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# Video Communication Journal



Serving the Audio-Video Communications Industry

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- FOAM CABLE — The Effects of Moisture
- NCTA CONVENTION REPORT — Part Two
- SECTION 605 — Part Three

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# Channel

# 1

## FCC PROPOSES CONFERENCE ON UHF

The Federal Communications Commission has recently proposed that a meeting be held between Commission officials and representatives of the various networks to discuss the release of network programs (those that the affiliate does not choose to present and which might therefore be available) to UHF stations which may come into existence in the intermixed markets.

In a letter addressed to all the networks the Commission stated, "In this way, the public in the area would have available to it additional network programming. Moreover, such programming, if made available to UHF stations, would obviously promote the development of UHF stations in the intermixed markets..."

## LEE LOEVINGER APPOINTED AS COMMISSIONER

The newest member of the Federal Communications Commission, Judge Lee Loevinger, took office on June 11th thereby filling in the gap left by Newton N. Minow.

Judge Loevinger formerly with the Department of Justice, is a native of Minnesota, born in the City of St. Paul on April 24, 1913. A graduate of the University of Minnesota with a Bachelor of Arts degree, Judge Loevinger received his Bachelor of Laws degree 3-years later in 1936.

During the years 1936-37, Judge Loevinger was an associate of a Kansas City, Missouri law firm. In 1937 he served as a trial attorney for the National Labor Relations Board and later as regional attorney for the Agency until 1941 when he joined the Antitrust Division of the Department of Justice as an attorney. During WW-II he served with the U.S. Navy while on military leave from the Department.

In 1946, Judge Loevinger became a partner in a Minneapolis law firm. From 1951-1952 he acted as Special Counsel to the U.S. Senate Small Business Committee on a

CATV  
MATV  
2-WAY  
UHF-TV  
Microwave

part-time basis. On April 4, 1960, he left his law firm to become a Justice of the Minnesota Supreme Court and served on that bench until March 16, 1961 when he became Assistant Attorney General.

Judge Loevinger is a member of the Minnesota and the American Bar Associations, the Federal Bar Association, the American Judicature Society, the American Association for the Advancement of Science, and Sigma Delta Chi, a professional Journalism society. He is the author of several books and numerous articles in fields of anti-trust law, jurisprudence and legal logic. He has written several of the leading articles on the use of science and computers in the field of law.

## WENTRONICS FILES FOR PARTIAL RECONSIDERATION

Wentronics, Inc., has filed a petition with the FCC for partial reconsideration of the conditions that were attached to a recent business microwave grant. As most will remember, Wentronics was one of the first groups, receiving a business radio service authorization, that were required to abide by the FCC's duplication clause.

In the petition filed by Wentronics, the company said it was looking for reconsideration of the condition regarding 'duplication' which it said is "unlawful being both contrary to the First Amendment to the U.S. Constitution and violative of the Communications Act." Wentronics further stated that while it has agreed to abide by the conditions, as far as signals carried over the specific business microwave channel involved, it should not be "compelled as a condition precedent to subject its entire antenna operation to the surveillance and supervision of the Commission." The duplication provision imposed by the FCC, it said, amounts to an "unlawful prior restraint on freedom of speech and press."

## COMMISSION DEFINES "DUPLICATION"

During a recent broadcast action, on May 22, 1963, the Federal Communications Commission held that the definition of duplication proposed in Docket 14895 is applicable in any situation involving Section 4.732 (e) (2) of the rules. Docket 14895 concerned the use of Business Radio Service microwave stations by CATV systems and contained within a "30 day before and after" clause.

According to the text of the broadcast action, the subject of duplication arose as the result of a dispute between Capital Cities Broadcasting Corp., Durham, North Carolina and Atlantic Telecasting Corp., who are seeking a new VHF TV translator station, concerning the definition attached to the word "duplication."

## TEMPORARY EXEMPTION ISSUED FOR IN-SCHOOL TV SETS

In a current ruling, sets shipped to educational institutions on or before April 30, 1966 will be exempted from the all-channel receiver legislation, according to the FCC. In taking this specific action, the FCC effectively denied blanket exemption requests for institutional users in general.

# VIDEO-COMMUNICATION JOURNAL

Combining Television Horizons and Communication Horizons

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## Editorial

It finally has happened. The FCC has apparently stepped on too many toes in the broadcast field. Consequently, the NAB is launching a fight against those that have sought to strangle the broadcasters.

This action, I feel, would not have been necessary if the Government had stayed out of areas they have no business in. In the case of the broadcasters, they have many valid reasons to be disgruntled and many of them are parallel situations in kind with what the CATV and communication people have had to face.

What the FCC and other Government officials are seeking to do seems to vary without clear reason behind their judgment and action. I am reminded of the fact, constantly, that any business is of a competitive nature and the art of survival is one that has been practiced for centuries without the benefit of Governmental help. Yet, in the CATV industry the FCC claims undue economic impact where a system is located in the same city as a television broadcast station, a fact that has still to be proved! However as that fact may be, did the powers-that-be figure on the economic effect of television upon local radio? Certainly they acknowledged that radio would suffer some but after all they were only interested in serving the needs of the public. It would seem that now they are bent on protecting the public from having more television. Competition is a poor excuse.

I would like to mention a recent proposal made by the Georgia Association of Broadcasters before the Georgia Congressional Delegation in Washington, D.C. Under this proposal, the GAB asked for legislation creating a new federal agency which should be divorced from the FCC and would only oversee radio and television broadcasting. In itself, this is a fine idea but I'd rather see the entire FCC reorganized so it might be allowed to function in a manner which would tie it strongly to the wants of the voting public and not to personal observations.

RLM

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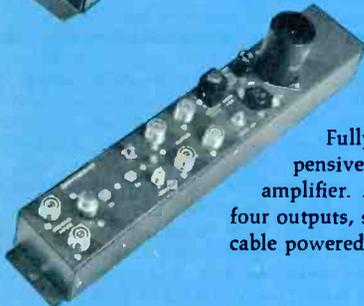
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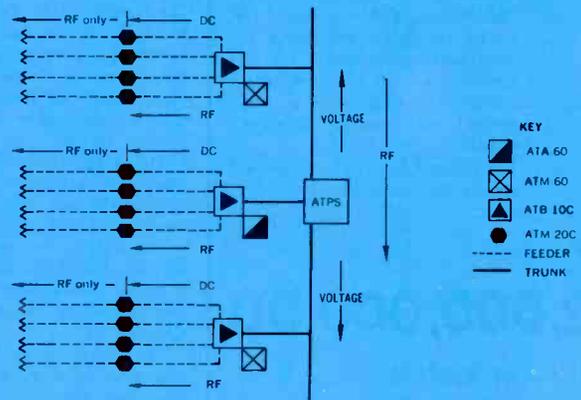
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# FCC HORIZONS

FCC actions, applications and public notices reported here are a representative sampling of actions which the Publishers of Video-Communication Journal feel will be of interest to our readers. The listing is by no means a complete report of all FCC actions in or out of these allied fields of communications.

## GENERAL NOTES

Commissioner Kenneth A. Cox has announced the appointment of William L. North as his Engineering Assistant. Mr. North has served as former Chairman Minow's Engineering Assistant since March, 1961.

Since joining the FCC in 1939, Mr. North has been a field radio inspector, section chief of the war-time Radio Intelligence Division; head of the Portland, Oregon monitoring station; Chief of the Frequency Utilization and Requirements Branch; Assistant Chief of the Frequency Allocation and Treaty Division, and has participated in several international frequency hearings.

The National Committee for Utilities Radio, Washington, D.C. has requested an amendment of the rules so as to provide for the regular licensing of the so-called 'splinter frequencies' in the Industrial Radio Services, for point-to-point operations, and also, on a secondary basis, for certain low power mobile stations utilizing continuous carrier.

Plains Television Corporation, licensee of UHF television stations WCHU, Champaign, WICS, Springfield and WICK, Danville, Illinois requests institution of a rule making to add Channel 15 to Champaign, to add Channel 71 to Bloomington, to delete Channel 33 from Champaign; this proposal would also require that WBLN construction permit be modified to specify operation on Channel 71.

The Commission has invited comments to a proposed rule making which would add regulations for the use of radio-frequency operated intruder alarms to Part 15.

Such use would be in the bands 910-920, 2435-2465 and 22025-22225 megacycles, subject to radiation limits, FCC approval of devices, cessation of operation if harmful interference is caused and non-protection from industrial, scientific and medical equipment.

## CATV MICROWAVE ACTIONS, ACTIVITIES

The Commission, by its Safety and Special Services Bureau has granted the applications of **Wentronics, Inc.** in the Business Radio Service to modify its microwave relay system to add a new channel. The microwave system is employed to relay television signals to the licensee's CATV system in Casper, Wyoming. The additional channel will be used to relay the signals of another television station to the CATV system.

The grants were made subject to the following provisions, voluntarily accepted by **Wentronics**, pending the conclusion of the proceedings in Docket 14895: "If the CATV system operates in an area within the predicted Grade A contour of any television broadcast station, in operation, or which subsequently comes into

operation, the CATV system must not duplicate, simultaneously or 30 days prior or subsequent to, a program broadcast by such a television station, provided the CATV operator has received at least 30 days advance notification from the broadcast station licensee of the date of such a broadcast. Further, if requested by such television station, the CATV system must carry the signal of such station without any material degradation of quality."

**Penn Microwave, Inc.**, Hazleton, Pennsylvania has been granted a construction permit to install an additional transmitter to operate on 6085.0 mcs at its Pimple Hill, Pennsylvania fixed radio relay point. The operator intends to modify the existing station by adding another channel to bring the signals of WOR-TV, New York City, into Hazleton, Pennsylvania for addition to the CATV system there.

**Southwest Texas Transmission Company**, Del Rio, Texas has been granted a construction permit for a new fixed video radio station to operate on 6041.6, 6100.0 and 6120.2 mcs. The operator proposes to furnish three channel service using the signals of WSB-TV, WLWA-TV and WAGA-TV to a CATV system under construction in Warner-Robins, Georgia.

**C. E. Davidson**, doing business as Columbia Communications Company, New Orleans, has filed an application for a construction permit to relay television signals from stations WWL-TV, WDSU-TV and WVUE-TV, all New Orleans, to CATV system customers at Bogalusa, Louisiana and Columbia, Mississippi. The proposed system will consist of a transmitting site at Mandeville, Louisiana and a relay transmitting site at Crossroads, Mississippi, using a power split at Crossroads to supply the two systems.

**Autry-Sigmon Communications**, Los Angeles, California has filed an application for modification of an existing construction permit, to provide a 3 db power split of the microwave transmitter carrying the signal of non-commercial educational television station KQED-TV, San Francisco, to intermediate power relay points located down the California coast towards San Luis Obispo, California.

**The New York Telephone Company** has filed for a construction permit to provide point-to-point television and data transmission between the New York World's Fair and a point in Manhattan, New York City. The period of the license sought is two years.

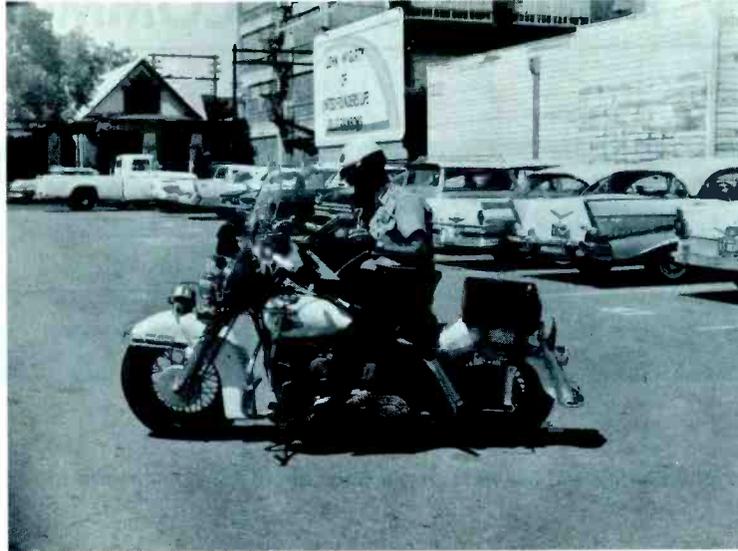
## TELECASTING ACTIVITIES, ACTIONS

**Ultravision Broadcasting Company**, Buffalo, New York has filed an application seeking a construction permit to install a 253 KW visual power station on Channel 29 in Buffalo New York.

**The University of Akron**, (Ohio) seeks a non-commercial educational permit for UHF Channel 55, to operate with a power of 4.9 kw.

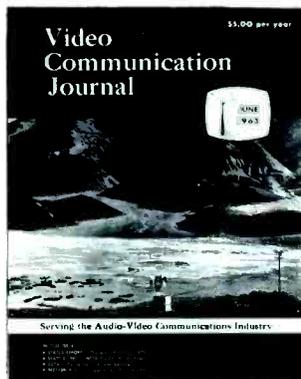
**The State of South Carolina, The City of Columbia** had requested an amendment of the rules so as to allow Channel 8 plus to be assigned to Columbia, S.C. without the necessity of suppressing the radiation in the direction of Channel 8,

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# 1963-64 WILL SEE NEW DEVELOPMENTS IN THE UHF TELECASTING FIELD AND IN COMMUNICATIONS.

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Greensboro, North Carolina.

The Commission, on June 6th, announced that this petition for rule making had been denied.

Hearing Examiner Thomas H. Donahue has issued an initial decision which looks towards the denial of an application filed by **KATV, Channel 7**, Pine Bluff, Arkansas to move from a location about 14 miles northwest of Pine Bluff to one about 50 miles northwest of that city and 12 miles from Little Rock, and to increase the antenna height to 1,862 feet above average terrain.

The Examiner questioned the integrity of the licensee in requesting such a move.

The **Duluth-Superior Area Educational Television Corporation, Duluth, Minnesota** seeks a construction permit for VHF Channel 8 in that city. The station would operate with a visual power of 316 kw and an antenna height of 922 feet. The applicants seek a waiver of section 3.613 (a) of the regulations.

**Bill J. Wheat, Anderson, Indiana** has requested a construction permit for UHF television channel 26 to serve that area from a 500 foot tower, and with a visual power of 17.50 kw.

In the matter of **dropping-in** additional VHF channels on a short-spacing mileage basis, the Commission has approved the movement of Channel 5, **KOCO-TV, Enid, Oklahoma** to Oklahoma City. Seven other drop-in assignments were turned down. They involved drop-in channels for Johnstown, Pennsylvania (channel 8); Baton Rouge, Louisiana (channel 11); Dayton Ohio (channel 11); Jacksonville, Florida (channel 10); Birmingham, Alabama (channel 3); Knoxville, Tennessee (channel 8) and Charlotte, North Carolina (channel 6).

By Report and Order the Commission has finalized a rule making which adds UHF channel 24 to Erie, Pennsylvania.

The Commission also invites comments on proposals to add commercial television channel 25

to Evansville, Indiana.

At the request of the applicant, the Commission has dismissed a construction permit application for VHF Channel 8 filed originally by the Electron Corporation, Missoula, Montana.

**Central Broadcasting Corporation, St. Louis, Missouri** has filed an application for a UHF television station on channel 30 in that city. The station would have a 370 foot tower and operate with 465 kw visual power.

**Springfield Television Broadcasting Corporation, Toledo, Ohio**, has filed an application for UHF channel 79 in that city. Power would be 727 kw visual with an antenna at 989 feet.

**TVUE Associations, Inc., Houston, Texas** are requesting a construction permit to build a 229 kw visual power station on VHF channel 24 in that Texas city. Antenna height would be 564 feet.

#### CANADIAN BROADCASTING ACTIVITIES

The **Canadian Board of Broadcast Governors** has approved an application for a new VHF television station on channel 8 at St. John's Newfoundland. The station, to be operated by the CBC, will operate with 196 Kw visual power from an antenna height of 855 feet.

A new television re-broadcasting station to operate on VHF channel 13 has been approved for Port Rexton, New Foundland. The station, to repeat the channel 8 station signals from St. Johns, will operate with a visual ERP of 18 Kw.

A new French-language television station to operate on channel 4 at Ste. Ann Des Monts, Quebec has been denied by the BBG. The station proposed was to operate with 100 Kw

In **Canada**, the Board of Broadcast Governors has granted applications for two additional television stations.

A new station, to operate on channel 12 at **Kapuskasing, Ontario** with an ERP of 13.6 kw visual will repeat the signal from a station now

proposed at Timmins, Ontario. The Timmins station is a French Language station.

The proposed station at **Timmins** was also granted, to operate with a visual power of 16.0 kw from a 562 foot antenna. The station will operate on channel 9.

#### EXCHANGE OF SPEAKERS URGED BY NCTA HEAD

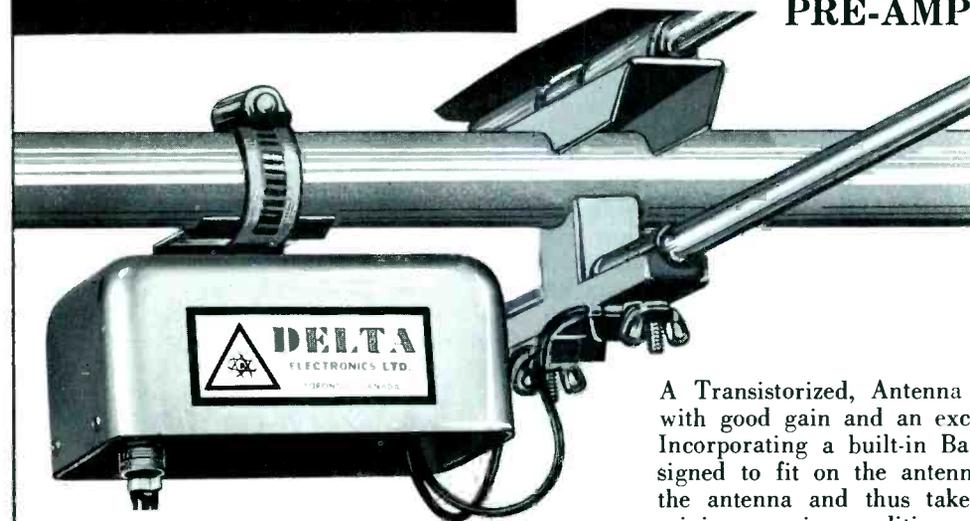
In a speech before the annual meeting of the Virginia Association of Broadcasters, National Community Television Association president William Dalton called for the more frequent exchange of speakers at state, regional and national gatherings in an effort to move the two groups closer.

Mr. Dalton told the broadcasters that he could see "a light ray of hope that the two industries can move closer together." He called his proposal a "realistic and timely wedge between the tight walls of misunderstanding and lack of knowledge" that now exist.

The NCTA president appeared as a featured speaker at the VAB meeting held June 21st in Colonial Williamsburg and also participated, together with other CATV representatives and Virginia Broadcasters, on a special panel dealing with CATV and its impact on broadcasting.

