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NABET National Council

Meeting: New York
STATLER HOTEL

Oct. 9-15

Color TV Reports: RMA, RCA, DuMont
Official Summaries of I.R.E. Technical Papers

VOL. 16, No. 10

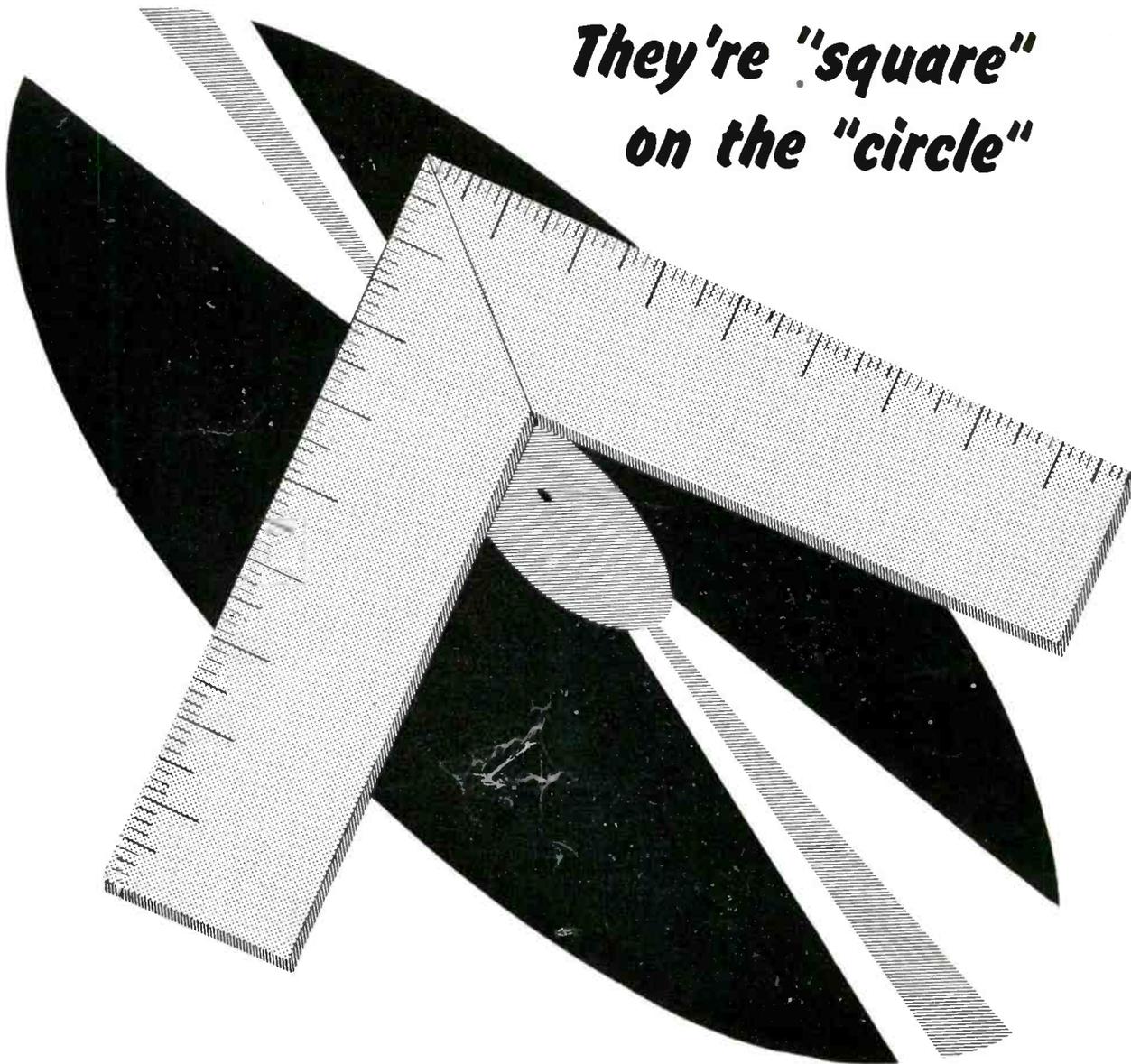
OCTOBER, 1949

N. A. B. E. T.

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THE BROADCAST ENGINEERS' JOURNAL

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OCTOBER, 1949

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THE BROADCAST ENGINEERS' JOURNAL

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National Association Broadcast Engineers and Technicians

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Pertinent Topics from the National Office

from

C. WESTOVER
Exec. Secy., NABET



A Message to the Members of NABET

from

JOHN R. McDONNELL
President, NABET

An officer of a certain IBEW Radio Local occasionally breaks out his paint brush to do some smear work. His "frequency run" shows a bad response; an equalizer would help, such as the truth, and all of it, not part.

The artist makes a great deal of WOR and WBZ-WBZA and their difficulties. He attempts to show this proves that his organization is all wise. He neglects to point out that WDET, WJBK, WLAV and others have recently pulled out of IBEW because they could no longer stand the indifferent attitude of the IBEW, both Local and International.

The artist might also read, and become familiar with the IBEW Constitution. It is suggested that he read Art. XVII, Sec. 22 and Art. XXVII, Sec. 2, 3, 5, 6, 7, 8, 9, 10, 11 and 13 before he gratuitously hands out advice to act in a democratic manner. Read Art. IV carefully, especially Sec. 6 before offering NABET advice regarding WOR and democratic principles.

One remarkable fact about this sandpaper artist is that he actually thinks he is right. His past associations perhaps his present, prohibit him from realizing that *some* people *can* be honest. His smear against NABET officers is undoubtedly based upon his personal knowledge that in his organization his top brass play handsies with management to such an extent that *his* Local is ordered to share work with the IATSE. There is good reason to believe "Mr. Roberts" is to be repeated and that as usual the IA gets half the work. No "encumbrances"; AND *he* can't reverse, or argue, with Tracy.

It is hard to understand why the column in question didn't tell the story of a meeting in Detroit at which an IB representative displayed such complete confusion and lack of facts that the IBEW was repudiated by an IATSE Local official. Conspicuous, too, was the lack of explanation for the IB's attempt to split the logical, and usual, bargaining unit in two rather than lose face. The membership was disregarded.

Memory is a peculiar thing, but the question occurs—does the artist remember conversations of a year ago when *he* requested NABET's National Council to convene so that if the IBEW Radio Locals disaffiliated from IBEW they could immediately come into NABET? If the IB is such a "benign" organization, when did the change occur?

The problem for the artist and his IO is one of developing integrity, not organizational drives. The future of radiomen is in establishing One Union For Radiomen, honestly run by leaders who have sufficient interest and courage to protect radiomen's interests.

Co-incident with the release of this October issue of the Journal the National Council of NABET will be convening (October 9th) to study and act upon the many problems and issues which have come up in the year ensuing since the meeting in Detroit. The problems are complex and the possible solutions vary. The membership of NABET has, in the main, been completely acquainted with these problems through monthly reports of the National Officers and bulletins emanating from the National Office. Your reactions to these problems should have been made manifest to your respective Chapter Chairmen and will determine ultimately the course which the National Council will adopt for their solution. It behooves every member to study carefully the actions of the National Council and its recommendations. Such controversial subjects as affiliation, or non-affiliation, should be approached calmly and not emotionally. These issues mean your bread and butter and should not be decided haphazardly. Any such major issues as these ultimately will be decided by the membership, as a whole, so make it a point to get a complete picture before arriving at a decision. The Council will make every effort to lay all the facts before you.

Sincerely,

JOHN R. McDONNELL,
President—NABET.

STRANGE BEDFELLOWS

(A reprint in full of an Editorial from the CWA News,
July 1949)

It's impossible to avoid the conclusion that the International Brotherhood of Electrical Workers—AFL by its recent action has prostituted itself to the Bell System and is in collusion with the company.

This strange alliance between a big international union and the largest corporation in the world has had some surprising developments lately. These developments are a disgrace to the leaders of the IBEW who launched their raiding campaign simply because CWA refused to commit suicide and let its constituent units be absorbed by the electricians' union.

It is difficult to realize how a union could have more gail than this—but IBEW had it.

Reports coming to CWA recite some things that are hard to believe of a labor union. IBEW is said to have told Western Electric management that they would "take care of" members in their groups and make them toe the mark. The contracts they signed in Illinois plant, in Montana and at Kearny

To Page 14

Television — Monochrome vs. Color

RMA, RCA, and Du Mont Statements to F.C.C.

RMA

Color Television Years Off In Public Use, RMA Tells FCC.

The Radio Manufacturers Association told the Federal Communications Commission that even if the Commission were to authorize commercial color television after its forthcoming television hearings it will take manufacturers "several years" to develop and distribute the necessary equipment for public use.

RMA also urged that the investment of 2,000,000 TV set owners be protected and that any color television system approved by the FCC be superimposed on the present black and white system in a manner which will make the service available to present TV set owners at a reasonable additional cost.

Filing its statement preliminary to participating in the FCC hearing beginning Sept. 26 on proposed TV channel allocations in the UHF band and color system proposals, RMA made the following comment with regard to color television:

"On the general subject of color television, the industry does not oppose the development of a sound and thoroughly tested system of color television—provided it is available for and superimposed on the 2,000,000 monochrome (black and white) television receivers already sold and available to such receivers now being manufactured and offered to the public.

"The industry has not retarded nor opposed the development of color television, but on the contrary has spent many millions of dollars and years of time in experiments and research. These even now are continuing, still in the laboratory and experimental stage, and RMA is of the opinion that even if the Commission should authorize commercial television broadcasting it would be probably several years before its initial introduction, thru the development, manufacture and sale of transmitters and receivers would begin. It would be even longer before wide public use would be possible."

RMA's statement was prepared by its Television Committee of which Max F.

Balcom, past RMA president and vice president of Sylvania Electric Products, Inc., is chairman. Other members of the RMA Television Committee are: Benjamin Abrams, president of Emerson Radio & Phonograph Corp., New York; Dr. W. R. G. Baker, vice president of General Electric Co., Syracuse, N. Y.; W. J. Barkley, executive vice president of Collins Radio Co., Cedar Rapids, Ia.; H. C. Bonfig, vice president of Zenith Radio Corp., Chicago, Dr. Allen B. Du Mont, president of Allen B. Du Mont Laboratories, Passaic, N. J.; J. B. Elliott, vice president of RCA Victor Division, Camden, N. J.; Paul V. Galvin, president of Motorola, Inc., Chicago; George M. Gardner, chairman of Wells-Gardner & Co., Chicago; W. J. Halligan, president of The Hallicrafters Co., Chicago; and L. F. Hardy, vice president of Philco Corp., Philadelphia.

