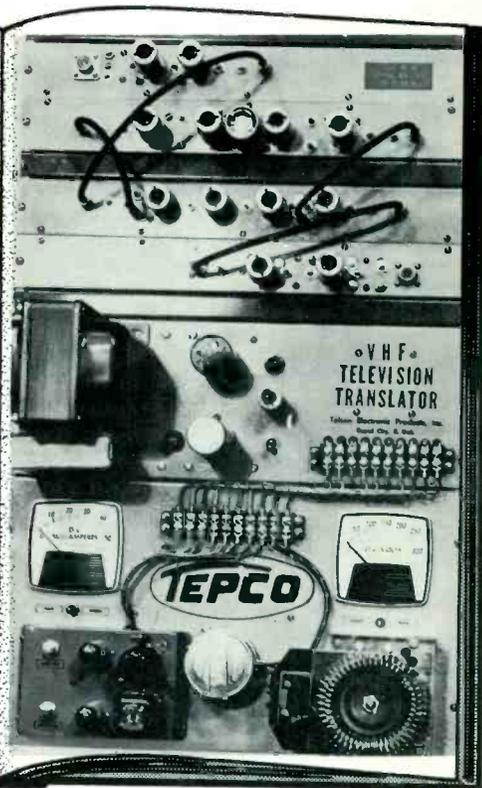
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1st Mixer	6688	2nd Oscillator and Multipliers (2)	6922
1st Common Amp.	6688	Rectifier	5R4
2nd Common Amp.	6688	Coder	7728
2nd Mixer	6688	Cut-off	7728
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a new—special form of VHF translator service applicable only to broadcasters.

(B) Broadcaster's will find the new regulations so tough to meet and so complex to operate under that many will be discouraged and forget the entire idea.

(C) Those who do decide to pursue the applications further will find they must withdraw the new pending applications for further research and data processing.

(D) In general, broadcasters will be discouraged from filing for VHF translators, although if they press the matter, they will receive their licenses.

In regions where VHF translators have already been installed by citizen's groups, broadcaster ownership and operation of translators will be almost unheard of. It is only in regions where translators are not well known that broadcasters will be forced to do the installation themselves.

All of which is another way of stating, "The smart broadcaster is agitating for citizen's groups to file the application for the translator, because the original intent of the VHF translator service was for "citizen's operation" anyhow."

One broadcaster in San Diego summed it all up with, "The VHF translator service appears to be another monster like the Citizens Band radio service, created by the Commission. If intent were the law, there would have been no trouble. Now, however, the Commission has been forced to make the rules and regulations so lax that intent means nothing, and as a result we have a monster on our hands."

Someone put in a call to Sir Lancelot!

MEANWHILE—BACK AT THE RANCH

The first "application for modification of a construction permit" has passed through the Commission. The Chico TV Booster Club of Emigrant, Montana filed an application to change the type of transmitter specified from a previous choice to an EMCEE model HRV, which proves (we suspect) that the art of salesmanship is not dead yet!

Meanwhile two translator groups have notified the Commission they have "completed their construction" and are already for their licenses. The Village of Center, Nebraska and the Newcastle TV Assn., Inc. of Newcastle,

Wyoming have filed for their permanent licenses.

As could be expected, some translator operators have neglected to observe the June 1 filing date for construction permit applications. Applications continue to arrive at the Commission at press time at the rate of about twenty-five per week. Meantime the Commission tells TVH, "*we are all caught up with granting applications. Now we are to the point that we are granting CPs for applications filed thirty days prior to the granting date.*" In other words, if your application is in order, you can expect your CP to be granted thirty days after you file. (Note: A thirty day wait is mandatory under Commission regulations, in order to allow sufficient protest time should anyone wish to file protests against or contend your application.)

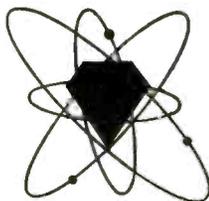
Application number 966 for a VHF translator station CP was filed as we go to press. It belonged to the Spearfish TV Assn., or Spearfish, South Dakota.

During June an application originally made by a broadcaster (Cascade Broadcasting Company, Ephrata, Washington) was withdrawn "at the request of the attorney;" apparently this station got tired of waiting around for Commission action. Meanwhile WCHU-TV (channel 33) filed an application for a channel 5 unit to cover Champaign, Illinois. Champaign is the home of WCIA-3.