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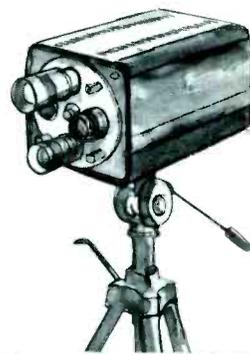
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# SYSTEM HORIZONS



## TELEVISION SYSTEMS BRIEFS

**Texas Video, Inc., Palestine, Texas,** reports the Palestine City Council has granted the system a rate increase to enable microwave to feed the system. The rate increase will go into effect one month after the microwave service begins, according to Norman A. Williams, the firm's manager. The new microwave will bring 2 Dallas and 2 Fort Worth stations into the system with local quality for distribution.

**Television Signal Service Company, Paducah, Kentucky** reports microwave now being installed, by Mesa Microwave Company, from Childress to Paducah. This will provide three channels of microwave fed cable reception from Amarillo stations on channels 4, 7 and 10. The microwave link was expected to be in operation by June 25th. The system will convert to a five channel system at the same time.

**Muscle Shoals TV Cable Company, Florence, Alabama** reports their 9,000 plus subscriber system has added two linemen to work on a \$40,000 expansion currently underway. Equipment being utilized in the new construction includes aluminum cable, Jerrold trunk and distribution amplifiers and Ameco transistorized line extenders. The new expansion includes the wiring of three new sub-divisions in the city, reports Milton Underwood, Chief Technician.

**Construction Electronics, San Jose, California** reports 10 MATV systems totaling 306 units completed during the past 30 day report period. Finco MATV antennas. Blonder Tongue and Delta MATV equipment was utilized in the installations, according to Richard E. Linebarger, owner of the firm.

## TWO-WAY SYSTEM BRIEFS

**Bill's Radio and TV, Ovid, New York** reports they are looking for an all-around television, radio and antenna installation and repair

man. Their address is Box 267 in Ovid.

**Meredith Electronics, Warren, Ohio** reports 1 base and 5 mobiles installed during the June report period. Two additional two-way systems are planned for July.

**Communication Service Company, Milford, Delaware** reports one new technician added during the report period. Equipment installed along the eastern shore area of Maryland and Delaware included 1 base with two remotes, and 23 mobiles; 1 base and 6 mobiles. A 450 megacycle repeater unit is being planned, and four good prospects have already indicated they would like to use the service.

**Aurora Police Department, Aurora, Illinois** reports installing a complete Motorola Private Line system comprised of 12 Motracs, 10 motorcycle units, 1 base and 1 remote control.

**The Washington State Department of Natural Resources** has awarded a contract to Motorola Communications for approximately \$130,000 in replacement equipment. The new equipment will replace existing AM units, and will become a part of the state-wide communications network.

A new two-way system that automatically sounds sirens in emergencies and alerts volunteer firemen for day-to-day community problems has been placed in operation in Alamance County, North Carolina by General Electric Communications Products Department. Key control point is a fire station at Burlington which serves as a central communications headquarters.

## PLANT NEWS

**J. L. Robb, president of Superior Cable Corporation, Hickory, North Carolina** has announced the formation of a new company facility — Systems Equipment Division. The new division will be responsible for

*Continued on Page 33*

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Sizes  
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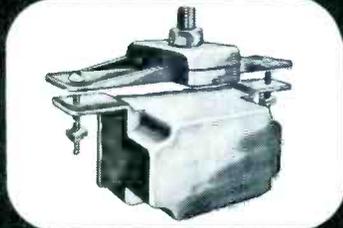
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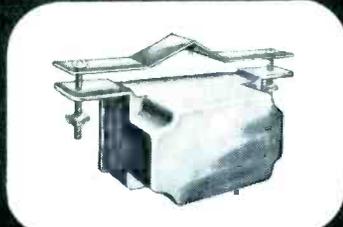
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# CENTRALIZED METERING AND BILLING FOR CATV PAY-TV SYSTEMS

By Ira Kamen  
 Teleglobe Pay-TV System, Inc.

The Pay-TV proponents are in two classes: those who believe in "home box office" with the use of coins or tapes which must be operated by the home subscribers; and a later group, who have advanced the application of Centralized Metering and Billing due to the advancements in the electronic data processing art. The "home box office" people state that entertainment must be paid for as it is seen and enjoyed.

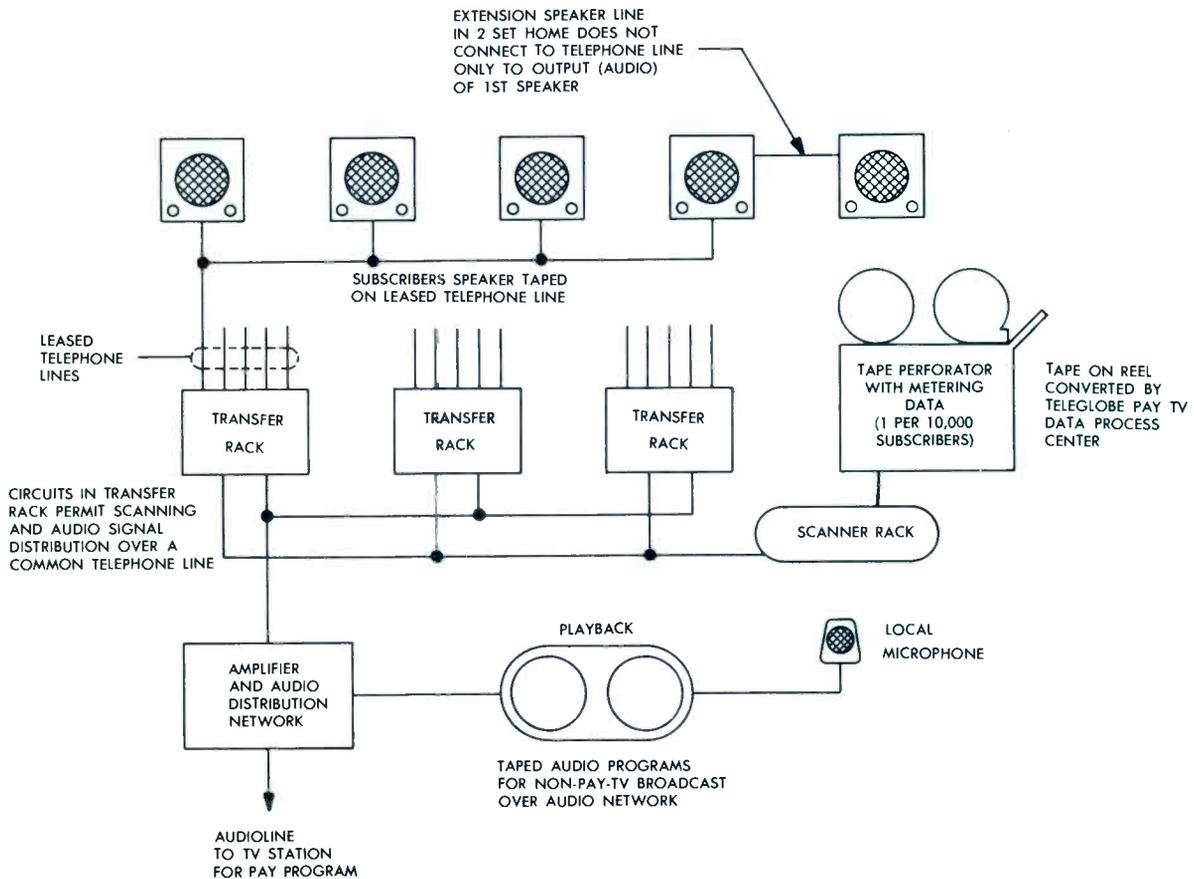
The Centralized Metering people point to the success of The Diners' Club, American Express, and Carte Blanche, where dining and entertainment are paid for by means of Centralized Metering and Billing on an E.O.M. basis. Also the Centralized Metering and Billing proponents claim that the urban population will find coin collectors an invasion of their privacy and disturbing to the sanctity of the home. "Home box office" proponents claim that the Pay-TV System should function like a theatre and that the hunting for coins present no difficulty since their equipment

provides for credit for the next program if there has to be an overpayment. Centralized Metering people ascertain that the cost of coin collection is far more expensive than electronic data processing via Centralized Metering and represents an advancement in the art which is economically favorable to the system operator.

Teleglobe Pay-TV System, Inc., announced this development in 1957; and currently, Matty Fox Television, TelePrompter, and Marconi's Pay-Vision have also announced that they function on the Centralized Metering principle.

As the Teleglobe System was disclosed to the FCC and approved for test on October 8, 1962, this article can freely discuss this application, embellished with Figures 1 and 2, which show its application for the Denver test.

As explained in the July article, "Pay-TV, A CATV Catalyst," the system to be tested in Denver functions



via an audio security technique. Using this technique, the video is transmitted in the clear and the on-off condition of the speakers, tapped on the leased telephone lines, is datalogged via a scanner rack which records perforations on a tape perforator with centralized metering data. The over-all system arrangement of audio distribution is shown in Figure 1 as well as the schematic circuit for parallel operation of the audio and the intermittent subsonic scanning. Figure 2 shows how the perforated tape looks.

It should be noted that the tape is a five-channel Teletype tape which allows for data processing in cities (which is practically every city) served by Western Union telephone lines. Five-channel Teletype tape is designed for slave transmission over Western Union lines to a central data processing center. This means that a Teleglobe Data Processing Center in New York City could process the tapes of CATV operators all over the country so that they could benefit from the advantages of Centralized Metering and Billing.

Further, the master metered tape will never leave the hands of the CATV operator who has logged the on-off condition of the CATV Pay-TV Decoder shown in Figure 3. Centralized Metering and Billing can only be accomplished economically by taking advantage of the already developed equipment of electronic data processing organizations such as IBM. Specifically, the system being tested in Denver, Colorado, performs its Centralized Metering and Billing function in the following manner:

Individual Pay-TV programs will have a complete data tape which will show the condition of the subscriber at the start of the program and somewhere before the completion of the program, which means that there will be not less than two scans per Pay-TV program. As a tantalizing feature, all subscribers are told they can watch the first five minutes of a Pay-TV program for free as the first random scan will take place later than five minutes after the Pay-TV show starts. These program data tapes which are prepared by the scanning equipment and located at the Teleglobe Central Office in Denver will be processed by the Teleglobe Pay-TV Data System Processing Center. As previously stated, these specially treated

paper tapes will have recorded the on-off condition of the speakers of all Teleglobe subscribers.

A special IBM Tape-to-Card Converter arrangement developed by IBM for Teleglobe converts the information on the paper tapes to punch cards. A card is created for each speaker control unit on each line, i.e., one card for each customer.

The tape data may then be converted to program rating and Centralized Billing operations in which the following steps take place so that the Central Office can immediately provide information which will be a statistical measurement of the popularity of each program as well as prepare the data for the monthly billing cycle operations:

1. Program tapes, prepared by scanning equipment located at telephone company central offices, arrive at the Teleglobe Pay-TV System Data Processing Center. These paper tapes have recorded on them the on-off condition of the Speakers for all of Teleglobe's Denver subscribers.

2. The Tape-to-Card Converter converts the information on the paper tapes to punched cards. A Card is created for each Speaker on each line, that is, one card for each customer. At the conclusion of this tape-to-card conversion, each card contains three classes of information.

A. Duplicated into each card are certain pre-punched program data such as name, date, price, etc. Thus, this operation rates each program card as well as supplying all needed indicative information.

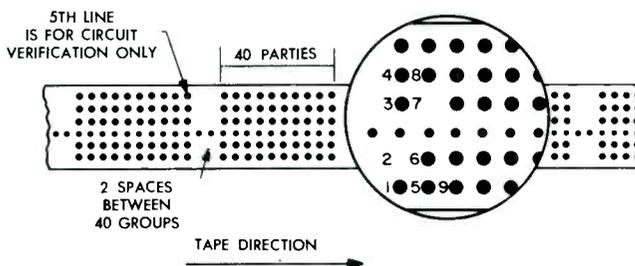
B. Punched into each card by the tape-to-card converter and the sequencing converter is a four-digit customer number. Customer numbers will be assigned to reflect their positions on the paper tape. The counter increments by one each time a card is punched by the tape-to-card converter. Thus, before any card operations, the converter has introduced each customer's number. No longer is the sequence of holes on tape or of cards necessary to determine the subscriber. Each card contains a punched customer number.

C. Punched into each card by the tape-to-card converter is an indicative punch reflecting the on and off condition of the subscriber's speaker. The 'on' and 'off' punch are positive identifications of each speaker's status. These punches will control the later selection of those subscribers who listened and those who did not listen to a particular program.

3. The collator matches the program deck produced by the first scan to the program deck produced by the second scan. Each program deck enters the collator in customer number sequence. The collator compares the two cards for each subscriber (one in the primary feed and one in the secondary feed). If the subscriber only watched a portion of the program (Speaker off for either the first or second scan), the cards will fall into pockets No. 1 and No. 4. If the subscriber did not watch the program at all (Speaker off for both scans), his cards will also fall into pockets 1 and 4.

4. The cards that represent all the subscribers who watched the entire program (pocket No. 2) become

THE FOLLOWING SKETCH SHOWS THE ORDER IN WHICH PARTIES APPEAR ON TELETYPE PROCESSED TAPE



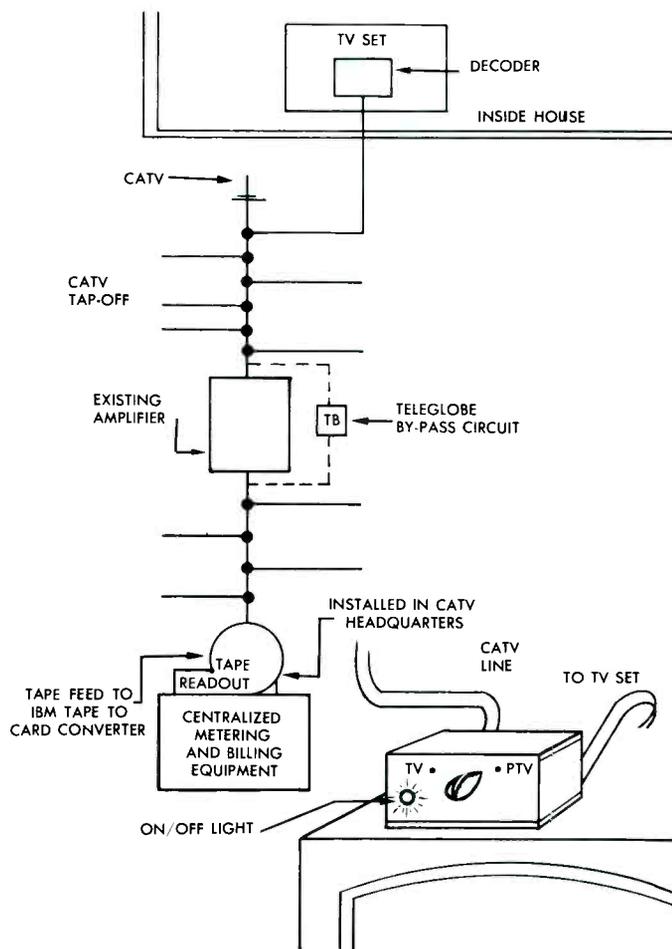
NOTES:

1. IF A PARTY IS CONNECTED TO A LINE, A PUNCH INDICATES THAT THE SET IS TURNED "ON" AND NO PUNCH INDICATES HIS SET IS TURNED "OFF".
2. SUBSCRIBER No. 2 and No. 7 WERE NOT CONNECTED AS THERE IS NO HOLE PUNCH.

the input to the accounting machine. These cards are the only ones to be billed. The accounting machine accumulates the total number of listening subscribers and the total dollar billing. These figures can then be used to apportion revenue to the supplier of the program. The program totals can be balanced at the end of the month to invoiced program totals to insure that all rated programs have been billed. As well, the accounting machine can give an immediate detailed listing of all the subscribers to be billed at the end of the month. Information needed by the FCC can be prepared by the accounting machine during this listing operation. The totals mentioned above and any other sub-totals desired can be indicated on this detailed report.

5. As the billable program cards leave the accounting machine, they enter the collator. It merges these cards with the deck of previous program cards for the current month. This deck is in customer number sequence. At the end of the month, all the program cards to be billed are in chronological sequence within customer number. At any time, this deck can be run through the accounting machine to determine the total number and total dollar amount of programs to be billed at the end of the month. These totals can be balanced with those accumulated at step 4 as a running check. At the conclusion of step 5, the billable program cards need no further processing until end-of-month invoice preparation.

6. The program cards representing those subscri-



ers who watched only a portion of the program or did not watch the program at all (pocket No. 1 and No. 4) enter the sorter and the collator. The sorter and collector will distribute these program cards into three decks. The first deck (A) contains all those program cards of subscribers who listened only to the first portion of the program. The second dack (B) represents all those subscribers who listened only to the later portion of the program. The third deck (C) contains all those program cards of subscribers who did not listen to the program at all.

7. These three decks are the input to the accounting machine. The accounting machine prints a detailed listing and accumulates various totals of the three decks. Information on this report is a statistical measure of the popularity of each program.

The foregoing is the work flow format which provides a daily picture of the program rating operations. In addition to the statistical measurement of program popularity, by-products of this routine will permit accurate division of program revenues and supply reliable data for the preparation of performance and business reports for the Pay-TV program producer, and the CATV operator.

As may be noted from Figure 3, the CATV Pay-TV Decoder (which provides video and/or audio security) is inserted between the antenna and the TV set and can be circuited in or out depending upon the subscriber's wishes to watch Pay-TV or commercial TV. The Pay-TV Decoder is designed not to require modification of the TV set. The on-off condition of this Decoder will be logged in a similar manner for CATV systems as was described for the over-the-air test and delineated by Figures 1 and 2. As Pay-TV is planned for transmission over coaxial cable via CATV by many Pay-TV proponents, is it important that CATV operators understand the principals of Centralized Metering and Billing since these proponents far outnumber the advocates of home box offices. The use of standard Teletype tapes as described in this article will be vital to the smaller CATV operators with approximately 1,000 subscribers, since they could not afford data processing of their own. Simple arrangements can be made via the phone company and/or Western Union for a leased line which would be used during the low cost night hours. By transmitting the billing information over wires to a central data processing center, each CATV operator using the Pay-TV service will function as though he were completely equipped with his own electronic data processing center. Statistical reports show that 12 bills can be processed within one year for less than \$3 per subscriber which provides the major economic advantage over the cost of monthly home collections by bonded personnel.

It is reasonable to assume that by 1965 expressions such as "datalogged", "tape-to-card conversion" will become as much a part of the CATV operators' language as "strip and bridging amplifiers," "field strength" etc., considering that the recent Gallagher Report of December 10, 1962 stated: "Pay-TV is the biggest potential growth industry since electronics and space."

# SAFETY FACTOR IN THE USE OF . . . CELLULAR POLYETHYLENE DIELECTRIC COAXIAL CABLES

by David E. Karrmann  
Staff Engineer, Times Wire and Cable

As the state-of-the-art in the electronic industry progresses, revealing discoveries are continually being made. One such discovery is the attenuation degradation at high frequencies of braided coaxial cables using cellular polyethylene dielectric and polyethylene jackets. This phenomenon has become particularly important with the introduction of High Band CATV Systems. The degradation of the cables is almost negligible in channels 2 to 6, but is quite high in channels 7 to 13, often resulting in up to a 25% increase of attenuation at 13.