RMA member-companies are not opposed to the commercialization of color television, the statement submitted by Bond Geddes, RMA executive vice president, added, "if it can be superimposed on present monochrome, or 'black and white,' broadcasting service with a minimum of dislocation and in a manner which will make the service available to present and future television receiver owners at reasonable additional cost.

"RMA in general concurs with the FCC statement of May 26 that any proposal for color television should 'permit reception on the ordinary television receiver with relatively minor modifications,'" RMA continued. "But RMA wants the introduction of color to be orderly and to carry the assurance of satisfactory technical quality at a reasonable cost."

RMA stated that its president, Raymond C. Cosgrove, who is also executive vice president of Avoc Manufacturing Corp., will be chief industry and RMA spokesman at the forthcoming television hearing. He will be supported by Dr. W. R. G. Baker, director of the RMA Engineering Department and vice president of General Electric Co., and other technical witnesses.

An extensive study of color television by special committees of the RMA Engineering Department is now under way,

RMA said, and considerable technical data will be introduced when RMA officials testify. Four subcommittees of a Color Television Committee are assembling information which will be submitted to the RMA Television Committee before presentation to the FCC.

Commenting on UHF allocation proposals of the FCC, RMA said that "the proposed addition of 42 six megacycle channels is substantially in accord" with a recommendation made to the Commission by RMA last February. At that time RMA recommended that the current television "freeze" be lifted as promptly as possible and that there be a minimum of overlap of UHF and VHF television stations in any given area.

With regard to the proposed UHF allocations recently announced by the FCC, RMA said it concurs with the FCC's objective of creating a "truly nation-wide television broadcasting service on a competitive basis," but it expressed the opinion that detailed allocations "can best be worked out with the broadcasters concerned, both those now operating and potential operators.

"RMA's chief interest in allocation of television channels is that satisfactory television service shall be available to as many areas and homes in the United States as is technically and geographically possible," RMA added.

RCA

Statement to FCC Reveals Details of New All-Electronic System Which Operates on 6 Megacycle Channel — Existing Black - and - White Receivers Can Pick Up Color Programs in Monochrome Without Any Modification of Existing Sets and Without Any Adapter.

A new all-electronic, high-definition color television system, completely compatible with the present system of black-and-white television, was unveiled by the Radio Corporation of America in a written statement to the Federal Communications Commission.

The new color television system—the fruit of years of research and develop-

ment by RCA—requires no changes in transmission standards of present black-and-white television. Its performance is equivalent to the present black-and-white service, both for color and reproduction of the color signals in black-and-white, the RCA declared. Through its complete compatibility, the new system enables present television sets to receive color programs in monochrome without any modification whatever and without any converter or adapter. Color programs can be viewed either on new color receivers or on existing receivers equipped with a color adapter.

The full text of the RCA letter, which was address to T. J. Slowie, Secretary of the FCC, and signed by Dr. C. B. Jolliffe, Executive Vice President in Charge of the RCA Laboratories Division, follows:

August 25, 1949

Mr. T. J. Slowie, Secretary
Federal Communications Commission
Washington 25, D. C.

Re: Docket Nos. 8736,
8975, 9175 and 8976.

Dear Sir::

In compliance with paragraph 14(a) of the Notice of the Commission in the above proceedings issued July 11, 1949, Radio Corporation of America hereby submits the following comments:

1. CHANGES IN TRANSMISSION STANDARDS LOOKING TOWARD COLOR TELEVISION.

RCA has developed a new color television system which does not require any changes in present transmission standards.

This new color system is all-electronic, has high-definition and operates entirely within a 6 megacycle channel.

The system has standards of performance equivalent to the present black-and-white standards both for color and for reproduction of the color signals in black-and-white. It accomplishes this in a 6 mc channel without any degradation of picture quality.

Our new system is a completely compatible system. It enables present television sets to receive color programs in monochrome without any modification whatever and without any converter or adapter.

Demonstrations will show that when a television transmitter shifts from black-and-white transmission to color transmission on this system, the viewer of an existing black-and-white receiver will be unaware of the shift. On the other hand, by means of this new system, a viewer of a color set receiving programs in col-

or will, when the station changes from color to black-and-white transmission, see black-and-white pictures without making any changes in his receiver.

Thus, with this new RCA color system, the transmitting station can change at will, either from color to black-and-white or the reverse, without disturbing the viewers of either the existing receivers or color receivers, without requiring adjustments to either type of receiver and, therefore, without any loss of audience.

Our new color system is also an adaptable system. Color programs can be viewed either on new color receivers or on existing receivers equipped with a color adapter.

This new RCA color system is the fruit of years of research and development. During the last decade RCA has carried on much research and development work looking toward a practical system of color television. During this period our engineers have investigated many systems and studied their advantages and disadvantages. It has been our objective to develop a high-definition color system which could be integrated into the existing black-and-white system without obsoleting present transmitters and receivers.

During the hearing in Docket No. 7896 held in 1946-1947, RCA demonstrated a simultaneous color system which the Federal Communications Commission recognized as having considerable merit. This system, however, needed further development, and the Commission has been informed at intervals of our progress.

The simultaneous system which we first demonstrated in 1946 requires a minimum of 12 mc for transmission and, because of problems of frequency allocation, it was necessary that that system be proposed for operation only at ultra-high frequencies.

In 1947 and 1948, RCA conducted extensive transmission tests at UHF, among which were the UHF tests in Washington, D. C., during the fall of 1948. Full information on these tests is in the files of the Commission. The results of the UHF propagation tests showed that much more work was needed in the UHF band before reliable public service could be given in that band.

This necessarily involved delay in bringing high-definition color television service to the public in the UHF band, not for reasons connected with color, but because of propagation difficulties. At that time we were also concerned because the VHF 6 mc channel did not provide

color television without degrading the quality of the picture.

Therefore, even before our Washington UHF tests were finished, we began a concerted attack upon the widely accepted conclusion that high definition color television could not be provided in a 6 mc channel. The objective of this attack was to develop a method of transmitting color in a 6 mc channel without any degradation of the quality of the received picture. At the same time we retained our previous requirement that the system must be completely compatible, that is, present receiving sets would need no modification for reception of color transmissions in monochrome and existing transmitters would continue to be useful.

We are now glad to report the accomplishment of our objectives. We have created a new color television system which has the characteristics described above.

For the studio we utilize the same equipment as we have in previous hearings for our wide band simultaneous system. This equipment provides three signals, one for each primary color. Following this and preceding the transmitter modulator, the signals are rapidly sampled electronically in time order for each color and then combined. The resulting single channel signal is transmitted in time multiplex fashion requiring a total modulation bandwidth of only 4 mc.

The head-end radio and intermediate frequency circuits of the receiver are the same as for a current black-and-white receiver. The video signal is then fed to an electronic arrangement which is the inverse of the signal sampler at the transmitter. This results in restoring the three color signal channels of green, red and blue, and these are fed in simultaneous-system fashion to a three-color picture reproducing system to be viewed as a single picture.

This RCA color system has the following characteristics:

- (1) 6 megacycle channel
- (2) Fully compatible
- (3) 525 lines
- (4) 60 fields per second
- (5) Field interlaced
- (6) Picture dot interlaced
- (7) 15 color pictures per second
- (8) Time multiplex transmission
- (9) All-electronic

The same transmitters as are presently used by television stations can be used for the transmission of the RCA color system. The changes required for trans-

mission of the new system are in studio equipment to produce color pictures and the addition of the small amount of electronic equipment required to perform the sampling and time multiplexing.

It is our belief that this new system provides for the first time a sound basis for the bringing of color television service to the public, as well as full scope for the continuing development of color as the art progresses, without involving obsolescence of present-day black-and-white receivers.

During the month of September we will transfer the equipment from our Princeton laboratories to Washington, D. C., where it will be installed in the NBC station (WNBW) at the Wardman Park

Hotel. RCA will submit testimony and demonstrations to the Commission regarding this RCA color television system.

This system is entirely consistent with the "Standards of Good Engineering Practice Concerning Television Broadcasting Stations" and can be broadcast without modification of these standards. Therefore, RCA does not propose any modification of existing transmission standards.

2. FIELD INTENSITIES, PROPAGATION, STATION SEPARATION AND SERVICE AREAS.

RCA will present evidence at the hearing regarding its experimental work on these subjects. This evidence will include

the results of our work on carrier synchronization and offset carrier methods of reducing co-channel interference. Exhibits containing this information will be submitted prior to the hearing. RCA believes that these methods can be effectively used in the public interest for increasing the number of television stations as well as enlarging and improving the service areas of those which the Commission proposes to allocate.

Very truly yours,
RADIO CORPORATION OF
AMERICA

(s) C. B. Jolliffe
Executive Vice President in
Charge of RCA Laboratories
Division

Du MONT

ONE-NETWORK TV MONOPOLY LOOMS UNDER FCC ALLOCATIONS,, SAYS DU MONT

Color Proposals Confuse Public, Cloud Real Issue.

The general public has a larger stake than it realizes in the television hearings scheduled to start before the Federal Communications Commission, September 26, it was stated by Dr. Allen B. Du Mont, President of the Allen B. Du Mont Laboratories.

On the face of it, the purpose of the hearing is to review the allocations outlined by the FCC on July 11, and also to look into color television proposals.

However, declares Dr. Du Mont, the public should be made aware that the future of television depends on these hearings. In regard to allocations, Dr. Du Mont points out that the FCC's assignment of channels in the VHF and UHF frequencies tends to create a one-network monopoly. Many cities would have only one VHF station. Also, the FCC plan calls for widespread mixing of VHF and UHF channels in the same city, which would require set owners to buy converters if they wish to enjoy all the programs available. It would also cause interference between stations.

Du Mont offers a solution to these problems in a comprehensive new plan drawn up by Dr. Thomas T. Goldsmith, Director of Research of the Du Mont Laboratories, which has just been filed with the FCC.