The Commission is still not adverse to granting Special Temporary Authority to "illegal boosters." As late as mid-June section 4.790 of the rules was waived allowing Beach, North Dakota (channel 4 unit), Plush, Oregon (channel 4 unit) and Laurier, Washington (channels 2, 4, 6 on-channel units) to file (eventually) for VHF translator licenses. All of which brings up the Commission's (unofficially) announced drive to turn up an estimated 250 plus still operating illegal VHF boosters during the summer months. Pressure has been placed on the TVH editorial offices in Modesto to turn loose our files on the subject, but subscribers need have no fear that we will. The Commission representatives so far have been "merely asking" for our records, and barring an ugly court injunction (very unlikely) it will probably go no further than "asking."

Ah me . . . *freedom of the press!*

J.B.



GENERAL ELECTRONIC MFG., INC.

P. O. BOX 865

ROSEBURG, OREGON

A Product of Merit

July 1, 1961

VHF TRANSLATORS
RF PREAMPLIFIERS
HI-GAIN OMNI-DIRECTIONAL ANT.
ELECTRONIC WHISTLERS
ULTRA-SONICS

An open letter to the translator operators of America . . .

So many facts and figures, claims and counterclaims are floating about the translator field these days we felt the time has come for the GEM engineering staff to explain exactly why we feel our GEM series of VHF translators offers you the most for your television dollar.

First off, to our knowledge we offer the **ONLY** VHF translator of modular design. This design feature offers many distinct advantages. Primarily, with modular design your initial installation will never become obsolete should you desire to change to a different channel, or higher power, at a later date. With modular design you merely change the necessary crystals for proper conversion and realign each modular unit to the new frequency.

Another unique feature of modular design is the "add-on" power flexibility. For example, should your coverage area grow, or change in shape or pattern, you do not need to replace the entire translator. You merely add-on a new final amplifier module to fulfill the new power requirements.

Most important of all, perhaps, is the well established fact that high gain amplifiers may cause feedback which in turn will degenerate the picture quality, unless severe and expensive restrictions are made to prevent this. In modular construction each unit is completely isolated from the others, making the overall translator operation one of utmost stability.

There are many other desirable features for modular construction including the ease of servicing, should the need arise. Any trouble that might arise is isolated, and therefore the cause is quickly pinpointed and the cure perfected.

In the GEM modular translator, the first two "all-triode" amplifier units provide a minimum gain of 100 db.; these are followed by two converters, each with a gain of 12 db., and then the final amplifier which also yields in excess of 12 db. gain.

These modular units provide an overall gain in excess of 136 db which presents a very low-level signal to be reproduced at the one watt output power without difficulty. The translator front end, being of all triode design, lends itself to very low noise—high gain operation on even the weakest signals.

Of course all GEM translators are completely automatic in operation. In fact GEM still offers the only inexpensive radio control accessory which makes our translator ideal for isolated mountain peak operation. Station identification is also completely automatic, with simultaneous audio and video identification modulation each thirty minutes.

The panel of the GEM VHF translator features a meter and meter switch which allows the operator instantaneous monitoring of each monitored stage. Fittings are standard UHF low loss coaxial type. Input and output impedances are 75 ohms, although special impedances are available on order.

Naturally, in this quality product, a full one year warranty goes with each unit.

We hope you will keep these thoughts in mind when selecting a "lifetime investment" VHF translator for your coverage needs. GEM makes the **ONLY** complete line of VHF translators, with prices starting as low as \$650.00.

Write us today, won't you?

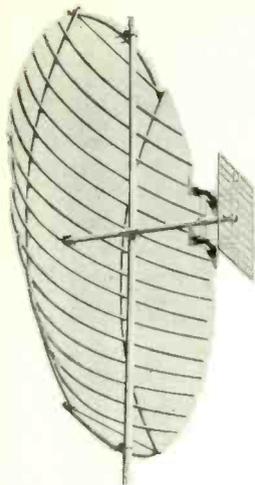
Yours for better translator television,

Gem, Inc.

GEM/ic

GENERAL ELECTRONICS MANUFACTURING, Inc.

Post Office Box 865 • Roseburg, Oregon



UHF HORIZONS

Conducted Monthly by
Harlow Speckhart
Route 1, Box 317
La Grande, Oregon

"News of the UHF Translator World"

RAISING FUNDS FOR NON-PROFIT TRANSLATORS

(Part Two)

Last month we discussed public support and membership fees as they apply to VHF-UHF translator operations.