Since the speed and degree of the degradation depends upon local conditions it is important for those using this type cable to determine an appropriate safety factor for their installations. To obtain a truly representative safety factor, it is best to measure cables which have been in service for one or two years and compute the per cent increase of attenuation as compared to the manufacturer's specifications. If this means of determining the safety factor is not possible, a safety factor over the manufacturer's published nominal specifications of

10% for relatively dry areas and 25% for very humid areas is indicated. Attenuation in coaxial cables is made up of losses due to conductor resistance and dissipation in the dielectric material. As shown on the graph below, the resistance losses increase as the square root of frequency, but the dielectric losses increase with the first power of frequency.

It can be seen in Figure 1 that if the dissipation factor constant is increased, the net attenuation is greatly increased at high frequencies, but only slightly at lower frequencies. From an evaluation of the slope of attenuation vs frequency characteristic as measured on cables in the field, the attenuation degradation is obviously due to an increase in the dissipation factor of the dielectric material.

We have conducted extensive studies to determine the cause of this increase in dissipation. We found that a surprisingly small amount of moisture would dramatically increase the dissipation factor of a foam polyethylene dielectric.

The mechanism by which the moisture enters the cable was the most difficult to resolve. We subjected several samples of cable to temperature cycling, both submerged in water and in a humidity chamber. These tests proved that although polyethylene is impervious to water, **it is not impervious to water vapor.** We also found that the cellular polyethylene would transmit water vapor 10 times faster than solid polyethylene.

We exposed a 2,400 foot reel of foam dielectric cable with a solid black polyethylene jacket to normal weather conditions for 100 days. The reel was sprayed with water each day for the first 50 days to simulate an extremely humid installation. As can be seen in Figure 2 the attenuation continued to increase as long as the wetting continued and then dropped slightly to what appears to be a stable condition for dry weather. It is interesting to note the relative increases of attenuation at channels 6 and 13.

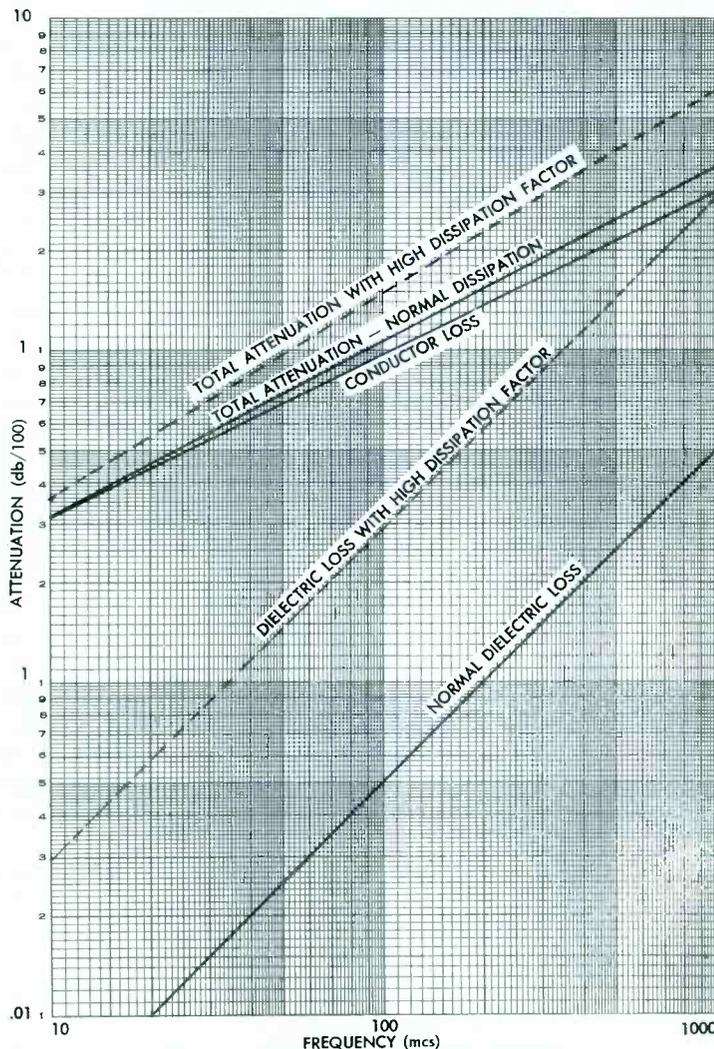


FIGURE 1 — ATTENUATION OF TYPICAL COAXIAL CABLE WITH CELLULAR POLYETHYLENE CORE

Reports of the accumulation of large quantities of water filling all the air spaces in certain sections of cable have reached us from the field. This is generally found at the low points of spans, and particularly at the low point of downhill runs. This is somewhat peculiar because most other exposed materials do not tend to accumulate water. For instance, telephone poles, guy wires, masonry walls and building roofs. These structures are continually wetted by rain, but just as regularly dry out and their average condition is substantially dry. This means there must be something peculiar in the construction of a coaxial cable which allows the accumulation of a permanent amount of water.

As our tests indicate that water is absorbed more rapidly in the vapor phase than it is from immersion in liquid, it seems likely that the water which penetrates the coaxial cable is in the vapor form. Because water has such a high latent

heat of vaporization (1000 BTU per lb.) the continual accumulation of water in a cable represents an unbalanced heat flow condition. Superficially there is no reason for a suspended cable to either absorb or radiate heat on a long-term basis. In other words, there is no power being supplied or extracted from the cable.

There is one mechanism which, theoretically, could account for this net gain in heat. If we assume that the polyethylene is permeable to water vapor, and therefore the whole length of cable has a continual supply of water vapor from the ambient atmosphere, a series of temperature cycles could produce the following action: On a change from warm daytime temperatures to cold nighttime temperatures, the cable would give up heat to the surrounding air as the air became colder. When the temperature of the air inside the cable became lower than the dew point, some of the water vapor inside the cable would

condense to water, the heat of vaporization flowing out through the cable to the colder air outside. The rate of heat flow would be proportional to the temperature difference times the square feet of surface area.

Consider the conditions on a downhill run, where during the night the water which condensed in the braid ran downhill to a low point. If all of the water which was condensed in 1000 feet of cable accumulated at 100 feet at the low end, conditions the next day would be considerably altered. Because the rate of heat flow is proportional to the temperature difference times the area, it becomes more difficult to re-evaporate the water which was condensed because there is only 1/10 the surface area available to provide heat flow. The water, instead of evaporating and absorbing 1000 BTU per pound, would merely increase in temperature, absorbing only 1 BTU per pound per degree Fahrenheit. The cable would therefore come up to a reasonable temperature approaching ambient without absorbing enough heat to evaporate the water. At the high end of the cable, the air which had a certain water content the previous day has been re-heated to its previous temperature, but some of the water has been removed by gravity during the night. It therefore will have a lower relative humidity and, assuming equal ambient conditions, additional water vapor will penetrate the polyethylene to attempt to equalize the vapor pressure inside and outside the cable.

In summation, it is apparent that any coaxial construction using a cellular polyethylene core, braided shields, and plastic jacket may exhibit large increases of attenuation in the high channels of a CATV system on a long term basis. The magnitude and the rate of increase of attenuation will be a function of the weather conditions at any particular installation. However, this type of construction can be very satisfactorily used if the appropriate safety factors are applied in the system layout.

Our investigation has led us to the conclusion that the only manner in which the addition of safety factors can be eliminated and the dissipation factor can be truly stabilized is by the introduction of a solid metallic barrier over the cellular one as used in the semiflexible seamless aluminum tube sheath coaxial cables.

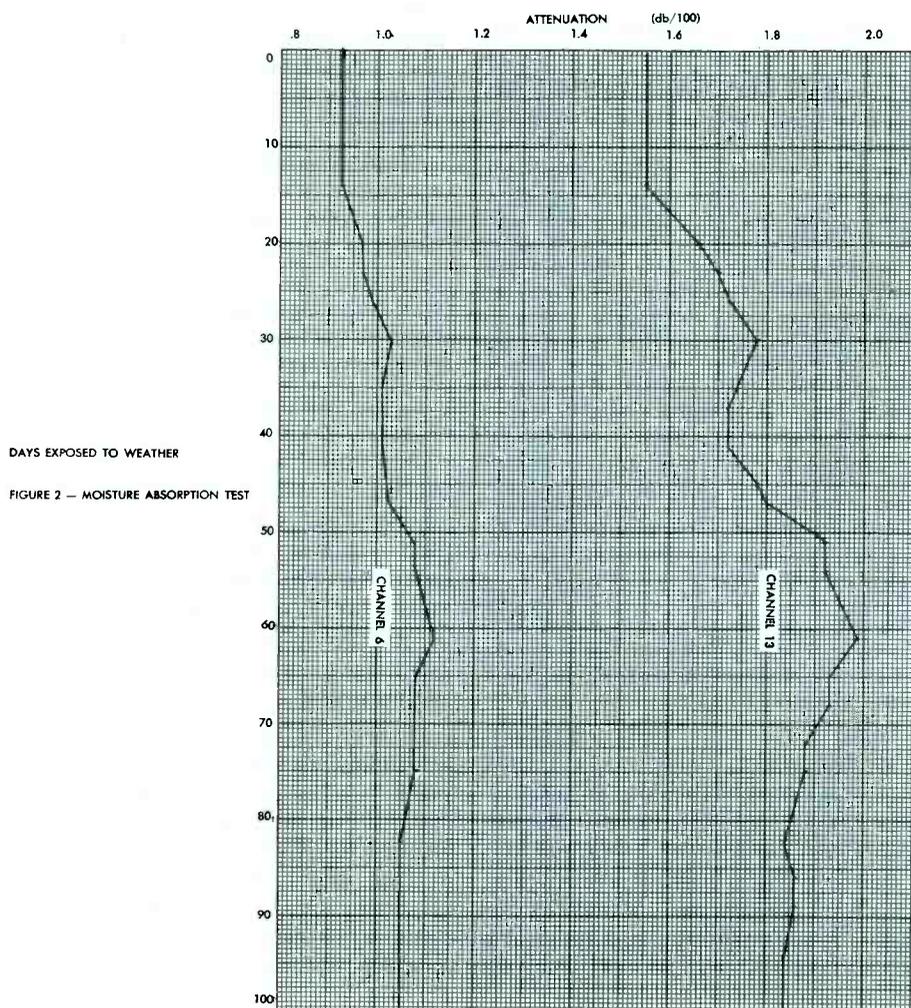
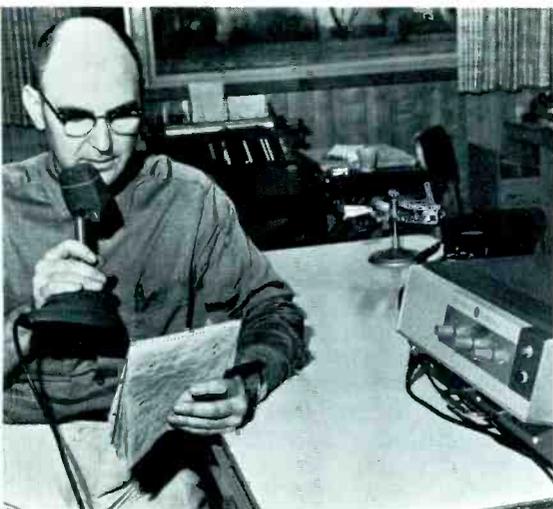


FIGURE 2 — MOISTURE ABSORPTION TEST

## Two-Way Radio Speeds Fuel Oil Deliveries

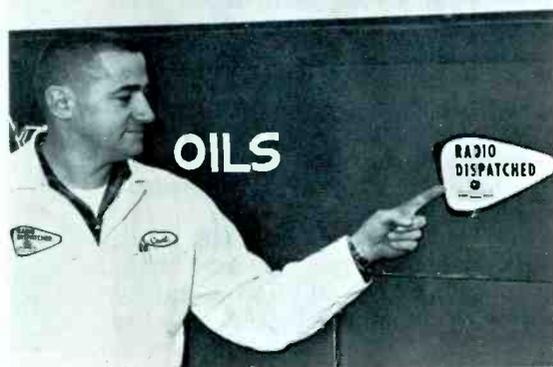
by R. A. Page  
General Electric Company



A push of the mike-button is now all that is necessary to eliminate the costly haulbacks that normally plague the fuel oil delivery business.



Here, radio in action is providing the immediate dispatch of a fuel oil truck, increasing the "edge" over competition.



The words "Radio Dispatched" most aptly describe the way to increase efficiency and decrease lost motion.

In 1962, Skillern Oil Company, Eugene, Ore., USA, delivered two million gallons of fuel oil with three full time trucks and one part-time unit. The year before, it took seven trucks to do the same job.

The difference: A new two-way FM radio system installed half-way through 1962. It enabled Skillern to increase delivery efficiency and to become more competitive.

The economy of Eugene and smaller towns in Lane County, Ore., is supported by logging, lumbering and agriculture. The fuel oil dealer is confronted with many small deliveries that can take him to rural areas 15 to 20 miles from his headquarters.

When great distances are involved, the unprofitability of haulbacks and re-traced mileage becomes considerably more pronounced.

Prior to using radio, Skillern found it was difficult to route a truck without part of the load being carried the circuit and hauled back to the bulk plant. Often, it was necessary to duplicate mileage to handle deliveries to a customer who called in an order after the truck had left the bulk plant.

In Skillern's operation, many of fuel oil customers are on a "call in" basis rather than an automatic delivery schedule. There are always the familiar calls: "Please rush me some oil—I have a small baby and the house is cold. We are completely out." Or, "Come right out, there's illness in the family and we have to have heat."

Invariably, the calls come in after the route truck has left that particular neighborhood. If a truck went back 15 miles, profit on the sale diminished or even vanished.

Now, with two-way radio, the driver is instructed instantly to make the emergency delivery. An extra trip is eliminated, saving

mileage, time and expense.

The decision to install mobile radio was made by Skillern as the result of highly competitive conditions in the Eugene area.

Skillern Oil Company's business is about 80 per cent residential with an average delivery per customer of 150 gallons. The home heating field in the area is competitive not only among other fuel oil dealers but also among other types of heating.

The electric power business in Eugene is owned by the city and enjoys one of the lowest electric heating rates in the United States. Wood products from the lumber industry are also available. Natural gas is being piped in. Therefore, the fuel oil dealer can stay in business only with improved business methods.

James Anderson, co-owner and manager who operates the firm with John Skillern, son of the founder, began seeking ways to accelerate the company's service without liquidating profits. He turned to two-way radio as one of the answers.

The company installed General Electric Progress Line and Pacer FM mobile radio units in the trucks and a 25-watt G-E table model FM base station at the office. Used with a gain antenna, the system blankets Skillern's operational territory with no difficulty.

Before making the installation, Skillern considered several types of radio units.

"One thing that swayed us toward FM was the quality of service available," Anderson points out. "Our consultation with other radio users showed that the reputation of Smith Radio Communications, local G E representative, was very high for servicing FM mobile communication equipment.

*Continued on Page 36*

# NEW ALL-BAND DESIGN!

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TYPE	O.D. (Nom.) Conductor	O.D. (Nom.) Dielectric	Overall O.D. (Nom.) Unjacketed	Overall O.D. (Nom.) Jacketed	Attenuation (db per 100 ft.) Channel 6	Attenuation (db per 100 ft.) Channel 13	Shipping Weight Lbs. Per M. Ft.
TAS	.098	.450	.500	-----	.83	1.35	102
TA5-J	.098	.450	-----	.575	.83	1.35	132

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# Seattle - 1963

## 12th Annual NCTA Convention



One of the first items encountered on the registration floor was this Abel Cable promotional poster depicting what community antenna television has to offer.

This year's National Community Television Association Convention was indeed an important one from many standpoints. Besides the considerable interest shown in the legal and legislative aspects brought to light in Seattle there was a good deal of discussion about the latest technical developments. At almost every turn, one could find groups of two and three talking quietly about some of the many displays at the show.

A tour through the "Pathway to Progress" revealed the reason for many of the get-togethers. Everywhere one could see new types, sizes and degrees of advanced development throughout the field. To most everyone, the many exhibits were worth visiting to see what was new in our industry. Incidentally, there were many old friends present at the displays and it was evident that many enjoyed their casual visits with each other. Of course, on the other hand there was a good deal of business transacted during the progress of the convention.

One of the highlights of the convention, and one that should be considered seriously, was the "Key-note" luncheon held on Tuesday, June 11th. During the course of the luncheon, NCTA president Bill Dalton delivered an address that pretty well summed up the status quo of the industry. Titled, "The Crystal Ball is Cracked", the address was an excellent reminder of what has happened and what we may face in the up- and -coming months.

A valuable asset to the convention, the technical sessions produced much thought on the part of all attendees. Many came away from these meetings with new outlooks. Some came away with the feeling of learning about a new idea or theory and others stated they were delighted to have had the opportunity to sit down and factually discuss the pros and cons of community antenna television system installation and operation plus various and sundry other topics relating to the field.



Talking about research and development is this dynamic young man, Frank Nowaczek, newly appointed Director of the Research and Development Council.



One of the prime necessities for the placement of coaxial cable is, of course, lashing wire. Holding a roll of new lashing wire is George Acker of Aberdeen Company, a leading manufacturer of this product.



Two 'neighbors' (almost) talking about what the State of Texas is like (probably) are shown at the Collins booth. The gentlemen on the left is Joe Fordham of Collins and on the right is Bob Cooper, Publisher of Video-Communication Journal.



The gentlemen with the very happy smile is John Campbell of CAS Manufacturing. John (left) and Bill Medlin (right) brought along, with many other products, their new Weather/View unit which features compact edge-wise meters.



Discussing some of the aspects of coaxial cable, Bob Burton of Times (right) is shown talking with John Kilpatrick of Los Angeles (left). Immediately behind Bob is Times new seamless aluminum tube sheath cable.



This view of the speakers table at the "Key-note" luncheon shows only a portion of the turnout that attended this function. Highlight of the luncheon was Bill Dalton's address, "The Crystal Ball is Cracked".



Scene of much of the convention activity was the registration area. Here, an able staff of young ladies worked with little let-up to see that everyone was supplied with the necessary literature, badges, and tickets to the many functions.



We interrupted Luther Holt (left) and Frank Chaundy (right) of Holt Electronic Research while they were in the midst of explaining to a customer the relative merits of their new line-extender amplifier.



A compact film chain system was the highlight of the Sarkes-Tarzian exhibit. Representing the company were Russ Ide and Dale Matheny who demonstrated just what the unit would and could do.



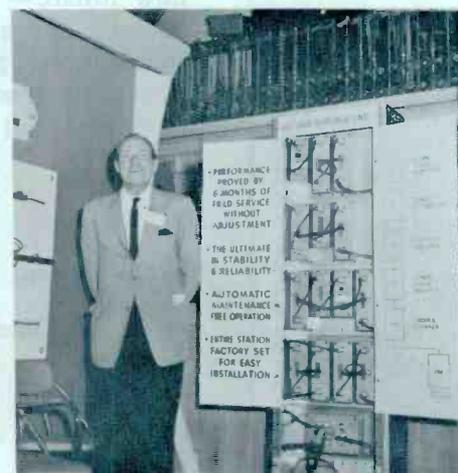
A visit to Seattle just wouldn't be complete without touring the engineering feat of the century, the Space Needle. Here, a number of the ladies are proudly displaying "I Was There" banners during a ladies activities breakfast.