Under this plan, 12 VHF channels would be used to the fullest extent, providing four channels per city for most of the 140 metropolitan districts. It utilizes 48 of the new UHF channels to assure adequate service to other communities. It reserves 12 additional UHF channels for smaller communities which will not be ready for television until later. It sets aside nine additional UHF channels for non-commercial educational stations. It avoids the intermixture of VHF and UHF channels in the same city. It provides allocation of UHF channels so as to minimize interference between stations and receivers. It provides a minimum of four channels in most communities to assure competitive operation and widest choice of programs. It provides a practical long term operating plan for television which will best serve the public.

Referring to the recent flurry about color television, Dr. Du Mont declared:

"We would welcome color, if good color were available. The proposed color systems of CBS and RCA each claim that it will be fairly simple and inexpensive to convert present black-and-white sets to receive color. That remains to be seen. Final determination of commercial color television requires extensive experimentation and field tests. Such tests are imperative before the FCC can consider adopting standards. This will take years.

"In any case, we hope the discussions on color will not cloud the major issue before the FCC, which is the practical assignment of VHF and UHF channels to make full use of the spectrum, to prevent omnopoly and provide the widest service to the public as quickly as possible."

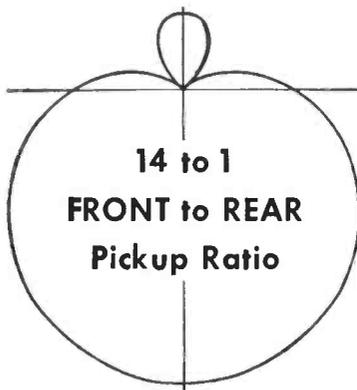
Du Mont's Eight Points in TV Allocation Plan

The Du Mont Program provides for 81 channels and rests on these eight factors:

1. To utilize the twelve present commercial VHF channels to the fullest extent, thereby providing four channels per city for most of the 140 metropolitan districts (as described by the 1940 census).
2. To utilize 48 UHF channels, each six megacycles wide, to assure adequate service to other communities.
3. To reserve twelve additional UHF channels, each six megacycles wide, to protect smaller communities, not yet ready to embrace TV and insure that adequate frequencies will be available when they are ready. These will be assigned on a first-come, first-served basis.
4. To set aside nine further UHF channels for non-commercial educational broadcast applications. These are to be assigned on a first-come, first-served basis and used at full metropolitan power.
5. To allocate VHF and UHF frequencies in such a manner as to provide a minimum of four channels in most metropolitan communities to assure competitive operation and a wide choice of programs.
6. To minimize the intermixture of VHF and UHF assignments to reduce, or eliminate, the need for set owners to buy converters or for station owners to utilize transmitters for two supplementary frequencies.
7. To provide for the best long term operating plan for television, by designating certain cities, now having a limited VHF service, as future UHF cities in the long term plan.
8. Finally, it proposes allocation of UHF channels so as to minimize interference between stations and receivers.

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Presented at the 1949 IRE Convention—continued from last month

INSTRUMENTS AND MEASUREMENTS III

Chairman, R. M. BOWIE

(Sylvania Electric Products Inc., Flushing,
L. I., N. Y.)

(Continued)

74. The Speed of Electronic Switching Circuits.

E. M. WILLIAMS AND D. F. ALDRICH, *Carnegie Institute of Technology, Pittsburgh, Pa.*

The transition or switching interval in electronic switching circuits such as multi-vibrators is discussed. Curves will be presented showing typical variation of the transition time with various circuit parameters. Analytic results based on the use of equivalent circuits employing mean values of transconductance and plate resistance are also presented, and means are provided for computing and minimizing the duration of the transition. Triggering delay is briefly considered.

75. A Magnetostrictive Delay Line.

E. BRADBURY, *Federal Telecommunication Laboratories, Inc., Nutley, N. J.*

A description is given of a supersonic delay line using nickel ribbons as the sound-conducting elements; the magnetostrictive property of nickel is used for coupling into and out of the ribbons.

Smoothly varying delays of 5.3 microseconds per inch of line are obtainable, along with the added convenience of many transmitting and receiving points. The 35-db insertion loss for this delay line is substantially independent of delay.

A novel method is described for reducing the effect of echoes from the ends of the line.

76. An Electromechanical Strain-Gage Multiplier.

C. H. WOODS, E. ST. GEORGE, L. ISENBERG, AND A. C. HALL, *Massachusetts Institute of Technology, Cambridge, Mass.*

This paper describes a newly developed instrument for multiplying modulated carrier voltages. The basic multiplying element in this instrument is a wire-resistance strain-gage Wheatstone bridge. One of the modulated voltages, the multiplier, is applied to the input terminals of the bridge network and the second modulated voltage, the multiplicand, controls the degree of unbalance of the bridges. The product appears as the modulated output of the bridge network. A circuit arrangement employing a constantly excited feedback bridge effectively applies negative feedback around the active elements in the system and results in an accuracy of

0.1 per cent of full-scale output, and a multiplication time constant of less than two milliseconds.

77. Radar - Circuit - Powered X-Ray Movie Equipment for Operation at 150 Frames Per Second.

D. C. DICKSON, JR., C. T. ZAVALAS, AND L. F. EHRKE, *Westinghouse Electric Corporation, Bloomfield, N. J.*

A high-powered pulse transformer has been developed which delivers 60-ampere current pulses to a special tungsten-filament X-ray tube at 150 kilovolts above ground. The pulse transformer is energized at up to 150 pulses per second by a circuit similar to a radar line-type modulator. The X-ray exposure time for each frame is 10 microseconds which results in negligible motion blur when recording on film moving continuously at 25 feet per second. Although developed specifically for the study of small solid-fuel rockets, the principle of operation is readily adaptable to other applications. With the existing equipment, penetration is good through one inch of aluminum.

ELECTRONICS I—TUBE DESIGN AND ENGINEERING

Chairman, DAYTON ULREY

(RCA Victor Division, Radio Corporation of America, Lancaster, Pa.)

78. Microphonism Investigation.

LESTER FEINSTEIN, *Sylvania Electric Products Inc., Kew Gardens, L. I., N. Y.*

A method of investigation which indicates which elements of the tube are causing microphonism is described. The equipment consists of a vibrating system driven by an amplifier operated from a variable-frequency audio oscillator. Tube noise is measured on a tube voltmeter and is also projected on an oscilloscope. At frequencies where peak noises are observed, a microscope and stroboscope indicate those elements that are vibrating.

An example is given in which a tube is analyzed and the information used to predict the frequencies at which microphonism will occur. Tube structural features that most frequently cause microphonism are cited, and a mathematical analysis of tube structure given which indicates how natural frequencies of the elements can be predetermined by the tube designer.

79. A Critical Survey of Methods of Making Ceramic-to-Metal Seals and Their Use for Electron-Tube Construction.

ROGER P. WELLINGER, *University of Illinois, Urbana, Ill.*

All of the known methods of making ceramic-to-metal vacuum seals have been

used in experimental klystrons. The methods have been thoroughly examined mechanically and electrically and an explanation of the physical-chemical nature of the bond is hypothesized. The methods used are: (1) the German method of metalizing the ceramic by sintering a metal powder onto it; (2) brazing onto the ceramic using a special titanium hydride flux; and (3) a new method of sealing by means of compression between the metal and the ceramic. A comparative study is presented of the advantages of each method used in respect to fabrication, as well as to the respective electric properties of the seals at high frequencies.

80. Rugged Tubes.

GEORGE W. BAKER, *Kip Electronics Corporation, New York, N. Y.*

An electronic tube which can take its place as a piece of mechanical equipment must be designed and tested to withstand an unlimited variety of mechanical shocks, exceeding the range of the currently developed "W" types.

This is accomplished by dividing the shocks into three regions according to the ratio of the natural frequency of the tube element to the frequency of the shock. The most severe shocks are represented by a half-sine-wave pulse of acceleration in the frequency-ratio range of 0 to 0.5; by a sine wave, including the contribution of the starting transient, in the range of 0.5 to 5; and above 5 the acceleration is considered as statically applied. In the range 0 to 0.3 the disturbing effect of the shock depends entirely upon the change in velocity during the shock.

A tube that withstands these shocks consists of a very rigid structure supported by a single compliant element designed to function as an oscillating system of one degree of freedom.

81. An Improved Method of Testing for Residual Gas in Electron Tubes and Vacuum Systems.

E. W. HEROLD, *RCA Laboratories Division, Radio Corporation of America, Princeton, N. J.*

The small amount of residual gas in electron tubes is sometimes of concern to the user and, more often, of considerably greater interest in the laboratory and factory. Existing methods of test employ a negative electrode in the tube to collect ion current or, in a vacuum system, a similar test is made with an ionization gauge. The dc current to the negative electrode is

used as a measure of gas pressure. Unfortunately, leakage and other stray currents are of the same nature and may even be greater in magnitude, so that ion currents well below the stray-current level cannot be determined. A new method is described in the present paper in which the desired ion current can be separated from undesired stray currents.

82. Design Factors, Processes, and Materials for the Envelope of a Metal Kinescope.

R. D. FAULKNER AND J. C. TURNBULL,
RCA Victor Division, Radio Corporation of America, Lancaster, Pa.

The development of the envelope assembly of the metal kinescope was prompted by the need to achieve in large cathode-ray tubes (1) lighter weight, (2) greater manufacturing flexibility, and (3) improvement in optical quality. Such an envelope assembly presented many new problems which had to be investigated, including those of designing a suitable face plate and of making large metal-to-glass seals. It was found that if the seal shape and the stress distribution at the seal were carefully controlled, the forming of seals with considerably higher stress than previously considered possible could be performed by mass-production manufacturing methods.

The use of a metal cone permits a considerably thinner face plate. In fact, low-cost window glass 3/16th-inch thick formed to a radius of 27 inches was found to be satisfactory. A chrome-iron cone is used. It has excellent sealing properties and the proper expansion characteristics.

TELEVISION II

Chairman, ROBERT SHELBY

(National Broadcasting Company, New York, N. Y.)

83. The Measurement of the Modulation Depth of Television Signals.

R. P. BURR, *Hazeltine Electronics Corporation, Little Neck, L. I., N. Y.*

For economic reasons the tendency in television broadcasting has been towards close control of the performance of transmitters with the intent of minimizing the design complications and cost of receiving equipment.

