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BROADCAST MANAGEMENT ENGINEERING

4



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# BM/E

## BROADCAST MANAGEMENT/ ENGINEERING

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GEORGE ROSTKY

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ARLINE G. JACOBS

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This month's cover: A TV set's no disciplinarian—as artist Art Sudduth sees it—and some ETV programming can't keep classroom interest from fragmenting, or so they found in Rochester (see page 28).

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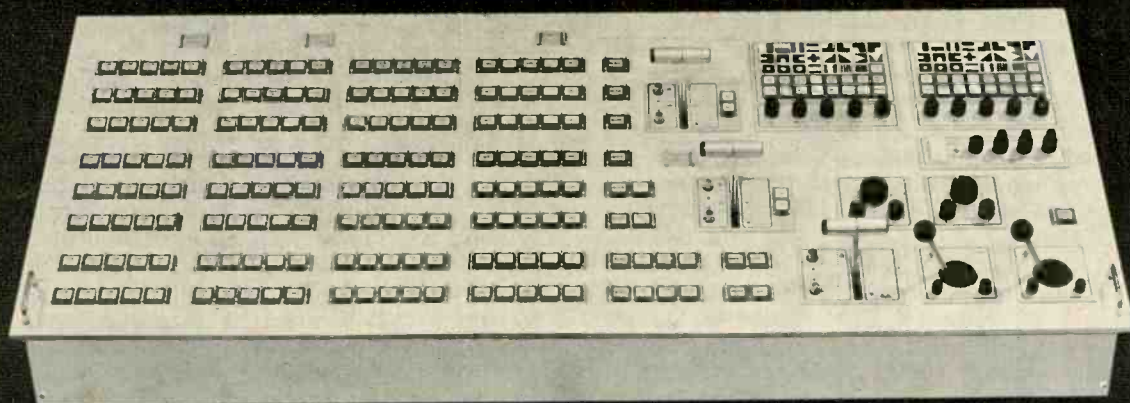
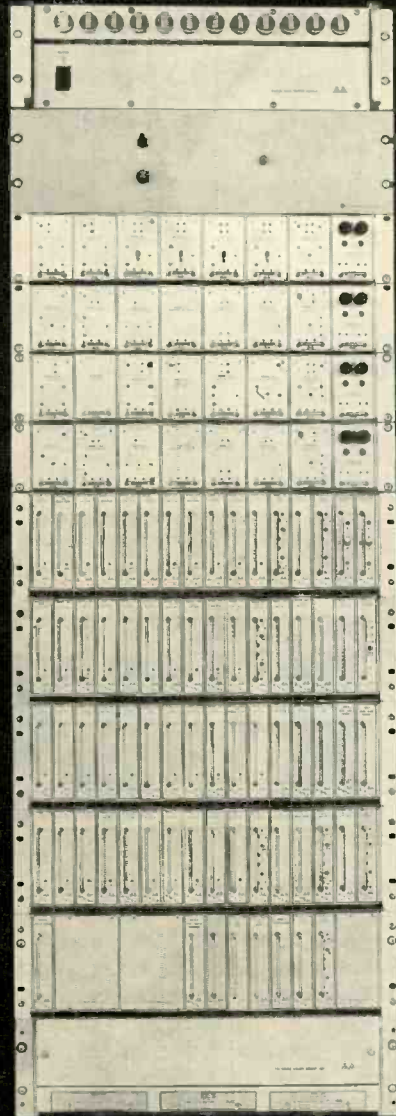


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Dr. George Mansur, assistant to OTP chief, Dr. Whitehead, addresses IEEE Broadcast meet.

## FCC has new partner: OTP

The head of the new Office of Telecommunications Policy, Dr. Clay T. Whitehead, has made it clear that OTP will be President Nixon's voice in shaping policy affecting broadcasters and cable TV.

In a paper delivered to the IEEE Broadcast Symposium, by Dr. George F. Mansur, Jr., for Dr. Whitehead, it was declared that OTP will "enable the executive branch to speak with a clearer voice and be a more responsible partner in policy dialogue with industry, FCC and the public. . . ."

Right after Dr. Whitehead was sworn in he is quoted as having stated that OTP "conceivably could go into the courts to challenge some FCC rulings."

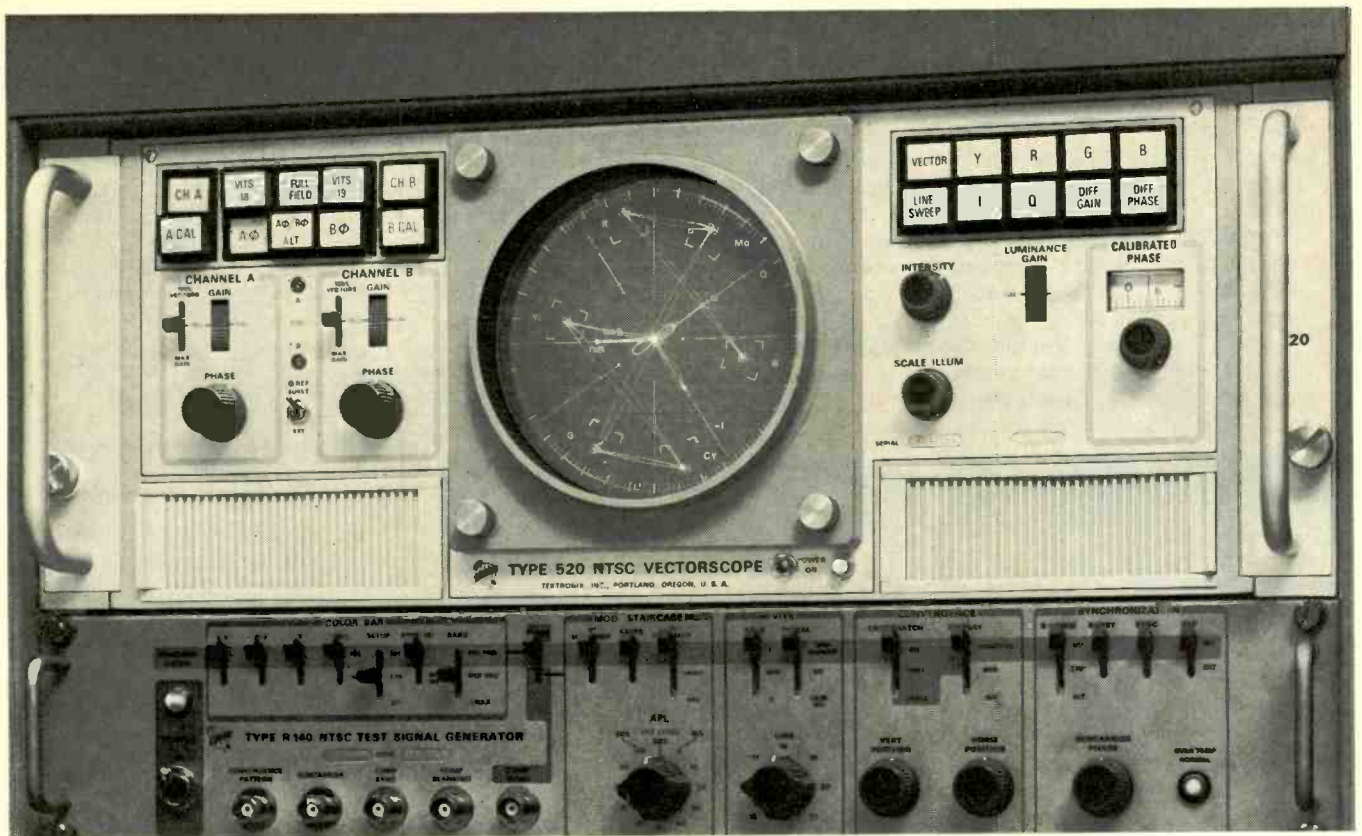
Technology has made communications a "part of" society which interacts with us, and affects what we do. It is no longer merely a support service. For this reason, OTP wants to make sure the new dimensions of communications will serve the public welfare.

Dr. Whitehead specifically mentioned equal time, fairness doctrine and prime time rulings by the FCC as those reshaping society and therefore of interest to OTP.

# BROADCAST INDUSTRY NEWS

**Business Notes:** Ampex has gotten an order for \$700,000 worth of VTR equipment—three AVR-1 recorders, two VR-2000 models and an HS-200 slow-motion disc recording system. The buyer is **Video Instar Productions** (New York City), which offers production and equipment services for TV producers and industrial training tape uses . . . **Avco's** Cartridge Television subsidiary has opened a \$2 million plant to mass-produce blank and pre-recorded tapes for **Cart-rivision** . . . **CCA Electronics**, after a record sales for June and July of \$1 million in broadcast equipment, has purchased its headquarters facility, doubling (to 50,000 sq ft) the available office and manufacturing space in the building . . . **Combined Communications Corporation** has taken over management of the St. Louis Outdoor Advertising Company, adding to its growing operation of similar companies plus AM, FM and TV stations, a few magazines and a Muzak franchise . . . **Communications Properties** has started constructing a 24-channel CATV system in Mexico City, starting with a 9000-home area service, soon expanding another 7000, and eyeing the rest of Mexico's TV homes—1.5 million, according to CPI President Jack R. Crosby. Two channels will be local origination (one for feature movies and the other for special events); educational TV under government auspices will get two; and one channel will bring American network programs via microwave. The remaining channels will be reserved for future cablecasting . . . **Tele-Mation** will be the exclusive distributor in the Western Hemisphere for **Data Memory's** VDR-1000 Color TV Stop Action Recorder; there is also an option for the company to get a license

to manufacture the DMI system . . . **Prodelin** (Hightstown, N.J.) has won from **Raytheon** a contract for the production of high performance communication antenna systems, to be part of a common carrier microwave system for data transmission between Chicago and St. Louis . . . \$500,000 of **RCA's** color TV studio equipment has been ordered by Westdeutscher Rundfunk (WDR) in Cologne, West Germany, the country's largest TV station. . . . **Rank Industries'** TV standards converter—which converts color and B&W TV signals from the 525-line 60-field standard used in Japan to the 625-line 50-field needs of Australia, and vice versa—has been ordered for use in New Zealand's satellite communication earth station. . . . A half-million-dollar Honeywell 200 computer is part of **U.S. Computer Systems'** expansion of its CATV Management Information System; this, along with incorporation of the Inforix Data Entry System (eight keyboard stations with visual display, feeding into a magnetic disc storage unit and then to magnetic tape) plus 2000 sq ft of additional space, will triple the processing power of the system while maintaining its five-day data turnaround time for information relating to CATV subscribers, financial matters including billing, and management . . . Two **Visual Electronics** M1600 TV audio production consoles are in the picture for KTVU (Oakland); according to the station's chief engineer, Bob Arne, one is already installed and the other will be in by the time fall programming starts. . . . **Scrapps Howard Broadcasting's** WPTV (West Palm Beach) has broken ground for its 20,000 sq ft, two-story TV station complex. Projected completion date of the 75-employee complex: January, 1971.



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- Advanced measurement capabilities
- Push-button operating convenience
- Dual-display inputs
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The Tektronix Type 520 NTSC Vectorscope provides new operator convenience, advanced measurement capability and silicon solid-state reliability. Push-button operating controls permit rapid selection of displays for quick analysis of color signal characteristics. A luminance channel separates the luminance (Y) component of composite color signals for display at a line rate. Combining the Y component with the chrominance demodulator outputs provides displays of the Red (R), Green (G), and Blue (B) values, revealing luminance to chrominance amplitude and delay errors if present. Line Rate displays of chrominance demodulated along the I or Q axis are provided for checking encoder performance.

Phase and amplitude accuracy of the vector presentation is verified by internally generated test signals. Errors in color encoding, video tape recording or transmission processes are readily apparent and are easily measured. Separate 0° to 360° phase shifters provide independent phase control of channel A and B displays. Excellent resolution for measuring small phase-angles is provided by a 30° precision calibrated phase shifter where 1 inch of dial movement represents approximately 1° of phase shift. Differential gain and differential phase measurements are made with accuracies within 1% for gain and 0.2° for phase. A unique graticule switching arrangement provides automatic selection of an IRE graticule or an illuminated parallax-free vector graticule. The selection occurs at the same time the operating mode is established.

The Type 520 Vectorscope provides the ability to check equipment performance during regular programming times through the utilization of Vertical Interval Test Signals. A digital line selector permits positive selection of Vertical Interval Test Signals from lines 7 through 21 of either field 1 or field 2.

For a demonstration contact your nearby Tektronix field engineer or write: Tektronix, Inc., P. O. Box 500, Beaverton, Oregon 97005.

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Recent acquisition activities include an agreement in principle between **Certron** (Anaheim) and **MAC Panel Company** for the latter's magnetic computer tape business and related operating assets to go to Certron for 125,000 shares of the California company's common stock . . . **Equity National Industries** has bought **Take Two, Inc.**, a TV commercial producer . . . **LTV ElectroSystems** has agreed to purchase most of the assets of the **Melpar Division of American Standard**, to extend its product line and set up an operation in Washington, D.C. . . . FCC has approved **San Juan Racing Association's** purchase of **WKLS-FM** (Atlanta) through the Association's subsidiary, **SJR Communications** . . . The two

major cable systems in New York City have undergone some ownership adjustments. **Manhattan Cable Television** is now owned by **Sterling Communications**, which made the purchase deal with **Time-Life Broadcast, Inc.**, the result of which is that Time-Life, former holder of 49% interest in Manhattan Cable, is now a 44% owner of Sterling . . . Meanwhile, **TelePrompTer Corporation** (the country's fourth largest cable operator and parent of **TelePrompTer Manhattan**) has received FCC approval for a merger with **H & B American**, the nation's largest cable operator. TelePrompTer, the surviving entity, would own wholly or partly 129 systems serving 413,500 subscribers—10% of all now receiving cable.

## NAB restructures for more control from top

Three executive vice-presidential posts, plus an unspecified sum of money for their salaries, have been created for the NAB by its board of directors.

These will be the only three "departments" reporting directly to NAB President Wasilewski—instead of the 12 now in attendance.

The reorganization came as a result of dissatisfaction with current public relations structure—and to get a streamlined PR effort, the whole framework had to be changed. According to Board Chairman Willard Walbridge, head of the special committee that came up with the new plan, the Board's unanimous adoption of the plan was "a complete vote of confidence" in President Wasilewski's ability to motivate the NAB.

Wasilewski remained on the sidelines during the reorganization meetings so as not to "inhibit" the action. The new posts:

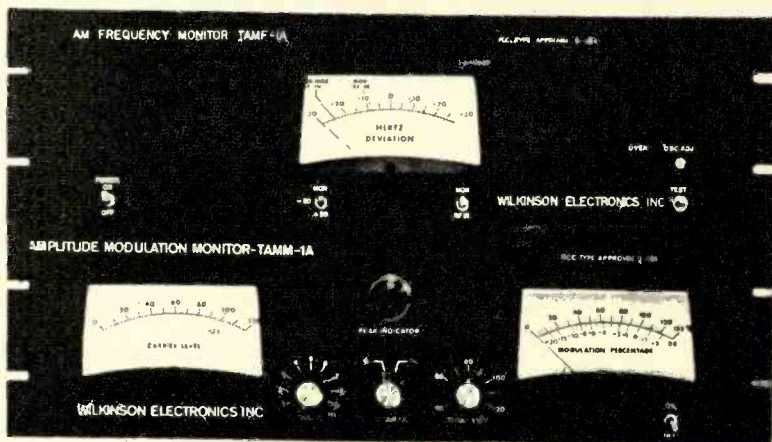
- **Government Relations**—will also be broadcaster liaison; will have general counsel, special counsel and vice president for government liaison reporting to him.
- **Public Relations**—also liaison with Television Information Office; will have press bureau, broadcast bureau, promotion department and a publications department.
- **Station Relations**—will supervise v-ps for radio, TV, engineering and research; will also supervise the Broadcast Management and Regional Management Departments; and eventually there may be established department for minority affairs and public service, which will report to this post.

Appointments to the new posts will not be made until after November, by Mr. Wasilewski with the help of NAB Executive Committee members and, in the case of the PR post, in consultation with a representative of the NAB's regular PR committee.

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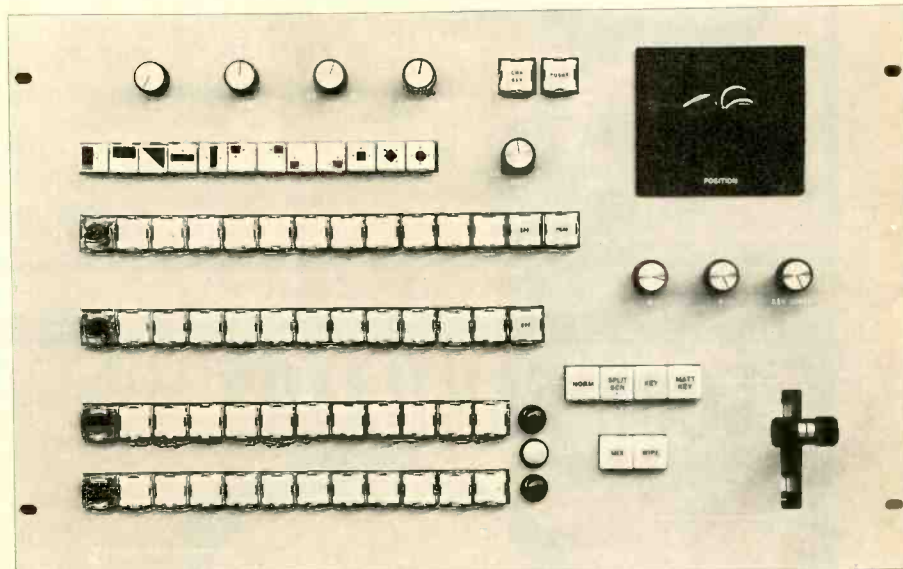
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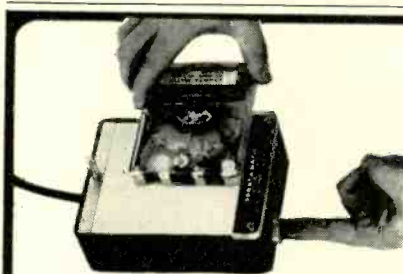
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## Radio Frequency Band Designations

To clear up some confusion, the FCC has issued a quick list indicating broad divisions of the radio frequency spectrum and the appropriate, internationally adopted designations. Here they are:

Very Low Frequency (VLF)	3 to 30 kHz
Low Frequency (LF)	30 to 300 kHz
Medium Frequency (MF)	300 to 3000 kHz
High Frequency (HF)	3 to 30 MHz
Very High Frequency (VHF)	30 to 300 MHz
Ultra High Frequency (UHF)	300 to 3000 MHz
Super High Frequency (SHF)	3 to 30 GHz
Extremely High Frequency (EHF)	30 to 300 GHz



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Designed specifically for tape cartridges. Absolutely NO sound carry over from previous recordings. Handles all cartridge sizes. Also reel tapes up to 10½ inches. Entire process takes only 3 seconds. **\$39.50**

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## No change in '71 GM windshield antennas

General Motors will continue using the controversial windshield antenna in its 1971 cars, although the device on 1970 models does an inferior job on both FM and AM—according to a recent study made by Kaiser Broadcasting and the Engineering Department of the NAB.

The antenna consists of a T-shaped lamination of copper wires inside the windshield, forming a horizontal dipole. According to the Delco Radio (Division spokesman) the antenna is designed to be resonant at 100 MHz.

Following complaints of poor FM reception, Kaiser Broadcasting borrowed a 1970 Chevrolet auto and made measurements in Boston in February, 1970. The car had both a windshield antenna and a standard whip, with a switch arranged to select either. Measurements were made with a Singermetrics Type NF-105 field intensity meter driving an Esterline Angus chart recorder. The tests used signals from four FM and two AM stations in Boston, and were made at several locations.

Once the meter had been calibrated on each station frequency, the car was driven around a minimum circle while recording field intensity.