Loren B. Stone, Manager of KCTS-TV in Seattle, is shown on the left admiring the award plaque presented to him at the "Keynote" luncheon. Looking over Loren's justly deserved award is Glenn Flinn of Tyler, Texas.



National Theatre Supply Co., was well represented this year. Shown here at their booth are (left to right) J. L. Milliken, Ohio Valley Cable (visitor); J. W. Servies, vice-president N.T.S.; R. R. Riley and W. G. Dimmerling, sales and engineering consultants N.T.S.



Here Donald Spencer of SKL is shown next to the company's new solid-state head end equipment which was located at one end of their booth. Also shown at this year's convention was SKL's 222A wide-band amplifier along with a number of other units.



Telemation, Inc., Salt Lake City, brought out a new weather board at the convention. Lyle O. Keys, president of the firm, is shown on the right having an apparently pleasant discussion with E. T. "Brick" Melbraaten about how the new unit operates.



One of the most unique displays at the convention was this lift-equipped truck, provided by Telesystem Services Corporation. Here, Bill Karnes of TSC is shown putting the Calhoun Uti-Lift through its paces. We still haven't figured out how they got this through the lobby entrance?



The three gentlemen on the left, visitors to the Jerrold booth, are apparently quite engrossed in what Mel Gray (center) and Sam Boyd (right) of The Jerrold Corporation have to say about some of the company's new equipment.



One of the newer exhibitors at this year's convention was Delta Electronics Ltd., from Toronto, Canada. Pictured here are some of Delta's staff (left to right) Art Whitehead, B.C. Regional Sales; visitor; Ron Leighton, Chief Engineer; visitor; Syd Wellum, president; Mrs. Bob Magness, Bozeman TV; Harry Sawyer, Sales Manager.

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# Our Man in Public Safety Communications



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## THE COMMUNITY AND PUBLIC SAFETY RADIO

On March 28, 29 and 30, 1963 a joint meeting of the Associated Public Communications Officers (Northern California and Nevada) and the California Public Safety Radio Association (Southern California and Arizona) was held in San Jose, California.

In attendance were 127 communications administrators and engineers including representatives from the States of Arizona, Nevada and Oregon as well as all parts of the State of California.

At the opening luncheon, City Manager A. P. Hamann of San Jose spoke of the fact that, "our elected people here feel that Communications is a very, very vital part of our particular community operations." The City has a centralized Communications Department which handles telephone and radio communications for all City Departments. Mr. Hamann continued: "I might mention that a few years ago our City Council did have the foresight to go along with the expansion of our program." "Speaking about communications, let me tell you that when the Council decided to go along with this program of ours it was a little unique; the idea isn't. Maybe it has some short comings and maybe it has some long suits too, but basically we have seen this thing operate. The recent one of course you read about last week. When we had this explosion in downtown San Jose, which of course could have been a real major catastrophe, it was a real bad one."

Mr. Hamann is hardly a neophyte in Public Safety Communications. He served for a number of years on the American Municipal Association Communications Committee and is keenly aware of our problems. To this end, he commented: "We know the fights that you people have as our representatives in this field with the F.C.C. Not necessarily with them as the intermediaries and the people that have to set the policies but with the fight that you have with the great com-

mercial interests and Television, Telephone Companies and all the other people that are trying to get themselves a little extra in these various frequencies. And that, of course, is of vital importance." "And I know it also is a great problem for the Federal people because these pressures are great. But, there's only so far that we can go and we have to take a stand relative to this situation or find ourselves on the outside in probably the most significant and vital part of our whole city or county operations. So I say to you, continue on with that battle that you have done such a fine job on in the past."

Mr. Hamann certainly speaks the truth when he states that we must take a stand relative to this situation.

Associated Public Safety Communications Officers, National President, Harvey O. Platt gave a comprehensive report of the activities of the national organization in general and the situation in regards to the Petition for a Statutory Inquiry into the Present and Future Needs of the Public Safety Radio Services in particular. Mr. Platt pointed out that governmental entities using radio frequencies for public safety purposes are today competing with commercial interests for spectrum space. Since the F.C.C. no longer accepts the words police or public safety as sufficient proof of need, he added that this inquiry is a must.

Following Mr. Platt, Mr. John McCue, Chief, Public Safety Division F.C.C., discussed the present situation in the regulatory field. He mentioned the enforcement program of the Commission, including application of the new "small fines" procedure to other than broadcast licensees. He also mentioned that there will be no waivers of the rule which requires the removal of fire communications from police frequencies by November 1, 1963.

Mr. George Brereton, Deputy Director, Department of Justice, State of California gave a very interesting and comprehensive explanation of integrated law enforcement records

and communications system of California. The magnitude of this operation was made clear when he explained that 149,688 name searches are requested from the State, sheriffs and police departments. Many of these requests are handled via radio and the State microwave facilities. Average time while search is made by electronic data processing equipment amount to ninety seconds. More than 129,000 record transcripts are received each month.

Mr. Allan K. Jonas of the California Disaster Office addressed the group as did Mr. A. P. Miller and Roy Post of Region 7, Department of Defense. Of particular importance was the report of the new requirement for a "hardened" operating point for base station facilities obtained under the matching funds program.

Among other items of interest were tours of the I.B.M. plant at San Jose and the Communications Facilities of Santa Clara County and the City of San Jose.

On April 16 & 17, 1963 your editor attended the meeting of the Public Safety Communications Council in Chicago, Illinois. The meeting was chaired by Max Guiberson of F.C.C.A. The first order of business was a report by Chief Thomas O'Brien of I.M.S.A. on the meeting held in the offices of the F.C.C. in Washington, D.C. on January 3, 1963. At that meeting the National Frequency Advisory Chairmen of A.P.C.O.; E.S.P.R.L.; F.C.C.A. and I.M.S.A. reached agreement with representatives of the Commission relative to a coordination procedure under Section 10.8(c) for the Local Government Radio Service. Mr. William Dillon attending as observer for A.A.S.H.O. indicated that this plan appeared satisfactory. A few days later A.A.S.H.O. joined the Council. Chief O'Brien reported further that as a result of this agreement, the Commission had released Docket #14923 which becomes effective May 1, 1963. He also reported that the Commission representatives indicated a desire for a standard form to be used for frequency advisory clearances. To develop this form, William Gamble of A.P.C.O., Captain Edward Tierney of E.S.P.R.L. and Chief O'Brien of I.M.S.A. were requested to develop a suitable form or forms. At this point Mr. Gamble distributed draft copies of several proposed forms along with an instruction sheet. The Council gave serious consideration to these forms, which after some modifications were approved and Mr. Gamble was requested to prepare the final copies and submit them to the Commission.

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By Robert E. Tall

# Our Man in Washington

**Lee Urges Nonbroadcast Government-Industry Group:** "Convinced that the time has come for some major changes" in the administration and use of nonbroadcast radio communications in order to "spread the use of nonbroadcast radio to as many people and legitimate pursuits in our country as possible" by alleviating "current conditions" under which further "expansion is not easy," FCC Commissioner Robert E. Lee laid the groundwork for the establishment of a government-industry committee to define both individual and collective problems of the various land mobile radio services and work toward their solution.

Mr. Lee spoke to the National Association of Manufacturer's Committee on Manufacturers' Radio Use at its semi-annual meeting in Washington. His specific proposal was for the formation of a government-industry committee for nonbroadcast radio "with functions similar to those of the Committee for the Full Development of All-Channel Broadcasting," which got off the ground earlier this year under FCC sponsorship.

His proposal is based in large part on anticipated results of the first comprehensive study of the state of frequency congestion in the land mobile radio services, being conducted by the Electronic Industries Association's Land Mobile Communications Section with the cooperation of the Commission.

"The frequency card study, using computer techniques," Mr. Lee said, "can furnish important basic data necessary to consideration of the problem and the information obtained may be of significant help in exploring possible solutions. While it is premature to predict the results, the areas and services in which congestion is greatest can be clearly delineated and a comprehensive picture built of the cold, hard undeniable facts."

"Radio is a tool of industry as much as the shovel, the die and the crane," he said. "The substitutes for this tool are expensive and increase unit costs in an era when we have serious competitive problems with our neighbors

around the world. Our unit costs are only competitive when we can utilize American knowhow to make up for the disparity in labor costs. This is as it should be. We want to keep American labor the highest paid in the world, enjoying the highest standard of living and thus helping to consume the products we make."

The FCC Commissioner said he "would not expect that all of the problems of the land mobile radio field can be taken care of by the joint government-industry committee before it is dissolved. However, I can certainly see — if the results of the committee's work are as worthwhile as I expect them to be — that the user groups would have become accustomed to working together more closely than has been the case in the past, and would want to continue some form of a central committee among themselves."

**FCC Asked To Reconsider Filing Fees:** About a dozen petitions for reconsideration of the FCC's order setting up a schedule of application filing fees to become effective Jan. 1 have been submitted to the agency. The principal point of contention was that the FCC does not have proper authority under existing law to take such a step. Among those filing from the nonbroadcast field were the American Petroleum Institute's Central Committee on Communication Facilities; the National Committee for Utilities Radio; the Special Industrial Radio Service Association; the American Radio Relay League; and the National Mobile Radio System.

**Microwave Talks Highlight API Committee Meeting:** Discussions of petroleum industry communications problems with respect to microwave sharing an interconnection and termination of privately owned communications systems with toll, exchange, and private line common carrier facilities occupied the principal spot of attention during the June semi-annual meeting of the American Petroleum Institute's Central Committee on Communication

Facilities in Washington. The Central Committee session was held in conjunction with the annual meeting of the National Petroleum Radio Frequency Coordinating Association.

The principle determinations made during the Central Committee meeting concerned a course of action to be undertaken by the group in planning for the future of petroleum industry microwave communications systems, as well as covering several current areas of consideration, and the decision to file a petition with the FCC looking toward the assignment of 450-470 megacycle frequencies for point-to-point functions in the petroleum industry.

The NPRFCA meeting was attended in part by all of the FCC Commissioners, each of whom made brief comment regarding his interest in nonbroadcast communications matters, with Chairman E. William Henry, in his first public appearance as Chairman of the agency, pledging action by the Commission to help alleviate the growing problems of the mobile radio field.

**Minow's Parting Recommendations:** In one of his final acts in connection with his recent service as Chairman of the FCC, Newton N. Minow wrote a nine-page letter to President Kennedy urging structural changes to establish a single Administrator and a Communications Court. Under his proposal, the court would rule on the "judicial matters" which come before the FCC, and the Administrator would be responsible for all other Commission activities, including policy making.

**Frequency Card Study:** The FCC has given the go-ahead signal for the first comprehensive study of the state of frequency congestion in the land mobile radio services — expected to set the stage for specific recommendations for improvements in the declining mobile radio frequency situation — as it concurred in the "desirability" of a frequency card study by the Electronic Industries Association's Land Mobile Communications Section, and

authorized EIA to move forward with the program.

The Commissions action, specifically, was to grant an EIA request to duplicate the FCC's electronic computer frequency record cards for current land mobile service authorizations issued in the public safety, industrial, land transportation, citizens, and common carrier radio services.

In its request, the EIA Section had pointed out that "It is common knowledge that there is an extreme shortage of land mobile frequencies in many areas," and explained that the projected study is designed to "confirm and support our present knowledge of the number of land mobile radio systems and units in specific geographic areas on each frequency assigned to these services and thereby enable us to gain additional information pertinent to the loading of these frequencies in any service in any area."

The study looks toward a cooperative effort by the FCC, the users, and the equipment manufacturers for "developing plans and suggestions for improving the use of the land mobile spectrum." Details on the steps projected for the study were described in the June issue of VICOM.

FCC Chairman E. William Henry said the Commission agrees that "useful information relative to the status of mobile assignments and their effect upon frequency utilization may be developed from the computer studies" projected by EIA.

#### **Bartley Emphasizes Importance Of User Groups:**

The importance to the FCC of the various volunteer organizations which are coordinating nonbroadcast radio frequencies and keeping the Commission apprised of the spectrum needs of their respective members was described by FCC Commissioner Robert T. Bartley in an address to a June meeting of the Aerospace Flight Test Radio Coordinating Council in Washington.

Commissioner Bartley urged the Flight Test Council "and other responsible user groups to continue to maintain a strong interest in the matter of frequency allocations and related regulations by the Commission. The fact that we do not have sufficient frequency space to accommodate all desires in this area makes for a continuing and difficult problem," he said.

#### **Air-Ground Public Service Proposals Dropped:**

Experiment and development looking toward the establishment of a regular, nationwide public air-ground radiotelephone service which has been conducted during the past six years "has not produced an adequate air-ground radiotelephone sys-

tem for the general public," the FCC declared, and proposed rules issued more than a year ago "should not be adopted."

The Commission announced a formal report and order terminating a 1962 proposed rulemaking which had been substantially in accord with a January, 1962, petition from the American Telephone & Telegraph Co. The rulemaking had sparked considerable controversy in several areas, including questions as to who should be permitted to provide the service; how maintenance of the equipment should be handled; and technical standards for the facilities to be used.

The agency said, however, that it is providing a period "through Sept. 10, 1964, during which it will entertain proposals looking toward the development of an acceptable system on the frequency bands now reserved for this purpose (in the 450 megacycle range) or on bands higher in the spectrum."

#### **Radio Common Carriers Oppose Rule Proposals:**

Outstanding FCC rule proposals which would restrict the location of domestic public land mobile radio service dispatch stations and rural subscriber stations, to the 37 dbu contours of their associated base stations, with exceptions, are an attempt at "restrictive provisions without any showing of the need for such changes," the National Mobile Radio System declared in comments on the proposals. A number of individual RCCs joined in with the NMRS positions, which contends that there is a clear need for the service which the Commission is attempting to curb.

#### **Barlett Succeeds Diller in NCUR:**

S. C. Bartlett, of the American Electric Power Service Corp., has been elected Chairman of the National Committee for Utilities Radio, succeeding Clarence O. Diller, of the Lone Star Gas Co. Other NCUR officers are Vice Chairman Glenn M. Green, of Los Angeles, Calif., Water & Power, succeeding Mr. Bartlett in that post, and Secretary Guy C. Lewis, of the Virginia Electric Cooperative, Bowling Green, Va., succeeding Mr. Green.

Mr. Barlett declared that "the most important problem facing the Committee is to obtain relief from the overloading of radio frequency channels allocated to the power radio service." In "many parts of the country," he said, "the situation has already become intolerable."

#### **"Intruder Alarm" Service Proposed In**

**Part 15:** The FCC has dusted off a docket which has been lying dormant for a couple of years and issued proposed rulemaking looking toward set-

ting up an "intruder alarm" service within its present Part 15 regulations, using the industrial, scientific and medical frequency bands at 915, 2450 and 22,125 megacycles.

**Henry Names Aides:** The legal and engineering assistants to new FCC Chairman E. William Henry during his initial service as a Commissioner will be members of his staff in the Chairman's office. Leonidas P. B. Emerson will be legal assistant to Mr. Henry, and Bruce S. Longfellow will be engineering assistant. Retired Chairman Newton N. Minow's engineering assistant, William L. North, has joined the staff of Commissioner Kenneth A. Cox, who previously had not had an engineering assistant. John Cushman, administrative assistant to Chairman Minow, will remain in that assignment with Chairman Henry.

#### **FCC Switches Frequencies To Power**

**Service:** The FCC has completed action on a set of February, 1962, rule proposals and shifted five frequencies in the 153 megacycle band from joint allocation to the petroleum and forest products radio services in the states of Oregon and Washington over to the power radio services for use in those two states.

The five transferred frequencies are 153.44, 153.50, 153.56, 153.62 and 153.68 mc. The original proposal, which was issued in response to a petition from the National Committee for Utilities Radio, had contemplated such a transfer of a total of seven frequencies, but the Commission said 158.16 and 158.22 mc are now to be retained in the forest products service "in order to satisfy a need within that service for mobile relay or repeater type operations in the mountain areas of the Pacific Northwest."

The frequencies involved are split channels derived in 1958 rulemaking. At that time, they were assigned to the power service in 42 of the then 48 states, but to shared petroleum-forest products use in Oregon, Washington, Arkansas, Louisiana, Oklahoma, and Texas.

Forest products and petroleum service licensees on the five frequencies in Oregon and Washington were given five years — until June 30, 1968 — to vacate their present assignments and switch to other frequencies assigned to those services.

The Commission said its "choice" as to whether the general needs of forest products or power service licensees in the area for frequency space is greater was "difficult," but "a more pressing or critical need" for frequencies in the high band "exists on the part of the power radio service." Forest products

users, the agency said, have shown a marked preference for frequencies in the 25-50 mc band.

**Plea Sounded For Unified Effort:** A plea for the "unqualified and unified support of every land mobile radio user in the country" for an effort "dedicated to the single purpose of obtaining the frequencies required to serve the communication needs of this county" was issued in a June address to the Alabama Civil Defense Association in Mobile, Ala.

Support for an active movement to "get such a program off-the-ground," and specific action by the radio users, was asked of the land mobile field in a speech by Robert M. Johnson, Manager, Government Sales & Service, of the General Electric Communication Products Department.

Mr. Johnson declared that the "future of land mobile radio in this country is completely dependent upon some sane solution to the allocation of radio frequency space for TV transmission," and this is a "herculean task" which is "tantamount to reversing an already adopted national policy." The job requires a "convincing demonstration to 180 million Americans that the luxury of unlimited television must and should be compromised slightly to give this nation the vital communications links that are required to serve our defense, common carrier, public safety, public administration, transportation and industrial growth," he said.

The GE official urged that the "idea of a national get-together on this problem should be talked up" in the land mobile radio user associations or government entities," and "national publicity" should be sought at every turn to point to the stifling frequency congestion in the mobile field.

**Henry Takes FCC Helm From Minow:** The non-broadcast radio communications field throughout the country has been looking with hope to the expectation that FCC Commissioner E. William Henry has meant what he has said in recent public pronouncements — that the frequency-harrassed land mobile radio services constitute "one of the major problems" facing the Commission, and pledging his support to improve the situation — as Mr. Henry formally took over the reins of the agency at the June 1 departure of Chairman Newton N. Minow.

In naming Mr. Henry Chairman of the FCC, President Kennedy also tapped Assistant Attorney General Lee Loevinger to fill the unexpected term of Mr. Minow as an FCC Commissioner — running until June 30, 1968, subject to Senate confirmation.

As had been expected, Mr. Minow's

resignation was to permit him to become Executive Vice President and General Counsel of Encyclopedia Britannica, Inc.

**Steps Expected Against FCC "Filing Fees":** Formal steps are expected to be taken by one or more radio user organizations to reverse the FCC's decision to institute an application filing fee schedule next Jan. 1, it was indicated following a meeting of representatives of a number of groups. The National Business Aircraft Association had already informally requested the Commission to reconsider its action adopting the filing fee plan, and one or more formal petitions were anticipated by the June 7 deadline for such action.