The purpose of this paper is to discuss the measurement of the modulation depth resulting from the application of a video signal to a television transmitter. The paper considers three means for modulation-depth measurement, two of which are electronic, and the third mechanical. Any one of the methods requires relatively little apparatus and may be applied to a local source or to a distant transmitter. Several photographs are included, showing the Patterns resulting from various adjustments of the television transmitter,

and the possible effect of these adjustments on different types of television receivers.

84. Development and Performance of Television Camera Tubes.

R. B. JANES, R. E. JOHNSON, AND R. S. MOORE, *RCA Victor Division, Radio Corporation of America, Lancaster, Pa.*

Three new television camera tubes have resulted from a development program extending over several years. These are:

1. The 2P23 image orthicon, which is especially suited for remote pickups where a wide range of illumination is encountered.

2. The 555 image orthicon, which is capable of producing better-quality pictures for studio scenes where more light is available and the range of illumination is not so great.

3. The 5769 image orthicon, which may be used for either remote or studio pickups.

The paper discusses the construction and operation of these tubes in detail. In addition, other tubes developed during the course of this work are described and their limitations brought out.

85. An Anastigmatic Yoke for Television Deflection.

KURT SCHLESINGER, *Motorola, Inc., Chicago, Ill.*

The paper describes a television deflection yoke with two coil doublets per scan and capable of reducing field distortion and spot defocusing at wide angles of deflection, if certain conditions are fulfilled. These are derived by theoretical considerations.

The performance of this yoke is shown in several tests. These include field patterns, photos of beam distortion, dot patterns on a kinescope screen, and a monoscope picture test.

Three simple and economical circuits are shown for use in a television receiver employing the new yoke. They are (1) a line sweep using the field energy in the yoke to energize the focus coil, (2) a field sweep amplifier with resistive plate load, using phase correction for linearity control, and (3) a synchronous high-voltage pulse power supply. All these units operate on low supply voltage (250 volts).

86. A High-Efficiency Sweep Circuit.

B. M. OLIVER, *Bell Telephone Laboratories, Inc., Murray Hill, N. J.*

This paper describes a sweep output stage using two driver tubes in a push-pull class-B connection. The entire plate power for one of these tubes is supplied by the energy stored in the yoke by the other tube. The plate power consumption is about one-fourth that of a single-ended class-A driver stage. Except during fly-back, transmission is present from the

grid of a driver tube to the yoke. Negative feedback can therefore be used to provide stable sweep linearity.

High voltage for the cathode-ray tube can be obtained, either in the usual manner or in a novel fashion which prevents a loss of efficiency.

87. Current Developments in UHF Television.

THOMAS T. GOLDSMITH, JR., *Allen B. DuMont Laboratories, Inc., Clifton, N. J.*

Widespread attention is currently being devoted to the possibility of using the uhf channels from 475 to 890 Mc for expansion of television service. Consideration by the FCC, as well as great activity within the industry, makes this field of endeavor change complexion rapidly with passing weeks. This paper will be a status report of uhf television at the time of presentation.

Emphasis will be placed upon propagation characteristics, material concerning allocations distribution, availability of power, the status of transmitting and receiving equipment, and, finally, the consideration of standards as to bandwidth, black-and-white, color, and other essential factors which must be determined before commercial operation in this band is authorized.

WAVE PROPAGATION II

Chairman, CHARLES R. BURROWS
(Cornell University, Ithaca, N. Y.)

88. An Analysis of Distortion Resulting from Two-Path Propagation.

IRVIN H. GERKS, *Collins Radio Company, Cedar Rapids, Iowa.*

It is shown that the distortion caused by two-path propagation for the case of amplitude modulation is principally a result of overmodulation in the resultant signal. This distortion may be very severe when the difference in path lengths becomes large and the two signals have nearly equal amplitudes, whereas it is usually negligible where the difference in path lengths is small, as in tropospheric propagation. The response of an ideal FM receiver is then investigated. It is found that the frequency of the resultant signal, when averaged over a beat-frequency cycle, is the same as that of the stronger signal, but that a very large excursion or "spike" may occur in one direction from this average value. The necessary characteristics of a receiver are determined to permit this averaging process to become effective when the two component signals are nearly equal in amplitude. It is shown that in this case the distortion can be made small, even for large differences in path lengths and an amplitude difference of less than 1 db, provided the frequency deviation is made sufficiently great.

88-A. The Speed of Radio Waves, and Its Importance in Some Applications.

R. L. SMITH-ROSE, *Department of Scientific and Industrial Research, National Physical Laboratory, Teddington, Middlesex, England.*

For radio waves in a vacuum the speed of transmission is equal to the velocity of light. When waves are propagated at a height of a fraction of a wavelength above the earth's surface, their speed is reduced by an amount dependent upon the electrical conductivity of the earth. For higher frequencies propagated at a height of several wave-lengths, the speed of the waves is determined by the refractive index of the air, rather than by the properties of the ground. Since the refractive index decreases with the height of transmission, so does the speed of the waves increase towards the velocity of light.

89. On the Origin of Solar Radio Noise.

ANDREW V. HAEFF, *Naval Research Laboratory, Washington, D. C.*

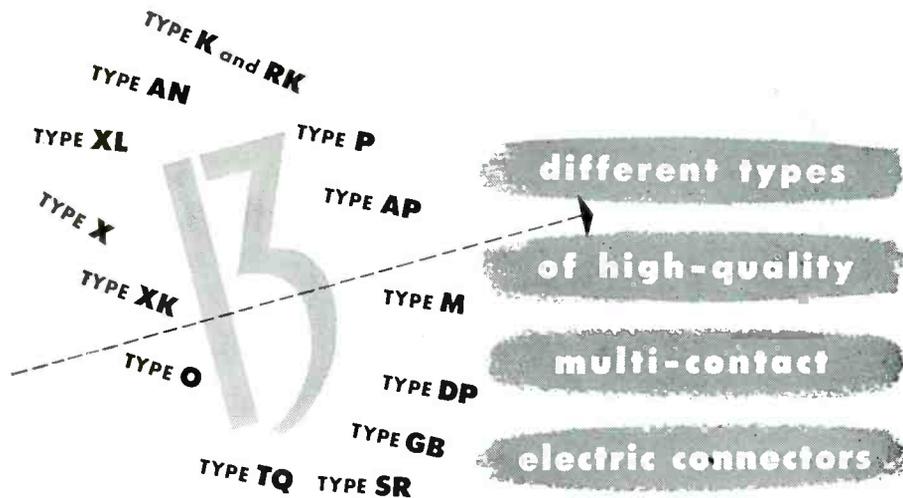
The observed anomalous radio-frequency radiations from the sun are associated with sun-spot activity and are believed to be generated within intermingling streams of charged particles issuing from active areas of the sun. Such streams have the property of greatly amplifying initial fluctuations over a range of frequencies determined by the density and velocity distribution of particles in the stream. The theory of generation of radio energy resulting from space-charge interaction between streams of charged particles is reviewed and applied to the solution of the solar radio noise problem. From estimates of average density and velocity distribution of solar particles, it is possible to compute on the basis of the new theory the frequency of the most intense radiation (30 to 60 Mc) and the absolute value of radiation intensity at the surface of the earth (7 to 2) $\times 10^{-22}$ C watt/(cm²/cps) which agree well with the measured values. The most probable spectral distribution of the anomalous solar radiation is derived.

90. Geometrical Representation of the Polarization of a Plane Electromagnetic Wave.

GEORGE A. DESCHAMPS, *Federal Telecommunication Laboratories, Inc., Nutley, N. J.*

A geometrical representation, introduced by H. Poincare, is briefly described. Polarization states of an electromagnetic wave, or of an antenna, are represented by points on the surface of a sphere. A simple formula is derived for the variation of the voltage induced in a given antenna when the polarization of the incident wave is changed. Trigonometrical

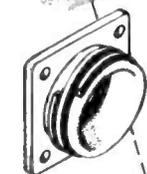
To Page 20



LOW - MEDIUM - HIGH

for most quick-disconnect needs

VOLTAGES - AMPERAGES



SHELLS

SHELLS of Cannon Electric Connectors are variously aluminum alloy, zinc alloy, and steel to meet the requirements of the application. For instance, a Type AN is aluminum alloy, Type P plug is steel or zinc, Type XL zinc or steel.



INSERTS

INSERTS are of good dielectric material to meet the needs of the application; and may be of melamine, Durez, Bakelite, Alkyd, etc. As new and better insulating materials are developed, Cannon Electric will have them.



CONTACTS

CONTACTS are generally brass, silver-plated, or copper, and milled. Gold-plated contacts are available for certain Type DP Connectors.



COUPLING

COUPLING means, too, vary with the needs of the application: the famous "latch-lock" for microphone applications in the "P", "XL" and "O"; AN, K, XK and AP have coupling nuts; X, TQ, SR, M and DP rely on friction hold.

Address Department J376 for further information and a copy of 72 page "Cannon Plugs for the Electric Circuits of Industry."

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Review of Current Technical Literature

By Lawrence W. Lockwood

Radio and Electronics (New Zealand)— May 1949

An Electronic Switch—Two Pictures at Once on the Same Cathode Ray Tube

A circuit which enables the placement of two waveforms at once on the screen of an oscilloscope without the aid of a special cathode ray tube.

Audio Engineering—June 1949

New Developments in Preamplifiers—C. LeBel

A comprehensive discussion of the advantages of subminiature design techniques.

New Polyphase Reproducers System—M. Weil

A new phonograph pickup design incorporating established operating principles which provides a simple and logical solution to the problem of reproducing different types of records and transcriptions.

Crossover Filter for Disc Recording Heads—H. Roys

Description of a practical device designed to compensate for variations in cutter characteristics, both at the transition frequency and at the high frequency end of the spectrum.

Magnetic Tape and Head Alignment Nomenclature —N. Haynes

Suggested terminology for expressing causes of malfunctioning of experimental and commercial tape recorders.

Communications—April 1949

A 16 Element FM Receiving Antenna—L. Dickensheets

Antenna 1,070 feet above sea level, provides consistent pickup of signals from 100 watt FM station 60 miles away.

The WOW TV Television Field Car—J. Herold

Car features easily removable console dolly on which all equipment can be mounted for rapid transportation to point of pickup. Also provided is a hydraulic leveling unit to level body when car is being used for relay and camera work.