The windshield antenna was checked with a Boonton Model 49 grid-dip meter and a Hewlett-Packard frequency counter. The antenna resonated at 90.2 MHz, favoring the low end of the band.

The Kaiser/NAB report concluded that:

- At 45 miles from the transmitter, the windshield antenna is very inferior to the standard vertical whip.
- Closer in, the windshield antenna compares a bit more favorably with the whip.
- When the car is moving, the horizontal windshield antenna exhibits undesirable directional characteristics which the vertical whip does not.
- AM reception is decreased by the windshield antenna.
- Using the windshield wipers and the windshield antenna makes FM reception almost unusable.
- The windshield antenna appears a major backward step in car radio reception, especially in FM and particularly in stereo.

Continued on page 42



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## with Collins new stereo consoles

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COMMUNICATION / COMPUTATION / CONTROL

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# Potpourri 70:

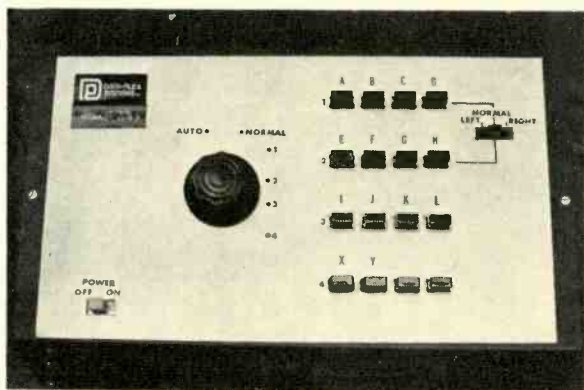
## A roundup of ETV, ITV, CCTV, and radio developments

Here's a collection of new or unusual applications of video or radio techniques in education, instruction, and related fields.

### Responsive TV: Programmed video learning system

A videotaped lesson is usually something you watch and perhaps learn from. With a live teacher in front of you, you can ask questions, and the feedback proves you are or aren't getting the point. Why not combine student response with the advantages of videotape? That's what Data-Plex Systems Inc. has done with its new system.

A videotaped lesson is played back through a standard TV receiver or monitor, attached to which is a small response box with a dial and four rows of pushbuttons. After each unit of instruction, questions appear on the screen with possible answers. The viewer decides which he thinks correct, then answers by pressing the appropriate buttons. Next on the screen appears a statement telling the viewer if he chose the right answer or not. If he chose a wrong answer, he is told which answer is correct.



The Responsive TV system can be transmitted by any source—broadcast TV, CATV, videotape recorders, EVR, or video cassettes. It can be used by single individuals or by large groups in training centers. It is applicable to schools and colleges, sales and business training, and nearly every area where video instruction is desirable.

Recent studies by UCLA indicated that a TV system with a response capability would increase learning and retention by a minimum of 30%. A particular feature of Responsive TV is branching capacity, so different viewers may pursue different paths according to the accuracy of their responses.

Control signals are included in program material, enabling the system to store instructions and receive delayed responses to previously selected

decisions. In addition, the equipment can automatically record and score all responses.

### Police TV: ITFS and videotape

The St. Louis Police Department is the first law-enforcement agency licensed by the FCC to use the 2500-MHz ITFS band. The system at Police Headquarters is used to transmit material and law-enforcement information to the city's eight district police stations without the need for cable.

Installed by Ampex under a \$200,000 contract, the St. Louis system includes a central control studio and transmitter at the Police Academy, contiguous with the downtown Police Headquarters. Equipment includes a console with special effects, switch and fade capability; video editing; two cameras; six one-inch helical VTRs; and one broadcast quadruplex VTR. A mobile van can transport cameras and a VTR to accident or crime scenes.

The St. Louis police system performs several functions: Training programs are videotaped by visiting lecturers and broadcast to all stations simultaneously. Accident and crime scenes can be documented on videotape. And internal business and administration message can be videotaped or transmitted live to all commands.

An important innovation is eliminating the daily show-up of criminal suspects. Following arrests, each suspect is videotaped while being interrogated. If he is subsequently released on bond, the videotape remains for playback to all police stations for viewing by complainants, witnesses

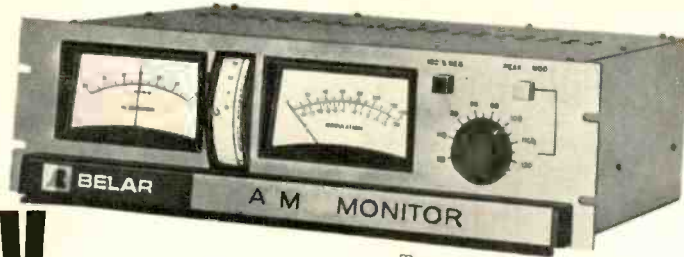
### In-Plant video courses train factory engineers

To make it easier for graduate engineers in industry to keep abreast of technological developments, the State University of Buffalo (N.Y.) has started televising courses into plants within a 20-mile radius. The experiment is called Graduate Engineering Management School Network, and it operates Monday through Friday from 8 am to 5 pm. Engineers who seek graduate work may take three to six hours of courses each week without commuting to campus. There are 12 companies in the area cooperating with the university in the TV project.



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a company  
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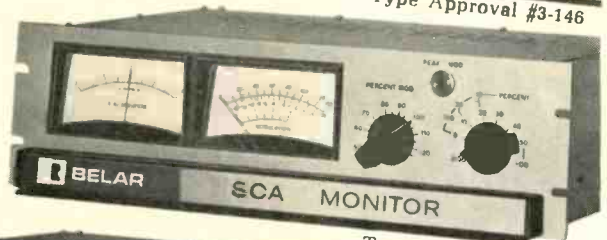
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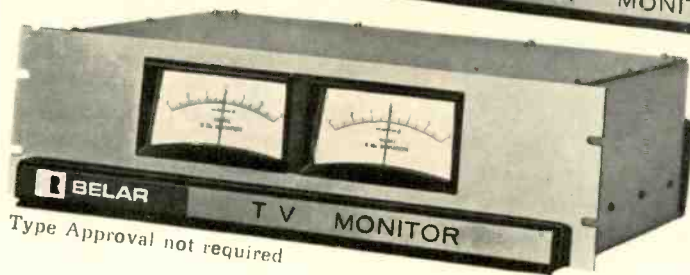
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## Model MC-2500 2500 MHz Broadband Down-Converter From the specialists!

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and detectives.

Videotaping a suspect's reaction to interrogation opens a new and important door in law enforcement, both in St. Louis and in Douglas County, Oregon. During the past few months,



Douglas County district attorney Doyle L. Schiffman has been using an Ampex VR-5000 helical VTR and camera to record interviews with accused persons. In one aspect, he records drunk-driving tests as given to suspected drivers. Advantages include visual and aural impressions of

*Continued on page 60*

### Make Educational Use of Commercial TV

For the third year, "Teachers Guides to Television" has been issued, enabling teachers to plan class sessions around outstanding commercial TV programs. Guides for the Fall semester contain lesson plans on programs ranging from Hamlet to A Connecticut Yankee, from Beethoven to the American Desert, and from the 1970 elections to a UNICEF program. The guides are flexible and may be used for many grade levels and in many subject areas. Also included is a bibliography and a list of related films. Even parents use the guides to add an extra dimension to their children's education. TGT costs \$3.50 for a two-semester subscription, \$2.25 for one. Send check or money order to Teachers Guides to Television, P.O. Box 564, Lenox Hill Station, New York, N.Y. 10021.

### Free list of ETV VTR Fax

A list of all primary ETV stations and the types of video tapes (color, B&W, high-band, low-band) they can handle, is available without charge from Reeves. The information should be useful to anyone who distributes video tapes to educational stations. Information was compiled by Reeves and RCA and is seldom found in directories, which often give minimal data on educational facilities.

Still available is Reeves' second Television Station Directory, which lists commercial TV stations and what types of videotapes and films they are equipped to handle. The booklet costs \$5.00 plus tax.

Both publications are available from Reeves Production Services, 304 East 44 St., New York, N.Y. 10017.



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**"Scotch" Brand  
Color Video Tape guards  
itself against damage.**

**Guards against cinching.** "Scotch" Brand No. 400 now solves your video tape handling and shipping problems. A new, matte-finish back treatment virtually eliminates cinching, windowing and creasing. Capstan slippage is a thing of the past.

**Guards against scratching.** The exclusive treatment on "Scotch" Brand No. 400 resists scratching, eliminates polyester redeposits on the oxide surface. Prevents the increase of dropouts and effectively extends tape life.

**Guards against dust damage.** This highly conductive treatment reduces static attraction of contaminants that can damage tape and VTR heads. New No. 400 gives you built-in protection, plus performance — the finest value in color video tape.

SEE US AT THE NAEB SHOW. BOOTH NO. 71 AND 72.



**3M**  
COMPANY

"SCOTCH" IS A REGISTERED TRADEMARK OF 3M CO.  
Circle 111 on Reader Service Card





**"Our Norelco PC-70s  
are as rugged as  
the Vikings games  
they cover."**

*John M. Sherman*

John M. Sherman  
Director of Engineering  
WCCO-TV, Minneapolis-St. Paul





When WCCO-TV took delivery of the 1000th 3-Plumbicon\* camera, the station highlighted the unprecedented popularity of the PC-70 family. There are more Norelco color cameras than any other on independent and network television.

The reasons are easy to find. WCCO Engineering Director John Sherman tells them with the voice of experience:

"This is the fourth season WCCO-TV has originated NFL Football for CBS in color, not only in Minneapolis-St. Paul, but in other cities. (Before 1967, we did NFL pickups in black and white.) For assignments like these, our cameras have to deliver studio quality and sharpness . . . and do it after the repeated rough-and-tumble of moving from game, to studio, to game.

"That's why we replaced our color cameras with Norelcos. Ever since we began the color originations for CBS, we've used nothing but Norelco cameras for football, and now we are 100 per cent Norelco.

"We have ten Norelcos, seven in our studios and three in our 40-foot mobile unit, but we bicycle studio cameras back and forth for remotes and have used up to eight on some NFL pickups. We've handled remotes for every network—elections, baseball,

news, you name it. We had beautiful color at 50-70 foot-candles for a Packers-Bears Shriner's Benefit in Milwaukee County Stadium.

"These cameras are as hard to stop as a 300-pound fullback. Picture quality is unbeatable, and maintenance requirements extremely low."

Now, the PC-70S-2. Our newest generation Norelco PC-70S-2 sets today's standard for superb color fidelity and control. Features include lower noise with level-dependent comb-filtered contour enhancement; better low-light performance with 48 dB signal-to-noise FET preamps; and optional non-linear matrixing.

Rugged as a Viking, but a faithful and sensitive artist with color... for the camera that is *number one* worldwide, come to Norelco.



\*Reg. TM N.V. Philips of Holland

One Philips Parkway,  
Montvale, N.J. 07645  
(201) 391-1000

Circle 112 on Reader Service Card





An appeal to youth from the National Institute of Mental Health. This kind of approach relies on emotion rather than reason; broadcasters may find factual education more effective.

**BROTHER...DON'T PASS IT ON.**

## BROADCASTERS AND DRUGS: What Can You Do?

### Educate Ourselves—A BM/E Editorial Opinion

*The Fairness Doctrine requires broadcasters to report all sides of controversial issues. As disseminators of news, broadcasters pride themselves on presenting an accurate picture of trends and events throughout the world. But what about "the drugs problem." Is it responsible journalism to settle for running the occasional Drug Scare spot—a corpse with needle tracks on his arm? A first reefer leading to death? Testimonials from frightened victims of this country's drug situation? Some experts say this is worse than nothing.*

THERE IS ANOTHER APPROACH to the Drug Issue. It's a calmer approach than the common Drug Scare campaign; it takes into account medical, psychological and sociological investigations into legal and illegal drug use in the United States, investigations which have destroyed many frightening myths. It takes into account facts and lore about drugs well known to the young, often overlooked by those who would "educate" the young. It recognizes that blind adherence to the "Horrors of Drugs" stereotype has ruined many well-intentioned efforts to "fight the drug epidemic."

Before taking an editorial stand on drugs, broadcasters must adopt this enlightened approach: Learn the facts. Ignorance, in adults as well as the young, will merely intensify the current problems. Fear won't work. Already the deaths, crime and hostility associated with current drug policies in this country pose as great a menace, we feel, as any drug could possibly threaten.

Here are findings and opinions reflecting the

work of experts in the area of legal and illegal drug use—educators, medical doctors, psychiatrists, sociologists. The facts given here are documented: See the *New York Times'* news reports on narcotics agency corruption; *The Stamford Curriculum* (a study guide put together by the Stamford Public School System—as described in adjoining speech by Mr. Leonard J. Patricelli) and references therein; *The Pleasure Seekers*, by Joel Fort, MD (Bobbs-Merrill, 1969) and references therein; *Drugs Education Resources* (a professional training package produced by Educational Resources, Inc., Orange, New Jersey) and references therein; also, see box, "How can I get the facts?"

**No one can get physically addicted to marijuana or LSD.** Medical research verifies this; neither drug is habit-forming. LSD has only a minimal potential for "psychological dependence." Marijuana's potential is moderate—about like coffee's. There is no evidence of any brain or other physical



damage from marijuana. There is conflicting evidence as to whether LSD causes chromosome breakage: two studies indicate the possibility; two other studies don't. There is no evidence of any other physical damage from LSD.

Scare campaigns capitalizing on alleged addiction or physical suffering caused by marijuana or LSD don't work. They undermine the credibility of more responsible statements about drugs. They insult those who know these allegations are wrong.

You can't scare people with stories they know are false, but you can lose their respect.

**Even over decades of use, heroin itself causes no permanent physical damage.** However, it is physically addictive and users build up a tolerance to the drug, so that they require increased doses for effect. Once addicted, the user "shoots to get straight," meaning he injects heroin not only hoping to get high, but also to avoid symptoms of withdrawal. Depending on the quality and quantity of the dosage, the high may last a few minutes or, in intermittent "nods," up to a few hours. Addicts may need another "hit" every four hours or so "to get straight" again.

The British experience with legalized heroin, administered under medical supervision in clinics, indicates that it is possible for an addict to lead a normally productive life while getting the necessary injection every four hours.

The methadone experience in the United States has demonstrated that a heroin addict can switch to methadone, which he can take orally as a medicine at breakfast (usually in orange juice). Under the public and private Methadone Maintenance programs, the individual cannot get high from heroin and does not get high from methadone. He can lead a normally productive life addicted to methadone.

The current supply of illegal heroin in this country tends to be a weak mixture of heroin with some other drug. The substance used to "cut" the heroin may be harmful. To increase profits, underworld drug operators have used strychnine, quinine and even rat poison (it's the same color) to cut heroin.

From this weak mixture, withdrawal symptoms are not the dramatic writhings people have come to expect. Many addicts compare withdrawal to a mild case of the flu.

The real danger of physical addiction today is due to the inconsistent "purity" of the available supply. An addict whose habit requires a given amount of highly cut (impure) heroin may die from an overdose if he injects an equal amount of the less-adulterated drug. Other dangers include disease—hepatitis from contaminated hypodermic needles—and malnutrition from the street living many people addicted to an illegal drug are forced to lead.


**Drugs are big business**—not all of which fits the traditional image of the dope peddler in the school yard. Most of the heroin coming into this

**"John was OK..."**  
**"Until his momma caught him"**



**"Now he can't go home anymore"**

Many psychiatrists feel that use of narcotics is often a result of broken homes, although a commonly used argument against heroin is that it destroys family life. This National Institute of Mental Health poster suggests another culprit—the parent unable to cope with a child's drug problem.



**Ever wonder  
why your kid doesn't  
take you seriously when  
you lecture him  
about drugs?**

Frequent victims of current anti-drug campaigns are parents who indulge in what's often called legal drug abuse. This NIMH poster plays on the worry of many adults: Do I have to give up mine to get my child give up his?

## How do I get the facts?

There are plenty of sources broadcasters can turn to for drug information. Not all of them contain accurate data; not all are designed to enlighten. In judging resource materials, any person interested in getting a realistic picture will have to ask these questions:

- Does the material treat drug use in context with current social and psychological conditions? Or does it assume Drugs Are To Blame, despite expert opinions tracing drug use to such other social conditions as poverty and racism?

- Does the material distinguish between the different drugs—physically addictive vs. non-addictive; psychologically habituating vs. non-habituating; physically harmful vs. nonharmful? Or does it treat all drugs with the same heavy-handed fear?

- Does the material encourage open-mindedness about drugs and those who use drugs? Or does it encourage preaching to drug users in a way which might alienate them from any worthwhile communication? To quote from a California's Health review of an anti-marijuana film, as reported in Educational Product Report, April, 1970: "This film, which seems on the surface to be a dispassionate analysis, shows through as uncompromising propaganda . . . It is doubtful that many young viewers will be anything but angered when they emerge from Assembly after seeing this opus."

To assist broadcasters and others seeking drug information, the National Coordinating Council of Drug Abuse Education and Information, Inc., Suite 212, 1211 Connecticut Ave., N.W., Washington, D.C. 20036, has started evaluating available sources. A preliminary list of audiovisual material found to be "among the better materials available for drug education" is available now from the Council. Full results of the evaluation will be out soon. Also, the Council is offering Grassroots, a drug abuse information service, at \$60 a year. Subscription includes special monthly supplements to the initial loose-leaf note book filled with current information on organizations, educational materials and other resources dealing with drugs, plus additional material. Executive Director Peter G. Hammond, on record as a critic of much current broadcast drugs programming—especially certain government-sponsored ten-second anti-drug spots—hopes the Council's efforts will help bring about an improvement in broadcast programming about drugs.

A review of available films on drug education is found in the April, 1970, Educational Product Report, the monthly membership service of the Educational Products Information Exchange (EPIE) Institute, 386 Park Avenue South, New York, New York, 10016.

An unusual audio-visual package has recently been produced by Educational Resources, Inc.,



Before trying to educate youngsters about drugs, teachers need to learn the facts themselves, as these two are doing with a professional training kit from Educational Resources.

(Orange, New Jersey) a Division of Educational Design, Inc., 47 West 13th Street, New York, New York. This product is designed to educate adults (teachers, community groups, PTAs, broadcasters) as well as older youngsters. It features color slides and audiotape cassettes, with written discussion questions, bibliography and an instruction manual; titled: Drugs Education Resources.

Operating under the assumption that drugs educational material should not attempt to "push" any particular point of view, the producers have compressed basic factual and historical information into eight side/cassette sets—as background information.

The rest of the package includes cassette recordings in these areas:

**Professional Points of View:** Eight interviews with medical, police and legal experts explaining their opinions and experiences related to drugs in their fields of specialty.

**Drug Scene Sociology:** Interviews with addicts, parents, teachers, medical experts, teenagers and others—a cross-section of people involved and willing to give their opinions about the Drug Scene.

**Approaches to the Drug Problem:** Discussions about various school programs dealing with drugs; the role of parents and the community; and four "Situations for Discussion"—role-playing setups demonstrating attitudes teachers, parents and students must face in dealing with drugs.

**Treatment:** Discussion of therapeutic communities, methadone centers, the Federal Government's Lexington Program, and the British system of legalized heroin.

Broadcasters could use this type of resource, as well as others, providing fact and expert opinions, not only for their own education, but as a guide for programming appropriate to solving the problems associated with drugs in this country.



country now is imported by organized crime: street opinion accepted by some experts reports importers are not the Mafia, but Cuban refugees who fled the Castro regime. "Retail outlets" might be addicts or small-time criminals. Or they might be corrupt police or narcotics agents.

Along the line are many pockets to be filled and some belong to apparently legitimate businessmen and public officials. Reports Dr. Fort in 1969: "Within the past year, the entire New York City Narcotics Squad was investigated, restructured, and restaffed, because of widespread corruption; state and local agents in various parts of the country have been suspended or dismissed; and more than 30 agents of the Federal Bureau of Narcotics were dismissed, suspended, and indicted on charges including the sale of narcotics, and bribery."