Also contemplated — in the likely event the FCC refuses to reconsider the plan — was an appeal to the courts, on the basis that existing legislation is insufficient authority for the Commission's action. Barring some further FCC action, July 7 would be the deadline for a court appeal.

Plans also were discussed to take up the matter with the appropriate Congressional committees. It was recalled that a decade ago the Senate Commerce Committee blew the whistle on an FCC filing fee plan, adopting a resolution calling on agencies under its legislative aegis to delay instituting such programs while it studied the matter further.

Meanwhile, which was probably to be the first of a number of bills to amend the Communications Act to prohibit the FCC from assessing fees and charges, unless specifically permitted by law, was introduced in the House by Rep. Walter G. Rogers (D., Tex.), a member of the Interstate & Foreign Commerce Committee.

**Broadcasting Station Asks FCC 'Paging' Ruling:** An "advisory ruling" as to whether Omaha, Nebr., broadcast station KFAB can engage in emergency radio paging operations for Omaha doctors over its regular AM broadcasting facilities in situations "when other modes of contact have failed," has been requested of the FCC.

The station said its filing was based on the fact that "On a number of occasions in recent months the Physicians Bureau of Omaha, which has the responsibility of handling telephone calls and locating between 400 and 500 doctors in the Omaha area, has been unable to contact through normal channels a particular doctor in an emergency situation, even though all Omaha physicians, when away from their offices, leave their schedules with the Physicians Bureau and even though many doctors have citizens' band

radios and radio paging devices" served by the telephone company's "Bell Boy" operation.

The most common situation, the station said, where the Physicians Bureau "has been unable to contact a particular physician or surgeon, arises when the doctor is in his automobile calling on different patients (and thus away from a telephone point of contact) or is in his automobile on his way to some town 20-40 miles from Omaha, beyond the range of his other radio devices."

**Devore, White Get New FCC Common Carrier Posts:** Lawrence M. DeVore, attorney in the FCC Common Carrier Bureau's Telephone Division, and more recently the Rates Division, for three years, has been named Assistant Chief of the Bureau's Domestic Radio Division. He succeeds Byron E. Harrison, now in private law practice.

**NCUR Petitions FCC For Two Rule Actions:** The National Committee for Utilities Radio has petitioned the FCC (1) for Commission rule changes to provide for the "regular licensing of the so-called 'splinter frequencies' in the industrial radio services," and (2) "early assignment of ten split channel frequencies in the 25-42 megacycle band to the power radio service."

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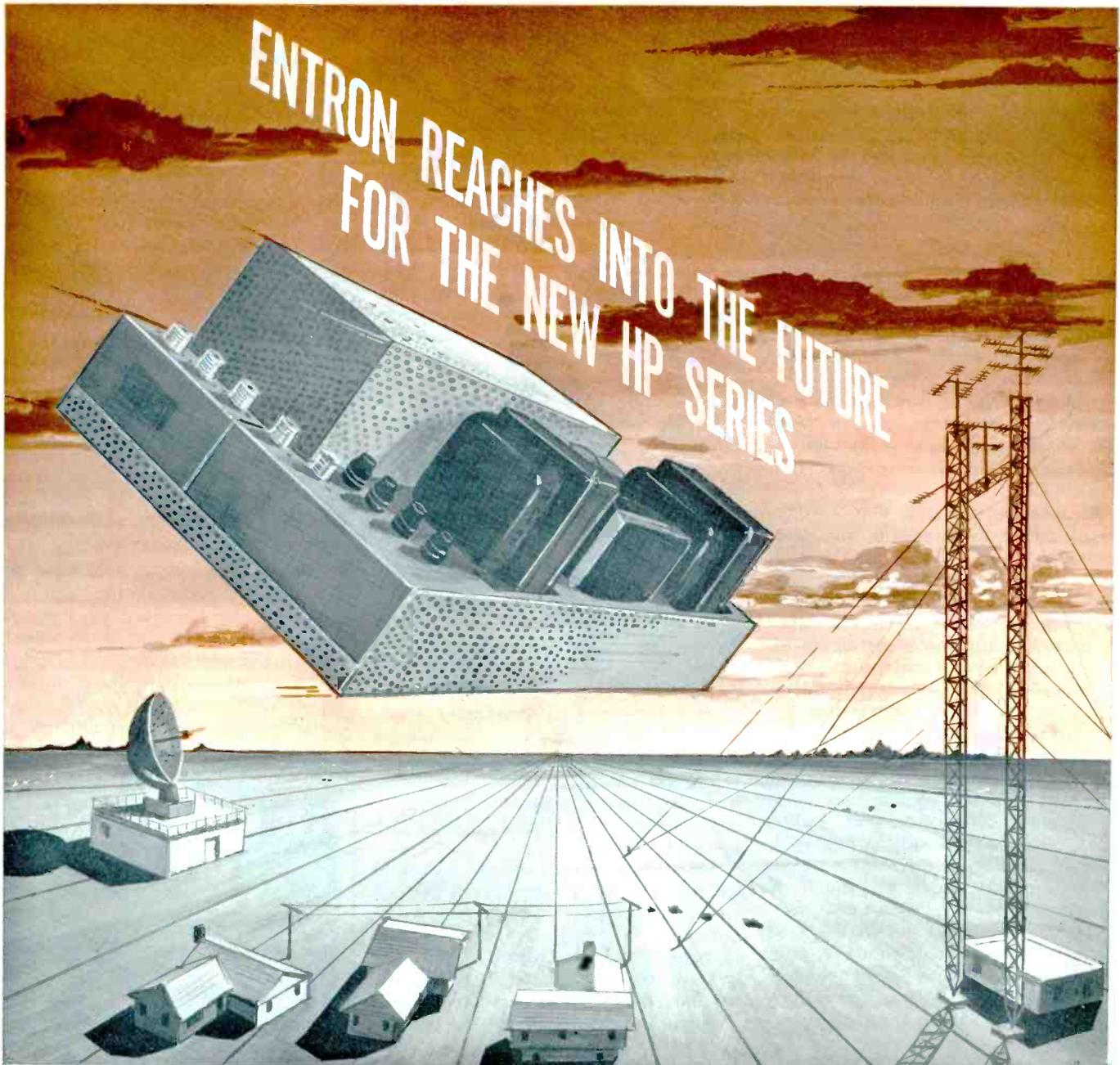
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## SECTION 605 AND YOU - PART III

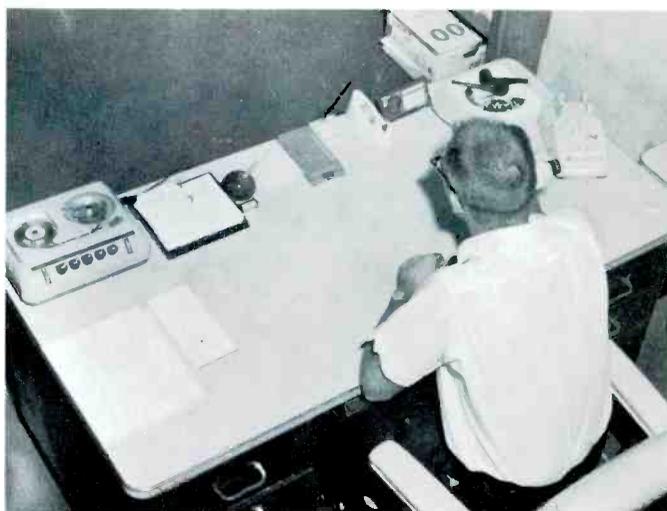


By Jeremiah Courney

(Editorial Note: The first two of this series of articles on Section 605 of the Communications Act dealt with wire tapping, and the application of Section 605 to extension telephones and the recording of telephone conversations, respectively. It is generally known that Section 605 contains a ban on wire tapping — both interstate and intrastate — and the disclosure of information so obtained. It is perhaps less well known that Section 605 also applies to such widely used devices as extension telephones and the recording of telephone conversations. Under the present law it is legal for one party to a telephone conversation, without the knowledge or consent of the other party, to allow a third person to listen on an extension telephone and use the information against the unsuspecting victim of this eavesdropping. Similarly, the use of mechanical recorders does not appear to violate Section 605. In fact, the rules of the Federal Communications Commission expressly sanction their use in interstate communications, under certain “beep” safeguards laid down by the FCC.

The second part of this series ended with a brief discussion of one-sided consent to recording radio conversations. It was at the conclusion of the second part that we wished to include a brief discussion of protected and unprotected eavesdropping but felt it should be reserved as a preface to part three.)

The Supreme Court's interpretation of the word “intercept” does very little to advance our right of privacy. While it was not until 1957 that the Supreme Court faced the problem of listening on an extension telephone with the consent of one party to the conversation, the Supreme Court gave an indirect boost to the opponents of the **Polakoff** view in 1942 in **Goldman v. United States**, 316 U.S. 129. There, the Court held that there was no violation of Section 605 where Federal agents, to overhear a conversation in a business office, gained access to an adjoining room and inserted a detectaphone in a small aperture in the partition wall with a wire leading from the detectaphone to earphones. The Court held that there was no violation of Section 605



because no interception had occurred when the officers overheard the speakers directly after the conversation reached its destination.

But the Supreme Court has not been altogether insensitive to this invasion of privacy and has refused to extend the **Goldman** principle of protected eavesdropping to accommodate other advances in the art of detection by electronic means. This was done in a 1961 case which involved the use of a “spike mike” (an electronic listening device consisting of a microphone attached to a foot-long spike with an amplifier, a power pack and earphones). **Silverman v. United States**, 365 U.S. 505. In this case police officers inserted a “spike mike” through a party wall so that it came into contact with a heating duct, converting the heating system into a giant microphone running the entire house. The Court agreed that there was no interception within the meaning of Section 605, but held that the use of a “spike mike” constituted a violation of the Fourth Amendment which prohibits unreasonable searches and seizures because there was an unauthorized physical invasion of the home of the victim of this practice when the “spike mike” touched the heating duct. In the **Goldman** case, there was no such physical invasion of a constitutionally protected area and, therefore, no violation of the Fourth Amendment. The distinction between the two cases seems rather tenuous. But it is clear that the Supreme Court has become increasingly sensitive to any further erosion of the right of privacy by refusing to extend the principle of protected eavesdropping to the use of an electronic device such as a “spike mike”.

A very recent Supreme Court decision, issued after Part II of the series was completed, has focused attention on the pervasive effect electronic eavesdropping can have on our privacy. Our first article opened with a quotation from a Federal Judge that Section 605 of the Communications Act goes a “long way toward safeguarding individual liberty, the right of privacy, and the insulation of one's home from Big Brother's intrusion of a police state.” **Carnes v. United States**. The electronic eavesdropping discussed in this article is beyond the scope

# 30 ALL TRANSISTOR AMPLIFIERS CASCADED IN A 50 AMPLIFIER SYSTEM

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*Repeater Amplifier Type RA22* — A wideband (20 to 220 mc/s) designed for use in main trunk cables. 23 db unit gain, plus/minus 2 db at 100 mc/s with 12 volt supply at 75 degree ambient temperature. Unique attenuator gain control provides up to 10 db of variation through switchable flat-bandpass pads in 2 db steps (amplifier gain is not controlled by touchy bias level control method). Gain stability is plus/minus 1 db for supply voltage change of plus/minus 1 volt dc. Change in gain for ambient temperature range -22 degrees F to 122 degrees F is plus/minus 2 db. Noise factor less than 8 db at 50 mc/s when amplifier is operated at maximum gain, input and output impedance flat across 20-220 mc/s at no more than 1.3 to 1. Output is 30 db when cascading 16 amplifiers. Cross modulation between two 30 db referred to output, typically 70 db down and a minimum of 65 db down. Power supply requirements (using mate supply model RG11) 12 volts DC, at 80 mA. The weatherproof cylindrical case is fully sealed to prevent the ingress of moisture.

Left to right, RA22 all transistor repeater amplifier; RC200 series Equalizer unit; RB21 Automatic Level Control unit. A complete trunk-line master station.



*Equalizer Unit RC200 Series* — Passive network which compensates for the frequency dependent characteristics of the cable over the range of 20 to 220 mc/s. Four different units are available, the choice determined by the characteristics of the section of cable immediately preceding the amplifier station.

### *Automatic Level Control Unit Type RB21*

Fully transistorized; comprised of an amplifier tuned to pilot carrier frequency, and a variable attenuator circuit. The amplifier input is derived from the associated trunk amplifier monitor point and its output controls the insertion loss of the attenuator in the main signal channel. A servo action is thus obtained ensuring that the trunk amplifier pilot-carrier output is maintained at a constant level of 30 db. The unit is housed in a cylindrical weatherproof case; it may be plugged directly into the input end of the equalizer at the appropriate amplifier station. Power for the unit is obtained from the cable fed supply voltage, originated at the mate supply model RG11. This unit is completely compatible with model RA22 amplifier and Equalizer RC200 series. An ALC unit is recommended every fourth or fifth amplifier station.

A complete line of transistorized equipment, including pre-amplifiers, and a quality line of high-level 7788/E810F trunk line amplifiers is augmented by a complete selection of cable accessories including splitters, directional couplers and taps, at *Electroline Television Equipment, Ltd.* A warehouse is maintained at Morell Electronics, Inc., P.O. Box 612, Champlain, New York. Write directly to Montreal for a complete catalogue, and pricing schedules.

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of Section 605. But some of the principles developed by the Supreme Court in interpreting Section 605 have been used in sanctioning the employment of electronic eavesdropping devices, and in holding that the Fourth Amendment of our Federal Constitution does not protect us against their use. Because, in our opinion, these electronic devices are capable of even greater mischief than wire tapping, a more extended treatment of this practice is warranted, lest the established protection of Section 605 and the Fourth Amendment lull the unwary into a false sense of security against the use of these electronic devices.

A front page article in the Wall Street Journal of April 9, 1963, entitled "Electronic Advances Aid Snoopers Using Eavesdropping Devices," described how professional eavesdroppers have been taking advantage of advances in the electronic art to "bug" offices and industrial establishments, in some cases for their protection, but in others to leak trade secrets. Many of the eavesdropping devices are radio transmitters of sufficient power to require prior FCC authority for operation. Needless to say, whenever such eavesdropping devices are used by persons other than the Federal Government, without proper FCC license, the user is violating Section 301 of the Communications Act and, if apprehended and convicted, may be fined or imprisoned. But this is a slim deterrent, at best. The article also pointed out that private detectives, industrial security forces, local police and Federal agencies are customers of the firms manufacturing eavesdropping and "bugging" equipment. Some of this equipment, of course, is used for espionage and counter-espionage, particularly by the Central Intelligence Agency. As for each action there is a reaction, so the development of electronic eavesdropping equipment has stimulated the manufacture of anti-eavesdropping devices. Some of them operate pretty much like mine detectors in locating hidden microphones. The Government, notably the State Department, is a major customer for such anti-eavesdropping devices.

Shortly after the publication of this eavesdropping article, the United States Supreme Court had occasion to deal with this subject also. Unfortunately, it sanctioned the particular use of an electronic eavesdropping device involved in a case before it, and, as implied by the three dissenting Justices, missed an opportunity to strike a telling blow for individual liberty and right of privacy.

#### **The Lopez Minifon Case**

The case in question was **Lopez v. United States**, decided May 27, 1963, 372 U.S. \_\_\_\_\_, 31 U.S. Law Week 4507. The facts were these. Lopez, an operator of an inn in a Massachusetts town, was thought by the Internal Revenue Bureau to be subject to the Federal Excise Tax because his establishment offered entertainment in the form of dancing. When Davis, an Internal Revenue agent, visited Lopez' establishment and pointed out to him that he appeared to be liable for a cabaret tax, Lopez invited the agent into his office and offered him \$420 if Davis would drop the case. Davis, though he had no intention of accepting the bribe, took the money and reported the inci-

dent to his superiors. When Davis next met Lopez, he carried a pocket wire recorder known as Minifon. A record of the second conversation transcribed by the Minifon made clear, beyond any doubt, that Lopez did in fact try to bribe Davis. Lopez' lawyer tried to exclude the evidence of the recorded conversation, but the trial judge overruled him. The Court of Appeals and the Supreme Court upheld the trial judge.

(Lopez claimed that the money he gave Davis was intended to pay the latter for straightening out Lopez' books — not to bribe him. If the trial judge refused to admit the recorded conversation, which contradicted Lopez' version of the money offer, the jury would then have to decide whether to believe Lopez or Davis. In other words, Lopez' lawyer did not object to Davis' testimony; he objected only to the use of the Minifon record. Later, apparently recognizing the weakness of his position, Lopez' lawyer shifted ground on appeal and claimed entrapment. The defense entrapment consists of a claim that the Government in fact manufactured the evidence by having its agent induce a person, who otherwise would have been law-abiding, to commit a crime. If Lopez could have proved entrapment, the trial judge would have dismissed the indictment. But the trial judge concluded that Lopez was bent on committing a crime of bribery and any encouragement he received from Davis did not constitute entrapment in the legal sense.)

#### **Minifon Use Approved by Majority**

The Supreme Court gave short shrift to the defense of entrapment; and if this were the sole issue involved, the decision would pass unnoticed. But the Court was also called upon to decide whether a wire recording of the conversation between Lopez and Davis was properly admitted in evidence. This squarely raised the use of eavesdropping as a means of collecting evidence. The majority of the Supreme Court upheld this particular use of the Minifon. The minority, in an impassioned dissent written by Justice Brennan for himself and Justice Douglas and Goldberg, concluded with this significant paragraph:

"In the light of these circumstances I think it is an intolerable anomaly that while conventional searches and seizures are regulated by the Fourth and Fourteenth Amendments and wire-tapping is prohibited by federal statute, electronic surveillance as involved in the instant case, which poses the greatest danger to the right of private freedom, is wholly beyond the pale of federal law."

Justice Harlan speaking for the majority refused to classify the use of the Minifon on the above facts as an eavesdropping case. He said:

"The Court has in the past sustained instances of 'electronic eavesdropping' against constitutional challenge, when devices have been used to enable government agents to overhear conversations which would have been beyond the reach of the human ear. See, e.g., *Olmstead v. United States*, 277 U.S. 438; *Goldman v. United States*, 316 U.S. 129. It has been insisted only that the electronic device not be planted by an unlawful physical invasion of a constitutionally protected area. *Silverman v. United States*, (365 U.S. 505). The validity of these decisions is not in question here. Indeed, this case involves no 'eavesdropping' whatever in any proper sense of the term. The Government did not use an electronic device to

listen in on conversations it could not otherwise have heard. Instead, the device was used only to obtain the most reliable evidence possible of a conversation in which the Government's own agent was participating and which that agent was fully entitled to disclose. And the device was not planted by means of an unlawful physical invasion of petitioner's premises under circumstances which would violate the Fourth Amendment. It was carried in and out by an agent who was there with Petitioner's [Lopez'] assent, and it neither saw nor heard more than the agent himself."