Modernizing a Remote Amplifier—A. Kelly

Revamped amplifier, incorporating simple mixing circuit with 1620's in the low level stages and a 6SN7 as a voltage amplifier and phase splitter, provides a frequency response flat within 2 db from 20 to 20,000 cps.

AM FM Console Switching and Relay System—F. Bartlett

Output and signal switching setup provides feed to the AM and FM lines or both, with practically instantaneous switching to each console.

General Folded Dipole Antenna Design—D. Waide-lich

An analysis for the field patterns and radiation resistance for folded dipoles of any length and with any current distribution in the sides. General folded dipole design theoretical results compared with experimental results.

Variable Density Recording on 16 MM Film for TV —L. Martin

Film recording directly on positive film minimizes possibilities of distortion and provides higher output level. Process can be used for kinescope recording work.

FM Proof of Performance Measurement Techniques —F. Talmage

Concluding installment with appendix covering list of FCC measurements required, FCC electrical performance standards, Bessel Zero system for measuring FM transmitter frequency swing and diode detector for hum and noise measurements.

Tape Recorder Time Clock Control—W. Marsh

Modified tape recorder control unit permits automatic recording of air check programs. System can also be applied to other remotely operated tape installations.

Communications—May 1949

RF Coil Design Using Charts—P. Sulzer

Plots eliminating need for calculations, provide inductance and number of turn data for rf coils when the capacitance, resonant frequency and coil form size are known.

Tube Engineering News—K. Hoagland

CR tube, designed for wide band scope work affords observation and recording of waveforms containing HF components, which appear in video and pulse transmitting and receiving systems.

TV FM Field Intensity Measurements—G. Adair

Essential equipment and methods used in actual field measurement operations for TV and FM stations lucidly described by former FCC chief engineer.

Balanced 2 Wire Method to Reduce Ignition Interference—V. Welge

Developmental study reveals that 2 wire method is superior to suppressor or shielding procedures, when symmetry is preserved.

FM Station Design for One Man Operation—M. Alth

WGNR, New Rochelle, design permits one person to serve as engineer, announcer and platter turner.

FM TV—June 1949

Equipment for Remote Pickups—F. Budelman

Transmitters and receivers designed for the revised VHF channel assignments and the new 450 to 452 mc band.

TV Operation in Small Cities—E. Meehan

Describing the equipment layout and operation for a commercially practical minimum cost secondary TV installation.

Choosing the Right Antenna

A few notes on improved designs.

Generator for AF Measurements—W. Eldred

A precision audio frequency signal generator with a controlled output voltage at a known impedance level.

Proceedings of the IRE—May 1949

Automatic Frequency Phase Control of Television Sweep Circuits—E. Clark

This paper describes three different types of automatic frequency control circuits: (1) sawtooth type, (2) sine wave type and (3) pulse time type.

A Field Survey of Television Channel 5 Propagation of New York Metropolitan Area—T. Goldsmith, Jr., R. Wakeman, J. O'Neill

A comprehensive study of the performance characteristics of DuMont television station WABD, New York, N. Y., embracing a new measuring technique is discussed.

Graphical Analysis of Linear Magnetic Recording Using High Frequency Excitation—M. Camras

The addition of a high frequency component to an audio signal which is to be recorded magnetically results in a low distortion, linear recording characteristic under certain conditions.

Proceedings of the IRE—June 1949

Antenna Impedance Measurement by Reflection Method—E. Istvanffy

Two methods of measuring the impedance of radiators are described based on measurement of the power reflected by the radiators.

Transient Response of Cathode Followers in Video Circuits—B. Mills

The behavior of cathode followers handling the irregular video signals of radar or television is discussed.

Experimental Ultra High Frequency Multiplex Broadcasting System—A. Kandoian, A. Levine

A definite indication that the need for broadcast facilities in the near future will far exceed the available channels is recognized. A feasible expansion appears to be in the UHF spectrum and this paper discusses a system operating in that region.

Tele Tech—June 1949

Simplified Handling of Television Remotes—W. McCord

Permanent facilities installed in coach permits transporting complete televising needs in "ready to use" condition.

Video Recording Technics—G. Gordon

Part two of two parts about 16 mm photography of shows off CR tubes.

Tele Tech—July 1949

Trends and Technics in European Communications

Keenest interest displayed in television, FM, High frequency AM employed experimentally.

A New Telecine Channel—F. Ehrenhaft, M. Cawein

"Shutterless" projector operating in conjunction with modified image dissector, "lap dissolves" each film frame, requires no synchronization.

Broadbanding Ring Type FM Antennas—B. Parker

Addition of series resonant circuit in coaxial feed line to counteract off frequency antenna reactances increases response from 0.5 to as much as 8 mc.

Television Photometry and Optical Background—R. Kuehn

A method for obtaining direct and precise light measurements for television studios.

Reversible Beam TV Receiving Antenna

Construction details.

Hidden Headaches in Building a Broadcast Station

Discussion of typical problems involved.

Tape Characteristics for Audio Quality—R. Marchant

Careful control of variables; proper operational storage and handling techniques govern in obtaining uniformly high quality recordings.

Climaxing 15 years experience in training **PRACTICAL ENGINEERS** . . . we announce completely **NEW** and **MODERN AM-FM-TV STUDIO, TRANSMITTERS, and IMAGE ORTHICON CAMERA CHAIN** . . . specially designed and planned to give the student the practical experience needed to be a real asset to an engineering staff.

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The CBS - IBEW Contract

By C. WESTOVER, NABET Executive Secretary

All pertinent excerpts therefrom are herein presented in condensed form and true aspect. *Anything* regarding job classifications and wage scales, penalties, premiums and conditions *not* herein presented simply are not in the contract.

1. The IBEW *jurisdiction* specifically *excludes* "draftsmen and machinist-technicians." Also excluded are "a number of engineers who perform, in whole or in part, such functions as the creation, origination, design, specification and the measurement or adjustment of equipment required in their developmental or experimental work."

2. No strike-breaking clauses refer *only* to strikes "involving IBEW members."

3. Wages:

1st 3 months	\$62.50
3 months to 1 year	67.50
1 year to 2 years	77.50
2 years to 3 years	87.50
3 years to 4 years	97.50
4 years to 5 years	110.00
5 years and thereafter	125.00
Asst. Supervisors	143.50
Supervisors	150.00

Note: No master control, video control or other higher classifications with upwards differentials.

4. CBS agrees *only* to the *appointment* of at least *two* (2) *supervisors* and *only* at their 50 KW stations. Assistant supervisors are not mentioned. *Contract terms do not apply to supervisors unless they perform twelve (12) or more hours per week of operational duty.*

6. CBS may employ part-time technicians at ratio of one (1) to twenty (20) full-time technicians.

Temporary technicians acquire no seniority rights.

6. Forty (40) hour week; eight (8) hour day plus meal period. Time and one-half after forty (40) hours per week; eight (8) hours per day; work performed on day off.

Five (5) days notice required for days-off change. Twelve (12) hour turnaround; \$1.50 per hour penalty on short turnaround.

Five (5) day notice in New York and Hollywood reduced to three (3) days as part payment of so-called "salary increase" in those cities by terms of new contract.

Schedules posted two (2) days in advance but a change in schedule is still possible up to completion of last work assignment prior to effective change.

Studio and field men are assigned lunch period by Director in charge of program when total assignment time exceeds ten (10) hours.

7. Car mileage—10c per mile plus tolls and fees—\$1.00 minimum.

8. One (1) week vacation after three (3) months prior to April 1st.

Two (2) weeks vacation after one (1) year service prior to April 1st.

Three (3) weeks vacation total after one (1) year service—(one (1) week in lieu of holiday pay). No other vacation or holiday credit.

Sick pay—two (2) weeks with job held open for six (6) months.

9. Two (2) man maintenance at transmitters over 1 KW—one of whom may be a non-union supervisor.

10. IBEW field jurisdiction:

200 mile radius of each CBS owned station except Hollywood, which is 300 miles.

CBS affiliates can program CBS within 15 miles of the affiliate studio without using CBS technicians.

CBS "has the right to assign" IBEW-CBS technicians to other points and if the assignment requires more than one man, CBS may employ any other IBEW card holders to assist—not necessarily CBS technicians.

Jurisdiction limited to U.S.A.

11. IBEW *cannot cut* a CBS feed or *otherwise disturb* CBS operations to support IBEW strikes or organizing activity elsewhere.

12. Lay-offs according to local seniority.

New Contract

13a. New 1949 contract provisions:

Minneapolis

St. Louis

Boston

No change—same as before—above.

13b. Pay scales with and without apprentices*

	New York with per week	New York without per week
0 to 3 months	\$65.00	\$62.50
3 to 12 months	70.00	67.50
1 to 2 years	80.00	77.50
2 to 3 years	90.00	87.50
3 to 4 years	100.00	97.50
4 to 5 years	112.50	110.00
5 years	128.50	127.50
Assistant Technicians	52.50	52.50
Assistant Supervisors	146.00	143.50
Supervisors	152.50	150.00

*If the IBEW Local 1212 exercises its option to revoke permission it has given to CBS, allowing Assistant Technicians to handle microphone booms in TV, the salaries in the right-hand column will then become effective instead of the left-hand column.

"COLUMBIA BROADCASTING SYSTEM, INC.

485 Madison Avenue,

New York 22, N. Y.

August 3, 1949.

Local No. 1212, IBEW

118 E. 28th Street, New York, N. Y.

Attention: Charles Calame

Dear Sirs:

In connection with the provisions of Paragraphs 1 and 7 of the New York Supplement D, in the contract we are signing today with IBEW, it has been mutually agreed that, provided you send us, by or before December 1, 1949, written notice that a majority of CBS New York Technicians have so determined, you shall have the option to modify Paragraphs 1 and 7 of that Supplement, as follows, effective on the first Sunday following our receipt of such notice:

(a) The wage scales in Paragraph 1 to be reduced to:

<i>Technicians</i>	
1st 3 months	\$62.50
3 months to 1 year	67.50
1 year to 2 years	77.50
2 years to 3 years	87.50
3 years to 4 years	97.50
4 years to 5 years	110.00
After 5 years	127.50
<i>Assistant Technicians</i>	52.50
<i>Assistant Supervisors</i>	143.50
<i>Supervisors</i>	150.00

(b) In line 2 of paragraph 7(a) the words "and microphone booms" to be deleted, so that the paragraph would no longer refer to the work of operating microphone booms.