It is naive to treat "the drug problem" as merely "crime in the streets" and expect law enforcement to stop it. Corruption at all levels of business and law enforcement weakens the effect of anti-drug laws.

**Reliance in drugs is a way of life in the United States.** Most people now recognize how popular culture and advertising encourage the feeling that a product—tobacco, liquor, caffeine, non-prescrip-

tion drugs—can make things better: "You used to be so hard to get along with, but now . . ." "Got the Blahs?" "You really know how to handle those things, Joe. How about a smoke?" "Come alive!"

People are also beginning to realize the dangers in abusing legal drugs, and even in simply using some of them. Alcohol and tobacco are at least as physically dangerous as any of the illegal drugs—in fact, alcohol and nicotine are the only two popular legal or illegal drugs which scientific evidence has indicated do cause irreversible physical harm as long-term effects of use.

The contemporary reliance on a drug product is too ingrained in today's culture to be fought with selective attacks on the illegal drugs. And since so many of the arguments against the illegal drugs are equally (often more) valid when used against the legal ones, a suspicion of hypocrisy hangs over many anti-drug slogans.

A young man in a culture of suave cigarette dependance (psychological) and executive alcohol addiction (physical and psychological) is not likely to feel it is a personality defect to pass a physically harmless, moderately habituating marijuana joint among friends. Nor will a glance in an amphetamine-and-barbiturate-laden medicine cabinet fill him with the fear of pills. **BM/E**

## Educate Our Youth—Leonard J. Patricelli

*Long before President Nixon called upon broadcasters to help solve the problems associated with illegal drug use, many broadcasters had begun their own public service in this area. Seeing a need for educating the young, Leonard J. Patricelli, president of WTIC-AM-FM-TV (Hartford, Connecticut), set an innovative example for all broadcasters. Here is his story, as excerpted from his speech before the 6th Annual Conference and Exposition on Education and Training of the American Management Association, August 6, 1970, New York City.*

WE DID OUR FIRST EDITORIAL on drugs on October 23, 1969. As you will see, it was a time of innocence. We thought the drug problem was controllable—at least in a state like Connecticut. Here's a portion of that editorial.

It's difficult to do, but try, if you will, to put yourself in the place of a Connecticut teenager who has been using marijuana, LSD or some other drug, and wants desperately to stop. You know you need help. You're trapped, but you don't know where to turn. Of course, the best person to turn to is your mother or father. But you don't want to face your parents with the awful news that you have been on drugs. You know how it will hurt your mother and your father.

You don't want to go to the police because you've been breaking the law and you know many other people who have been breaking the law with you. You don't want to tell on anyone.

What do you do? Where do you turn? Thanks to a new law that just went into effect in Connecticut, the teenager in this difficult position now has somewhere to go and someone ready to help him . . . and no questions asked.

Since the first of October, if you are a young drug user, you can go to any city health department, any hospital or clinic and get the best

medical attention and treatment without the consent or knowledge of your parents. This is also true—and has been true for some time—of any teenager suffering from a venereal disease.

If you want to free yourself from drugs, you can seek help by approaching your school guidance counselor, school nurse or school doctor. Or, you can walk into any hospital or clinic or city health department and tell the person at the desk that you want to talk to someone about a problem with drugs.

A good place to go is one of the six clinics operated by the state. There are clinics in all sections of Connecticut: in Hartford at 2 Holcomb Street; in New Haven, 412 Orange Street; in Waterbury, 167 Grove Street; in Bridgeport, 50 Ridgefield Avenue; in Stamford, 322 Main Street and in Norwich, in the Mitchell Building at the Norwich State Hospital. These addresses will be repeated from time to time on WTIC Radio and Television. The clinics are open weekdays from 8:30 in the morning to 4:30 in the afternoon. And we do hope the state will consider keeping them open later in the day and on Saturdays.

Please . . . spread the word about this new program, this new means of escape from drug dependence. You might save a teenager's life.

Well, we practiced what we preached. We spread the word about these clinics. We ran



"The young addict," as depicted in many anti-drug scenes: oversized needle, tense face, etc. To escape detection (by "needle tracks" on the arm) many addicts inject heroin under the tongue.

announcements frequently on our radio and television stations. But we were too successful. I'll let an editorial we did in December tell what happened to our campaign to get youngsters to the drug clinics:

There was an extraordinary response from the young people. The clinics were swamped with teenagers and others who wanted to be freed from drugs. I have personal knowledge of an eighth grader who sought help. He was on heroin at the age of 13. But the state of Connecticut couldn't help all of them. The response was so great, we were politely asked to stop listing the addresses of the clinics on the air. The state simply didn't have the manpower and money to help even those who responded to an editorial and a few announcements on WTIC Radio and Television. We withdrew the announcements on the grounds that it would be a great disservice to encourage drug users to visit clinics and find little or no help available.

But we submit that being unable to treat even those voluntarily seeking help is no way to fight an epidemic.

The state has many financial problems. There is no money for many worthy projects. But if smallpox or some other serious disease were reaching epidemic proportions in Connecticut, the money to cope with the epidemic would be found.

The choice seems obvious. We can do all in our power to stop this drug epidemic in its tracks. Or we can write off a portion of the next generation.

That ended our innocence about the drug epidemic and we were bitterly disappointed at having let the kids down. We sought an immediate meeting with Governor John Dempsey and the state mental health commissioner, Ernest Shepherd, to find out why the state could not provide services it seems legally obliged to provide. We met for over three hours.

The governor explained that getting qualified people to operate the clinics was a major stumbling block, but he promised to keep trying.

On the morning we were to meet with the governor, I received a letter from a teacher in a nearby community. She told me that she shared my concern about young people and drugs, and she revealed something new about the drug problem. Here is part of her letter:

"In this day and age, we cannot reach our students with methods and materials used ten years ago. These are outdated and have lost their relevance. I am finding that I do not have the answers to the questions my students ask. What is my next step? I can't believe that I am the only teacher inadequately prepared to teach this subject."

I had this letter in my pocket when I met with the governor, and I asked him and the mental health commissioner if they had an answer. They did. They told me about the *Stamford Drug Curriculum*, a teacher's guide for Grades 4 through 12. The state hoped to distribute one copy of the guide to each public school in Connecticut.

They sold us on the Stamford Curriculum in a matter of minutes, but they also told us it would be several months before it could be printed and distributed. We asked if we could help and offered to have printed, at our expense, thousands of extra copies for free distribution in Connecticut and neighboring states as well. We didn't know what it would cost, but I thought the drug epidemic required emergency measures, regardless of cost. Governor Dempsey and Mr. Shepherd assured us that our taking on the project would be most helpful.

Well, we got to work immediately after the meeting, contacted the Stamford school officials involved in the project and discovered that the book wasn't quite ready. Instead of waiting for Stamford to get the book printed, we requested and received permission to design a cover, complete the format and get the book to our printer.

The printer even shared our enthusiasm about moving quickly, about the drug epidemic. He put aside some printing jobs from major customers—United Aircraft and a couple of large insurance companies—and put the Stamford Curriculum on the press. Within two weeks of our meeting with the governor, we were distributing the Stamford Curriculum. We have never stopped.

The initial announcement of the Curriculum's availability was made in an editorial on December 19, 1969:

The Stamford Curriculum is so good, the state of Connecticut hopes to provide each public school in Connecticut with a copy. However, in order to reach far more students, WTIC will print thousands of additional copies of this 96-page guide and make them available at our expense to any teacher, school official or school board member who wants them. This offer is made not only to public, private and parochial schools in Connecticut, but also to all the schools in neighboring states served by WTIC Radio and Television. The guide should be printed and ready for distribution shortly after the first of the year. To get a copy, just send a request on your school letterhead to Drug Study Guide, WTIC, 3 Constitution Plaza, Hartford, Conn. 06115. We admit that taking on the printing and distribution of a



state document is rather unusual. We admit too that sending a public school curriculum to private and parochial schools is also unusual. But the drug epidemic is most unusual. We must do something about ignorance, the root cause of the drug epidemic. We must reach our children before the pushers reach them.

We followed up this editorial with announcements on the air—and, on the theory that epidemics have no respect for state borders—placed sizeable ads in newspapers in neighboring states, including the *New York Times*.

There was one inaccurate statement in the last editorial. I said we would send guides to neighboring states served by WTIC Radio and Television. To be perfectly accurate I should note that we reached a few more states than those served by WTIC. Our total came to 49 states, the District of Columbia, the Virgin Islands, Puerto Rico and 12 foreign countries.

Requests for the guide have come not only from schools, but also from colleges, clergymen, city, county and state health departments, police and other law-enforcement agencies as well as from judges, doctors and others who deal with the drug problem. We asked that requests be made on official letterheads, but we did honor a request from a woman who wrote that while she had no letterhead, she did have a college degree, seven growing children and an appalling lack of knowledge about drugs.

As a result, we have printed, handled and mailed a pound and a half of drug curriculum 18,000 times at a cost to our company of \$65,000.

It is obvious from our experience that the schools need all the help they can get in order to teach youngsters about the dangers of drug abuse. It is also obvious that neither the federal government nor the state is going to be willing to spend the money needed to do the job properly until perhaps it is too late.

This leaves the private sector. Admittedly, spending company funds to help the schools educate youngsters about drugs is unusual. Even drastic. But drastic measures are a must.

I would like each of you to write to me for one of these Drug Study Guides. Show it to your board of education or to your mayor or the school principal. Just do that one single thing—not for me, but for your community, your children.

Get a responsible person in your business or your town interested. The book will speak for itself. Help the drug guide do its job—give it a chance to carry out its mission for children from the fourth through the twelfth grade.

Make this a personal crusade, if you will, whether it be in distributing the drug guide or in some other way seeking a solution to the monstrous problem of drug abuse.

See what your schools are doing and if they can do more. Check your local hospitals. You may be shocked to see that they have no beds available for persons on drugs. See what your city government is doing or what the state is trying to accomplish. You may be shocked by what you find there as well. Help former addicts who are establishing successful rehabilitation programs. Work at it.

I do hope you will make the search for solutions to the drug problem your personal crusade. A crusade to save this country's most valuable asset, your children and my children.

I have a brief addendum. A friend told me this short but significant story:

His nine-year-old daughter and her friend came home from school recently and said, "Daddy, Daddy, Debbie and I learned a new song today—wanna hear it?" He said, "Why sure, sing away." She pushed back her blonde hair and, with her pretty blue eyes sparkling, this is what she sang:

"Marijuana, marijuana  
LSD, LSD  
Rockefeller makes it  
Agnew takes it  
Why can't we?  
Why can't we?"

Now I ask you to write your own ending to my speech. **BM/E**

**Editor's note:** BM/E applauds Mr. Patricelli's strong sense of civic responsibility in printing and distributing information about drug abuse to teenagers. We also feel it's important to mention a point he didn't: credibility of drug-education programs. (See above, "Educate Ourselves.")

Many broadcast and print-media programs currently attempt to inform young people of the dangers of drug abuse. Some are successful, some are not. Unfortunately, some make no distinction between marijuana and the physically or psychologically addictive drugs: alcohol, amphetamines, tobacco, barbiturates and heroin. This carelessness can make a drug-education program largely ineffective.

Informed teenagers know that marijuana isn't addictive in the sense that heroin is. They also know that no evidence exists which proves that

marijuana users necessarily become heroin addicts. When such young people hear a drug education program carelessly lump marijuana with addictive drugs, they don't believe any of the advice.

However dangerous marijuana may or may not be, we know heroin addiction can have destructive results. It makes no sense to destroy credibility through carelessness.

We are glad to note that the Stamford Curriculum is careful to separately describe hallucinogens (LSD), opiates (heroin), barbiturates (Nembutol), amphetamines (Benzedrine), tranquilizers (Equanil), marijuana, delirants (airplane glue), alcohol, and tobacco. The study guide is honest and credible. And it should prove effective in educating young people as well as adults about drugs.

- 1. **Jim Reid**  
Program Manager  
says:
- 2. **Les Corum**  
Operations Manager  
says:
- 3. **Barbara Fisler**  
Promotion Assistant  
says:
- 4. **Paul Weber**  
Engineering Assistant  
says:
- 5. **Dave Wygant**  
Manager of Sales  
says:
- 6. **Don Plumridge**  
Director of  
Creative Services  
says:
- 7. **Don Doughty**  
Chief Engineer  
says:
- 8. **Jim Anderson**  
National Sales Manager  
says:
- 9. **Milton Grant**  
V.P. & General Manager  
says:





# WDCA-TV on the 'cart' machine:

Now that station WDCA-TV in Washington, D.C., has been using a TCR-100 cartridge video tape recorder for almost six months, we thought you might like to hear what they have to say about it.

1. "With this new cartridge VTR, one man can run the station, as far as on-air presentation is concerned...three or four taped commercials in a row is easy, because you just don't run out of tape machines."

2. "There's no degradation of quality in the cartridge tapes, even after more than 100 plays...I've been tickled to death with this 'cart' machine; it just sits there and works."

3. "The TCR saves us time during station breaks...We're actually logging 30% more promos since we got it. And we're starting to piggy-back our promos."

4. "I'd say the TCR-100 is a bigger advance over reel-to-reel VTRs than the audio cartridge was over reel-type audio recorders...

and reliability has been terrific."

5. "It can help sell prospects because it really gives the station more production time...and that's going to help us become the most cooperative station in town."

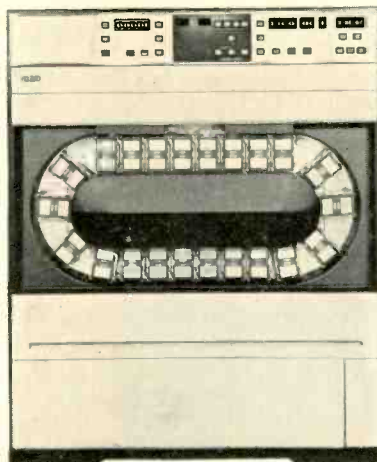
6. "We're changing our station's whole visual image. We're redoing all promos and slides...and the 'cart' machine is giving us the extra production capability to get the job done."

7. "The TCR-100 is the equivalent of at least three reel-to-reel VTRs...I frankly don't think any of our engineers would trade it for five regular video tape recorders."

8. "It's the world's best machine for programming commercials. They run so smoothly that we sold more national accounts."

9. "Our staff—Production, Engineering, Traffic, Promotion, Sales—is united in enthusiastic acceptance."

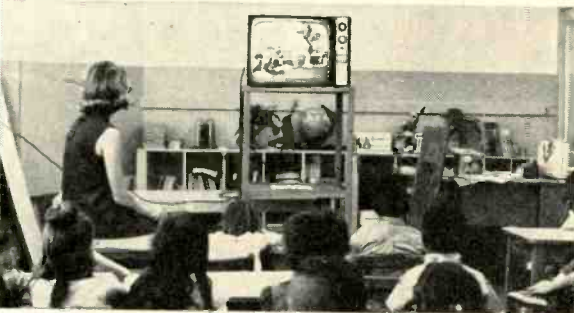
Thank you, lady and gentlemen.



Circle 114 on Reader Service Card

# RCA

# INSTANT TV INSTRUCTIONAL

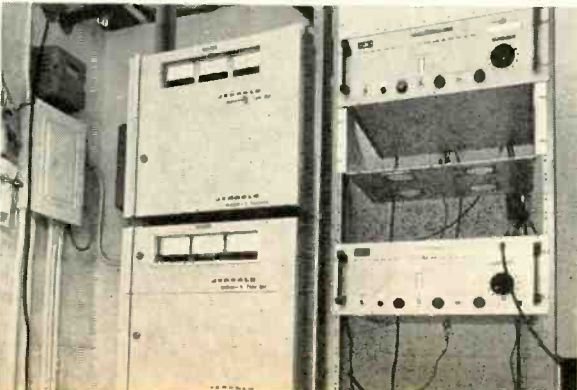


Above (top to bottom):  
In-service TV training uses two-way video. Nothing goes on that can't be viewed by everyone.

A rural school gets a Spanish lesson via TV.

Compact ITFS exciters (Jerrold units, center) fit into control panel. Boynton Beach ITV center shown here.

Below:  
Jerrold heterodyne repeaters at Loxahatchee are used to boost ITV signals.



TELEVISION IS HELPING the Palm Beach, Florida, county-wide school system to overcome its instructional inequalities. At the same time it helps solve district communications problems. Because of the region's unusual geography, this would have been nearly impossible to achieve economically without the electronic medium. Between one population center on the Atlantic seaboard and another at the western end of the county around the shore of Lake Okeechobee are 40 miles of swamps and farms.

A 2500 MHz Instructional Television Fixed Service (ITFS) system is able to provide communications and lesson materials over these distances and thus give special aid to disadvantaged children wherever they might live in the 2200-square-mile county. At present, eight channels are in use; ultimately there will be 12.

The system, with transmitters at three program origination centers and one repeater station, now reaches 72 of the county's 90 schools. All will be serviced by mid-1971.

During the past school year, more than 38,000 of the county's approximately 70,000 primary and secondary students received ITV lessons. Since some students receive more than one lesson per week, nearly 85,000 student lessons are logged each week on some 800 TV sets.

When funds become available, the system will be expanded to its full 12-channel capacity and reach the entire school population from kindergarten through twelfth grade. With the additional four channels, it is expected that compensatory work in reading, language arts, science and other basic courses can be done.

## In-service use and instant communications

ITV really proves itself by making in-service workshops all pervasive. Already, Palm Beach teachers have benefited from three system-wide in-service ITV workshops. One on linguistics involved 75 teachers in a two-week course. Another was a one-day workshop for 200 teachers in the use of 8-mm film. The third workshop, held this past summer, was a three-week course for 75 teachers to prepare them for undertaking a new reading program during the 1970-1971 school year.

For these workshops, two-way video and audio communications are provided.

Administrative communications is another role for the TV system. When racial integration problems came up last year, two-way TV question-and-



**The I in ITV at Palm Beach County could stand for Instructional TV, Instant TV, or In-service training TV. Put them all together into an ITFS system and you can wipe out instructional inequalities in a sprawling 2200-sq-mile district of 90 schools.**

answer dialogue between the administration and the teachers helped achieve understanding. Regular telecasts of this sort are planned for the 1970-1971 school year.

**Summer workshops via ITV saved money**

ITV can get much credit for making the 1970 Summer Reading Workshop successful. The workshop was important. The goal was to show elementary teachers how to become more effective in improving the reading skills of disadvantaged children.

Dr. Anne E. Hughes, a reading specialist from the Detroit Public Schools, was called in to direct the three-week program. A logistics and budgetary problem would have existed were it not for the ITFS system. No housing accommodations had to be arranged, no 100-mile-a-day travel allowances had to be paid.

The specific objectives of the workshop called for much teacher involvement. The two-way video capability of the Palm Beach system brought Dr. Hughes in direct contact with each teacher even though they were separated by as much as forty miles.

The desirability of a TV feedback system is obvious from a quick look at the objectives:

To involve all teachers in the actual—

1. Construction of a language-readiness inventory.
2. Study of a Reading-Skills chart to be used in diagnosing the reading difficulties of children.
3. Construction of an Informal Reading Inventory.
4. Administration of the Inventory and a standardized test to one child with whom the teacher will work on a one-to-one basis during the workshop.
5. Opportunity for the reading consultant to work with the teacher, criticizing the reading program developed by the workshop teacher.

Specific responsibilities of the teachers in the workshop included mastering the lecture content—involving reading methodology, materials, and organizational procedures for individualization of reading instruction. In addition teachers had to develop and construct teaching aids and to work with a child or children, showing their ability to use diagnostic techniques and materials.

The reading workshop included many demonstrations. For example, space and direction words, such as in—out—on—around—in front of—behind, take on real meaning for a child when body positions and placement of objects demonstrate

their meaning. Likewise, the child demonstrates his understanding of these terms when he is able to follow teacher instructions (written or oral) using these words. It is obvious that the TV media can be put to good use in enhancing these demonstrations.