The Justice likened the case to a leading Section 605 decision discussed in the previous articles:

"The case is thus quite similar to *Rathbun v. United States*, 355 U.S. 107, in which we sustained against statutory attack the admission in evidence of the testimony of a policeman as to a conversation he overheard on an extension telephone with the consent of a party to the conversation. The present case, if anything, is even clearer, since in *Rathbun* it was conceded by all concerned 'that either party may record the conversation and publish it.'" (Emphasis the Court's)

Then, the majority concluded:

"We think the risk that petitioner took in offering a bribe to Davis fairly included the risk that the offer would be accurately reproduced in court, whether by faultless memory or mechanical recording."

This is reminiscent of the court's statement in the *Rathbun* case that:

"each party to a telephone conversation takes the risk that the other party may have an extension telephone and may allow another to overhear the conversation."

But we think this statement of the Court in the *Lopez* case goes too far. There is quite a difference between the risk that an extension telephone—a device commonly used throughout the country—may be employed, and the risk that the Federal agent, with whom you are talking in your own private office, may have a mechanical recorder concealed in his pocket. A person bent on bribing a Federal agent is obviously taking a chance that the agent may have a faultless memory. But then in any subsequent trial it is the agent's word against the word of the alleged bribe offerer. The judge, or the jury, may choose to believe either. But a mechanical recorder is another matter. Most of us would credit it unhesitatingly, and herein lies one of the dangers of this practice. For the allegedly faithful mechanical reproduction may in fact be a deception. But more about this later.

The Chief Justice who agreed with the majority in the *Lopez* case, wrote a concurring opinion for the principal purpose of placing on record his disapproval of a previous case, *On Lee v. United States*, 343 U.S. 474, on which the majority, implicitly, relied. On Lee was indicted for selling opium. He was free on bail. One day, an old acquaintance came to On Lee's laundry and induced him to make certain incriminating statements. What On Lee did not know was that his acquaintance had turned government informer and was carrying a small concealed microphone which transmitted the conversation with On Lee to a narcotics agent stationed outside. The informer, presumably because of his questionable character, was not called as a witness in On Lee's

trial. Instead, the Government relied on the testimony of the agent who heard the conversation transmitted by concealed microphone on the informer's person. The Supreme Court held that the agent's testimony was admissible; and that this method of obtaining evidence did not violate the Fourth Amendment's ban on unreasonable searches and seizures. The Chief Justice thinks that the *On Lee* case was wrongly decided; and so do the dissenters in the *Lopez* case.

#### Dissent Castigates Minifon Use

Before turning to the dissent in the *Lopez* case it is well to quote the full text of the Fourth Amendment:

"The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized."

The dissent implicitly disagrees with the majority decision that the use of the Minifon did not constitute an unlawful physical invasion of Lopez' premises under circumstances which would violate the Fourth Amendment. In Justice Brennan's view, the use of the Minifon amounted to the introduction of a third party to a conversation—an uninvited eavesdropper. Said Justice Brennan:

"A mechanical recording is not evidence that is merely repetitive or corroborative of human testimony. To be sure, it must be authenticated before it can be introduced. But once it is authenticated, its credibility does not depend upon the credibility of the human witness. Therein does a mechanical recording of a conversation differ fundamentally from, for example, notes that one of the parties to the conversation may have taken. A trier of fact credits the notes only insofar as he credits the notetaker. But he credits the Minifon recording not because he believes Davis accurately testified as to Lopez' statements but because he believes the Minifon accurately transcribed those statements. This distinction is well settled in the law of evidence, and it has been held that Minifon recordings are independent third-party evidence. *Monroe v. U.S.* 98 U.S. App. D.C. 228, 233-234, 234 F. 2d 49, 54-55."

The dissent then quotes from a famous article of which one of the authors was the future Justice Brandeis, than a young lawyer:

"The common law secures to each individual the right of determining, ordinarily, to what extent his thought, sentiments, and emotions shall be communicated to others . . . and even if he has chosen to give them expression, he generally retains the power to fix the limits of the publicity which shall be given them." Warren and Brandeis, *The Right to Privacy*, 4 Harv. L. Rev. 193, 198 (1890)" (Emphasis the Court's);

and continues:

"That is not to say that all communications are privileged. On Lee assumed the risk that his acquaintance would divulge their conversation; Lopez assumed the risk vis-a-vis Davis. The risk inheres in all communications which are not in the sight of the law privileged. It is not an undue risk to ask persons to assume, for it does no more than compel them to use discretion in choosing their auditors, to make damaging disclosures only to persons whose characters and motives may be trusted. But the risk which both On Lee and today's decision impose is of a different order. It is the risk that third parties, whether mechanical auditors like Minifon or human

transcribers of mechanical transmissions as in *On Lee* — third parties who cannot be shut out of a conversation as conventional eavesdroppers can be, merely by a lowering of voices, or withdrawing to a private place — may give independent evidence of any conversation. There is only one way to guard against such a risk, and that is to keep one's mouth shut on all occasions."

The dissenters were not unaware of the possibility that they might be criticized as encouraging bribery. To meet this possibility, Justice Brennan conceded, of course, that no social interest exists in encouraging Lopez to offer bribes. But "neither is there a social interest in allowing a murderer to conceal the murder weapon in his home." Yet this does not constitute a basis for permitting a search of the murder suspect's apartment in violation of the Fourth Amendment.

The dissenters also consider their position to be consistent with the *Rathbun* case:

"Nothing in *Rathbun v. United States* . . . is to the contrary . . . The decision was a narrow one. The grant of certiorari was limited to the question of statutory construction, and neither the majority nor dissenting opinions discuss any other possible basis for excluding the evidence. Furthermore, as the Court was careful to emphasize, extension phones are in common use, so common that it is a normal risk of telephoning that more than one person may be listening in at the receiver's end. The extension telephone by means of which Rathbun's statements were heard had not been specially installed for law enforcement purposes, and no attempt was made to transcribe the phone conversation electronically. Thus in the Court's view wiretapping in the conventional sense was not involved and §605 had no application. It should also be pointed out that while it is a very serious inconvenience to be inhibited from speaking freely over the telephone, it perhaps is a far graver danger to a free society, if a person is inhibited from speaking out in his home or office."

#### **Electronic Surveillance Equated to Tyranny**

In further support of his position against "surreptitious electronic surveillance", Justice Brennan cited various studies which show the pervasive nature of this practice. The following quotation shows the extent of the Justice's concern with this practice:

"Electronic surveillance, in fact, makes the police omniscient; and police omniscience is one of the most efficient tools of tyranny."

This condemning statement is extensively documented. The Justice not only cites the above-mentioned *Wall Street Journal* article, but also refers to specific examples such as (1) "bugging" conversations between husband and wife in jail; (2) wiretapping and "bugging" of labor controversies; (3) in Las Vegas "a bug is put in a visiting hoodlum's hotel room as a matter of course, to see what he is up to". The Justice then observed that "electronic eavesdropping by means of concealed microphones and recording devices . . . has become as large a problem as wiretapping, and is pervasively employed by private detectives, police, labor spies, employers and others for a variety of purposes, some downright disreputable." After citing examples of bugging such as the three mentioned above, the Justice adds:

"These devices go far beyond simple 'bugging' and permit a degree of invasion of privacy that can only be described as frightening."

For example, a parabolic microphone (which concentrates sound much as a curved mirror focuses light) can pick up a conversation at a distance of 100 feet and is readily obtainable. A current ad in a national magazine for "The Snooper," advertised to cost \$18.95, describes this device, according to the Court, as follows:

"This is literally an electronic marvel that's a direct result of the space age. Incredible as it may seem, it does amplify sound 1,000,000,000 times. Sensitive 18" desk reflector will pick up normal conversation at a distance of (500 ft.) where you can't even see lips moving. Just think of the ways you can use it. Portable; complete with tripod and stethoscopic earphones. The best part — a regular tape recorder can be plugged into the back to take everything down. Have Fun!"

#### **Reliance on Minifon Evidence Challenged**

The dissent finally takes issue with the majority statement that the use of a device such as a Minifon serves "to obtain the most reliable evidence possible of a conversation." States Justice Brennan: "Far from providing unimpeachable evidence the devices lend themselves to diabolical fakery." Here, the Justice relies on a carefully controlled experiment in which a sample of a political speech on tape was sent to a sound studio specializing in tape editing for one of the large broadcast companies. The studio edited the tape so as completely to reverse its meaning. The frightening part about this is that this type of "editing," if done by an expert, cannot be detected—no clue can be found to prove that the tape was so altered. "Our possessions," the Justice writes, "are of little value compared to our personalities. And we must bear in mind that historically the search and seizure power was used to suppress freedom of speech and of the press." Justice Brennan winds up this disturbing picture thusly:

"Electronic surveillance strikes deeper than at the ancient feeling that a man's home is his castle; it strikes at freedom of communication, a postulate of our kind of society. Lopez' words to Agent Davis captured by the Minifon were not constitutionally privileged by force of the First Amendment. But freedom of speech is undermined where people fear to speak unconstrainedly in what they suppose to be the privacy of home or office . . . If electronic surveillance by government becomes sufficiently widespread, and there is little in prospect for checking it, the hazard that as a people we may become hag-ridden and furtive is not fantasy."

Thirty-five years ago, the popular reaction to the Supreme Court's *Olmstead* decision that wiretapping was not prohibited by the Fourth Amendment to the Federal Constitution resulted in the enactment, by Congress, six years later, of Section 605 of the Communications Act, in effect over-ruling that decision. No doubt, it was the dissenters in the *Olmstead* case who focused public attention on the threat the majority's view held to our liberties. It is to be hoped that Justice Brennan's brilliant dissent in the *Lopez* case may have a similar effect in stimulating a legislative answer to the "electronic eavesdropping" threat. But if this is to be accomplished, the dissenter's plea for the protection of personal liberties must not be forgotten.

# New Product Horizons



## TRANSMISSION LINE

**Andrew Corporation**, P.O. Box 807, Chicago 42, Illinois has recently developed and produced what the firm calls the largest flexible air-dielectric cable available for high power communication systems. Andrew Type H9-50 Heliac, a 5 inch diameter copper cable, is available in continuous splice free lengths, and is designed for operation up to 950 megacycles.



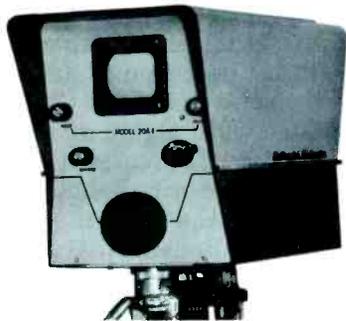
The H9-50 HELIAX is a 50 ohm cable featuring convoluted inner and outer conductors of high conductivity copper, permitting easy bending around obstructions. Type H9 is available in 1,000 foot lengths. Flanged end fittings for Type H9 mate with 6-1/8 inch EIA standard flanges and inner connectors.

Full technical data on the new cable is available from Andrew. Request Bulletin 8505.

## VIDICON CAMERA

A new vidicon camera system with an image tube viewfinder has been introduced by **Continental Electronics Products Company**, new communications subsidiary of Ling-Temco-Vought, Inc.

Identified as model 20A-1, the camera is the first of a new line of Continental television products. The 20A-1 is usable with any studio equipment operating on standard EIA sync pulses; performs in low light level areas and is designed to be simple to operate and economical to maintain.



The camera system consists of the vidicon camera, the camera control unit and the power supply unit.

With its three-inch electronic image view-finder, providing reduced initial cost and lower replacement cost, the 20A-1 also has electrical center to ease vidicon and viewfinder alignment.

Controls for the 4-lens turret and optical focus are grouped on the rear of the camera. A transistorized two-way communications system linking the camera operator with the control console permits each operator to adjust his ear-phone listening level.

Sweep-failure protection prevents damage to the vidicon in the event of loss of horizontal or vertical sweep.

Complete information on the new CCTV item, and the complete line, is available from the manufacturer at P.O. Box 5024, Dallas 22, Texas.

## NEW MATV WALL PLUG

**Saxton Products, Inc.**, 4121 Park Avenue, New York 37, New York has introduced a new MATV wall plug designed to eliminate service calls resulting from broken and pulled cable-to-system connections through broken wall plug connectors.

Model SP-27 is an improved plug-in device for master TV antenna systems. It replaces the more commonly used Motorola type plug, and assures a good electrical connection and a rigid attachment that cannot be pulled apart or broken in normal wear and use.

The new plugs are individually packaged, or available with 10 or 20 foot installed lengths of coaxial cable. Full details are available from the manufacturer.

## TWO TRANSISTOR PRE-AMP FEATURES HIGH-GAIN, NO OVERLOAD

**Jerrold Electronics Corporation**, Philadelphia, has announced their model SPM-102 Super-Powermate. The unit is completely transistorized and will handle up to 700,000 microvolts of signal output.



Gain-overload specifications range from 15.5 db with a maximum output of 700,000 microvolts at channel 2 to 11.1 db with a maximum output at channel 7, to 11.3 db with 200,000 microvolts maximum output at channel 13.

Frequency response as a function of gain is 0.6 db over the low band or 0.2 db over the high band.

Noise figure measurements indicate, the manufacturer reports, that variations will not be more than plus or minus 1 1/2 db from the production average figures of 4.31 db at channel 2, 7.04 db at channel 7, or 7.17 db at channel 13.

The remote power supply provides 15 volts AC to the antenna mounting unit. The power is

fed to the unit through the 300 ohm twinlead. List price is \$44.95, shipping was to start during July.

## VHF-FM MARINE RADIO LINE

A new VHF-FM Marine radio-telephone unit has been announced by **AEROTRON**, manufacturer of single sideband low frequency transceivers, mobile FM two-way radio units and other related items.

Designed especially for Marine use, the new AEROTRON 'Sea-Line' provides the boat owner with VHF-FM communication on any of four crystal controlled channels. These include 156.8 megacycles for calling and safety (Coast Guard), 156.45 megacycles for marinas, yacht clubs and other shore facilities, and 157.3/161.9 megacycles for marine radio-telephone use.

The unit is small, lightweight, constructed of a heavy-gauge, corrosion-resistant aluminum and finished with a brushed silver panel. A stand-by switch reduces battery drain during extended periods of listening. The unit has a squelch control.

The 'Sea-Line' can be mounted in any desired position including bulkhead, dash or overhead. Optional accessories include a remote control unit, noise-cancelling microphone or handset and several styles of antennas and mounts.

Full additional data is available from the manufacturer at U.S. Highway 1, North Raleigh, North Carolina.

## LITERATURE AVAILABLE

Electronic Tube Procurement Directory, an 8 page booklet covering more than 2,500 of the most popular types, is available from **Corvair Electronics**, 215 Park Avenue South, New York 3, New York.

The Directory is designed as a ready reference for purchasing agents, buyers and engineers.

Contact Charles A. Tepper for your copy.

The 1963-64 edition of **EM — Electronic Engineers Master**, has been released to 61,000 qualified electronic engineers and purchasing agents. Totalling 2,400 pages, the new edition of the catalog-directory is the largest in the history of the electronics field.

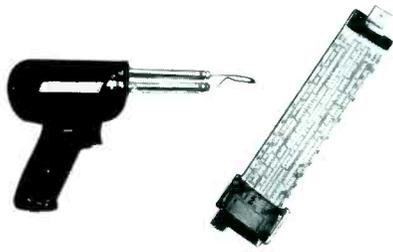
The Product Directory lists over 3,000 products from 114,000 product sources, with company names and addresses.

EEM — Electronic Engineers Master is published at 645 Stewart Avenue, Garden City, New York.

**Prodelin, Inc.**, Hightstown, New Jersey, designers and manufacturers of antenna and transmission line systems, has recently released an expanded catalog describing microwave parabolic antennas and two-way mobile and base station antennas. A comprehensive 52 page illustrated edition of current engineering data on electrical and mechanical properties is provided. Products covered include parabolic dishes from 400 mc to 13 gcs; two-way mobile radio base station and vehicular antennas from 25 to 950 mc/s; Spir-O-line, semi-flexible air-dielectric coaxial cables, wave guide and adapters-connectors, and related accessories.



For your copy, write the manufacturer requesting catalog number 631.



# Horizons Lab Report

Not too long ago, Radio Corporation of America brought forth a new type of vacuum tube after much intensive research and testing. This new version of the vacuum tube, named the Nuvistor, has already contributed much to the development of better VHF-UHF receiving equipment since it was introduced.

In the VHF range most manufacturers have been faced with the problem of obtaining tubes that would exhibit the necessary characteristics and allow for the ready construction of efficient amplifiers. Besides just characteristics, though, there have always been economic factors that governed to a large extent the type of tubes that were picked for this service. Therefore, it has been a matter of efficiency vs. cost in some instances with the optimum combination of both, hard to obtain. Here, the Nuvistor is filling a once vacant slot.

The manufacturer of the Nuvistor as well as its internal make-up is quite interesting. Internally, the Nuvistor's elements are cylindrical in nature, with cylindrical cathode grid, and anode. In versions such as the 6CW4 Nuvistor, all the elements terminate at the base of the Nuvistor in a unique pin arrangement requiring a special socket. The shell of the Nuvistor is of all-metal construction and extends down to the base with a portion of the shell going past the base to form the two indexing lugs. Viewing the indexing lugs, both lugs are different widths, one being slightly narrower than the other to insure that the Nuvistor is inserted in its socket in the correct position.

Nowhere, in the construction of the Nuvistor is glass used. The seal material used around the base of

the structure is ceramic. In the manufacturing process, brazed connections are used throughout. These connections are made at very high temperatures in an atmosphere composed of hydrogen. When the Nuvistor is pumped and sealed, this process is also accomplished at very high temperatures so that impurities and gases, which are usually present in electron devices processed at low temperatures, are eliminated.

Circuit-wise the Nuvistor is very easy to utilize and depending upon which type is selected, efficient operation can be obtained up to 1200 Mc. In many different types of applications using the 6CW4 type, general operation in the VHF range is remarkable. In VHF tests, the 6CW4 has demonstrated a noise figure of 3.5 db at 150 Mc. The admittance figure at this frequency is also favorable. Current ( $I_b$ ) and plate voltage ( $E_b$ ) requirements are very low as are the heater requirements—6.3 vac at 135 ma. Gm characteristics (transconductance) are excellent with an average figure that is higher than many of the commonly used triodes.

Operation of the 6CW4 is most usually conducted in the neutrode fashion using inductive reactance to cancel out the grid-to-plate capacitive reactance. In the most commonly used circuit—the neutrode version—the plate voltage ( $E_b$ ) is supplied through a 10,000 ohm, 1-watt resistor from a 150 vdc source. The grid return resistor in this case is generally a 47,000 ohm resistor. The inductive reactance used to counteract the grid-to-plate capacity is usually comprised of a small slug-tuned component.

Another of the Nuvistor types, the 8058, one of the newest editions

to the family, offers performance at the UHF frequencies that was heretofore obtainable only with highly expensive tubes. In general the 8058 is similar in construction to the 6CW4 with one specific change. The upper portion of the metal body has a band of ceramic to which is mounted the plate cap assembly. This design was developed to permit the 8058 to be used in concentric type cavities.

In tests using an argon noise source the 8058 Nuvistor exhibits a figure of 6.5 db at 450 Mc, 9.5 db at 700 Mc, and 12.2 db at 1200 Mc. Average transconductance of the 8058 is 12,000 micromhos obtainable with 10 ma.  $I_b$ , 110 vdc  $E_b$  using self-bias provided by a 47 ohm resistor inserted in the cathode circuit. General amplification factor runs at about 70. Like the 6CW4, the 8058 is also very rugged and will withstand shocks that normally would destroy a vacuum tube.