It is understood and agreed that changes (a) and (b) above must be made together, so that change (b) cannot be made unless change (a) is also made; and that the above union option ends on December 1, 1949, if we have not been given notice of your desire to exercise it on or prior to that date.

Yours very truly,

COLUMBIA BROADCASTING SYSTEM, Inc.
By _____
Vice President

Accepted and agreed:
LOCAL No. 1212, IBEW
By _____

"COLUMBIA BROADCASTING SYSTEM, INC.
485 Madison Avenue,
New York 22, N. Y.

JAMES M. SEWARD,
Vice President in Charge
of Operations

August 3, 1949.

Mr. Charles Calame
IBEW, Local No. 1212
118 East 28 Street, New York, N. Y.
Dear Charles:

In connection with the provisions of Paragraph 7 of the New York Supplement D, in the contract we are signing today with IBEW, you have asked us to indicate that we will not simultaneously utilize the services of more than three (3) assistant technicians to operate microphone booms as part of any one crew in connection with any one show. You have not asked that this limitation to three (3) assistant technicians operating microphone booms be applied where several different television crews are picking up a single show from several different locations.

This letter is to indicate that, in accordance with your request, we do not intend, during the term of the contract, to utilize the provisions of Paragraph 7 of the New York Supplement D in any way which conflicts with your request as noted above. In stating this, however, it is our understanding that you speak here only of the function of *operating* the microphone booms, as distinguished from the functions of moving, transporting, storing and/or removing such booms.

Sincerely, _____

TV seniority and AM, FM seniority distinctly separate.

	per week	per week
Assistant Supervisors	\$143.50	\$150.00
(Otherwise like Minneapolis, St. Louis—(no changes).)		

LOS ANGELES

Same as New York without right to revoke Assistant Technicians operating mike booms.

13c. CHICAGO

	Men hired prior to 8/3/49	Men hired after 8/3/49
0 to 3 months		\$62.50
3 to 12 months	0 to 6 months	67.50
1 to 2 years	6 to 18 months	77.50
2 to 3 years	18 to 30 months	87.50
3 to 4 years	30 to 42 months	97.50
4 to 5 years	42 to 54 months	110.00
5 years	54 months	125.00
No Assistant Technicians (no TV).		

13d SAN FRANCISCO and SAN JOSE*
(Never up to net scale)

	Per week
0 to 1 year	\$68.75
1 to 2 years	77.00
2 to 3 years	85.25
3 to 4 years	93.50
4 to 5 years	105.00
5 years	115.00
Supervisors	130.00

*Technicians at San Jose "shall not be entitled to base weekly salaries exceeding \$100.00 at any time"—except if they have to possess a 1st Class phone license and have to announce "they shall receive \$12.00 additional per week."

"August 3, 1949.

Columbia Broadcasting System, Inc.,
485 Madison Avenue, New York, N. Y.
Dear Sirs:

In connection with the Trade Jurisdiction clause (Section 1.04) of the agreement of even date between us, IBEW waives, as to CBS, any claim to perform *any* of the following work:

(i) any work which under the current practices of CBS or of its local stations is performed by others than the Technicians covered by this Agreement;

(ii) any work presently covered by an agreement with any other labor organization, including but not limited to the playing of records, transcriptions, or tape or wire recordings, where so covered;

(iii) work performed by any other CBS employees who are now or may in the future be covered by other agreements between CBS and IBEW and/or any of its Locals, including but not limited to Draftsmen, Machinist-Technicians, Electricians, Sound Effects Men, or Air Conditioning Men; nor the work performed by clerical personnel, Stock Room Attendants, or design, research, construction, developmental, station or other professional Engineers;

(iv) the work of operating (as distinguished from maintaining) of portable recording, transmitting or receiving equipment for program or pickup requirements where, because of the physical limitation of the equipment or the performance requirements, it is impractical for anyone but the performers using it to do so, provided that this exception shall apply only in situations where, under the applicable rules and regulations of the FCC, licensed technical personnel are not required for such operation; e.g.: operating a walkie-talkie on the floor of a convention; or a recording machine in a plane or submarine where space is limited;

(v) any work performed by independent contractors, or their employees; e.g.: telephone services, film-making, etc.;

(vi) work for anyone from whom CBS purchases or otherwise procures, or to whom CBS sells or otherwise furnishes, film, recordings, apparatus, equipment, programs or other materials or services; e.g.: other stations, clients or others supplying recordings, etc.;

(vii) work on CBS equipment which CBS has sold, leased, rented, or loaned to third parties, and whether or not the use of such equipment by such third parties occurs in or on CBS premises, except insofar as CBS has arranged with such third parties to have services of the type covered by this Agreement performed on such equipment by CBS employees; e.g.: loans of equipment to other stations; "Bare-wall" leases of studios to outside parties not contracting with CBS for operating services, etc.

CBS' signature in the space provided below will represent CBS' agreement that CBS will not contract to have work performed by non-IBEW members under any of the above subparagraphs v, vi, or vii, essentially to evade the terms of the Agreement between us.

Yours very truly,

INTERNATIONAL BROTHERHOOD OF
ELECTRICAL WORKERS

By
International Representative, for and in behalf
of its Local Unions 45, 202, 1212, 1216, 1217,
1220 and 1228

Accepted and Agreed:
COLUMBIA BROADCASTING SYSTEM, INC.

By
Vice President

COLUMBIA BROADCASTING SYSTEM, INC.,
APPROVED: FOR CALIFORNIA (For Stations
KCBS and KCBS-FM)

By
Vice President Local Union 202, San Francisco, Calif. (For men employed at Delano and in San Francisco Bay Area.)

APPROVED:

.....
For CBS—Delano

.....
For CBS—Los Angeles Local Union 45, Los Angeles, Calif. (For men employed in Los Angeles.)

.....
For CBS—New York Local Union 1212, New York, N. Y. (For men employed at or about New York City.)

.....
For CBS—Minneapolis Local Union 1216, Minneapolis, Minn. (For men employed at or about Minneapolis.)

.....
For CBS—St. Louis Local Union 1217, St. Louis, Mo. (For men employed at or about St. Louis.)

.....
For CBS—Chicago Local Union 1220, Chicago, Ill. (For men employed at or about Chicago.)

.....
For CBS—Boston

.....
Local Union 1228, Boston, Mass. (For men employed at or about Boston.)"

One thing can be said for such a contract. It will insure good relations because the IBEW has given up its claim to most of its jurisdiction and, therefore, the union will not be in a position to claim contract violations. Yi!

No wonder CBS and the other networks like A. F. of L. Unions. I would, too, if I was an employer.

For this the mountain labored.

Respectfully,

CLARENCE WESTOVER,
Executive Secretary.

STRANGE BEDFELLOWS—from Page 2

manufacturing lend weight to the charge that IBEW is playing cozy with the company.

They're the worst contracts in the phone industry—and a millstone around the neck of legitimate unionism.

Proof that the company would like IBEW to be successful in splitting phone workers apart is found in the tenderness with which they allow AFL representatives time off the job for union activity while denying the same privilege to CWA-CIO representatives.

We are convinced that either through tacit consent or by actual agreement, IBEW is in collusion with the company. AT&T has much at stake and has much to gain through division in the industry and through preventing us from gaining the objective of bringing all phone workers together into one CIO union.

The telephone companies are too tender with the IBEW on matters of time off for organizing—and other favors; the IBEW is too tender with the companies on contract matters for us naively to believe that collusion doesn't exist.

The IBEW is not acting like a legitimate union. It's acting like a kept organization—an AT&T company union—or worse.

No longer is IBEW content to snipe only at CWA. It has broadened out its activities and is now blasting at the entire CIO. This can only have the effect of weakening the entire labor movement in the eyes of the public and making people outside the labor movement wonder why there must always be bitter warfare between its various segments.

If labor can't stay together on fundamental issues of union ethics, if substantial segments of the labor movement continue to take pot shots at each other, it's no wonder that reactionary business and governmental figures take advantage of the situation.

DO WE HAVE YOUR ZONE NUMBER?

DEADLINE is 2nd OF EVERY MONTH. EXAMPLE: COPY RECEIVED MARCH 2nd APPEARS IN THE APRIL ISSUE, IN THE MAIL APRIL 1st.

Heading Cuts for Chapter news columns. Chapters without regular heading cuts and desiring same, should send in photo, cartoon, or drawing of subject matter that they wish used to identify and distinguish their column.

D. C. SHULTIS

Engineering Chairman

DeWitt C. Shultis is the recently elected Chairman of the Engineering Chapter, NABET.

He was graduated from Morris High School, was sincerely interested in radio, attended several technical schools, and was graduated from the RCA Institute.



D. C. SHULTIS

In the communication and electrical field, Shultis worked for the Edison Company and Western Electric Co., and then went in business for himself—which provided a priceless education.

Mr. Shultis joined the Engineering Dept. of NBC in New York in 1928, and during his twenty-one years of service, he was successively construction engineer, maintenance engineer, maintenance supervisor, field engineer, and now television engineer.

Organization-wise, Shultis is an effective leader, and down thru the years he has served NABET and its predecessor, A. T. E., as councilman in various groups; he was Chairman of the New York Chapter for 1937-1938, when he was elected Vice President and then President of A. T. E. Shultis is well known among the entire New York NABET membership, New York and Engineering membership alike. He will prove himself a credit and an asset to the NABET membership.—EdS.

—If it concerns the
Broadcast Engineer, he
will read it in the

BROADCAST

ENGINEERS'

JOURNAL



WASHINGTON

By W. D. DEEM

The WRC softball team started the season in a slump, but after their next to the last game of the season, they were in anything but a slump. Their opponent, NAB of Washington, took a trouncing to the tune of 22-9 in a 5-inning game. JOHNNY BATCHELDER hit three home runs, two with men on base, to bring the score up to the substantial lead that was never lost. JOHNNY BATCH has made 7 homers this season, MARVIN COOPER has 2 to his credit, VERN SWIGER has 2, SHERMAN HILDRETH has 1 and CARROL BOLSTAD has one. WOIC finished the season near the top and their high standing was partially credited to some fine pitching by JACK WALDRON.