Unfortunately, even the best planned and most ambitious translator projects face an uphill fight all the way in raising sufficient funds to keep the units operating.

Many translator groups will tell you that raising the initial funds is always much easier in a "TV-less" region than it is in a region where some off the air or cable television is available. However "newcomers" to the game should keep in mind that raising money is always a problem, no matter how worthwhile the cause.

For example, the isolated town or village knows only so well that broadcasting is free in this country. According to rules and regulations prescribed by our Federal government, it is a service which the citizens enjoy with nothing more than the purchase of a receiver. Therefore, if you live in a region which has a high turnover in local residents, or in a region which once had TV, but through FCC allocation changes and whatever, you are now without acceptable television, *you have an educational job on your hands*. First of all, television WAS free before, why is it not now! The set owner (or prospective set owner) will ask you why his cousin in New York doesn't pay money every month to have television, and *YOU must have the answer*.

Once the fund drive is underway, you will soon discover that not everyone is going to be

quick to pay their share of the load. There has always been, and there will always be "the freeloader" problem. Some translator viewers simply will not pay. In some cases it may be a matter of finances, but in most cases it is pure stubbornness. Faced with this problem, the initial planning stages of the translator installation must be cognizant of the fact that an "educated populace" which has been well versed on what the translator is, and how it works, will not be so quick to believe *stories* about the unit's operation for profit. *Some residents will simply believe that because the translator is a "broadcasting station" it must be making a profit!* And nothing you can say or do will change this erroneous attitude. Nothing, that is, except . . . (A) If the freeloader problem becomes severe, simply shut down the translator and make a public announcement to the fact that because of lagging public enthusiasm, the system has run out of sufficient funds to continue meeting the operating costs. This trick has been employed very successfully in Minnesota, Washington and Oregon to our knowledge. In one Minnesota town five days of "no-TV" raised so much public sentiment AGAINST the non-contributors to the system that support jumped from forty per cent of the viewers to eighty-four per cent of the set owners! And the translator soon had sufficient funds to continue operating all year.

In some cases a list of "paying" viewers is posted at a public place for the inspection of the local townspeople. Public sentiment, so aroused, will frequently do the trick.

However, it is not always necessary to "embarrass" the non-paying viewers. They KNOW who they are, and when the station is shut down and the reason clearly stated, their conscience (and kids!) soon start bothering them. (B) Another successful operation has found wide acceptance in Montana. Here translator groups provide window stickers ("*We Support Translator TV*") which the donator attaches to his front window after he has given his share for the year. This is a constant reminder to the non-supporters (and their neighbors) that they are freeloaders. An occasional story or tag-line in the local newspaper to the effect "*Is your neighbor a supporter of translator television?*" usually brings the desired results.

FUND DRIVES

Let's assume you want to bring new or expanded translator television to your town. How do you go about it?

Several successful methods have been em-

ployed and/or suggested by completely competent translator installation firms. Other methods have been "dreamed up" but to the best of our knowledge never attempted. Here are a few of both.

Local Civic Group—In this example a local club (20-30 Club, Jaycees, Rotary, etc.) takes on the subscription drive as a public spirited move. The group will canvass the area, collect the monies, and make all of the arrangements with the translator installation firm to complete the installation. Normally the money collected is placed into a *proof of performance fund* at a local bank where it is held in escrow until the translator installation is finished. Then, upon operating proof that the system can provide UHF television signals in a manner which was originally promised by the translator sales company, the money is turned over to the installers. And at the same time the local civic organization has gained a big moral boost in the community, for it was they who (in the public's eye) brought television to the town.

Town Leaders—In the absence of a local civic organization, the above plan is often proposed by a voluntary committee of leading town fathers. Most such organizations include

a local banker, a few shop keepers, and perhaps a judge or lawyer. The mechanics of the *proof of performance* arrangement are identical, however, to the above plan.

Boy Scout Plan—Any town of substantial size has a boy scout troop. In most small towns the troop (or confederation of troops, called a council) are themselves lacking proper donated funds to do anywhere's near all of the scouting they would like to do. In such cases the local translator committee will make arrangements with the local scout leaders to enlist their aid in keeping the fund drive going. For example, one proposal would have the scouts collecting *donated translator funds* either as a single-bulk (once per year) subscription, or a monthly basis. For their aid in collecting the funds, the scout troop receives a percentage of all of the funds collected over and above the money needed to keep the barest rudiments of a translator system in operation. This is the double-barreled approach which combines the homeowner's desire to have television with the parent's desire to provide his town's children with the best possible recreation and educational facilities.