During two-way video transmissions, split-screen techniques were used. The result was a remarkable feeling of nearness and immediacy according to Dr. Hughes. "I could look at and call on a person by name 40 miles away because I could read her name tag," said Dr. Hughes. "No one dared doze off." After the experience, Dr. Hughes feels that two-way video is the greatest thing that could happen to in-service TV training.

During a normal school term, 38-40 lessons are televised to classrooms every school day. The board is in the process of creating a rich library of videotaped lesson material which can be used over and over again. Already more than 1,400 lessons are on tape. Six new lessons are taped every day, according to William Phillips, Director of Learning Resources.

The library includes six basic "sequence" lesson series for the various elementary learning levels. Each of these series is composed of 36 15- to 20-minute lessons on a gamut of learning—living subjects. For each series teachers get an instruction manual.

Other ITV courses available in the Palm Beach library are:

- "Americans All"
- Art ("Seeing through Art" and "You and Eye")
- Business Education ("Office Careers")
- "English Potpourri" and "New Generation English"
- Health ("All about You")
- Music
- Phonics ("Sounds to Say")
- Political Science ("Florida—from Exploration to Exploration" and "The Communists")
- Spanish
- Speech Improvement
- "Storytime"
- Word Study ("The Wordsmith")
- World Events ("Places in the News")

Some of the ITV lessons are leased but most are produced by the Palm Beach Board. The system also carries programs from a Miami ETV station plus three Miami as well as two Palm Beach commercial stations. The system has the right to tape and delay-broadcast some programs of two of the three national networks.

The lessons are telecast on a regular 8 am to 3:30 pm schedule Monday through Thursday. Fridays are "random access" days when any of the previous days' taped lessons or available films

*Continued on page 58*

# Using ITV To Cut Instructional Costs

Rochester's (N.Y.) City School District had used TV for seven years—for enrichment, some direct instruction (typing, primary music), in-service teacher training, and as a means of communicating with parents and the community. It was well received by elementary teachers. Yet when budgets had to be cut for the '69-'70 year, TV got the ax. ITV simply has not proven itself as essential.

But the deepening financial crisis facing the city schools made some think that TV could be used to lower instructional costs by maximizing the use of human and technological resources. A grant from the Bureau of Mass Communications, New York State Department of Education, was obtained to reassess TV particularly as a cost-effective method of teaching. This article highlights what was learned.

**Rochester experiment points up promises and problems of substituting TV and classroom aides for teachers. Existing TV materials are inadequate.**

COULD THE SAME NUMBER of teachers serve a greater number of children through the use of television and teacher aides? During March of this year a two-week demonstration project was conducted by the 19-member Central Television Project Committee of Rochester to make this decision.\* The verdict—a qualified yes. But if direct TV teaching is to work, new and additional

\*An Evaluation of a Two-Week Demonstration Project on Human and Technological Resources in Learning, April 1970, City School District, Rochester, New York. Copies available from Raymond W. Graf, Supervisor, Educational Television, The State Education Department, Albany, N.Y. 12224

## STUDENT SCHEDULE—GROUPS 1 and 2 MARCH 9-13

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:45	ATTENDANCE AND OPENING ACTIVITIES				
	READING				
			LANGUAGE ARTS (Teacher directed activity)		
	MATHEMATICS				
10:55			VALUES SEMINAR (TV and Aide directed activity)		
11:30					
12:00	LUNCH	←————→			LUNCH
12:10	TV SOCIAL STUDIES				
12:40					
1:10	TV BASIC SKILLS				
1:30	TV RECREATION TIME				
	ART	MUSIC TV GIRLS	PHYS. ED. GIRLS	MUSIC TV GIRLS	PHYS. ED. GIRLS
2:00		Phys. Ed. Boys	Music TV Boys	Phys. Ed. Boys	Music TV Boys
		(Break—children return from gym)			
2:10		TV SCIENCE			
2:45					



programs are necessary. So before TV teaching can really cut costs, some big money will have to be spent on better productions. And before such a commitment can be justified, there has to be an indication that other schools will buy the product.

The State Education Department is researching this possibility right now with school districts throughout New York State.

Although the need for better programs is very apparent, there are a number of other unresolved questions raised by the Rochester demonstration: How can you use teachers best? Exactly what are the purposes of the teacher aides and how should they be prepared? How can you get better coordination between television segments and pupil activity? How do you make allowances for individual differences, for greater flexibility? What is the proper pacing of concepts via TV?

Despite the lack of any definitive answers to these and two dozen other questions, raised by evaluators, Supervisor for Educational Television of the N.Y. State Education Department, Raymond Graf, feels there is ample evidence to indicate that TV could take over about half of the present instructional load thus permitting the classroom teacher to roughly double her student load. The resulting savings in professional salaries of certified teachers compared to that of teacher aides makes the television-teacher aide approach cost-effective.

Although some popular and highly praised ITV programs did bomb in Rochester, students generally found TV instruction more interesting than conventional teaching. Students also felt TV made some subjects easier to learn—art, science and social studies, for example.

### The demonstration

Four groups of fifth-grade children were involved in the Rochester demonstration which lasted two weeks. Each group of students received instruction via television for approximately two hours and 35 minutes a day. During the TV session, teacher aides were present. Two of the groups got their TV instruction in the morning, the remaining two in the afternoon.

When the students were not in the TV-equipped room they were in their regular classrooms receiving instruction from one of the two fifth-grade teachers participating in the demonstration. Each teacher had one group assigned to her in the morning for two hours and 10 minutes and another group in the afternoon (for a total teaching load of four hours and 20 minutes). The teaching schedule permitted a 35-minute conference and planning period between groups. The teachers provided instruction in reading, language arts, and mathematics.

The TV block consisted of two segments: 1) TV instruction (two hours) in social studies, basic skills (reading and math), art, music, health and science; 2) a values seminar (35 min-

**Table 1**  
Student Comparison:  
TV instruction vs. normal instruction

Subject	INTEREST					
	More interesting 5*	4	Same	Less interesting 2	1	No answer
Art	42**	8	20	1	12	3
Basic Skills	22	13	20	12	15	4
Health and Safety	22	22	24	6	7	5
Music	7	9	20	15	29	6
Science	54	13	4	1	11	3
Social Studies	29	15	11	9	19	3
Totals	176	80	99	44	93	24

Subject	DIFFICULTY					
	Easier 5*	4	Same 3	Harder 2	1	No answer
Art	40**	10	25	2	4	5
Basic Skills	27	19	18	10	8	4
Health and Safety	24	21	26	5	5	5
Music	22	8	25	8	19	4
Science	50	13	8	4	8	3
Social Studies	28	13	12	4	27	2
Totals	191	84	114	33	71	23

\*A weight of five represents the most interesting or easiest; a weight of one the least interesting or hardest

\*\*Number of students responding.

**Table 2**  
Popularity of Courses: Regular and TV

Subject	Most enjoyable or interesting		Least enjoyable or interesting		Easiest to learn		Hardest to learn	
	Regular program	By TV	Regular program	By TV	Regular program	By TV	Regular program	By TV
Art	51	9	6	6	17	27	0	1
Basic Skills	9	7	21	19	16	13	18	25
Health and Safety	3	3	8	6	12	4	5	8
Music	10	4	18	39	18	15	4	1
Science	6	42	9	2	14	17	17	13
Social Studies	7	21	24	14	9	10	39	35
No answer	0	0	0	0	0	0	3	3
Totals	86	86	86	86	86	86	86	86

utes) consisting of a TV film followed by class discussion under the direction of teacher aides. The full schedule for groups 1 and 2 is illustrated. (Groups 3 and 4 began the morning with TV instruction, then moved to phys. ed. or music. After lunch they got regular teacher instruction for two hours and 10 minutes and ended the day with the 35-minute values seminar.)

### Student evaluation

Although teachers and supervisors at Rochester have many reservations about TV teaching, as will be noted shortly, the students liked it. In a direct comparison between TV instruction and regular teaching, students ranked TV more interesting for five out of the six subject areas—

art, basic skills, health and safety, science and social studies. Only music was dull on TV.

A clear majority of students also thought the TV-presented subjects were easier to learn in every instance except for music. Social studies did draw a mixed reaction since almost as many students found the TV lesson hardest as found it easiest. See Tables 1 and 2.

Actually student support for TV was even more emphatic than the two tables indicate. Before commenting on TV versus regular instruction, students were asked to rate all six subjects for relative interest and ease of learning as they had been conventionally taught. Only art was enjoyable to the vast majority. When asked about the TV lessons given during the demonstration, science and social studies scored high indicating TV could drastically alter a student's interest in a course. See Table 2.

In response to the question on *how much* they thought they learned via TV, students split three ways—one third said more, one third said the same, and one third said less. When asked if they would like teaching by television to continue, 49 said yes, 29 said no. Comments on this question suggested that those who wanted to discontinue television were particularly concerned about students messing up their desks while they were in another room and that they missed their regular teacher.

On the negative side, as many as 30 out of the 86 students thought student behavior was worse during TV presentations—a matter of great concern to the professional evaluators who deem control essential.

### Teacher's view of learning

Both of the teachers involved felt that two hours was insufficient to teach the basic skills. They also felt the afternoon was a poorer time to teach these basic skills since youngsters were more restless in the pm. Both felt there was too little time for individual help.

One teacher, however, liked the efficiency of working with two groups and felt that the planning time available between classes to sharpen her presentation was preferable to doing individual tutoring. The other thought the schedule too tight and preferred having only one group all day because of the greater flexibility such an arrangement offered. This teacher also missed teaching some of the enjoyable subjects assigned to TV. She preferred the conventional approach.

The team of six observers, who monitored (via CCTV) the television instruction on three different occasions during the two weeks, were concerned with class attentiveness, control, rapport (between aides and students) and seating arrangements. Only the latter turned out to be no problem.

Attentiveness was generally considered good except when there was too much TV talk—which

*Continued on page 56*

## ITV Program Log

### 1st Tuesday Day 2

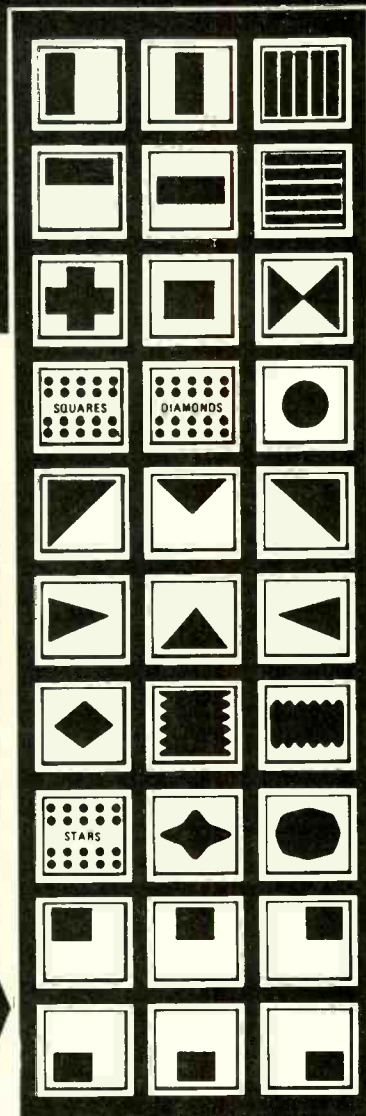
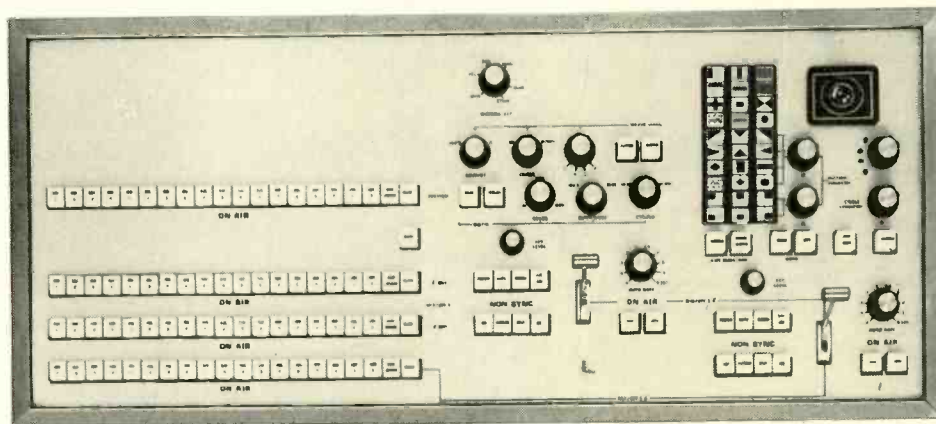
Tape Time	
9:58:09	Hello, with music
9:58:34	Salute & opening
0:00:00	Opening to Social Studies "California"
0:00:33	Ferd J "talking"
0:01:22	Katy intros Josh
0:01:33	Josh Opening
0:02:28	Film
0:04:27	1 min Pete spot—History
0:07:18	1 min Pete spot—Crosscut saw
0:13:58	1 min Pete spot—Imports people—grizzly bear
0:15:32-15:57	Pete—Intro to Josh
0:15:57	Josh—Pass out Soc. Studies folders
0:16:02	"Pass out folders"
0:17:02	Josh—Intro to study guides
0:17:21	"Work on study guides"—sign over slide
0:28:20	½ min to go—Josh
0:28:28	"Work on Study Guides"
0:28:57	Josh close of Soc. Studies
0:29:00	Pass in Folders
0:30:00-0:35:00	Basic Skills Intro Katy W243
0:35:00	Pete #1
0:35:15-0:39:58	Patterns in Arith #58
0:39:58	Pete #2 15 sec W210
0:40:13-0:42:48	Patterns in Arith #58
0:42:48-0:43:03	Pete #3 15 sec W210
0:43:03-0:48:41	Patterns in Arith #58
0:48:41-0:49:03	Basic Skills to Individ Study W243
0:49:03-0:54:03	Individual study work time
0:54:03-0:55:45	Basic Skills Answers W87
0:55:45-0:58:43	More Work
0:58:43-0:59:00	Basic Skills Close W243
0:59:00-1:00:00	Pass in Study Materials
1:00:00-1:00:28	Reaction Time Intro
1:00:00-1:00:28	Reaction Time Intro W243
1:00:28-1:19:33	Electronic Patterns
1:19:33-1:20:00	Intro to Music
1:20:00-1:20:30	Music Heritage
1:20:30-1:21:30	Katy Music Intro to Mrs. Hamilton
1:21:30-1:43:06	Music Heritage 8 Spirituals
1:43:06-1:49:37	3 Questions asked by Katy with time to answer
1:49:37-1:49:50	End of Music—Intro to Sneaker Time
1:50:00	Sneaker Time—effects with music
1:59:10-2:00:00	1 min warning—Katy
2:00:00	(For Pass out Folders) Katy
2:01:00	Science Program #1 Intro.
2:03:27	Science Mrs. Hallick
2:06:29	Adamus W241
2:09:11	Science Film "What's Inside The Earth"
2:23:11	Adamus W241 closing
2:30:15	Katy—Pass in envelopes—intro Mr. Wizard
2:31:15	Wizard W237 Boy & center of gravity
2:33:31	Pete closing!!
2:34:39	Katy closing



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Smallest cartridge-loading video recorder to date is Ampex Instavision player, in foreground.

## *The Video Playback Race*

**There are 12 entries in the race to capture the ETV, ITV, cablecasting, and home video-playback markets. Three systems are off and running, four are warming up in the pits, and five are still in the garage. Who will come in first depends on many factors.**

SEVERAL YEARS AGO, someone discovered a new electronics market—the mass production and distribution of video material in education, industry and the home. Schools eat up video lessons, industrial training uses similar material—and what if you could buy or lease a movie and watch it in your living room?

At first, Super-8 or 16-mm film projected on a home-movie screen seems the least expensive and most convenient solution. Indeed, in the educational, industrial and consumer markets, a certain amount of film is used. But threading a projector is a hassle for those who are all thumbs. Besides, in most schools there are more TV receivers (or monitors) than movie projectors. And nearly every private home has a TV set, but few have movie projectors.

When the helical VTR appeared in the early 60s, some thought it the electronic answer to home movies. It certainly has caught on in ETV, ITV, and CCTV. But threading a VTR is as difficult as loading a projector, or worse.

In the prerecorded audio tape field, cassettes and cartridges have made a hit with laymen, because you can load them easily in a second or two. If it'll work with audio, why not video?

It will—and a dozen firms have invested time and money in their versions of encapsulated video systems. Two approaches have been taken: playback only, and record-playback.

### **The playback-only machines**

Earliest runners in this field were the plastic

film/tape systems, followed by the photographic film systems. Last to announce was the plastic video disc.

CBS Labs broke open the market with a black-and-white version of EVR (electronic video recording) in 1968. They updated to color in 1970. An important point is that CBS Labs retains recording equipment, and will not sell or lease to others. Thus you have to go through the CBS input to get your lesson or program on EVR.

EVR converts any input—live or taped video or film—to special 8.75-mm film, putting on images with an electron-beam recorder. The film is packaged in a self-threading seven-inch cartridge. Playback is on a CBS-licensed, Motorola-built teleplayer which delivers rf to air on ordinary TV receiver antenna terminals. The system includes twin audio channels, slow-motion and still-frame action.

CBS and 20th-Century Fox have agreed to transfer movies to EVR five years after their theatrical release. Motorola has an order for 600 teleplayers for the National CATV Program Library, for CATV systems to use EVR films on local cablecasting channels.

### **Holograms**

RCA's SelectaVision was first shown in 1969 with a B&W picture that was only fair, and no audio. Now developmental, SV is expected to have color and sound, and be on the market by 1972. Live or taped video is encoded: Luminance is in the area 0—3 MHz; blue is a 0.5-MHz band at



3.5 MHz; red a 0.5-MHz band at 5 MHz. The encoded signal is then put on 16-mm film by an electron-beam recorder. This master film and a laser are used to make a nickel master hologram. The nickel master is used to print inexpensive vinyl tape hologram copies.

#### Film and disc

Using photographic film seems a regression, but the three systems involved here use film cartridges for simple loading. None of the three—German Nordmende, American Sylvania, British Vidicord—is making any visible effort at this point.

The most recent entry in the field is the plastic video disc developed by a combination of German Telefunken and English Decca. Not a magnetic disc, it's embossed like an audio LP.

#### The record/playback systems

A conventional reel-to-reel helical VTR is difficult for laymen to thread. That may be one reason Arvin hasn't gone anywhere with its reel-to-

reel longitudinal system, which has been shelved for more than a year.

But what about a video cartridge or cassette system, encapsulated and self-threading? It could compete with the film systems and it would have the additional advantage of allowing the user to record what he wants—off-air or from a camera.

Panasonic's videocassette was shown in November 1969. It uses two reels in a package, 1/2-in. tape running at 7.5 inches, and is thus compatible with Panasonic reel-to-reel VTRs, but with no others. The cassette player furnishes rf to TV antenna terminals.

Sony's videocassette was also shown in late 1969. It uses 3/4-in. tape running at 3.15 inches and is noncompatible with all other helical VTRs, even Sony. There are twin audio channels.