What is going to happen to the engineering jobs at WOL? Their station was sold to the WWDC management last August, WWDC wanting more power to broadcast with. Almost every one of the men at WOL had an application at the new TV station WOIC when it opened up last year, but to my knowledge none made the transfer. Most of the men dislike the idea of leaving the Washington area. By the time this is in print most of the WOL engineers' job problems will be solved and everyone situated to their satisfaction we hope.

Every engineer at WNBW in the field group was presented with a gift of Waterman pens by BOB SWAN, agency representative, for their part in the telecast of the Army final boxing matches at Ft. Myer, Va. this spring. BOB, on a previous occasion gave the engineers cigar-

ette lighters for doing the Baltimore Colt games. Thanks a lot BOB. While I am acknowledging gifts I would like to mention the fine pen-lighters that were given to us by Harvey Radio Co. in New York.

I have talked to various members of NABET here about the affiliation with CWA-CIO and have heard a lot pro and con. Some of the fellows against the merger seem to think that we should affiliate with a union more related to the entertainment part of radio and not so much with the communications end of it. The supporters of the merger seem to think that this affiliation would be the best thing to strengthen our union. They like the idea of being on good terms with the long lines men and having the strength of the CIO International offices behind them in a crisis.

I had the pleasure of paying the engineers at WOIC a visit recently and the most striking thing I found over there was the all over good natured fellowship existing between the men. The fellows were all very hospitable and I enjoyed my visit and tour very much. Their control rooms and film rooms were neatly arranged. The camera control units were located on the left end of a long control desk and I noticed that over each control unit was the name of the operator of the camera. Instead of calling the shots by camera the producer used the first name of the operator. NORMAN BAILY and I exchanged some maintenance ideas to our mutual benefit. PAUL MALIK brought up the idea that different stations set a date each month and exchange ideas along the technical line. We are all in the business of making good pictures and I think that some good ideas beneficial to all could be brought about in this way.

WALTER BOSTWICK, of WNBW Transmitter, recently returned from an extensive trip out west. The trip in all extended from Canada to Mexico and from DC to California, about 7500 miles all told. He took close to 500 color prints and had a time showing them to BOB TERRIL upon his return. BOB's another color photo fan.

Walter, before starting on his vacation, had no camera and just about wound up with three of them before leaving. He had three deals cooking and two came thru, so he now has two Leica's, Model 11-C's. He will sell to anyone interested, one of these cameras. It has an f 3.5 coated Elmar lens, W-SCM, case included. Wants \$150.00.—W. Deem.

MOHAWK

By JOHN F. McMAHON

Since I didn't send any material in for the journal's last edition, I thought, perhaps the kid had better get in the game and dash off a few words.

I don't have too much to say, maybe more next time.

Joe Decker at WGY MCR had an experience which was good for a giggle or so, not long ago. Joe was returning from a beauty contest, to which he had taken an applause meter, when some joker slammed into his rear end; the rear end of his car I mean. Naturally Joe was quite surprised and somewhat indignant, so he asked the boy what the score was and if he hadn't seen the conspicuous WGY vehicle stopped for a light. The answer was very honest, "No said the reckless one, I was lighting a cigarette." Casual HUH?

While I have the opportunity, I would like to ask all Tele. cameramen to please keep the girls in focus. Nothing is more annoying than to have a pretty girl's face de-focused. While I am trying to focus on her the men don't matter much, keep them out of the picture if you wish.

A couple of us at WRGB Tele. Xmtr. learned a few things about our new Xmtr recently when we had a high voltage breakdown. It almost convinced me that I should have studied music.

Gus Coopersmith at WGY is looking for a W-7, so what say someone, please?

Joe Gagne, also at WGY, looking very blonde and burned after a sojourn at Jones' Beach. Ah, those week-ends in or should I say on, Long Island.

I still like the Yanks for the Series as I first said on opening day, hope they don't let me down now. How do you like that DiMaggio?

I have never seen a kid with a new toy, who was any more pleased, than Hort Mosher is with his new car. It is quite a buggy.

Red Wilson came back to work on the Hill after about a month's vacation, worked four days and had a six day week-end off. Boy do we hate that stuff hey Red?

We at the GE FM AM and TELE stations are very fortunate in having such fellows as: Dave Burdett, Dick Richardson, Pete Kelly, Howie Lester, Bob Wengenroth and a few more whom I do not know, working summer relief while the regular lads are on vacation. These fellows are all on summer vacation from RPI, Union or possibly other local colleges.

While on the subject of colleges I would like to offer congrats to Lee Pratt, who has just received a degree from Union College.

The only degree I ever received had a three in front of it.

As if I didn't have enough trouble trying to write this drivel, I have to listen to soap operas on the FM rig, there just isn't any justice.

Glad to hear that Dick Sullivan WRGB studio is out of the hospital.

I hope that by the time this stuff reaches you, Johnny Martocci also of Tele studio, will be out of the hospital too. Let's go, John, gotta get back with the parasitics.

Sabby Sabeff got the shock of his life recently, he was in our (WRGB) microwave relay station at Beacon, N. Y., when the tower was struck by lightning and that's no fun sun. Luckily enough he wasn't injured, but how many near misses can you have?

Still haven't heard whether our Chairman, Don Morey, has that ten meter beam up yet. What say Don?

Think Ralph De Graf WGY Xmtr is

going to build his peanut whistle into a powerhouse. Got that beam up yet Ralph?

Last I heard, Marce Reid, W2LRW, was still pounding on the door of the B.P.L.

Seems to me that Jack Hahn WGY MCR, should be getting married round about this time, the best of luck Jack.

I made an error in the last column which I submitted to the journal, and would like to make a belated rectification if I may. I believe I said that Eileen Hanrahan and Ray Lynch were married. That should have been Ray Flynn, who has been knocking himself out with WRGB remote Telecasts.

Speaking of remotes, the WRGB remote crew have been turning in some nice jobs, under anything but ideal conditions.

Heard some good gags at an Amateur Radio Club meeting, not long ago but am afraid I can't put them down here, so I had better get up and see how the Xmtr is and incidentally put this scribbling into the mails. Mohawk is QRT, so C. U. L. Mac.

Rocky Mountain News

By GEO. SOLLENBERGER

The cool shades of fall are upon us already and the time for anti-freeze is just around the corner. Only the vacation relief men will notice the difference when it becomes necessary to find something to do for the next few months. All vacations are practically out of the way and all employees are happy and fresh, anxious to resume their duties be they large or menial tasks (packing discs).

KOA's master control room is due to expand soon with the moving of the fish bowl further out to make way for the new recorders. The project has to be finished by the end of the year so it is wise that the move starts now.

VIDEO ASSOCIATES report a better, clearer picture and have booked several shows for this TV rasterless area. People seem to be anxious for TV to get to Denver but who knows when? New power supplies, peaking coils, germanium crystals, and vacation rested participants account for the 350 line definition. Seemingly August's article did not stir much wonder at the amateur TV in this monthly organ.

Flying discs will soon be seen around Denver when some of CBS's color TV

equipment will be demonstrated to some local sawbones. All viewers will be furnished plastic safety glasses at a small charge. The electronic method seems quite satisfactory and much less risky.

Improvement in the ham bands is reported by the DXer's at this point and comes the fall and the QRM becomes markedly heavier. DXCC Andrews is feeling good enough again to get on the air at least once or twice a day.

That's all the latest from here except that the NABET Journal is anxiously read and commented upon from various other broadcasting quarters here in Denver and I believe with some enviousness of NABET's potentialities in the B. C. field. 73's.

If it concerns the
RADIO-TV MAN
he will read it in
THE BROADCAST
ENGINEERS'
JOURNAL

LABOR - MANAGEMENT NEWS

The Sec'y of Labor says:—

In studying our labor problems of today and tomorrow, I often turn to history to find ideas and experience.

Early American labor history carries for me the lesson that this movement, like religion and like other human institutions, can never survive at a standstill. All of these must progress or die.

Labor's activities over the long years has been consistently and steadily on the side of progress. Often labor has been the mainstay of support for the progressive features in our national life. Labor has promoted and expanded both our wealth as a nation and our liberties as a people.

The Department of Labor itself illustrates this. We serve the whole Nation by serving labor, both organized and unorganized. The Department's basic aim is the same as that of labor—to improve the living and working conditions of the American people.

Together we seek to act against sweat-shop wages, over-long hours, and oppressive child labor where they still exist or threaten to return. We seek better apprenticeship training, improved methods of collective bargaining more information on which to base both private and official action in the governance of our lives and our business, all the things that help working men and women.

Together we shall progress, in the years to come.

Security Is the Common Goal

Seek higher living standard for selves and children.

The farmer and the city workers share as a common goal the desire to live at a decent standard and to rear their children in a healthy social and moral atmosphere. Both groups are engaged essentially in the production of goods and services.

That theme, frequently expressed by Secretary of Labor Maurice J. Tobin, has been expanded into an exhibit which is being shown at national and State labor conventions, at State fairs, and before other groups of workers and farmers.

The exhibit was prepared by the Department of Labor in cooperation with the Department of Agriculture and is jointly sponsored by Secretary Tobin and Secretary of Agriculture Charles F. Brannan.

The character of the goods and services produced by the farmers and workers of the Nation, Tobin has said, is what brings into sharp focus the differences which exist between the farmer and the wage earner.

The farmer is engaged in producing an entire "package" from beginning to end. His job is to prepare a product of the soil, and he manufactures this product from start to finish.

The wage earner is one of many elements—elements both human and mechanical—which are part of the long assembly line comprising manufacture, transportation and trade.

Both the farmer and the wage earner have their worries, the Secretary has pointed out.

Problems Differ

The farmer's worry is about such things as the change in

prices which he will receive for his product, and uncertainty as to future markets or weather conditions; his *job* is always there.

The wage earner, on the other hand, is concerned primarily with job security.

In an age when lack of housing and poor health are of primary concern to the wage earners, we must broaden the scope of our activities to insure adequate housing and health standards. All of this must be done with a constant regard for the needs of a democratic society. This means that we can proceed only as fast as is consistent with our ability to convince the majority of the people that entering these new fields will not interfere with their democratic rights, Secretary Tobin has stated.