Above all, keep in mind that although the
(Continued on page 35)

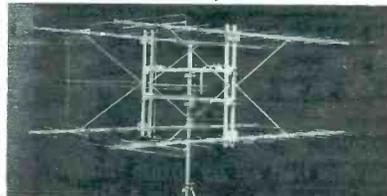
SITCO

Heavy Duty Quads and Yagis

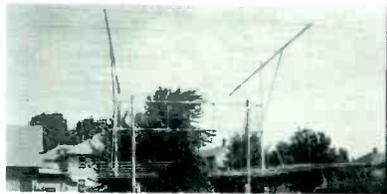
Designed by SITCO for Translator off-the-air pickup, Community TV and extreme fringe area requirements.

The SITCO Models 94 and 102 Quad Mount Antenna Arrays are designed to produce high gain, high front-to-back ratio and large aperture to weak signals. A completely balanced system which reduces noise pick-up and greatly improves the signal-to-noise ratio.

NOW, all SITCO element ends are machined to reduce static leakage. The signal-to-noise ratio is increased at sites where signal levels are low.



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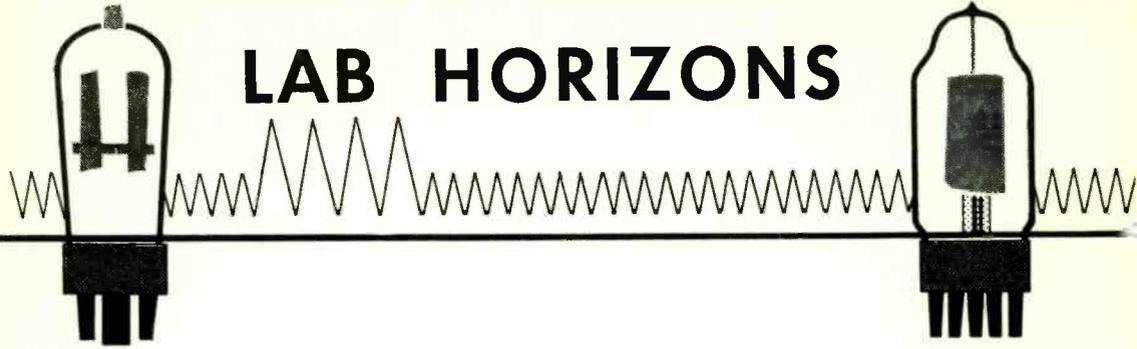


Model No. 94-HD 32-element Quad

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LAB HORIZONS



Mast Mounted Preamplifiers WHY and HOW?

(PART TWO)

By Jack Beever
Jerold Electronics Corporation

Last month we promised to talk about V.S.W.R.—voltage standing wave ratios—and noise figures, and how they affect the use of mast-mounted preamplifiers.

V.S.W.R. is a term which applies to an effect seen in transmission lines carrying r.f., and the effect is only seen when the line is *not loaded to its characteristic or surge impedance at its terminal end*. The key phrase is the one in italics, but the effects on a TV picture are not readily apparent from the description, and it is best that we discuss standing waves from this angle. We will try to take a new approach to the subject.

Figure 1 shows a length of parallel pair transmission line such as the familiar 300 ohm twin lead, with an r.f. generator connected to one end and nothing to the other. The generator is symbolized, but may be, for example, an antenna, an r.f. transmitter, an r.f. amplifier, or a mast or antenna mounted preamplifier. Now let us imagine a character who can't see r.f. generators, but can see transmission lines and the currents in them. Looking at the end of the line (b) he sees a point where maximum voltages develop at the peaks of the alternations of the r.f. At the other end of the line (a) he sees a point where similar peaks

of alternating voltage occur. In other words, *both ends of the line look alike*—they both act as if a generator were connected to them, and as if each generator were sending currents down the line.

Suppose we now change it so that the end of the line (b) is shorted, and show it to our myopic friend again—Figure 2 shows how it looks. Don't forget he can't see the short, only the line—and it looks to him as if he had a very high current low voltage generator pushing currents down the line at (b). At (a) he again sees a generator, as he did before, with the higher voltage lower current called for by the surge impedance of the line.