The third entry—Cartrivision—was shown in mid-1970, and is a development of Cartridge Television Inc., subsidiary of Avco Corp. Admiral Corp. is partner in the venture, and will produce the TV receiver-player combination. (A player-only version is available for use with existing receivers.) CTV uses 1/2-in. tape running at 3.8

### Video Playback Systems: A BM/E Instant Summary

System	Status	Capability	Equipment cost	Recording Medium cost	Picture quality	Playback transducer	Maximum playback time
<b>Plastic film/tape</b>							
CBS/Motorola EVR	In production	Playback only; color, B&W	\$795	Moderate	Very good	Flying-spot scanner	25 min. color 50 min. B&W
RCA SelectaVision	Developmental	Playback only; B&W	\$400 est.	Low	Fair	Laser + vidicon	30 min.
<b>Helical video tape</b>							
Panasonic (cass.)	Marking time	Playback color, B&W; record B&W	\$400	High	Good	Tape head	?
Sony (cass.)	Marking time	Playback color, B&W; record B&W	\$400—550	High	Good	Tape head	100 min.
Avco/Admiral Cartrivision (cart.)	In production	Playback color, B&W; record B&W	\$400—500	High	Good	Tape head	120 min.
Philips VCR (cass.)	Developmental	Playback color, B&W; record B&W	\$500—600 est.	High	Good	Tape head	60 min.
Ampex Instavision (cart.)	In production	Playback and record color, B&W	\$800—1000	High	Very good	Tape head	30 min. std. play 60 min. ext. play
<b>Longitudinal video tape</b>							
Arvin (reel-reel)	Marking time	Playback color, B&W; record B&W	?	High	Good	Tape head	?
<b>Disc</b>							
Teldec	Developmental	Playback only; B&W	?	Very low	Very good	Phono cartridge	12 min.
<b>Photographic film</b>							
Nordmende	Developmental	Playback only; color, B&W	?	Moderate	?	Flying-spot scanner	?
Sylvania	Marking time	Playback only; color, B&W	?	Moderate	Very good	Flying-spot scanner	?
Vidicord	Developmental	Playback only; color, B&W	\$900	Moderate	?	Flying-spot scanner	45 min.



Avco Cartrivision plans rental video cartridges by February 1971, including feature films, documentaries and shorts.

## Picture resolution and limiting factors

Amidst the confusing claims of the various video playback systems, one fact is often overlooked: Picture resolution is limited by the U.S. television system standards, which prescribe 525 lines, 60 fields, and 4.2 MHz video bandwidth. For example, here are picture resolution figures for various media:

Medium	Vertical lines	Horizontal lines
35-mm color film	1000	1000
16-mm color film	490	490
B&W TV	350	320
Color TV	350	280
8-mm color film	230	230

Note that these figures are for TV signals fed through the antenna terminals of a receiver. As long as the video player must work through the bottleneck of the rf tuner, a high-resolution playback medium—whether plastic film/tape or photographic film—produces little or no improvement in resolution of the TV picture.

In addition, very few TV sets are properly set up, with the following results:

- Imperfect i-f alignment reduces horizontal resolution.
- Over- or under-peaked video amplifier stage reduces horizontal resolution.
- Misadjusted vertical hold control causes horizontal line pairing (imperfect interlace), reduces vertical resolution.

Hence in practice it's not uncommon to find horizontal resolution of less than 250 lines. Even a high-quality 35-mm film looks poor on such a set.

There is a solution to this problem, however. If the video playback machine has a wideband video amplifier and pickup device—say, 8 MHz or so—it can be fed as direct video into a professional monitor which has been carefully set up. Jeeping a receiver (bypassing the rf and i-f sections and driving the video amplifier direct) is not only a sticky hassle, it usually doesn't work. Many TV receivers are designed with fairly narrow video amplifiers, for economy. But feeding direct video from EVR to a professional monitor could produce a picture with resolution.

in./s, a noncompatible format.

Avco has considerable software backing, including subsidiary Embassy Films, British Lion Films, possibly United Artists and Grove Press. Proposed home-audience offerings include such nonbroadcastable movies as "I Am Curious (Yellow)," "Art of Marriage" and "Hold Me While I'm Naked." The company says it will have 500-600 movies on cartridges ready for distribution by February 1971.

Cartrivision plans to sell blank carts, also rent recorded versions. Blank carts will cost \$10 for 15 minutes, \$25 for two hours. Recorded carts are to sell for \$8-\$25, with rental \$3 and up. An important point: Rented carts can't be rewound by customer, who must return them to retrieve his cash deposit.

Next is the Philips VCR (video cassette recorder), which hasn't been seen in the U.S. yet. It uses another noncompatible format: 1/2-in. tape running at 5.6 in./s. The deck is said to include a timer and inbuilt TV tuner. Market date: '72.

Ampex Instavision is the newest packaged videotape system in the race. It uses 1/2-in. tape in a format compatible with the Japan EIA Type 1 helical standard for black-and-white (1/2-in. tape, at 7 1/2 in./s). Thus tape from an Instavision cartridge can be found on a Type 1 reel and played on a Sony reel-to-reel VTR, or any other using Type 1 format.

The Instavision player furnishes rf or video/audio to TV receiver or monitor. Important point: This is the only videotape system in the field which can record color. The record-playback unit and companion B&W camera (with electronic viewfinder) are portable, battery operated. The R/P unit plugs into an ac-powered base for stationary operation, color playback, and color record—from any NTSC source. Extended-play mode is also possible, doubling time at slight reduction in resolution. Other features: Fast forward, rewind, auto-search mode, slow-motion, stop-action, twin audio tracks, and indexing—which lets you go back to a certain point on the tape. Currently, Ampex has no plans to produce its own software.

### Duplication ease and cost

There are differences in the various video media by cost and ease of duplication of recorded movies and other programs.

- Lowest in cost at this point, seemingly, are SelectaVision and the video disc. However neither has color capability nor is ready for the market today. Furthermore, the SV recording process is an incredibly complex multi-step process, and the playback gear includes a laser and a vidicon, which are bound to run the cost over RCA's optimistic \$400 estimate.

- Moderate cost is tagged to EVR and photographic 8-mm film. Both have color and EVR, at least, is on the market.

- That leaves video tape, which has highest cost and takes most time to duplicate at present. But 1-to-1 tape duplication hurdle is being jumped



rapidly: Avco's Cartridge TV Inc. says it will use high-speed tape duplicators to produce recorded carts. Panasonic and IBM have developmental helical tape duplicators. Ampex is ready to deliver a broadcast (quadruplex) duplicator, thus isn't far from a helical version. Memorex, 3M, and DuPont are working on a still newer thermal-transfer process, which promises a throughput of 30:1.

Videotape will probably continue to cost more than other media. But once tape duplication can be done as fast (or faster) than other systems, it will probably gain competitive edge because it's the only medium which is reusable. Other media are actually more costly (except where permanent, non-erasable record is desired).

Furthermore, with exception of 8-mm film, videotape is the only medium on which the consumer can record, since CBS EVR won't permit, and SelectaVision and the Teldec video disc systems are probably too expensive for the low-budget market.

#### The compatibility bugaboo

As is well known, in the open-reel helical VTR field, no two machines use the same format (*BM/E*, April 1970, page 48). The first effort to avoid a similar mess in video cassettes came in March 1970, when Sony announced an agreement with seven other firms to cooperate on a standard video cassette system: Panasonic, Nippon Victor, Telefunken, Grundig, Zanussi (Italy), Philips (Netherlands), and North American Philips.

But by September 1970 Philips had made agreements with five companies to standardize on its VCR format. The companies are Blaupunkt (Bosch), Loewe Opta, Grundig, Telefunken, and Zanussi.

Confusing the issue are two more items: Telefunken is a partner in Teldec, and Zanussi is—in addition to being part of the two above agreements—a licensee of the CBS EVR system.

Whether or not we'll ever have a standard packaged video system is still anybody's guess. Even Ampex is still alone in using the Type 1 format for a cassette.

#### Record vs. playback

In the ETV, ITV and cablecasting fields, recording capability is an advantage for any video system. That gives video tape the edge over the other media. But tape has less of an advantage for the home consumer.

To record off the air, the TV receiver must be carefully adjusted and receive a clear signal from the antenna or cable. Many home TV receivers aren't so carefully adjusted. Of course the Philips VCR is said to include a TV tuner, which presumably will be carefully adjusted. If a consumer uses a CATV feed, he ought to get good video.

Recording from a live camera is no hassle for ETV, ITV and cablecasters. But home consumers will probably limit their live taping to B&W, since the lowest-price color camera is \$1000. *BM/E*



1 Model OIB-1 Operating Impedance Bridge measures "in circuit" impedance of networks, transmission lines and antennas. Accuracy  $\pm 2\% \pm 1 \text{ Ohm}$  5 kW Power rating-VSWR 3:1.



2 Model CPB-1 Common Point Bridge measures resistance to  $\pm 2\% \pm 1 \text{ Ohm}$  and reactance to  $\pm 5\% \pm 1 \text{ Ohm}$  at full power.



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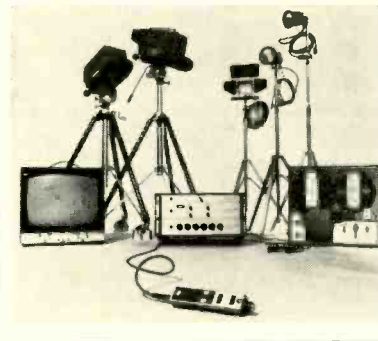
## Video Specialties

**Color calibration slide for tele-cine chain**, 3.75 by 4 in, used as a film system alignment tool; features new Eastman crossed-step grey scale to help get best possible reproduction of color films. Inconel model light modulator, specially packaged for mounting at field lens—only common point of focus for all film projection sources. Slide is made of glass "on which seven progressively denser steps of Inconel alloy are deposited in two parallel rows," producing waveform which is simple pattern of crossed steps, easily noticed so operator can adjust controls correcting transfer characteristics, projector color balance and inter-channel tracking. **EASTMAN KODAK. 276**

**CCTV and CATV one-man studio system** combines the work of director and cameraman in small control unit which handles all



details of videotaping—allowing setup and switch from camera to camera every 20 seconds. Rest of system includes half-inch videotape recorder and control center (housing EIA sync generator, special effects generator and audio mixer), 19-inch monitor, two Hand Command viewfinder cameras, with customized tripods. Standard accessories: zoom lenses; three-unit quartz light kit for key, fill and back lighting; two dynamic low-impedance lavalier mikes with auxiliary stands; and an instructional videotape on techniques of the system's operation. Price with options: \$10,680. **DIAMOND POWER. 275**



## BROADCAST

# EQUIPMENT

### Audio equipment

**Wireless mike system** for educational



use consists of model 506 teacher-worn, battery-powered mike, and receiver module which mounts in model 502 master control center. With frequency range of 100 channels, transmitter includes inbuilt peak limiter and pre-emphasis network, can operate for seven hours on nickel-cadmium battery. **ATA Div. SKINNER INDUSTRIES. 293**

**Stereo headsets** have freq resp 20 Hz to 22 kHz, distortion less than 1%, sensitivity 105 dB at 1 kHz with 1 mW input. Model 100A, 17 ohms; model 103A, 300 ohms; model 106A, 600 ohms. **DAVID CLARK. 290**

**Turntable** has continuously variable speed from 25 to 100 rev/min. Model CVS-12 is 15 × 6 × 16 in, is available separately or with custom base, tone arm and cartridge. Cost is \$169.50 for turntable, \$225 for system. **REK-O-KUT. 291**

**Dual mike preamp** on single PC card, model AM220, has balanced transformerless input made possible by use of op amps. Gain is 45 dB, but may be reset to 20 dB. Eliminates distortion, phase shift, size and weight of transformer. **MELCOR. 292**

**Amplifier-speaker system** for control-room monitoring has bridging input (20 k) and 50 watts output, with two reproducers in sealed enclosure. Freq. resp ±5 dB from 20 Hz to 15 kHz, price \$399. **SCHAFFER INTERNATIONAL. 294**

**Electret condenser mikes** are omnidirectional with freq resp of 50-

16,000 Hz. **ECM-50** is tie tack or lapel mike, less than ¾ in. long, weighs under 1 oz. Battery, transformer, output connector are in separate package on 10-ft. cable. **ECM-51** is telescopic wand for interview and actuality news use. Price for each is \$195. **SONY SUPERSCOPE. 295**

### Tape gear

**Stereo reel-to-reel recorder/reproducer** has three drive motors and two solenoid-controlled capstans, speeds of 3¾, 7½, 15 in/s. Model 1000 is capable of four-track record and eight-track playback, is available in panel mount, portable, and studio console versions. **TAPE-ATHON. 301**

**Stereo reel-to-reel recorder/reproducer** has automatic program scanner, locating recorded material by sensing foil strip. Model 850 uses fast forward to find material, then reverts to play mode for reproduction. Has 3¾, 7½ and 15 in/s speeds, handles two-, half, and quarter-track tapes, closed-loop dual-capstan drive, automatic shutoff, sound-on-sound and echo, and wow and flutter of only 0.03% at 15 in/s. Price \$775. **SONY SUPERSCOPE. 302**

Line of **recorder/reproducers** features both four-track and two-track stereo capability. Model TCA-40 is quarter-track, two-channel stereo playback, and four-channel inline stereo playback, with quarter-track two-channel erase and record heads. Has automatic reversing, costs \$365. Model TCA-41 has two- and four-channel playback, two-channel record, may be modified for four-channel record, costs \$535. Model TCA-42 (shown) has two- and four-channel record and playback, automatic reverse for two-channel operation, costs \$695. **TEAC. 303**



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 R—Religi  
 I—Instru  
 S—Sport  
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SOURCE

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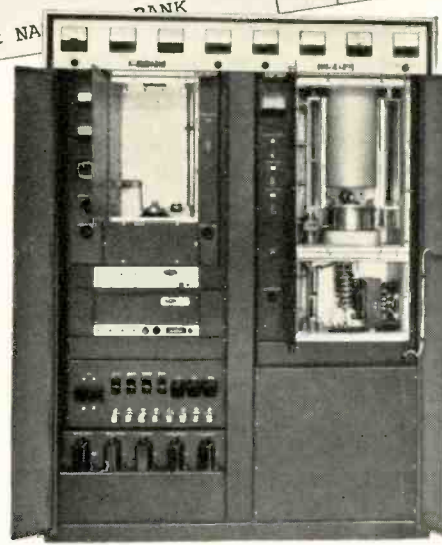
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*Barry Neil Dixon*

Time On 6:30 AM Time Off 10:10  
 Time On 10:00 AM Time Off  
 Time On Time Off

ON OFF TIME	PROGRAM TIME		PROGRAM TITLE-SPONSOR	SCHEDULED LENGTH	
	ON	OFF		COMMERCIAL MIN. SEC.	NON-COM'L MIN. SEC.
30	6:30	6:59:30	WAKE-UP (PART 1)	1	30
			Harewick Carpets Cancer Spot Deal Shoes XMITR ON 6:54:10 XMITR OFF 6:37:29		
5:59:30	7:00	7:05	NEWS	1	
	7:01	7:02	1st NA		

# the end of unscheduled sign-offs!



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**Cassette tape** has extended freq resp, virtually flat from 50 Hz to 10 kHz, and improved S/N ratio. Type C-90 blank tape cassette is made with gamma ferric oxide and new tape surfacing process, with eight times greater density of magnetic particles and reduced print-through. Cost of cassette is \$3.59. TDK. **304**

**Tape deck** uses B-Type Dolby noise reduction system, adding 10 dB S/N ratio to record-reproduce system. Model 200 has selectable bias, record and playback equalizations for conventional low-noise tape. TDK and similar tapes, and chromium dioxide tape. Single VU meter is used with circuit which monitors both stereo channels and displays higher-level one. Price is \$250. ADVENT. **305**

## Rf equipment

**Detector/dc amplifier** has freq resp of ±0.5 dB 10—300 MHz, minimum gain of 26 dB, return loss better than 20 dB, maximum input level +28 dBmV, power supply 1.5-V battery. Has separate connector for marker generator input. COLTRONICS. **355**

**Linear amplifier**, type LA-40KA, provides 40 kW PEP, 20 kW CW, between 3 and 30 MHz. Frequency changes are made with minimum time, effort, or amplifier is available with five preset frequencies. Remote control option. AEL. **356**

**Uhf preamplifier** covers TV channels 14-83 with gain of 23-26 dB and noise figure of 6.5-7.5 dB. Model DSU-105 has output capacity of +40 dBmV for three channels at -46 dB crossmod. Impedance 75 ohms in and out; mast mount pre-amp, indoor mount power supply. Price \$150. JERROLD. **357**

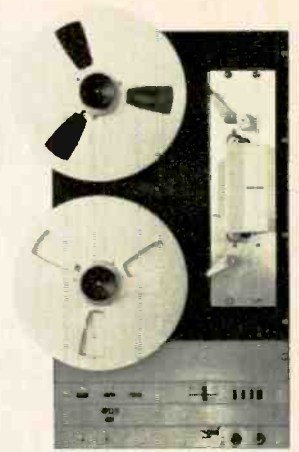
**Rf power amplifier**, model 230B, covers 10-500 MHz in six continuous ranges, has up to 30-dB gain, power output 4.5 W, typical noise figure of 6-9 dB. Output level monitored by voltmeter, and circuit automatically reduces gain when maximum level reaches 30 V level. Designed for use with signal generators in testing. Cost \$1190. HEWLETT-PACKARD. **359**

**Uhf two-way radio line** includes model M5 mobile station, 5 W; model F5 base station, 5 W; remote base station model FR5, 5 W; model SF1 hand-held portable, 0.2 W dc power input. All work range 450—470 MHz with 25 kHz channel spacing. Line is made in England by Star, handled in US by ITT. **360**





## Put it all together with our ABR series broadcast recorders



Now you can get a tape recorder that fits the exact demands of your station. With our ABR series, the choice is yours. Install as much or as little reproducer or recorder/reproducer as you need. You'll have a broadcast recorder put together the way you want it, not the way someone else thinks it should be.

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From Ampex you expect more than just design flexibility. And you get it. Every ABR comes with Ampex quality and experience. Quality and experience that provide a combination of features and easy maintenance found in no other broadcast recorder.

Servo-controlled capstan motors for constant capstan speed—standard. Servo-controlled reel motors that spell exceptional through-the-reel timing accuracy (our conservative engineers specify  $\pm .08\%$ )—standard. "Joystick" control for fast forward/reverse tape search and cueing. Fast start/stop. Digital tape counter. An uncluttered design so neat that rack-mounted electronics and control modules are each only 1¾ inches high. All standard!

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# If Viscount Video's new-generation routers made sense for MOL— maybe you should take a look...

(after all, we designed them for you in the first place)

When Viscount developed routers incorporating "IsoSwitch" solid-state intergrated crosspoints, we knew we had a breakthrough in simplicity and rugged reliability.

First we found we could eliminate expensive plug-ins and sockets and rely on the intrinsic reliability of the components. Second, we no longer needed one selector per crosspoint. Now we only needed one per input and one per output . . . and one control wire for each input bus and one for each output bus.

"At last," we said, "we'll be able to offer every school . . . every industrial user . . . every TV-oriented institution of **any** size, the type of simple, low-cost, push-button circuitry that's been built into giant computers. Truly, a space-age breakthrough."

Guess who heard about it before we even had a **chance** to talk to you? A prime U.S. Air Force contractor. "We'll need this kind of simplicity and dependability for the Manned Orbital Laboratory launch complex", they said. And they asked us to supply them.

Naturally we were very proud. But the point is . . . these routers were really designed with **you** in mind . . . not MOL. So may we send you more information on VVS routers? (When you find out how reasonable priced they are you'll also have new respect for the Government's ability to get full value for a dollar).



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(Dealerships established in Europe and the Far East)

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## News

Continued from page 10

### NAEB '70 in Washington, D.C.:

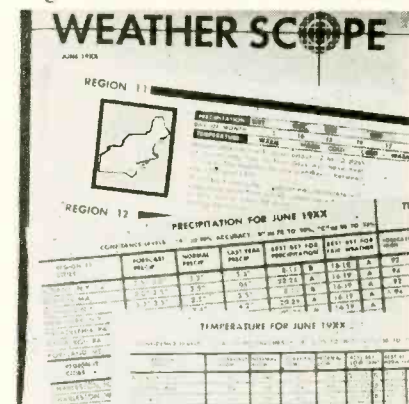
Some of the big exhibitors won't be there—like RCA, GE & Sarkes-Tarzian—but plenty of others will. Sessions will cover the "broad spectrum of challenges" educational broadcasters face. Speakers will include the NPR's Don Quayle and, of course, Dean Burch.

"A complete creative center for automated radio" is what the president, Edward J. Peters, calls his new corporation. Peters Productions, Inc. (San Diego), will "create and produce program formats for automated radio stations throughout the country," and its service will include: music tapes, media promotional campaign, sales promotional materials, market analysis and lots of other goods. Vice president is Paul Schafer.