In operation the 8058 Nuvistor must be handled a little differently than the 6CW4 for the reason that the 8058 has its control-grid structure grounded directly to the shell of the tube, the grounding being accomplished by a circular ring attached to the grid structure and to the shell. When operating the 8058, grounded-grid, driving the cathode through a suitable coupling capacitor, the hot-cathode impedance makes an appropriate match to a 50 ohm E source. In this case, the cathode bias resistor is isolated from the cathode proper by use of a radio-frequency choke. Since the cathode will be operated above ground for R.F. it is necessary to isolate the heaters above ground with appropriate chokes also.

In an actual test unit, using an 8058, it has been found that a very realistic noise figure of 7.0 db is obtainable, with a gain of 15 db, at an operating frequency of 450 Mc. Neglecting the actual hot-cathode impedance of the 8058, the specific test unit mentioned used a 50 ohm source impedance for all measurements. It is assumed that since all the measurements were favorable, the hot-cathode impedance or admittance value must be fairly close to the source impedance with just enough mismatch to provide an optimum noise figure.

**System Horizons**

*Continued from Page 6*

the design, development and manufacture of products and equipment for communications, signal systems in the telephone, television and electronics fields.

Mr. Robb explained the move "was a natural one" and noted "today's advanced and complex wire and cable constructions require specialized accessories and equipment in order to realize their full potential. As a wire and cable manufacturer, Superior Cable Corporation is well qualified to produce associated equipment specially designed to utilize and augment cable capability."

**The Jerrold Corporation** has reported all-time record sales and earnings in fiscal 1963, for the second consecutive year.

Mr. Harman reported that Jerrold's volume in the 12 months ended February 28, 1963 rose to \$24,816,000, an increase of 38 percent over the \$18,002,000 of fiscal 1962.

Based on the average number of shares outstanding in the most recent year, fiscal 1962, fiscal earnings would represent 29 cents per share.

**Entron, Inc.**, Silver Spring, Maryland has announced the completion of its most successful year. The firm has just completed its tenth year of operation as a leading manufacturer, designer and installer of Community Antenna Television Systems.

Mr. J. L. Lahey, president, indicated that sales and earnings for the year ending February 28, 1963 were at an all time high. Sales for the year totaled \$2,679,490 and represented an increase of 97 percent over the previous year. Earnings were equivalent to 50 cents per share on the 272,135 shares outstanding.

**The Multi-Products Company** of Oak Park, Michigan manufacturer of two-way communications equipment since 1947, has announced a name change. On June 1, the name of the firm changed to Mult-Elmac.

The change was directed at a move to coincide the trade name multi-elmac with the name of the firm, in line with plans for increased distribution activity in the new year.

**PERSONNEL NEWS**

**M. G. McRae** has been named District Sales Manager, General Electric Mobile Telephone Equip-

ment, at Tallahassee, Florida. He will be responsible for sales of G-E and non-identified dial and manual and duplex systems in the southern regional area.

**R. D. Hickok**, president of The Hickok Electrical Instrument Company, Cleveland, has announced the appointment of Almo Industrial Electronics and ALSCO Electronics, Inc., as exclusive distributors for Hickok commercial test equipment in the greater Philadelphia region. The move is in line with the company's policy of establishing exclusive distributors for the line in all key market regions in the United States.

**Ralph H. Albers** has become District Manager for the expanding Telecommunications Division of the Secode Corporation. The establishment of district marketing offices throughout the country is a part of the new sales program recently announced by Secode. Also announced as new District Managers were C. H. Clanton, to serve the Midwest Division from Kansas City, and Lutner Pully, who will serve the Southwest Division from Dallas.

Products of this Secode division include tone signaling devices,

# 58 steps from New York Coliseum

Headquarter at the Henry Hudson Hotel

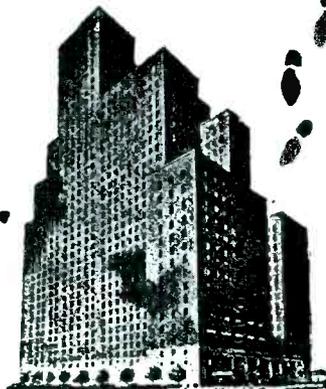
In the heart of New York City—58 steps from Coliseum. Near all activities & transportation terminals. Swimming Pool available to guests. Entertainment Nightly in

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Chart Room, grill, cocktail bar

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**The "Messenger-202" gives you all the pep, power, and performance you need for solid business communications!**

Priced within easy reach of any business, the "Messenger 202" packs the power to punch your signal across the miles with the crisp authority that gets things done! A complete 10-tube (including rectifier) crystal-controlled AM transceiver, the "202" is F. C. C. type accepted for use in the Industrial, Public Safety, and Land Transportation services. Highly selective and sensitive superheterodyne receiver—built-in "squelch"—automatic modulation limiter—AVC—automatic noise limiter circuits—and provision for 37 tone selective calling system. Designed for easy operation—fast, smooth installation—and simplified maintenance. Only 5 3/8" x 7" x 1 1/8".

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Descriptive literature and information-packed booklet—"2-WAY RADIO for your Business"



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Please rush full details on the "Messenger 202"

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ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_

Manufacturers of World's Most Widely Used Personal Communications Transmitters

mobile telephone terminal and supervisory equipment, and complete mobile radio and mobile radio telephone systems.

**Verne Larson** has been named Account Executive Manager by



Motorola Communications and Electronics, Inc. Mr. Larson will be responsible for a seven state territory in the upper-mid-west and will headquarter in Chicago.

**Charles J. Chatterton** has been named by Browning Laboratories, Inc. of Laconia, New Hampshire as Production Manager of all divisions, including FM Multiplex, test equipment and two-way communications equipment. Chatterton has been associated with Browning since 1959. Prior to that time he was employed by RCA Service



Company.

**Brad Kroha** has been appointed as National Account Executive Sales Manager by Motorola Communications and Electronics, Inc. Mr. Kroha will supervise a newly formed staff of account executives who serve the Bell and General Telephone companies.

General Electric's Communications Products Department has appointed **William P. Bartley** as manager of Advance Engineering. In his new position, Bartley will coordinate advanced technical studies concerned with developments in mobile communications, telecommunication systems, microwave relay, power line carrier current and integrated military land communication systems.

**George Leibowitz** has been named Secretary and Treasurer, and chief financial officer, of the TelePrompTer Corporation.

Mr. Leibowitz joined TelePrompTer Corporation in 1961

Decibel Products, Inc., Dallas, Texas has announced the appointment of **Floyd D. Shipley** as Chief



Engineer. In his new position, Mr. Shipley will be responsible for engineering research and development. Prior to joining Decibel Products, Mr. Shipley was associated with Texas Instruments, Inc., Chance-Vought Aircraft, Inc. and the National Bureau of Standards.

Edgar Johnson, president of the E. F. Johnson Company, Waseca, Minnesota has announced the election of **Irving Koss** as a Vice President of the communications equipment manufacturing firm.

#### TREND NEWS

The switch to all-channel television receiver production, next year, and the anticipated increase in the number of UHF stations, will not greatly affect the market position of sets with remote control tuning, according to L. C. Truesdell, president of Zenith Sales Corporation, Chicago.

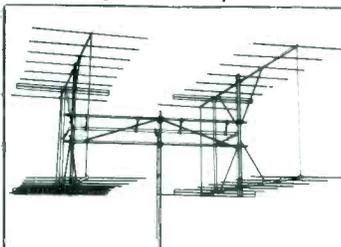
Truesdell said that Zenith's new tuner will take any combination of 12 UHF and VHF channels.

## SITCO Heavy Duty Quads and Yagis

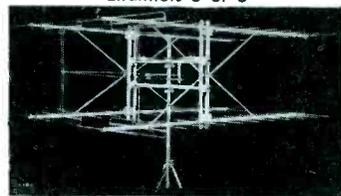
Designed by SITCO for Translator off-the-air pickup, Community TV and extreme fringe area requirements.

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.

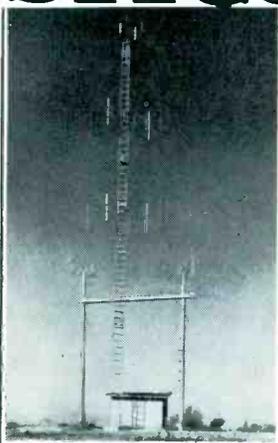
NOW, all SITCO element ends are machined to reduce static leakage. The signal-to-noise ratio is increased at sites where signal levels are low.



Model No. 94-HD 32-element Quad  
Channels 5 or 6



Model No. 102-HD 48-element Quad  
For all hi-band channels



SITCO WEDGE SCREW FASTENERS



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## SALE

### BECKMAN/BERKLEY FREQUENCY COUNTER

with amplifier and plug-in converters. Reads 0-210 Mc. Consists of 7170, 7570, 7571, 7572. Cost \$2570.00 in 1962. In as-new condition in every respect. Sell for \$2150. F.O.B. Burbank.

P.O. Box 1307 — Burbank, Cal.



# BLONDER-TONGUE

## CABLEMATCH

SET OR WALL MOUNTED TRANSFORMER FOR  
MATCHING 75 OHM COAX TO 300 OHM TV SETS

### model 3334

#### DESCRIPTION

Every master TV or community TV system installation requires one matching transformer for every TV set in the system. Adds up to a considerable number of matching transformers — a great deal of installation time.

Most installers take the matching transformer for granted. Basically, its purpose is to match 75 ohm coax cables to the 300 ohm input of a TV set. This the Blonder-Tongue Cablematch does most efficiently, most precisely. But here the similarity between the Blonder-Tongue Cablematch and all existing matching transformers ends.

First: it is housed in a high-impact plastic case. This eliminates the grounding problem where low cost TV sets (series circuit models) present the problem of a hot chassis. Second: it uses a new type of solderless plug that will save installers many hours of installation time with coax cable. Called the Blonder-Tongue Solderless Autoplug, it ends the need to unbraid coax shielding or to solder the connector. Further, it assures a connection that will stand twisting and tugging, almost any abuse that the cable and connection will be subjected to while the set is being moved. With the Blonder-Tongue Autoplug you simply strip the wire, slide on the connector and crimp it. The special neoprene insert connects the center conductor firmly; teeth pierce the insulation to make contact with the shield. This connector is a time saver on initial installation. It also offers new convenience in easy connect and disconnect for maintenance. No detail has been overlooked in engineering the best matching transformer available today. Instead of the usual twin-lead which must be stripped for connection to the 300 ohm terminals of the TV set, the Cablematch uses heavy duty output leads with spade lugs.

You'd think that a product with so many refinements and innovations would cost more than other matching transformers. Not so. The Blonder-Tongue Cablematch is one of the lowest priced matching transformers available today.

#### RELATED EQUIPMENT

##### OUTDOOR PRESSURE TAPS

- MT-11, 12, 17 or 23db.
- MTO-11, 17db inserts available for 12 and 23db.
- ST-4-75MP — 12, 16, 20, 25, 30, 40db. Back matched.

##### INDOOR SPLITTERS

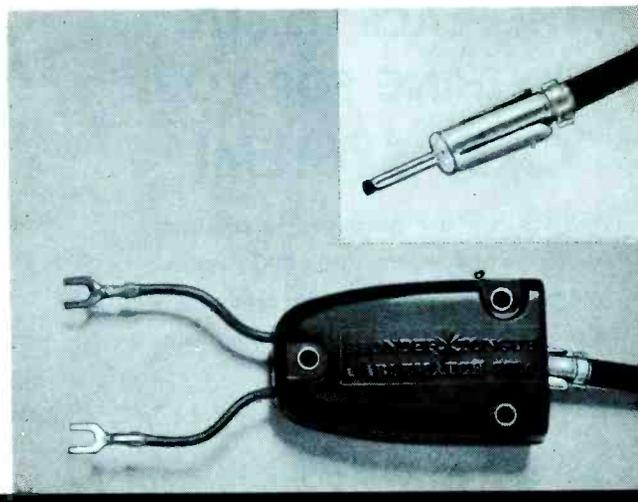
- TS-772 — 2-way splitter. Back matched.
- TS-774 — 4-way splitter.

#### SPECIFICATIONS

- **INPUT**—75 ohm Solderless Autoplug.
- **OUTPUT** — 300 ohm 2 $\frac{3}{8}$  inch wires with crimped on lugs.
- **MATCH**—4:1 or better.
- **UNBALANCED COMPONENT REJECTION**—18 db minimum.
- **TRANSMISSION LOSS**—1.5 db maximum (54 thru 103, 174 thru 216 mc).
- **SIZE**—2 $\frac{1}{2}$ " L x 1 $\frac{1}{2}$ " W x 15/16" H.
- **WEIGHT**—2.4 ounces.
- **CASE**—High impact polystyrene.

#### FEATURES

- **NO GROUNDING PROBLEM WITH HOT CHASSIS** — transformer is housed in non-breakable plastic case for complete isolation.
- **SECURE, RAPID CONNECTION TO COAX** — Blonder-Tongue solderless AUTOPLUG ends need to unbraid coax shielding or to solder. Connection is secure. Easy connect and disconnect from tapoff.
- **EASY CONNECTION TO SET** — spade lugs used to connect to 300 ohm terminals of set.
- **ECONOMICAL** — low cost, saves big money in installation time.



engineered and manufactured by

**BLONDER-TONGUE**  
9 Alling St., Newark, 2 N. J.

Canadian Div.: Benco Television Assoc., Ltd., Toronto, Ont.

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

## Two-Way Radio

Continued from Page 14

mobile communication equipment. Service was important to us because our own business is based on service."

As expected, radio has vastly im-

proved Skillern's own service to its customers. In one particular case, the driver was able to make delivery within 3 minutes after the customer phoned because the truck operator was in the immediate neighborhood. Without radio, he

would have had to drive to the bulk plant for the message and then return to the area.

"We are receiving favorable word-of-mouth advertising because our customers are telling their friends about our service.

Before radio, a truck operator seldom was able to make definite plans for the end of the day because he could never be sure when he would complete his rounds, due to unforeseen emergencies. Drivers now know that, upon returning to the bulk plant and completing their plant routine, they are through for the day. They have received all delivery instructions during the normal course of their route, not after its completion.

Late in 1962, Western Oregon was hit by an unprecedented wind storm, causing millions of dollars of damage to property, power lines and communications. Eugene was without power and telephone service for several days.

Says Anderson: "Our two-way radio equipment nearly paid for itself during that one storm. When we were without power and telephones, one radio-equipped truck was stationed at the bulk plant and kept in touch with our other units.

Increased truck efficiency has been accomplished with improved routing. Trucks are dispatched fully-loaded with the majority of the delivery points predetermined, but with a "cushion" for phone-ins in the normal delivery area. "Haulbacks" to the bulk plant are virtually eliminated.

The General Electric two-way radio also has been a time and money saver during occasional truck mechanical failures. A radio call to the main office brings assistance, parts and service with a minimum of tie-up.

Skillern's radio equipment is mounted under the dash-board for easy operation. The G-E Progress Line units are on trucks having six volt electrical systems and the G-E Pacer sets are on 12-volt trucks.

Skillern plans to equip its fourth truck with two-way radio this summer. As Anderson puts it: "In a business rife with human factors, mobile communications provides a means of automating without lessening individual attention to each customer."

## HIT OF THE NCTA SHOW!

# TELEMATION WEATHER CHANNEL



- BROADCAST QUALITY GENERAL ELECTRIC CAMERA
- FULL WEATHER DISPLAY PLUS TWO PANELS FOR SLIDES, FILM WEATHER FORECASTS; FULL EXPANSION CAPABILITIES FOR FUTURE CCTV ADDITIONS.
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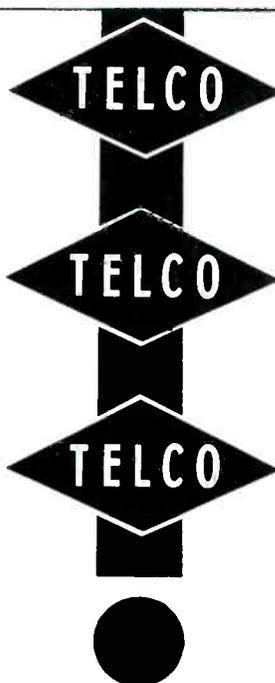
At Telco, we sell everything to construct, modernize and maintain your CATV system.

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Rates for classifieds are \$2.00 per line or fraction thereof for advertising which, in our opinion, is obviously of a non-commercial nature. A charge of \$20.00 per column inch (2 1/4" col.) is made to all commercial advertisers. We do not bill for advertising in the CLASSIFIEDS, nor can we acknowledge receipt of copy sent in. Full remittance MUST accompany all orders. NOTE: The products and services advertised in this section are not guaranteed by the publisher of Video-Communication Journal. Deadline, 1st of second preceding month. (i.e. Deadline for August issue is June 1).

FOR SALE: Ten GPD amplifiers complete with tubes. Top condition, used six months as line extenders. Also have 4 AG10C converters, some need a little repair. Amplifiers — \$40.00 ea., Converters — \$16.00 ea. K & M Cable Corporation, Baline, Oregon.

**EXAMPLE**

FOR SALE: 4 used high band LPI units complete with antennas for mobiles plus base station equipment. All in working condition. \$785.00. M & J Communications, Box 66, VCJ.

**EXAMPLE**

## WANT TO GET RID OF THAT OLD AMPLIFIER OR ANTENNA?

Video-Communication Journal is introducing a new service in this issue that is aimed at providing you with a means to engage new personnel or buy and sell equipment. This new service, Video-Communication Journal's Classified Section, will occupy this space for easy reference and convenience. If you are interested in disposing of that spare piece of equipment on the back shelf or purchasing a particularly special item or need a communications or CATV technician or manager, then use the special form provided.

Tear

**CLASSIFIED AD ORDER -**

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City ..... Zone ..... State .....

Amount Enclosed \$..... Word Count .....

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(Use reverse side of this form if necessary)

Do you desire box number reply? .....

WANTED: Model 80 Signal Generator in top condition. Also 6 db pad for same. Prefer 80R if price is right. Write: John Smith, Box 92, VCJ.

**EXAMPLE**

AM LOOKING FOR a reliable 2-way technician possessing 1st Class ticket and familiar with microwave systems. MUST be experienced, send resume to: Jim Smith, 14 Box Street, Ipswitch, Washington.

**EXAMPLE**

CATV MANAGER: Company has recently acquired several new systems and is looking for a top-notch man to manage the affairs of these systems. If you are interested in living in an area well-known for its living comforts, moderate temperature, and friendly people; send resume to Box 74, VCJ.

**EXAMPLE**

HAVE OPENING FOR CATV system technician with 2 or more years of experience. Must be familiar with all-band concept. Write: Box 94, VCJ.

**EXAMPLE**

Text

# FOR SALE: RESULTS

Have you tried Classified Advertising? Video-Communication Journal now covers the field like a blanket to offer you a means by which you can convey your wants or needs to others in the same business. Besides providing wide circulation to business people in the same field, Video-Communication Journal also circulates to closely allied fields giving you a pool from which you can seek personnel or equipment. TRY CLASSIFIED ADVERTISING FOR DIRECT RESULTS.