In both cases, it looked to him—and to the line, therefore, as though there were generators at each end of the transmission line, pushing currents both ways along the line. Now, you and I know that you can't have bunches of electrons moving in opposite directions at the same time in the same conductor—but this is a.c., even if it is at r.f. or v.h.f., and its wavelength is so short that there are a number of current reversals in the normal length of down lead. So we have current flowing in opposite directions in adjacent parts of the line, see Figure 3—where the little arrows show the direction of current flow. The reason we can have these currents flowing in different directions is because of the law that where a current moves, a magnetic field appears—and where a magnetic field moves, a current must flow.

Now, unlike currents, the combined electro-

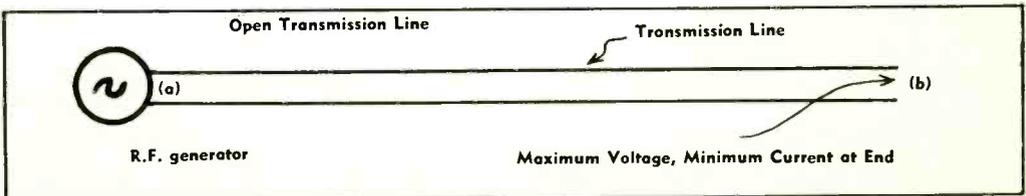


Figure 1

static fields and magnetic fields which surround the transmission line can move through each other—otherwise broadcasting would be impossible, and we wouldn't be writing this article. They don't effect each other, but the electrons in the wire which they surround obey only the total effect of the surrounding fields.

Consider this—it means that if two magnetic fields surround the conductor, and at the particular point in discussion on the line, these fields are of equal power and opposite sign—one north and the other south, *then their effect on the wire will cancel out and no current will flow at that point.* Let's see how this works.

For ease of discussion, we can look at just one of the pair of leads, as though it were a "C" line, and instead of confusing the picture, we'll assume a single cycle of current going down the line from the generator and one starting back from the open end. These are called, respectively, the incident wave (the

two field groups meet at point "a," Figure 4. As they interpenetrate at "a," the two leading half cycles are opposite, they cancel out, and no current will flow in the wire. As they travel a little further, the leading half-cycle of the reflected wave will coincide with the trailing half-cycle of the incident wave, but here they are of the same polarity, and the wire will have twice the current we could get from either field alone. Following this reasoning out a little further, if these were continuous waves, rather than single cycle pulses, then this action would occur repeatedly as each cycle came along and first cancelled a field then augmented the next field—always at the same points, "a" and "b." But there would also be other points along the wire—spaced at half-wavelength intervals. The significant thing is that whereas the fields producing the cancellation and augmentation are moving at close to light velocity, the *points of cancellation stand still—they do not move.*

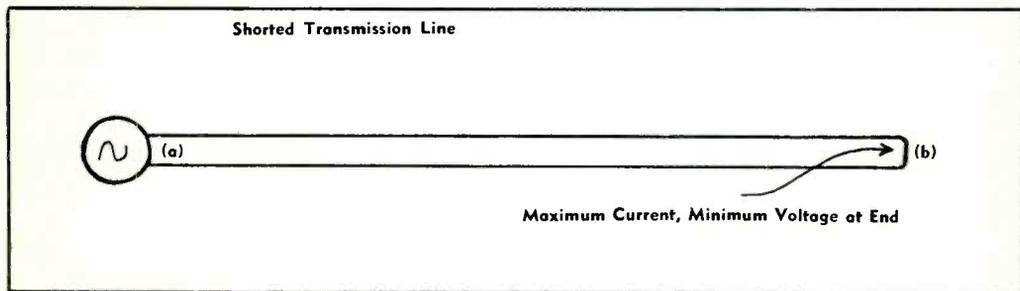
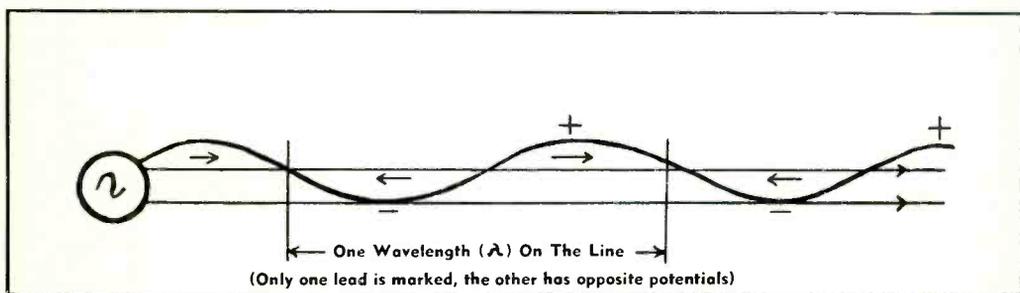


Figure 2



Instantaneous Voltage Distribution on Transmission Line

Figure 3

one going the "right" direction) and the reflected wave. The arrows drawn on the line of Figure 4 represent the field energy around the wire—not the currents in the wire.