### "A cinema-television concept/production group"

is the description given for another new firm. This one is located in the Philippines (Manila) and plans productions that "run the gamut of the audio-visual scene." President is A. J. Perez.

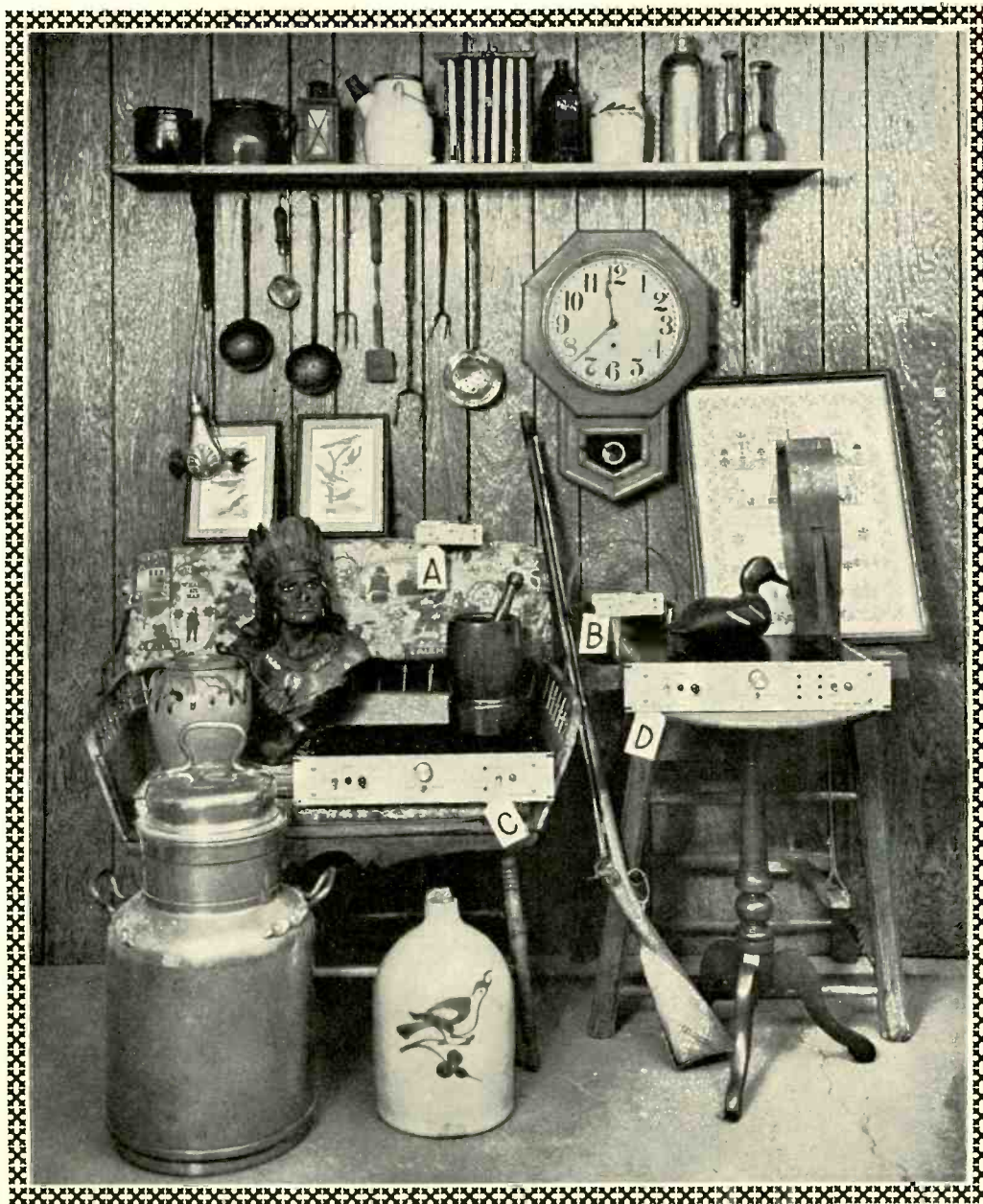
**WEATHER-SCOPE** is the name of a new service from Irving P. Krick Associates, published by Lakewood Publications (Minneapolis). It's a monthly packet providing "a detailed guide for planning weather-sensitive events three



months in advance." For \$36 a year (cancellable at any time) you get temperature and precipitation predictions for over 70 cities and the entire continental U.S., charted and interpreted, based on day-to-day weather data from 1899 to the present. Meteorologist Dr. Krick calls his method the "5th generation of weather forecasting."

**VTR head life was doubled**, from 225 to 450 hours, by Bill Canora, chief engineer at WHNB (Hartford), using a clean air shower from Tele-





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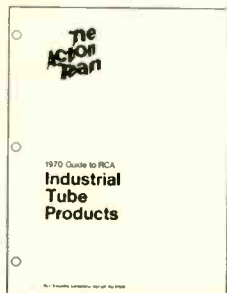
Quality. You know the story. He stocks the finest.

In power tubes, for example, brand preference studies by leading electronic publications have listed RCA as the first choice of professional designers year after year!

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Need more reasons? Call your local RCA Broadcast Tube Distributor. For starters, ask him for the new 1970 Guide to RCA Industrial Tube Products, or write: RCA Electronic Components, Commercial Engineering, Dept. 21K, Harrison, N. J. 07029.

P.S. Your RCA Broadcast Tube Distributor is also the man to call for RCA Starmaker Microphones.



# RCA

vision Equipment Associates. The device, installed over a year ago, consists of a five-inch HEPA filter, blower and prefilter, installed over a VTR's transport. It showers 100 ft/minute of air, filtered to less than 100 particles/cu ft, over the VTR's transport. T.E.A. also recommends its product for film chain optics and projectors.

**A CCTV network**, permanent, nation-wide, large-screen color system, for business, institutions and the professions, will debut this fall. GE is behind the setup, which will start with a 21-city hookup, expanding to 35 cities eventually. A GE-patented large-screen video projection system will produce the images—in color and up to 20 feet wide. Full service rates (for the 21 cities): \$35,000 for the first one to four hours and \$25,000 for each of the next three hours; \$32,500 for the first of five to nine hours, \$23,250 thereafter; for ten to fourteen hours it's \$30,750 and \$22,000; 15 to 19 hours cost \$29,500 and \$21,250.

**Already in business** is another closed-circuit linkage. Management Television Systems ran the first multi-city business seminar on "theater-sized screens" with two-way audio facilities. The occasion was the National Association of Manufacturers meeting in which several thousand businessmen in 14 cities saw (on screen) and conversed with (via two-way) Secretary of Labor James D. Hodgson and other government and industry leaders. The MTS 360 System brought the show to 40 locations built especially for such a gathering.

**HEW gave \$600,000 to the CPB** to help establish an independent Public Broadcasting Environment Center. The purpose of the center is to "pool resources of government and private groups and the public broadcast industry in a type of coordinated enterprise." Pilot programs (called "Quality of Life") for radio and TV might be produced at the Corporation for Public Broadcasting's Center, as well as special educational materials on environment.

**"The public expects business** to become involved with social problems," according to TvB President Norman Cash, addressing The Advertising Club of New Orleans. A TvB research study has shown, however, that few people count



**Our new krypton-halogen replacement  
for the PS52 fits the same fixture,  
lasts twice as long and maintains  
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**That's some replacement.**

New DSF 1500-watt  
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PS52 1500-watt  
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When you replace a PS52 studio lamp you can replace it with something better.

The something better is Sylvania's DSF krypton-halogen lamp, which fits the same fixture as the PS52.

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And that's useful life, because the DSF is as bright at the end of its life

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And its 3200° K color temperature is there right from the beginning. And it's still there 250 hours later. Constant.

The DSF has low-noise construction. There are no loose parts to resonate when used with SCR dimmers.

With all these advantages, the DSF is more than a replacement.

It's a major improvement.

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on local advertisers to help solve social problems, and Cash says this is because businesses do not let people know about this involvement in social problems. Informing the public as to how industries help solve such problems is a "growing role" for advertising today, he concluded: "What the public expects from a company may be just as important as what the public gets from a company, and advertising can make the difference."

**The Public Broadcasting Service (PBS)**, chartered last fall to get and distribute programs for the nation's 190 noncommercial public TVs, is moving into new quarters—955 L'Enfant Plaza North, Southwest Washington, D.C. 20024 (202) 484-9500. Hartford N. Gunn, Jr., is president.

**National Public Radio (NPR)**, also recently established, provides programming for the country's 92 non-commercial radio stations. The first president of NPR is Donald R. Quayle, who will be leaving his post as director of systems development for the Corporation for Public Broadcasting.

**Dangerous x-rays from TV receivers** will be sensed by "Rayguard," from Audio Equipment Company. The sensor unit is installed inside and the meter is attached to the back of the set. When the device notes excessive voltage in the set, the needle swings into a yellow danger area.

**Six hours and five minutes a day** is the average TV viewing level for the first half of 1970, according to TvB reports on Niesen figures. This is a new record. Last year the average television household spent five hours and 56 minutes with the TV set turned on each day.

**Another study** has been commissioned from The Rand Corporation and Dr. Leland L. Johnson (whose CATV report a few months ago set off highly partisan comments with its optimistic vision of cable's future). The Markle Foundation has granted \$500,000 for the undertaking, to be a three-year study of the economic, legal and technical problems "posed by the explosive advance in communications technology."

**A consumer protection network** of ten Nebraska TV and 50 radio sta-

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FEATURES**
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- MODEL 870  
FEATURES**
- 70 Watts RMS
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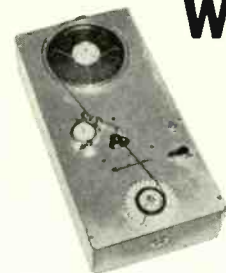
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## TP-1B Tape Cartridge Winder



This rugged and dependable tape winder fills a need in every station using cartridge equipment. No longer is it necessary to restrict your cartridge operation to stock sizes, or to tie up your conventional tape equipment loading cartridges. The TP-1B handles all reel sizes (up to 3600' of 1 mil tape), winds new or old cartridges in any length. Available with or without Spotmaster tape timer, providing precise minute and second calibration for creating exact-length tapes. TP-1B is \$104.50, with Tape Timer \$129.50. Lubricated tape and empty cartridges are also available.

### BROADCAST ELECTRONICS, INC.

A Filmways Company

8810 Brookville Rd., Silver Spring, Md. 20910





## KORK-TV bet on a sure thing when it went to color for local news.

"The mechanics of our switch to the Kodak ME-4 Process weren't very spectacular, but that just goes to show how easy the whole thing was," says Herb Herpolsheimer, Photo Chief for the Las Vegas station. "But when we presented B&W local news one day and color local news the next—now that got a reaction from viewers, advertisers, and competition.

"Speaking of advertisers, we got a lot of local advertiser interest when we went full color. It's a lot easier for us and the advertiser now that we can shoot color film commercials at his business.

"We've got a new mini-ME-4 processor which we were able to put into a small lab room because it was so compact. It processes 20

feet of color film per minute, and we're doing about 10,000 feet per month for news, sports, and advertising.

"We haven't had any trouble with the ME-4 Process. A Kodak representative helped us mix our first packaged chemicals, and we haven't had any bad film yet.

"Management is very pleased with the change to full color. It re-



inforced our number-one spot in the market. It gave us increased viewer and advertiser interest. It saved us lab space. And it's even paying us back something through the Kodak Silver Recovery System. We hit the jackpot!"

Color for your station now comes in small, less expensive processors. Packaged chemicals keep it easy. Kodak help is a call away. Find out how easily you can get into full color by calling a Kodak Regional Chief Engineer. Call John Waner in Hollywood. Dick Potter, Chicago. Ray Wulf, New York. Go!

### EASTMAN KODAK COMPANY

ATLANTA: 404/351-6510 CHICAGO: 312/654-0200  
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**Kodak**

# all solid state TELEVISION MICROWAVE RELAY LINKS for high quality color and monochrome TV systems

Use as rack mounted STL  
or Remote TV Pick-up  
or for Intercity Relay

- Meets EIA, CCIR,  
and FCC standards
- Available in all  
FCC authorized bands
- High fidelity color



TRANSMITTER

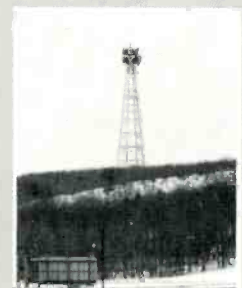


RECEIVER

- Ferrite isolator
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- Key lock switch
- Removable power supply module
- Plug in pre/de-emphasis
- Plug in printed cards
- Optional audio subcarriers

RHG, a leading supplier of military TV relay links, now offers Series MRS to the broadcast industry. Transmitters and receivers, with advanced field proven designs provide solid state reliability, no warmup, and low power drain.

To improve your color transmission quality and to insure trouble free operation specify RHG equipment fully described in Bulletin 69C. Call for "no obligation" demonstration.



# RHG

RHG ELECTRONICS LABORATORY, INC.

94 MILBAR BOULEVARD  
FARMINGDALE, LONG ISLAND  
NEW YORK 11735 (516) 694-3100

Circle 123 on Reader Service Card



tions has been organized to broadcast information and complaints on fraud and bogus advertising. The state's Better Business Bureau is behind the operation which is part of a plan for "chains of communication" to alert consumers. Currently the broadcasters are airing spots notifying consumers of local chamber of commerce services.

**Financial showings** were "appreciably below" those for last year at **Ampex**. The corporation's first quarter (ending August 1) sales were \$64,528,000 in 1970, down more than \$4 million from 69. Net earnings went down from last year's \$3 million to \$519,000 . . .

. . . A quiet improvement for **Cox Broadcasting Corporation's** second quarter meant a net income rise of \$30,000 for 1970, up to \$2,539,462, or 44 cents a share, a penny a share higher than last year. Net income for the entire first half of '70, however, was down from 1969, reaching \$3,992,403 . . . . .

For **Hewlett-Packard** the nine-month period ending July 31 saw a 12% gain in sales (to \$262,144,000) but a 3% decline in earnings (to \$17,251,000, or 68 cents a share). Third-quarter earnings were 22 cents a share, down 2 cents from the previous year . . . . .

**McMartin Industries**, which in the last year has launched 51 new products in broadcast, background music and commercial sound equipment from its Omaha plant, had a good first quarter ending July 31—profits rose by \$123,028 from last year . . . . .

**Superscope, Inc.**, had net sales of \$23,048,880 for the first half of 1970, net income of \$974,680; last year's first half income was about \$160,000 higher, but for just the second quarter, 1970 showed earnings up one cent a share from 1969, with a net income after taxes of \$511,853 . . .

. . . **Tracor**, which has just reached an agreement for the acquisition of **Datamark's** assets and products, saw its second quarter, ending June 30, drop in revenues to \$17,604,000, from 1969's figure of more than \$21 million. There was a net loss of \$552,000, although a good first quarter balanced that down to a first-half net loss of \$175,000, or 8 cents a share. Some optimism has resulted from recent contract awards, including one to Tracor subsidiary **Astro-Science** for a half million dollars—the Ministry of Technology, London, England, is the buyer of the company's instrumentation recorder/reproducer designed for hostile environments.

From BIW —



**New, slim design** — New TV-81 MiniCable is only about half as thick as standard cable. Weighs less. Easy to handle.

## NEW, easy-to-handle "mini-cable" assembly for color TV cameras



**New TV-85C MiniConnector** — Smaller. Lighter. Shorter. Mates with all existing 85-pin connectors.



**New color coding** — Connectors color-coded to show length at a glance. Another BIW exclusive.



**New BIW guided pin entry** — Assures fast, positive connections.

. . . and you get all these proven BIW connector features:

- Outer sleeve protects mating threads from physical damage.
- Outer sleeve design assures positive alignment, pins cannot be damaged by mismatching.
- Connector parts machined 7075-T6 aluminum.
- Rubber compression gland seals against cable at rear of connector.
- All pins and sockets crimp to cable conductors.
- All pins and sockets front release, rear removal.
- Woven cable grip and molded rubber boot provide bend relief and protection against cable pullout.
- Complete with protective molded rubber dust cap.

**BIW "mini-cable" assemblies for color TV cameras are available from stock for prompt delivery. Write: Robert Fanning, Product Mgr.**

**VISIT OUR NAEB BOOTH NO. 25**



**Boston Insulated Wire & Cable Company**  
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Kingston-upon-Thames, U.K.; GEDEBIW, S. A. - Clichy, France

Spotmaster

## Cartridge Tape Supermarket!

Here's a one-stop shopping center for the most and best in broadcast quality cartridge tape equipment—a SPOTMASTER supermarket of variety and value.

Just check the boxes and send us this advertisement with your letterhead. We'll speed complete information to you by return mail.



### Single-Cartridge Equipment

Record-play & play-back models, compact & rack-mounted

Ten/70 Record-Play

- The incomparable Ten/70
- The classic 500C
- The economical 400 (from \$415)
- Stereo models
- Delayed programming models

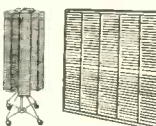


### Multiple-Cartridge Equipment

- Five•Spot (5-cartridge deck)
  - Ten•Spot (10-cartridge deck)
- Versatile Five•Spot

### Cartridge Tape Accessories

- Tape cartridge winder
- Calibrated tape timer



Tape Cartridge Racks

- Remote controllers
- Cartridge racks (wall, floor & table top models)
- Degaussers (head demagnetizers & cartridge erasers)

- Telephone answering accessory
- Replacement tape heads
- Adjustable head brackets
- Head cleaning fluid
- Alignment tape
- Bulk tape (lubricated, heavy duty)



- Tape tags
- Cartridges, all sizes, any length tape (or empty), no minimum order, lowest prices

Cartridges: All Sizes

The nation's leader in cartridge tape technology can fill your every need, quickly and economically. That's how we became the leader. Write:

### BROADCAST ELECTRONICS, INC.

A Filmways Company

8810 Brookville Rd., Silver Spring, Md. 20910  
(301) 588-4983

# CROSS-TALK

## Fining/firing the engineer

We received a good number of letters answering the August "From the Editor." Here are some excerpts.

Dear BM/E:

Read your editorial several times, and find much point to it. Sometimes even formal squawks to the management don't get correction of a situation that is borderline. I rather like your last suggestion better than the others, because there are owners who will refuse to correct a matter and will also threaten to blackball the engineer if he quits. Fine him to boot?

One of the points which the FCC is behind the ball on is on transmitter maintenance. I do not see the point in daily inspections if either the half hour readings or a competent power and frequency alarm are in service. The transmitters I am familiar with will run for months with no more than tube changing, and power adjustments that are routine and could be automatic. The engineer spends more time setting up remote broadcasts and keeping that gear in order than on the main line equipment. There may be equipment that has to be babied, but I see no reason to require all equipment to be babied because of it. Even a directional antenna can be automated, if necessary, and shouldn't be touched by anyone but an expert anyway.

There are two points where additional training should be required. Directional antennas should be the subject of an endorsement, and one year should be required for chief. I don't think just broadcast should be accepted for the experience, as valuable training can be had elsewhere, including both amateur radio and the military, but a year of transmitter work of some kind. I shudder when I see some six-week wonder diddling with 5 kW, when he couldn't tune a one-tube ham rig built on a breadboard without the book.

Another point which needs attention is the regulations, and the inspectors. There are some items in the book that are subject to various interpretations if read with no background information. The FCC representatives frequently make a big stink if you don't read it the official way. We're not lawyers, and we don't have access to the latest sheet from the FCC legal section. Combine the situation above with sadists who

delight in finding violations, and/or bureaucrats who are incapable of seeing anything but a rulebook, and you have too many of the present inspectors.