Tear out order form, insert in envelope with your remittance and mail to:

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Classified Department  
P.O. Box 1557  
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# HOLT LOW-HIGH Broadband Line Extender



Model LH-BB-LEA

The model LH-BB-LEA, low high broadband line extender amplifier was designed to amplify channels 2 thru 6 to 95 Mc and channels 7 thru 13. It has been carefully designed to reduce power consumption so it can easily be powered remotely, if so desired. It has a highly filtered power supply.

## FEATURES:

Designed for continuous commercial service. Long life, low operating cost, high gain, low power consumption, linear curve response, variable tilts both low and high band. Low maintenance, low and high band gain controls, insertion pad for low band eliminating the use of equalizers.

## SPECIFICATIONS:

**Type** — Broadband channels 2 thru 6 to 95 Mc, and 7 thru 13. (Can be aligned to 108 Mc with less gain at Ch. 6 picture)

**Tilt** — 3 to 6 db variable

**Control** — Manual

**Input Low Band** — 10-15 db.

**Input High Band** — 10-15 db.

**Output Low Band** — 40 db at channel 6 picture

**Output High Band** — 46 db at channel 13 for Channels 7, 9, 11 and 13

**Gain Low Band** — 38 db at channel 6 aligned to 95 Mc.

**Gain High Band** — 43 db at channel 13 picture

**Power Consumption** — 35 watts

**Response** — Linear, plus or minus .5 db

**Tube Complement** — 5-7717, 2-6EW6

**Size** — 5" Wide, 10" Long, 5" High

**Optional** — Can be aligned to 108 Mc on request, with less gain

**Extra** — Remote Powered

**Extra** — Messenger mounted remote powered housing

Write or call today for free consultation and data.



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# KAAR RADIO COMMUNICATION PRODUCTS



TR505,

*TR505/506 FM Radiotelephones*

## DASH-MOUNTED/TRUNK-MOUNTED FM RADIOTELEPHONES

Most complete and moderately priced line of two-way, UHF equipment in the 450-470mc field. TR505 is a self-contained, dash-mounted unit. TR506 consists of dash-mounted Speaker and Control Head plus trunk-mounted base station. Output up to 10 watts on either unit. Up to 35 watts (Base Station) with optional A509 RF Amplifier.

*TR507 Repeater-Mobile Relay-Base Station*

## FOR MOBILE RELAY OR CONTROL LINK APPLICATION

Extends mobile-to-mobile coverage without separate base station by automatic re-transmission of UHF signal. Features grid-controlled transmitter keying, either 19" rack mounting or 26" weatherproof cabinet, and 10-watt output raised to 35 watts with optional A508 Amplifier.

*117C903 Remote Control System*

## FOR WIRE LINE CONTROL OF REMOTE BASE STATION

An extremely versatile system designed to control radiotelephone station equipment through a two-wire circuit. Includes Remote Control Unit, Switching Line Amplifier, and Desk Type Microphone. Selects from 3 channels or transmitters, amplifies and reproduces receiver audio, adjusts squelch, provides multiple remote control, and serves as intercom.

For FREE DETAILS on above equipment, write:



**KAAR ENGINEERING CORP.**

2994 Middlefield Road • Palo Alto, California

Section 605 and You  
Continued from Page 30

At least one State legislature has already taken up the challenge presented by the spreading use of electronics for eavesdropping. The State of Illinois in 1961 adopted a statute specifically prohibiting electronic eavesdropping. The statute appears to be broad enough to cover the practice sanctioned by the Supreme Court in the Lopez case. Because this statute appears to be unique among the various State wire tap acts, the pertinent portions of it are quoted below. Eavesdropping is defined in Article 14-1 of Chapter 38 (Illinois Criminal Code) as follows:

"(a) Eavesdropping device. An eavesdropping device is any device capable of being used to hear or record oral conversation whether such conversation is conducted in person, by telephone, or by any other means; Provided, however, that this definition shall not include devices used for the restoration of the deaf or hard-of-hearing to normal or partial hearing.

"(b) An eavesdropper is any person, including law enforcement officers, who operates or participates in the operation of any eavesdropping device contrary to the provisions of this Article."

Under Article 14-2:

"A person commits eavesdropping when he (a) uses an eavesdropping device to hear or record all or any part of an oral conversation without the consent of any party thereto; or (b) uses or divulges any information which he knows or reasonably should know was obtained through the illegal use of an eavesdropping device."

A person violating the foregoing provisions may be subject to a fine of \$1,000 or one year imprisonment, or both. Moreover, any victim of eavesdropping may enjoin the practice; obtain actual and punitive damages from the perpetrator; and obtain damages from any landlord, building owner or common carrier who "aids, abets or willingly permits the eavesdropping concerned."

The Illinois statute also contains an explicit prohibition on the use of any evidence obtained in violation of the statute "in any civil or criminal trial, or any administrative or legislative inquiry or proceeding [or] in any grand jury proceeding." Broadcast transmission and similar transmissions to the general public are, of course, exempt from the prohibition of this very broad law which bans not only the use of wire-tapping but also any and all varieties of eavesdropping devices of the type discussed earlier in this article.

An interesting legal question immediately suggests itself: What would have been the situation if Mr. Lopez instead of operating his cabaret in Massachusetts operated it in Illinois? Apart from the fact that Mr. Lopez, in Illinois, would very likely be entitled to sue Agent Davis for damages actual and punitive, would the Court still sanction the use in a federal court of the Minifon evidence obtained in violation of a State statute? Should more states be inclined to adopt statutes patterned after the Illinois law, it may not be too long before the Supreme Court is faced with this very question.

(This discussion of the land-mark Lopez case has required an additional part. Part IV, concluding this series of articles, will appear in next month's issue.)

## NEW FEDERAL AGENCY PROPOSED BY GAB

The Georgia Association of Broadcasters has recently released the details on an entirely new idea aimed at creating a new federal agency "which can serve the true needs of today's broadcasters." Under the GAB plan, the new agency would become the watch dog of the broadcasting field; have separate administrators for radio and television; and would be divorced from the FCC.

GAB said "broadcasting has outgrown the FCC which has hundreds of thousands of communications systems to regulate. The requirements of radio and TV are too extensive and too important to be further served by the present FCC."

The details of the proposed plan were divulged during a special meeting of the GAB Board of Directors with the Georgia Congressional delegation in Washington, D. C.

## HARMAN RESIGNS AS JERROLD HEAD

In an unexpected move, Mr. Sidney Harman resigned as president of The Jerrold Corporation and also sold his stock holdings and those of his family in The Jerrold Corporation. Assuming active management of the company will be Milton J.

Shapp. Mr. Shapp, who founded the original Jerrold Electronics Corporation in 1948, was the firm's president up until 1961.

The announcement regarding Mr. Harman's resignation was made at Jerrold's annual meeting of stockholders. Mr. Shapp told those present at the meeting that "for several months, basic policy differences have existed between Mr. Harman and myself as to the future direction the company should follow to maximize profits. It is my belief that with the rapid expansion of the community antenna and microwave industries, that going forward, the company should lay greater stress in these fields rather than emphasize the general pattern of diversification that the company has been following for the past two and one-half years."

Mr. Shapp also told the stockholders that "although the company reported a substantial rise in sales and profits last year and is in a strong financial position, I must report to you that for the first four months of the current year we have been operating at a loss. The first quarter loss amounted to approximately \$104,000 before tax recov-

ery. Jerrold Electronics Corporation in Philadelphia is the only subsidiary that operated profitably during this period. It is not unexpected for our company to show a loss in the early part of the fiscal year as our maximum volume and profit is normally generated during the second half." Mr. Shapp further stated that he is "confident that Jerrold will grow in markets that will earn maximum profits for each dollar of sale and for each hour of endeavor."

**SALESMEN THOROUGHLY ACQUAINTED WITH CATV INDUSTRY — CABLE AND PARTS LINE AVAILABLE WITH TERRIFIC OPPORTUNITY. EXCLUSIVE TERRITORY, EXCELLENT ARRANGEMENTS.**

CONTACT ARTHUR BAUM

**VIKING CABLE COMPANY**

830 Monroe Street, Hoboken, N.J.

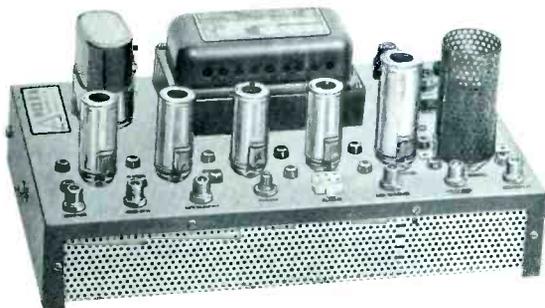
## WANTED: CATV ENGINEER

Excellent opportunity with aggressive young company for qualified **factory design engineer**. Must be thoroughly familiar with CATV Products. Salary open.

Reply to Box 48

# DELTA

## H.B.C. HIGH BAND CASCADE \$195



### FEATURES

- LOW NOISE INPUT
- EXCELLENT LINE MATCHING
- MATCHES EXISTING LO-BAND AMP STATIONS
- LOW COST TRANSISTORIZED AGC UNIT AVAILABLE

*FULL DETAILS AND SPECIFICATIONS GLADLY SENT ON REQUEST.*

The HBC is a completely new design of High Band/Broad Band cascable amplifier, produced expressly for operators of Low Band Systems who now face the necessity of adding High Band Channels. The HBC amplifier literally "Drops in" to any existing Low Band System that uses approximately 26 db spacing. All Low Band System operators will be quick to realize the tremendous advantage of fast conversion at moderate cost with no change in existing amplifier stations. The tilt control has a range of 6 db to match this spacing. Input and output circuitry includes a carefully designed High Pass - Low Pass filter, providing excellent line matching with minimum reflections. Both the input and output are provided with -20 db test points for combined signals. Fully regulated power supply, so necessary for consistent performance in High Band operation, stabilizes both B+ and filament voltage. The special quality 10,000 hour double frame grid output tube combined with this voltage regulation ensures high quality and low intermodulation figures.

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BRINGS YOU . . .

## SADELCO'S NEW STANDARD IN VHF FIELD STRENGTH METERS



MODEL FS-1B  
ONLY

# \$295

complete with  
carrying case  
and batteries.

- 2¼" x 4½" x 8¼"
- Weighs only 3 lbs.

- ◆ Fully TRANSISTORIZED  
Battery Operated
- ◆ VHF-TV in Two Ranges (Ch. 2-13)
- ◆ FM on Separate Scale (88-108 Mc)
- ◆ Peak Reading, Carriers Marked
- ◆ 75 ohm, "F" Connector, Matched  
Input
- ◆ AGC & Temperature Compensated
- ◆ Calibrated in 1 db div. from -35 to  
+60 and volts from 20 Microvolts  
to 1.0
- ◆ Accuracy  $\pm 1.5$  db
- ◆ Front Panel Jack for sound monitor-  
ing, oscilloscope inspection, recorder  
connection

### ORDERS FILLED PROMPTLY!

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# Log Book

Aug. 13-16—National APCO Conference. Leamington Hotel. Minneapolis.

Aug. 16-19—Annual Convention of National Mobile Radio System. Disneyland, Calif.

Oct. 7-9—Ninth National Communications Symposium sponsored by Institute of Electrical & Electronic Engineers' Professional Group on Communications System. Utica, N.Y.

Oct. 9-11—Annual Meeting of Communication & Signal Section of Association of American Railroads. Chicago.

Oct. 24-25—Annual Meeting of Executive Committee of Forest Industries Radio Communications. Washington.

Oct. 31—Mobile radio users must meet full narrow band technical standards of FCC.

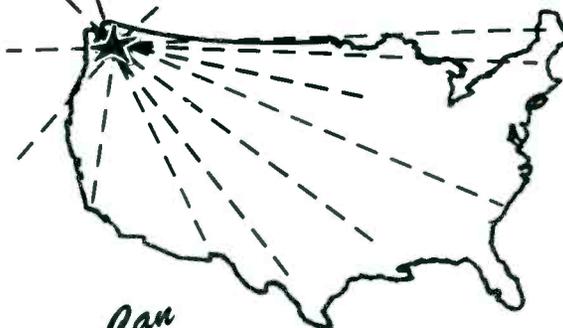
Nov. 1—Fire radio systems must move off frequencies allocated to the police radio service.

#### Wanted: CATV System Managers

Entron, Inc. has openings for two system managers (one in the Southwest and the other in Pennsylvania). Applicants should have a minimum of three years system management experience, including knowledge of subscriber promotion programs, modern business controls and financial management. While a strong technical background is not required, applicants should have sufficient technical knowledge to deal with daily problems.

Resumes as well as salary history and requirements should be addressed to President, Entron, Inc., Industrial Parkway, Silver Spring, Maryland.

## Wherever You Are



*You Can  
Count On*

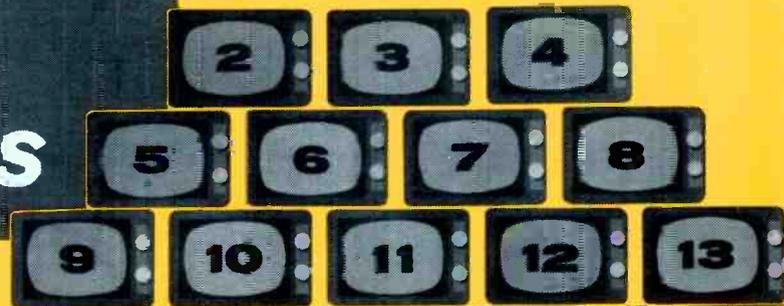
### SOLID SERVICE From the Jack Pruzan Co.

CATV operators and contractors across the country have learned to rely on the solid, dependable service of the Jack Pruzan Co. When orders are received at the Seattle office, they are immediately phoned to the warehouse nearest you. In most cases orders are shipped within a few hours. For low prices, same-day shipment, all around solid service . . . you can always count on Pruzan!

### JACK PRUZAN CO.

1963 First Ave. South — Seattle, Washington

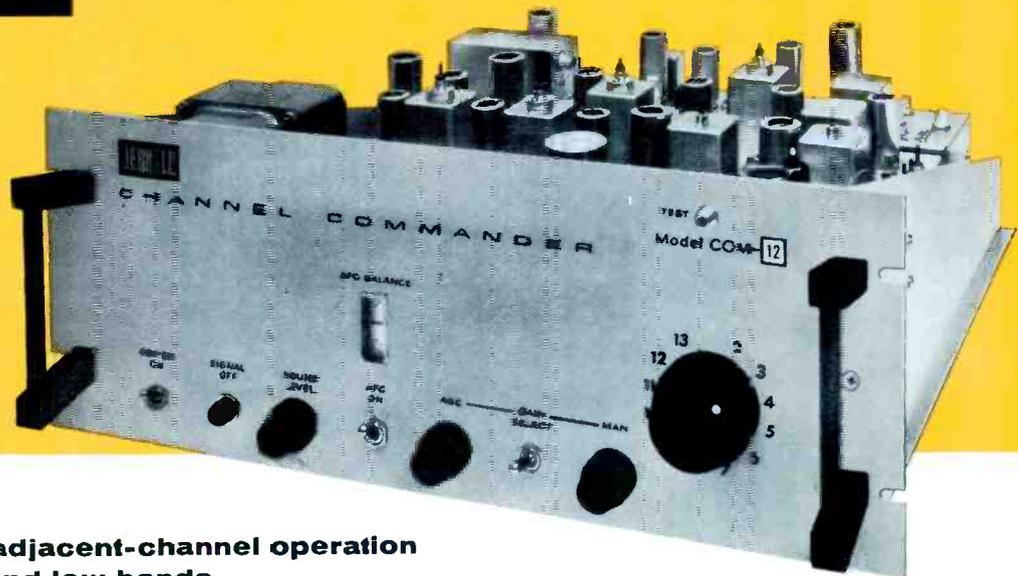
**NOW - GO**  
**12**  
**CHANNELS**



**WITH THE NEW**

**JERROLD**<sup>®</sup>

**CHANNEL COMMANDER**



- **Permits adjacent-channel operation on high and low bands**
- **Single unit processes, controls, and delivers antenna signal on any channel—including same channel**

You can now offer CATV reception on all twelve VHF channels with no adjacent-channel interference! By adding a Jerrold Channel Commander to your head end for each adjacent channel desired, you achieve 12-channel operation with minimum equipment.

The Channel Commander is a complete, compact unit which processes, controls, and delivers clear, interference-free signals on any desired VHF channel, including direct operation on the received frequency in both the high and the low bands.

In conjunction with Jerrold microwave and all-band-system equipment, the Channel Commander gives you command of the entire VHF band, lets you offer CATV subscribers the widest choice of entertainment possible over their present TV sets.

Channel Commander's compact modular design and compatibility with your present head-end equipment lets you "go 12 channels" immediately or in channel-at-a-time stages. Call your Jerrold factory representative or write for complete technical data.

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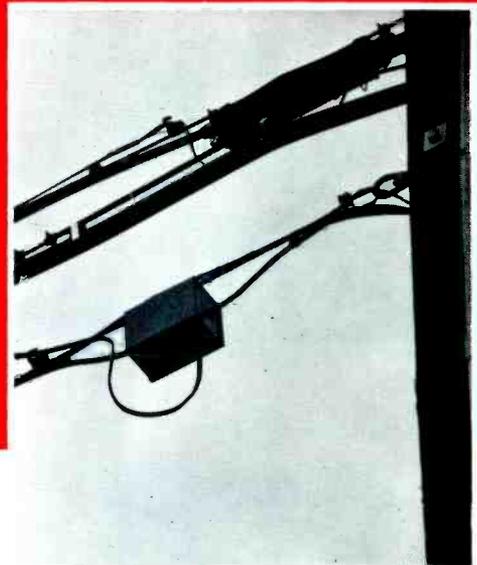
## Multiple-Output Line Tap

### Model 469 Multitap



Basic unit with single tap.

Basic Unit  
Only \$4.95  
(Lots of 100)



Multitap installed  
in feeder line.

### Single Insertion Loss for Up to 4 Taps. Low VSWR with High Isolation from Line. The Essential Tap for Wide Band Systems.

SKL's Model 469 Multitap combines the electrical superiority of the directional coupler principle with a unique economy of through line loss in multiple output applications.

The basic unit consists of a single tap and housing box. It is mounted on the messenger strand and is inserted into the distribution line to serve the first subscriber. When taps are required for additional subscribers, an insert plate with two, three or four outputs as required is slipped into place in the Multitap box. Up to four house drops can in this way be installed with a total insertion loss of less than 1.0 db and without further cutting or disturbing of the distribution line.

With flat response across the VHF band and an effective return loss of 41 db minimum (VSWR of 1.02 maximum), the Multitap further sets up a protective isolation of more than 33 db between all taps and the distribution line.

If closely spaced taps are causing ghosts in your subscribers' pictures, watch the ghost disappear when Multitaps are substituted. And in wide band systems, we think Multitaps are a must!

For full information on Multitaps, call or write:



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