The fields will cause currents to move in the wire, and these currents will move along the wire. Consider now what happens when these

This is why this phenomenon bears the name "standing waves," and why it only occurs if two waves are found travelling in opposite directions. V.S.W.R.—voltage standing wave ratio—is simply the ratio of the voltage found at a point of augmentation to the volt-
(Continued on page 36)

For DXers Only

E SKIP — BEST EVER

"How about asking A. Coro, Jr. of Cuba, how come if CMAB-2 Havana is no longer on the air, I received its test pattern at 4:10 P.M. June 9" writes Frank Hill, Gallipolis, Ohio.

And, writes Fred Schroyer of Waynesburg, Pennsylvania, *"Phooey . . . I took a picture of their test pattern June 18 at 5:00 P.M."*

DXer Coro (the last of the Cuban DXers, incidentally) writes *"CMAB is off the air in Havana, but the call letters continue on the air. I don't know why."* And quite frankly, TVH doesn't know either. Help . . . anyone?

Few active TV-FM DXers will dispute this summer has been the very best possible for E skip DXing. Writes Dave Beal of Tucson, Arizona, *"E skip DX here every day from May 20 to June 14. Not a single day went by without skip!"*

Notes Bill Hauser, Oklahoma City and Enid (Oklahoma) *"WOW!"*

And from David Metcalf, Otsego, Michigan, *"This has been the best ever."*

TVH is only too sorry that this month's special NCTA convention issue will keep us from detailing the great bulk of the very fine reports. However in the August TVH we will attempt to make it up to the DXing set with a more complete review of the summer's DX season.

That the summer has been unusual is perhaps indicated by veteran DXer Bill Eckberg, Walnut, Illinois. Writes pro Eckberg, *"The last eighteen days (up to June 10) have been the best for E skip I've ever seen. Almost every time I turned on the set there is E skip. I don't know how skip was before May 23rd, but on that date I put up my new Winegard Powertron. I find the sensitivity the greatest, and most of all, directivity a vast improvement. It is so directional that I can get skip from every direction through my locals!"*

FM DXers also had a field day as E skip seemed to extend well into the FM band on numerous occasions. Reports Robert A. Dufault of Duluth, Minnesota, *"You are probably*

swamped with long distance FM reports for May 27. Here are more." Dufault notes FM skip from Georgia, Florida, Tennessee, Connecticut, and South Carolina for the day.

Hank Holbrook, Bethesda, Maryland, caught his "first FM DX in years" with a table model indoor antenna. May 27th was again the day, and stations in Oklahoma and Kansas were logged.

On May 28th Holbrook caught KHFI, Austin, Texas FMer at 1,315 miles. This with an indoor antenna!

Terry L. King, San Angelo, Texas, mixes TV with FM DXing to make his hobby all the more interesting. King caught KCJC-FM, Kansas City (98.1), May 21 and WVMF-FM Mount Vernon, Illinois (94.1), May 30.

Francis B. Lee, North Wildwood, N.J. uses an FM/Q FM array and Winegard TV array to snag his DX, which he reports has been *"almost like clockwork from 1:00 P.M. EST to 9:00 P.M. EST recently."*

TVH is indebted to the following DXers for their reports this month. Look for a detailed synopsis in August.

Gary Olsen, Barrington, Illinois
C. E. Stephens, Revelstoke, B.C.
Daryl Reedy, Peoria, Illinois
Paul E. Petosky, Trout Lake, Michigan
Hank Holbrook, Bethesda, Maryland
Robert Dufault, Duluth, Minnesota
Bill Eckberg, Walnut, Illinois
David Metcalf, Ostego, Michigan
Frank Wheeler, Erie, Pa.
Bill Hauser, Oklahoma City, Oklahoma
Terry L. King, San Angelo, Texas
Ronald A. Boyd, Truro, Nova Scotia
John F. Wilson, Wilmington, Dela.
Francis B. Lee, N. Wildwood, N.J.
Roger Hansen, Kalamazoo, Michigan
John Dranchak, Bridgeport, Conn.
Richard Cochran, Sweets Corner,
N.S., Canada
James E. Mitchell, Dahlgren, Va.
David Beal, Tucson, Arizona
Eric Norberg, Carmel, California
Frank Hill, Gallipolis, Ohio