As I dislike criticising without suggesting solutions, the Commission might do well to hire some broadcast engineers. An experienced non-college type would cost half as much as the college man, would know where to look when he ran into something odd, could inspire confidence instead of scaring, could get around twice as often for the same pay and catch things before they got rooted down, and could do ninety percent of the work the college man could. Most people will cooperate with someone their own speed who helps them obey the law, while the present system just gets people worried, mad, or both.

Name withheld by request

● Aren't you letting your attack on the shoddy process of producing "five week wonders" obscure the real culprits?

It has been my experience that the "silly games" you mention are a symptom of marginal ownership, inept management, or, usually, both. Why such persons would "junk wornout gear and dismiss obsolete technicians" in the face of reduced personnel requirements escapes me. Surely the "professional dedicated engineers" you suggest command a fee equivalent to their position, even if they were available to small markets on a standby basis sufficient to assure smooth day-to-day operation.

It would be more fruitful to suggest automatic logging coupled with parameter alarms to aid the third phone operator who should be permitted to perform routine operations. The better results you speak of would then be possible when the first phone becomes, not a condition of employment for an announcer, but a badge of proficiency for a technician of competent level.

Most of us "firsts" wish only to assure reliable, honest operation in the face of the growing tendency of management to view us as "necessary evil" rather than what we are: a realistic class of operator less able than the PE, but certainly better than the "paper hanger."

Robert A. Shellady  
Program Director  
KXIC-AM-FM, Iowa City

● On the one hand, you decry the 5-week engineer (see Aug '70 p. 52) and on the other, you accept advertising from the 5-week schools, (see Aug. '70 p. 50). If, as you imply, the "5-weekers" are so bad, why go out of your way to promote them? It would seem that a partial answer could be found if you were to refuse advertising from a product or

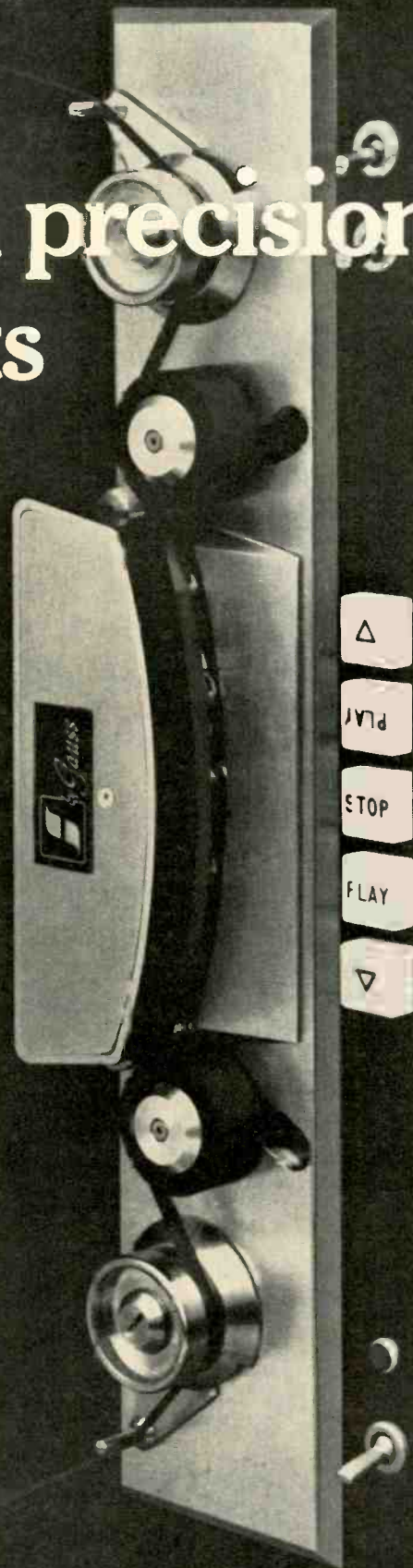


# Gauss: engineered precision where it counts

Gauss research and development has created two technological masterpieces. The 1620 Recorder/Reproducer with E heads, features an ingeniously designed capstan and guidance assembly that completely eliminates transport plate warpage and attendant guidance problems. This rugged dual-capstan transport puts greater strength and accuracy right up front where the action is, reducing scrape flutter and maintaining tape accuracies at all speeds. Gauss 1630 is a reproduce-only transport incorporating all identical design advances of the 1620. Both transports can be mounted in any position on any surface, function equally well in a b-directional mode and offer constant tape tension regardless of size, position or location of reels. We can safely say the new Gauss 1600 Series heralds a new era in the broadcasting and tape recording duplicating state of the art. But hearing is believing. Another precision product . . . by Gauss.



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Los Angeles, California 90064  
(213) 478-0261

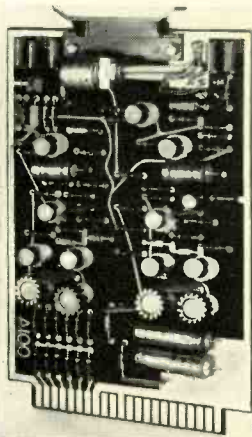


Circle 125 on Reader Service Card



# MAXI MODULES AT MINI PRICES

TelComp Audio Modules



- A-100 Audio Distribution Amplifier \$171.00
- A-101 Low Level Pre-Amp \$130.00
- A-103 High Level Pre-Amp \$95.00
- A-104 TEN Watt Monitor \$130.00
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All modules (except A-100) available with solid state REMOTE GAIN option at \$65.00 additional per module

TelComp modules and systems are made for broadcast engineers . . . by broadcast engineers

All silicon solid state devices

All transistors and IC's socket mounted

Computer type plug-in cards mount in modern heavy gauge aluminum 19" rack mounted card frame with hinged front panel

Self contained modular heavy duty regulated DC power supply operates any 12 modules in frame 5 1/4" high

For better broadcast equipment contact

## TELCOMP



Division of Television and Computer Corporation  
2385 Beryllium Road,  
Scotch Plains, New Jersey 07076  
(201) 233-6200  
NAEB Convention BOOTH 44

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service you feel to be inferior, or harmful to the industry you serve.

There seems to be an implied lumping of the five week wonders with the graduates of the more reliable correspondence schools. If that is your intent, I would ask where you propose we find replacements for the industry's engineers lost by normal attrition? How many of us can afford the time and money to attend extended schools? If these extended residence schools are to be our only source of engineers, I submit that the industry which is already short engineers would be even shorter. . . .

The blame lies in large part with the industry which tolerates less than competent engineers. There are as many unlicensed but talented technicians in this nation as there are licensed half-wits. If one of these technicians wishes to use a 5 week course to review for the exam, why shouldn't he? The only level at which the real qualifications of an employee, including engineers, can be measured is at the level of performance. If he can do the job, fine. If he can't, fire him. In an industry which is already screaming about rule by commission, it seems inconsistent to demand more rules.

Jeff Bixby  
WHUN AM/FM  
Huntingdon, Pa.

### • HEY. . . .

This is the first time in my life that I've ever replied to an editorial. After you wrote it, didn't you feel a little wierd inside? I go along with you on a couple of things but dumping engineering altogether at any station is completely destroying the art.

If you were a manager and lost the secondary of your transformer supplying hi voltage to your transmitter because of poor manufacturing, what would you do? Call an expert three hours away?

If lightning hit your tower and burned off the end of your coax?

What do you do if your power changeover relay jams? Do you know where it is? Do you know what it is?

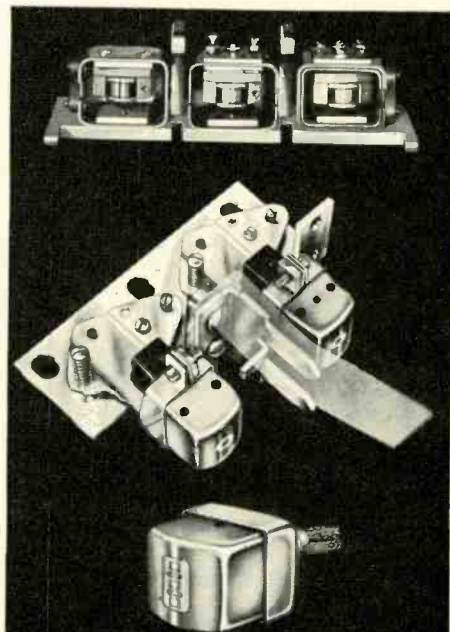
I'm not making these things up. They have all happened in the past year. The longest we've been off the air in five years is twenty minutes.

I stopped into the station on a Sunday. My day off. I noticed that two rectifier tubes were out. I asked the first class man on duty why he didn't replace them. He told me that the thing was still running and the station manager (he was a good manager) said to leave it alone. The manager said the only difference now is that the common point meter goes down instead of up when you apply modulation. That first class man isn't here anymore. I have since replaced him.

FOR EVERY PROFESSIONAL APPLICATION

# Nortronics

heads you right!



Nortronics heads offer excellent performance characteristics, long life, and quick, easy replacement with negligible downtime.

REEL TO REEL

AMPEX MAGNECORD SCULLY

CONCERTONE RCA CROWN

CARTRIDGE MOUNT

ATC COLLINS GATES

KRS MACARTA RCA

SPARTA TAPECASTER

Best of all, you can get them locally from your Nortronics distributor.

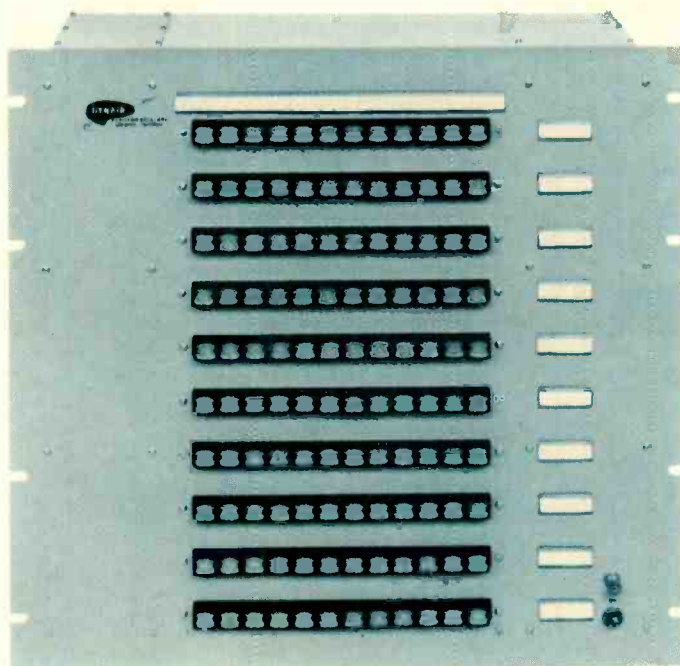
## Nortronics

COMPANY, INC.

8101 Tenth Avenue North  
Minneapolis, Minnesota 55427  
Phone: (612) 545-0401

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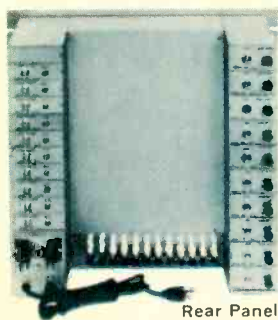




## (Patch Cable Eliminator)

Now you can forget about messy patch cables and the tedious task of re-patching to change distribution. DYNAIR's Series-X Switchers provide pushbutton distribution of either 6 or 12 inputs to as many as 12 outputs. A high degree of input-to-output isolation allows any input to be switched to any or all outputs without loading the source.

Series-X Switchers are also available for simultaneous switching of video and audio, further simplifying distribution. All isolation amplifiers are silicon solid-state and full-broadcast quality. The audio and video amplifiers and the power supply are all plug-in modules which may be easily removed from the switcher for maintenance. A 12-MHz bandwidth and excellent differential gain and phase characteristics assure quality color performance.



Rear Panel

Wouldn't a Series-X Switcher solve some of your distribution problems? Write today for full details.

TYPICAL BASE PRICES			
Capacity	Video Only (Base Price)	Video and Audio	Panel Height
6 in, 3 out	840.00	1,575.00	6.0
12 in, 3 out	955.00	1,690.00	6.0
6 in, 6 out	1,455.00	2,625.00	12.25
12 in, 6 out	1,645.00	2,815.00	12.25
6 in, 9 out	2,070.00	3,675.00	15.75
12 in, 9 out	2,335.00	3,940.00	15.75
6 in, 12 out	2,685.00	4,725.00	21.0
12 in, 12 out	3,025.00	5,065.00	21.0

Other input/output configurations available. Options include lighted pushbuttons, bridging inputs, and sync-mixing.

**DYNAIR Electronics, Inc.**  
 6360 Federal Blvd., San Diego, Calif. 92114  
 Telephone (714) 582-9211

Have you seen "Video Switching Techniques"?  Yes  No  
 Have you seen "Video Transmission Techniques"?  Yes  No  
 Please send information concerning Series-X Switchers

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

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Circle 127 on Reader Service Card



# PROTECT your broadcast equipment against lightning surges with WILKINSON AC LINE SURGE PROTECTORS

Excessive voltage surges caused by lightning, transformer arcing and induced transients are everyday occurrences that cause heavy damage to valuable broadcast equipment.

Now through the use of WILKINSON voltage sensitive Line Surge Protectors you can protect your equipment from line surges that may exceed even twenty times the normal line voltage.

A WILKINSON pulse compensated Line Surge Varistor, is placed across a line of its rated voltage. Should a surge or increase of voltage occur, the resistance of the varistor decreases at log scale as the voltage increases, thus acting as a momentary load or short circuit to the surge. WILKINSON Line Surge Protectors draw little or no current and are capacitor compensated for microsecond surges, thus damping all line disturbances as well as excessive voltage increase.

A small investment in WILKINSON Line Surge Protectors is your assurance that your valuable broadcast equipment will not be damaged due to line surges.

Model SIA-1 110 V. Single phase \$125.00

Model SIA-2 220 V. Single phase \$225.00

Model SIA-3 220 V. Three phase \$325.00

Model SIA-4 440 V. Three phase \$425.00

For complete details write to:

## WILKINSON ELECTRONICS, INC.

1937 MacDADE BLVD. • WOODLYN, PA. 19094  
• TELEPHONE (215) 874-5236 874-5237 •

Circle 129 on Reader Service Card

I had to change consultants also. The one that I had before tuned up my antennae and left me with 60% efficiency in my transmitter. I now have 79.5%.

It is up to management to get competent men. . . . Also, the FCC better consider getting some first class men in these FM stations. . . .

James J. Gilmore  
Chief Engineer/Announcer  
WTMR  
Camden, N.J.

• First, to simply say "Fine the engineer" for all violations would be asinine. . . . He may know a violation exists, has battled management and lost the battle. The FCC, instead of punishing this man, should encourage him to report to them the violation, and then stand behind him to prevent retaliation. . . .

The NAB proposal to let third-phone operators perform routine operations regardless of station power would be another step away from good engineering practice. One of the first steps in the downhill direction was taken when the Commission allowed someone to talk them into dropping staff engineers. When there is an engineer on duty, he is likely to spot an impending problem, repair it under a maintenance program and prevent down time and lost revenue. To say any such proposal as that of the NAB makes sense is being short sighted to say the least. It would be equally foolish for the FCC to drop any section dealing with qualifications of personnel.

The suggestion of letting maintenance be done on contract might not solve the problem of incompetence, but might only shift the problem to another area. If qualified personnel are removed from stations, where will they go? It is implied that they will go to work for the companies which contract the maintenance. There is an underlying implication that there is a shortage of qualified personnel. But is the shortage real or is it that well-trained, qualified personnel do not want to work for less than a living wage? If these con-

tracting companies do not pay top salaries to attract top men, the incompetents will be working for the contractors and the so-called short-age will still exist.

My personal feeling is that there has been entirely too much relaxation of the Commission's rules. The examinations should be so designed to prove the qualifications of the operator. . . . There should be a practical examination which would be designed to measure the operator's technical ability.

Perhaps there should be an extension to the classifications. There could be First, Second and Third Class Operators; and, in addition, First, Second and Third Class Operator/Technicians. The requirement would then be for a staff Operator/Technician. Under this plan, any existing license holder would receive a Technician's rating upon application under a "grandfather clause." However, the Commission would maintain a file of citations against Operators and Operator/Technicians. A certain number of citations and the Operator or Operator/Technician would be required to be re-examined. If he failed the examination, his license or rating or both would be either suspended or revoked. Then the Commission could reinstate the rule regarding the presence of a Technician on the staff. The result would be better on-air sound, less down time, less lost revenue and probably better working conditions for everyone.

Perhaps I am too technically oriented to understand Management's viewpoint. But I feel that a Broadcast Engineer is a rare breed. He is a person of technical skill who has had enough training in this specialized area of electronics, and is sufficiently dedicated to qualify as a professional person. One might say that Broadcast Engineering is a Technical Profession, and should be treated as such.

E. Neil (Bert) Pike  
Broadcast Engineer  
Southern Illinois  
University  
Edwardsville, Ill.



4.95

AG1

- ★ CUTS TAPE CARTRIDGE REJECTIONS DRASTICALLY!!
- ★ COMPACT . . . ONE PIECE SOLID CONSTRUCTION!!
- ★ ADJUSTS ALL HEADS TO SAME ELEVATION!!

## NOW IT'S QUICK & EASY TO KEEP TAPE CART HEADS IN ALIGNMENT!

New Sparta Head Alignment Gauge optically aligns head height and azimuth in seconds!! . . . for total compatibility between playback and record machines.

### SPARTA

Electronic Corporation

5851 Florin-Perkins Road (916-383-5353)  
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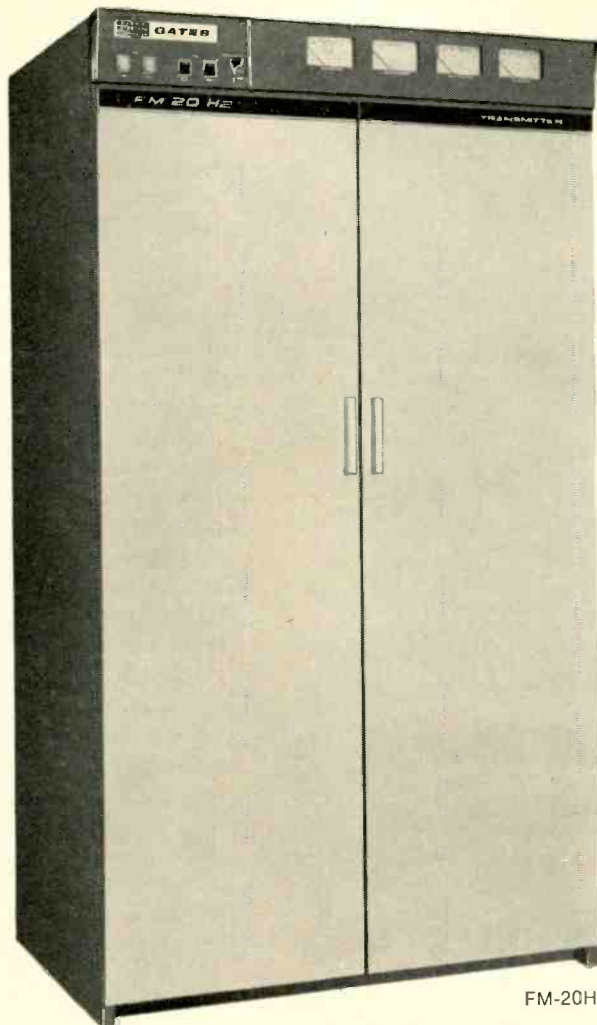
A DIVISION OF COMPUTER EQUIPMENT CORPORATION

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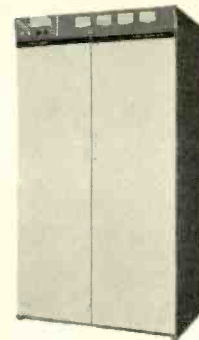




FM-1H



FM-20H



FM-10H

## Look what our customers say about reliable Gates FM Transmitters . . .

"We've never had a second of downtime with our Gates 20 kW FM transmitter. That's reliability!"