PART-TIME TELEVISION

(Continued from page 23)

Despite the problems, K70AL and K73AD were airborne in February 1957 with "part-time" television. To meet the requirements of the situation a radio-control link was installed between downtown Palm Springs and the 1,200 foot (above average terrain) receiving-transmitting site. KRCA and KNXT provided the translator group with complete program schedules, marked to indicate when local programs would be broadcast. Following this schedule, the translators were switched "on and off" via radio control, forming a "patch-work quilt" of reception for the town's 2,500 set owners who originally backed the project.

Needless to report, few of the town's residents were overjoyed to have their programming switched off in the middle of an evening of viewing! And it is no wonder that today residents supporting the translator have dwindled to 650.

How long can the Palm Springs translators exist under these circumstances? More than that, are the circumstances surrounding the problem "keeping within the public interest clause" all broadcasters must work under? Is there a way out for Palm Springs?

The August TELEVISION HORIZONS Palm Springs story. (A) Under what legal pretext have Los Angeles stations refused the Palm Springs stations rebroadcast permission?

R.B.C.

KNXT-2 (hours on) KRCA-4 (hours on)

Saturday

8:30-12:00 Noon
12:30- 1:00 P.M.
4:45- 5:15 P.M.
7:30-10:30 P.M.

Sunday

8:00-10:00 A.M.
2:30- 4:00 P.M.
4:00-11:00 P.M.

Monday

7:30- 8:00 A.M.
9:00-12:00 Noon
12:30- 4:00 P.M.
6:45- 7:00 P.M.
7:30-11:00 P.M.

Tuesday

7:00- 8:00 A.M.
9:00-12:00 Noon
12:30- 4:00 P.M.
6:45- 7:00 P.M.

Saturday

7:00- 1:30 P.M.
4:00- 6:00 P.M.
7:30-10:30 P.M.

Sunday

10:30-11:00 A.M.
5:00-11:00 P.M.

Monday

6:00- 3:00 P.M.
6:15- 6:30 P.M.
7:30-11:00 P.M.
11:15- 1:00 A.M.

Tuesday

6:00- 3:00 P.M.
6:15- 6:30 P.M.
7:30-11:00 P.M.
11:15- 1:00 A.M.

7:30-11:00 P.M.

Wednesday

7:00- 8:00 A.M.
9:00-12:00 Noon
12:30- 4:00 P.M.
6:45- 7:00 P.M.
7:30-11:00 P.M.

Thursday

7:00- 8:00 A.M.
9:00-12:00 Noon
12:30- 4:00 P.M.
6:45- 7:00 P.M.
7:30-11:00 P.M.

Friday

7:00- 8:00 P.M.
9:00-12:00 Noon
12:30- 4:00 P.M.
6:45- 7:00 P.M.
7:30-11:00 P.M.

Wednesday

6:00- 3:00 P.M.
6:15- 6:30 P.M.
7:30-11:00 P.M.
11:15- 1:00 A.M.

Thursday

6:00- 3:00 P.M.
6:15- 6:30 P.M.
7:30-11:00 P.M.
11:15- 1:00 A.M.

Friday

6:00- 3:00 P.M.
6:15- 6:30 P.M.
7:30-11:00 P.M.
11:15- 1:00 A.M.

Because of the "quilt-pattern programming schedules" of the translators, viewers often loose track of when the units should be ON or OFF, and this in itself leads to mass confusion. Palm Springs viewers via the translator are deprived of all California news, weather, etc. because of the restriction of rebroadcasting local programs.

UHF HORIZONS

(Continued from page 31)

service you are attempting to provide is "free television" in the sense that the viewer is not absolutely obligated to pay for his reception, you certainly have any number of moral and legal responsibilities under both the Communications Act and the fair trade laws in your state. No amount of extra emphasis can be placed upon the importance of starting off on the "right foot" with the initial fund raising drive. Above all, keep the people well informed and up-to-date on the progress you are making. An educated populace will fight for you twice as hard as a populace who only hears from you UNTIL you have their money, and then never again until the translator finally takes to the airwaves.

H.S.



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FM/Q WETHERSFIELD 9, CONN.

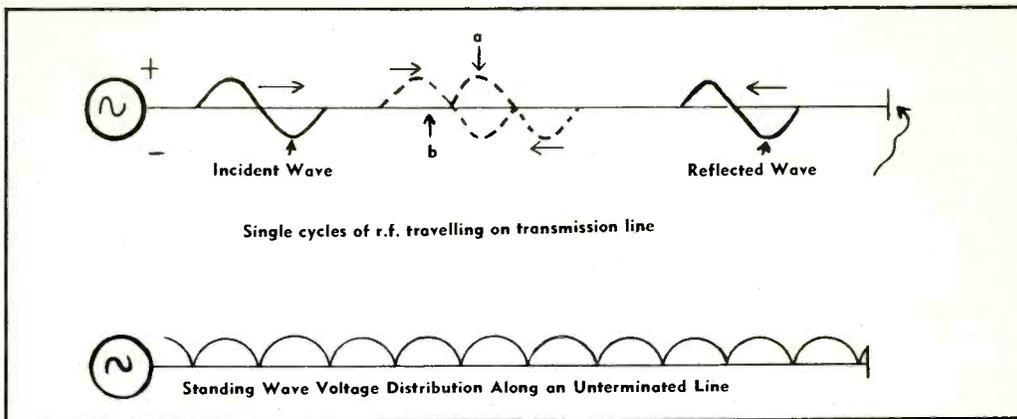
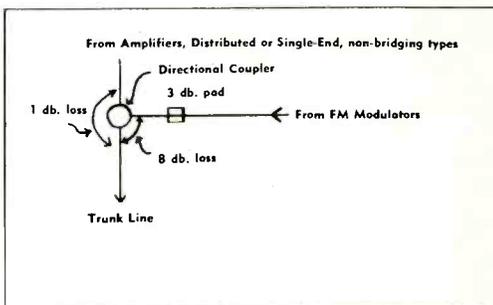


Figure 4

age found at a point of cancellation. If the cancellation is complete, the ratio is infinitely large, but in practice this never happens due to the loss in the transmission line. Since the reflected wave must travel from generator to line and back to the measuring point, it must suffer more loss than the incident wave. Being weaker, it cannot completely "buck out" the incident wave.

Next month in Part Three of this article we will consider the affect that these standing waves have upon mast mounted preamplifiers.

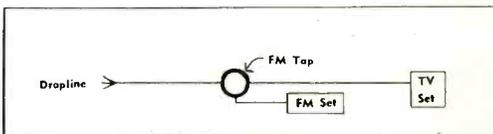


Alternate Method of Connection of FM Modulators Figure 4

FM ON CATV

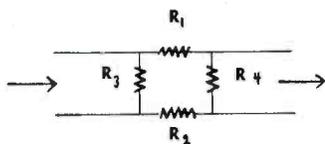
(Continued from page 25)

have fading signals from two stations on adjacent FM channels. The tuner will flip back and forth between them, always taking the stronger one. Can you imagine a mixture of "Hamlet" and an aspirin commercial?



FM Tap Connection Figure 6

300 OHM Attenuator Construction



db loss	R ₁ , R ₂	R ₃ , R ₄
3	51	1800
6	110	910
9	180	620
12	270	510

Figure 5

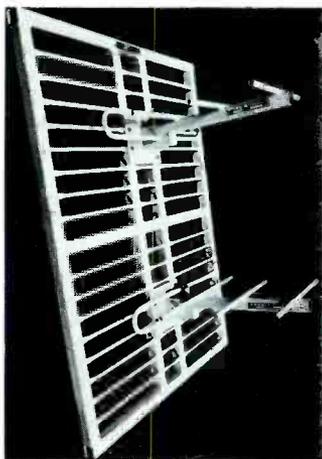
When you have this situation, you shouldn't use the AFC circuit—which is why they're always switchable on good tuners. But if you don't use it, you must have a drift-free, stable oscillator in the tuner.

So you see, you need both stability and AFC. The same arguments apply to AM tuners.

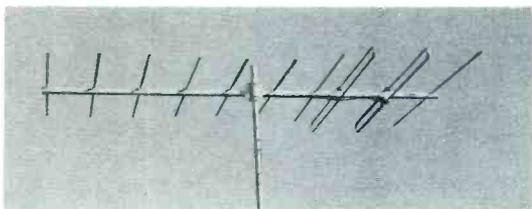
Well, what's holding you up? Let's go FM.
Jack Beever

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