Paul Wolfcale, Radio Station WMZK-FM  
Booth Broadcasting Company, Detroit, Michigan

"Our Gates 10H couldn't be easier to operate. Or provide our listeners with richer, more 'life-like' sound."

Larry Gordon, Radio Station KWIL-FM  
Albany Radio Corporation, Albany, Oregon

"Our Gates 1H gives us the finest in stereo, mono and multiplex sound. And the TE-1 Exciter is the best we've seen."

Vic Michael, Radio Station WMLP-FM  
WMLP, Inc., Milton, Pennsylvania

For the most reliable FM transmitter you can buy . . . look and listen to Gates. Or ask our customers! For more information, write today. Gates, 123 Hampshire Street, Quincy, Illinois 62301.



# GATES

A DIVISION OF HARRIS-INTERTYPE

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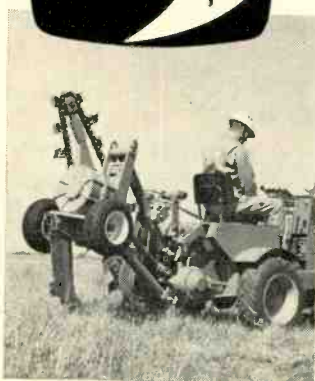


## THE V30 COMBINATION... UNIQUE NEW TRENCHER FROM *The* Professionals

THE V30 COMBO WILL TRENCH, BACKFILL, BACKHOE, DO VIBRATORY PLOWING AND BORING—without removing or installing attachments in the field. Now you can get it all on one machine—the V30 Combination. Digging chain and vibratory plow are mounted at rear of unit; backhoe, full hydraulic backfill blade and boring unit on the front. The 30-HP model offers all this, plus proven design advantages of the V30 Ditch Witch, including directional power steering, four-wheel drive, unmatched operator convenience and safety, hydraulic travel speed independent of mechanically-selective digging chain speeds and plow shaker drive. Trenching depths to 42" at width of 6". Plows in plastic, copper, wire or cable to depth of 24".

Ask a Professional for a demonstration today!

A division of  
Charles Machine Works, Inc.  
100 Ash Street  
Perry, Oklahoma 73077 USA



Circle 143 on Reader Service Card

## ITV to Cut Costs

*Continued from page 30*

was too often. Observation showed that it was harder to retain attention during afternoon.

Social studies films were the best attention holders; attentiveness was intermittent during math video tapes.

Music programs held interest during singing portions, but lost it during music history segments. The tube tended to lose viewers when there were equipment and materials on hand to explore.

Control of the class could quickly be lost if aides weren't able to head off pending problems. A major source of disruption was inappropriate pacing in the TV instruction, i.e., if there was not time to distribute materials or solve problems before the TV teacher moved on, students became perturbed and noisy. (Teacher aides confirmed that this was a major problem.)

Attentiveness, and therefore classroom control, suffered not only during lengthy talk segments, but whenever slow-paced material or downright boring passages appeared in the TV presentation. There was too much of this weak material according to the observers—and teacher aides. The presence of one or two aides in maintaining control seemed of less importance than the skill of a particular aide and the nature of the programming. Minor disruptions, such as a person entering the room, can seriously affect TV viewing—the TV rolls on, regardless.

Interest seemed lowest, the evaluators found, during talking-face segments that were at all

## TELEVISION MATERIALS USED IN ROCHESTER EXPERIMENT

**Social Studies**—10 titles, film and film strip, from McGraw Hill, Coronet, Bailey-Films, Arthur Barr Productions and E.B.E.C.

**Math**—2 titles, VTR & film, Patterns in Arithmetic IV & V from NIT, Haiku Graf/Lacy from Bailey Films.

**Science**—10 titles, VTR and film, from NYSED, Bailey-Films, E.B.E.C. and locally produced VTR.

**Art and Music**—6 titles, VTR, from Great Plains and locally produced VTR.

**Newspaper**—3 titles, VTR, from Great Plains and locally produced VTR.

**Health & Science**—2 titles, film, from Coronet and McGraw-Hill.

**Negro History**—1 title, film strip, Bailey-Films.

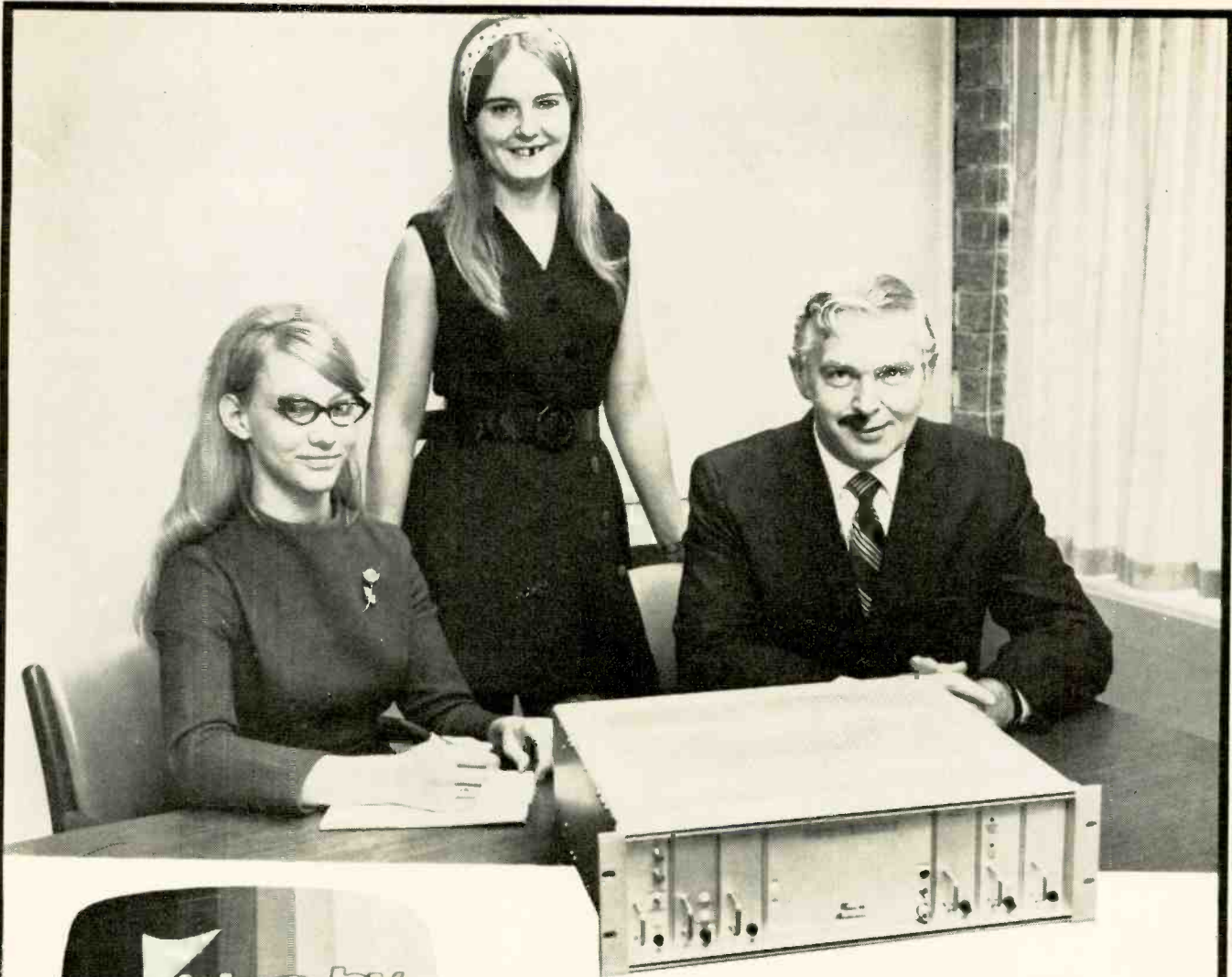
**Transitions, Bridges**—VTR; 148 bridges locally produced.

**Pioneer Pete**—"Spots"—VTR, 40 spots locally produced.

**Miscellaneous**—7 titles, slides, VTR and film, from various sources.

**Total number of program segments: 683**





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## ITV to Cut Costs

Continued from page 56

prolonged. In the social studies film a character Pioneer Pete appears during 60-second breaks. His talking seemed to become a signal for diminished attention.

The rapport observed was spotty and tended to reflect the abilities of the teacher aides.

The eight aides themselves had varying reactions. Most felt not enough total time was involved to establish the needed rapport. Only four worked the full two weeks and they felt rapport was building. Evidence seemed to indicate that one aide was sufficient except that there were problems in passing out and collecting materials.

From the reports of the observers and aides, one TV set per room is adequate, but two is better.

The response from parents to the demonstration was positive.

Because of the short duration of the Rochester demonstration, only the process could be evaluated and not the product. Lengthier demonstrations are needed to prove the product. But before this can happen, better materials are needed—materials that have been field-tested. This requires money. Moral: To save money you have to spend it.

BM/E

## Instant ITV Instruction

Continued from page 27

are broadcast on request.

The ITFS system began its operation early in 1968 on a limited basis in the southeastern section of the county.

A turnkey contract was soon awarded Philadelphia-based Jerrold Electronics Corporation to expand the existing system into a county-wide ITV network according to the Adair & Brady design.

The system now has transmitters sending out programs in all directions from centers in Boynton Beach (south), Riviera Beach (north) and Belle Glade (west). Each of these centers has program-origination capabilities and is interconnected with the others.

The center at Boynton Beach, for example, has two professionally equipped studios, one 60 by 47 feet, the other 40 by 40.

Signals from the Boynton Beach and Belle Glade centers are boosted at an intermediate repeater station at Loxahatchee.

The Jerrold installation includes 235- to 250-foot-high towers (designed to withstand 135-mile hurricane winds) omnidirectional transmitting antennas, transmitting and repeating equipment, parabolic receiving antennas and signal converters, and coaxial-cable distribution systems in the various schools.

BM/E



MODEL 700-RP

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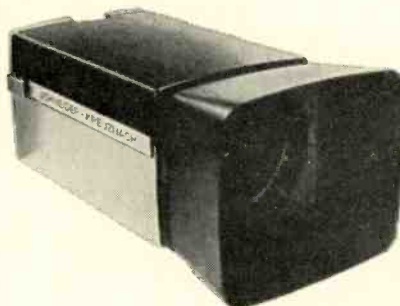
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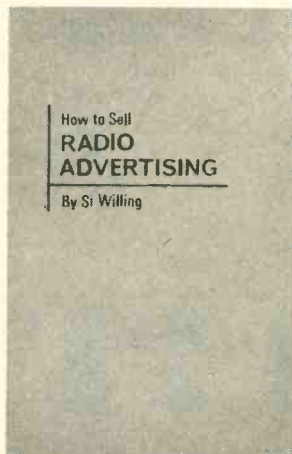


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The author also dwells on those detrimental personal habits—mannerisms, appearance, inertia, indecision, time and timing, etc.—that turn off prospects. In Part 4 the author stresses the five points that make a successful salesman

excel: merchandising initiative, special techniques, the restrictions of the tried-and-true, overcoming boredom, and effective communications (letter and phone). And in the final section there are numerous case histories, real-life sales experiences from a number of eminent broadcast salesman such as Mike Rooney (KVOZ), Neil Terrell (consultant), and Roger Davidson (WNBO). You'll learn ways to sidestep objections, how to recognize the "opportune moment", how to convert a "No" to a "Yes," and how to satisfy the prospective sponsor who has everything.

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Circle 135 on Reader Service Card

## Potpourri 70

Continued from page 14

a suspect's actions at the time of arrest.

Another important use of videotape, says Schiffman, is to record criminal confessions. The advantages: The videotape shows the suspect being advised of his rights; it is an objective record of the confession in the suspect's own words and gestures; and the videotape may be replayed as desired to prosecution and defense attorneys.

What about admissibility as evidence? Schiffman says: "We haven't been able to test this technique in court yet because the defense attorneys who have seen our tapes have advised their clients

to plead guilty. Perhaps this is the best proof of the validity of the technique."

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## NEW LIT

For copies of these literature offerings, circle numbers for appropriate items on Reader Service Card.

**CATV test equipment**, complete specs of the Texscan line in 16 pages with section on related components. **200**

**TV distribution product line** covered in Jerrold 56-page catalog, including guide to MATV systems. Costs \$1.00 from Jerrold's Distributor Sales Div., 401 Walnut Street, Phila., Pa. 19105.

**Signal power and rf relays** with operational features described in eight-page stock catalog from Hart/Advance Relay Div., Oak Electro/Netics. **201**

**Headphones**, general communication and dictation, plus other private listening devices, in Telex eight-pager. **202**

**Antenna systems**, the Phelps Dodge line, with illustrations, specs and performance data, plus descriptive material on mounting hardware, duplexers and cavity resonators, coax cable systems and mounting accessories. **203**

Catalog of new and used **test equipment**, power supplies, bridges, decades, delay lines, 400-Hz power sources, high-voltage power supplies, servos, etc. Bulletin 93 has 48 pages, is from Lectronic Research Laboratories Inc. **209**

Catalog/handbook lists more than **100 dc power supplies** in 80 pages. Sections include definitions of specifications, description of circuit principles, operating features, methods of checking power supply performance, and applications. Hewlett-Packard. **210**

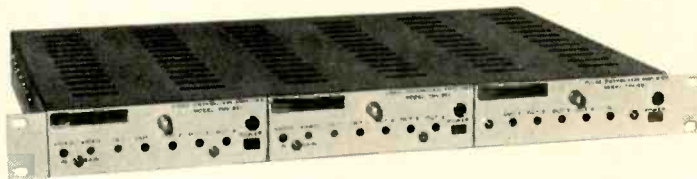


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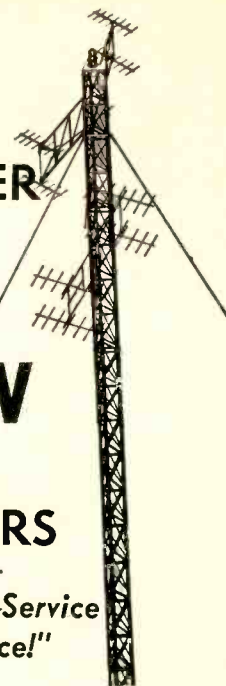
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# FROM THE EDITOR

## ITV Cutbacks: Who can challenge the wisdom?

ITV was dropped at the Norwalk, Conn., public schools this year—not because it wasn't useful, but because it wasn't cost effective. Although public schools find it increasingly difficult to justify the expense of ITV when the budget gets really tight, industry, cooperating with universities, is discovering TV as a means of both expanding and lowering costs of under- and post-graduate education. The college classroom hasn't yet been transferred to the living room, but it has gotten off campus. ITFS, microwave, leased telco lines and CATV cable systems have proved electronic highways are more conserving of time and expenses than are transportation highways.

In Great Britain, where the regulators don't mind pre-empting the air channels for educational purposes even during prime time, the Open University, Bletchley, Buckinghamshire (a combo university-of-the-air and correspondence school), will make it possible next year for the entire population of working adults to earn college degrees for as little as \$350. Could such a concept be established in the U.S.? Several communities are successful in winning Title II funds for an ITFS system to overcome educational inequalities, but who would dare suggest that tax-supported mass educational TV is a greater good than free enterprise's free TV?

Are we lacking in vision or is it that the spirit is wanting because the educational broadcaster knows he has produced very little that can both hold students' attention and teach them at the same time. *Sesame Street* and *Misterogers' Neighborhood* are exceptions but their high cost of production underscores the problem: Cottage-industry efforts can't do the job.

Lester A. Nelson, in *Towards a Significant Difference*, writes that TV's "most significant potential lies in two areas: one, as a long range means for achieving more nearly equal allocation of available resources and two, as a facilitating strategy to begin critical programs needed to prevent any further erosion of human resources." Nelson points out that TV and technology in general offer immense opportunities for cooperative planning and pooling of resources.

We need pooling not because of any teacher shortage—there are now enough teachers for every classroom. The question in the 70s is "Can we afford a teacher in every classroom?" The Rochester experiment (page 28 of this issue) sought to determine if costly resources could be better allocated.

The answer would appear to be yes, but just how these resources are to be best used in TV programming has not yet been discovered. Cooperation is needed, not only within schools, but between schools. Somewhere somehow some autonomy must be given up in favor of cooperation. Educators haven't shown how to bring about this cooperative effort. Could it be that that's why the nation is in trouble?

**James A. Lippke**  
Editor

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A quick reference to products mentioned editorially or in advertisements. Page number is listed first (light face type) followed by reader service number (bold face.)

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### CATV (See also: COMPONENTS, WIRE & CABLE)

\*Appears in CM/E (CATV supplement) only

- \* 4/151 Cameras, color/Philips
- \* 10/153 Color monitor/World Video
- 60/137 Lenses/Cosmicar
- 39/275 Studio system, one-man/Diamond Power
- 56/143 Trencher/Ditch Witch
- \* 9/152 TV signal generator/Tektronix
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- C2/100 Coaxial cable/Phelps-Dodge
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### ANTENNAS, TOWERS & TRANSMISSION LINES

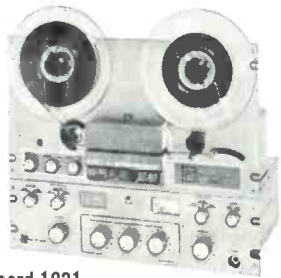
- 48/123 Microwave TV systems/RHG
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- 63/139 Towers/Fort Worth Tower
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- 55/128 Transmitters, fm/Gates

### MISCELLANEOUS

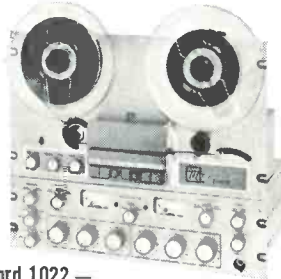
- 59/135 Books/Tab Books
- 54/129 Surge protectors/Wilkinson
- 40/360 Uhf two-way radio line/ITT-Star



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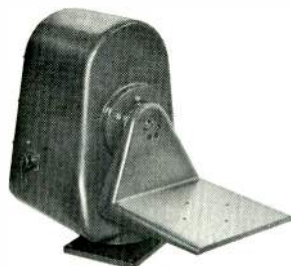
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type 210



APPLICATIONS	CAMERA LOAD CAPACITY	DRIVE	SPEED	PRESET CAPABILITY	MANUAL CONTROL
<b>CCTV</b> Educational Industrial Medical & Hospital Security, Etc.	30 pounds	AC continuous	TILT 3°/sec. PAN 6°/sec.	YES	YES
For vertical & inverted mounting/preset or manual remote control of pan & tilt functions					

type 230 &  
230 SD



<b>TYPE 230 CCTV</b> Outdoor Security & Traffic Surveillance	120 pounds	AC continuous	TILT 4°/sec. PAN 5½°/sec.	NO	YES
For vertical & inverted mounting—completely weatherized					

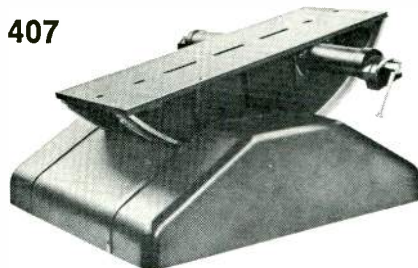
<b>TYPE 230 SD CATV</b> Educational Industrial Medical & Hospital Security, Etc.	100 pounds	AC SERVO	TILT 4°/sec. PAN 5½°/sec.	YES	YES
For vertical & inverted mounting—completely weatherized					

type 405



<b>CATV, CCTV</b> Educational Industrial Medical & Hospital Security, Etc.	120 pounds	AC SERVO	TILT 40°/sec.	YES	YES
<b>BROADCAST</b> News & Weather Presentations Interviews Panel Shows, Etc.			PAN 60°/sec.		

type 407



<b>BROADCAST CATV &amp; CCTV</b> News & Weather Presentations Workshop Demonstrations Interviews & Panel Shows Commercial Video Taping Special Effects	400 pounds	AC SERVO	TILT 20°/sec. PAN 40°/sec.	YES	YES
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