The worker has found that he cannot expect to get these benefits and this larger measure of security through the munificent efforts of government. And it is a good thing that he does not depend upon such munificence, for if he did, his sense of security would be a false one. The Government could easily take away what it had given him of its own volition. So the worker has found that he needs one other right to guarantee that his views will be heard by his employer, by his community, and by his government. This is the right to organize, and it is more important to the wage earner than any of the specific benefits which he has received through his political or economic strength. It is his right to organize, and the exercise of this right, which has meant to the wage earner the opportunity for meeting as equals those elements in our society which must give him the things he needs.

Means to Ends

As in the case of the wage earner, it should be clear that the farmer's objectives cannot be gained by Government action alone. Organizations of farmers, therefore, exist for the protection of this group. Both farmers and wage earners find cooperatives—producers' as well as consumers' cooperatives—another valuable means of achieving their just and reasonable ends.

The "4th Round"

After the fact-finders complete their public hearings on the steel 12½¢ wage, 6.27¢ insurance and 11.23¢ an hour pension demands, their recommendations will be considered by representatives of management and United Steel workers at meetings with federal mediators, with September 15 set as the deadline for an agreement. Before negotiations were broken off the Steelworkers were asking \$150 (latest figures appear to be \$125) a month pensions starting at 65 but the U. S. Steel Corporation had refused to consider the subject. On group insurance U. S. Steel offered to pay 2¢ per hour. Suggested group benefit schedules were reported to be:

Coverage—Life

Union Demands—18 months' earnings, \$1,500 paid up at retirement.

U. S. Steel Offered—12 months' earnings, \$1,000 paid up at 65 with 25 years' service.

Coverage—Accident-Sickness

Union Demands—\$35 a week, starting 4th day on sickness, for 52 weeks.

U. S. Steel Offered—\$21 a week, starting 8th day on sickness, for 13 weeks.

Coverage—Hospitalization

Union Demands—\$8 day up to 70 days, \$84 for extras. Same Schedule for employees and dependants. \$225 surgical.

U. S. Steel Offered—\$6 day for employees, \$5 for dependents, for 31 days. 10 times daily for extras. \$150 surgical.

LATIMER CRITICAL OF PRESENT PLANS: The average U. S. Steel Corp. employee has \$3,988 group life, Murray Latimer, CIO consultant, reported at the New York hearing. U. S. Steel employees pay 80% of group cost, Bethlehem Steel employees pay entire cost, he said. Latimer claimed that average steelworker was not eligible to join U. S. Steel's pension plan until 1947. Under its present contributory plan, Latimer claimed that the average worker entering the plan at 51 can count on a \$7.50 a month pension, while a 41 year entrant can expect \$13.20. Average pension payments in May were \$9.33 a month. Only 384 out of 722 workers retired since June, 1927, receive pensions.

Bethlehem Steel pensions average \$21 a month, Jones & Loughlin's \$31 while Republic Steel pays nothing, according to Latimer.

NOT TIME TO TALK ABOUT PENSIONS. At the start of the hearing steel companies asked that the fact-finders decide whether pensions should be included in the negotiations. Chairman Daugherty refused, saying that the board would hear arguments and would include its findings in its report. John A. Stephens, vice-president U. S. Steel Corp. in charge of industrial relations, later claimed that the Steelworkers had agreed that they wouldn't seek to bargain on pensions until April, 1950. It is not a question of benefits but one of living up to a contract, he declared.

FORD MOTOR CO. workers have voted 65,001 to 9,549 to strike, if necessary, to secure their demands for pensions, insurance and a wage increase. Ford rebutted that if a strike is called it may be a long one. UAW has already voted a \$12 million strike fund to back up the Ford local.

RULINGSS ON 12,865 pension and deferred profit-sharing plan qualifications were made by the Commissioner of Internal Revenue as of June 30, 1949, a 1,123 increase for the year. The cumulative total on termination rulings increased from 484 to 711 while curtailed plan rulings increased from 226 to 401 during the year.

Society Places Emphasis on Youth, Energy, Speed

"Our society places its emphasis on youth, energy and speed. It expects every person to keep up or be swept out of the mainstream of life's activities", Dr. Robert J. Havighurst, University of Chicago sociologist, stated in connection with the university's Institute on Problems of Old Age.

By 1965 there will be 16 million persons 65 or older and 16 million old people cannot be simply shoved off to one side, Dr. Havighurst warned.

The problem of people over 65 is largely one of retirement which can be handled by providing adequate benefits and pensions, Ewan Clague, U. S. Department of Labor statistics commissioner, told the conference. The problem of those in the labor market who have passed their peak is of primary concern, he warned. Faced with a restricted labor market and the inability to advance on his job, the older worker worries about his situation and his productivity declines even more," Mr. Clague declared.

Welfare Plans

COOPER-BESSEMER CORP., Mount Vernon, O., is increasing insurance benefits under its new union contracts as well as for salaried workers. At least three unions are involved.

MINNESOTA MINING & MANUFACTURING CO. distributed \$190,546 in bonus checks to 6,500 employees for their share of the second quarter, 1949, profits.

BROWN & WILLIAMSON TOBACCO CORP.—\$100 a month retirement income for men and \$85 for women, including social security. Retirement benefits start at 65 after 20 years' service. After 10 years' service employees becoming totally disabled will receive \$50 (men) and \$42.50 (women) a month. Those totally disabled after 60 with 15 years' service will receive \$75.00 and \$63.75.

Expenditures for Hospital Care Show Sharp Increase

The nation's expenditures for private hospitalization facilities have increased 140% since 1942, the 1948 total being \$1,564,000,000 in 1948, according to U. S. Department of Commerce estimates. Payments to physicians have increased 100% from \$1,072,000,000 in 1942 to \$2,141,000,000 in 1948.

In considering the adequacy of group life benefits it is well to consider the following cost increases taken from the survey: Expenditures for funeral and burial services increased 82% from 1942 to 1948, while cemeteries and crematories received 27% more and 110% more was spent for monuments and tombstones.

COLUMBIA CONSERVE CO., Indianapolis, is now paying 80% of group insurance costs.

California Adds Hospitalization

California's new \$8 a day for 12 days hospitalization benefit under its compulsory disability law, effective Jan. 1, 1950, will necessitate the revamping of practically all voluntary plans. The new hospital benefit is not geared to the disability benefit formula or to hospital expenses incurred. The present 7 day waiting period on disability payments is waived for anyone confined to a hospital.

As insurance companies providing coverage under the plan have been offering more liberal benefits than those under the state fund, it may be necessary to either reduce present weekly benefits above those required or to increase premiums. One estimate is that the additional coverage will cost at least 40c per month per individual more.

Group Proceeds Part of Estate; Employee Trust Funds Are Not

Full proceeds from group insurance are includible in the gross estate of an employee even if part of the cost is paid by the employer, U. S. Tax Court held in *Est. of Saxton v. Com.* (12TC, No. 74, CCH Dec. 16, 914). However, employers' contributions to an employees' trust are not includible in the employee's estate, the court held in the same case.

Group premium payments are in effect additional compensation and thus payment comes under the "directly or indirectly by the decedent" definition in the incidents of own-

ership provision of Sec. 811(g) of the IRC. The right to change the beneficiary was also held to be an incident of ownership.

Although the Commissioner sought to include the employees' trust proceeds in the decedent's estate, applying Sec. 811(c) and (d) the court held that these sections were inapplicable as no transfer of property was made or procured by the decedent. It was pointed out that the particular trust involved was created voluntarily but that if it had been established as a contract obligation to the employees to pay additional compensation, the proceeds might have been held includible in the employee's estate. This also would have been true if the decedent had cut down his own rights in the trust to provide for his survivors. As it was the trust provided for distribution of the proceeds after 10 years with the provision that if an employee died, his share was to be immediately paid to the person appointed by his will, and failing such an appointment to his issue.

Vote Rubber Strike Fund

A million dollar fund has been voted by the United Rubber Workers-CIO to back up its campaign for \$100 a month pensions and wage increases. Each of its 180,000 members is being asked to contribute \$1 a week on a voluntary basis.

Negotiations are currently being conducted by URW with all the big four companies. The Goodrich union has backed up its negotiators with a strike vote.

Typical Group Plans

Two new insurance plans have been negotiated by Textile Workers-CIO in Buffalo as follows:

GLOBE WOVEN BELTING CO.—\$2,000 life; \$500 dismemberment; \$180 surgical for employees, \$150 for dependents; \$6 day hospitalization for employees, \$5 for dependents; \$20-\$45 a week accident and sickness.

PERCY KENT BAG CO.—\$2,000 life; \$8 day hospitalization; \$80 hospital extras; \$200 surgical; accident and sickness 55% of 40-hour week earnings.

Hospital Admissions Increase In 1948

Hospital admissions increased from 15,829,514 in 1947 to 16,422,774 in 1948, the American Medical Association estimates. Records received from 6,335 hospitals shows the average patient was hospitalized for 10.5 days in 1948 compared to 11.4 days in 1947.

UAW - CIO Outlines Strategy

New "Handbook for Workers' Security Programs" Tells How to Prepare for Negotiations.

Point by point instructions are outlined in the United Automobile Workers-CIO "Handbook for Workers' Security Programs" recently released by the UAW's Social Security Department headed by Director Harry Becker. In addition to enumerating and analyzing the UAW's pension and welfare plan demands which were previously published, the handbook gives some pertinent instructions on how to carry on negotiations and to draft contract provisions.

Local bargaining committees are urged to secure the following information before they start negotiations.

Prepare for Negotiations

1—Know the inadequacies of your present group insurance and pension plan by comparing plan of administration and benefits with UAW-CIO demands and standards.

2—Find out how many workers and families are not covered by "company" controlled plans currently in effect.

3—Know the number of persons in your community or state receiving public relief because the Federal Old Age and Survivor's Insurance benefit is too small to buy the necessities of life.

4—Talk with workers from your local union who have been forced to retire because of old age or illness and learn how they are meeting living expenses and present their experiences in negotiations.

5—Find out the amounts allowed by your local relief agency for persons "too old to work and too young to die" and the actual amounts of relief received by members of your local union who have retired and had to seek public relief.

6—Get the facts on the cost per day of hospital care, including "extras", for the hospitals in your community.

7—Do the hospitals in your community require deposits before admitting a patient?

8—Contact local hospital personnel and ask for figures on the typical cost of care for various types of illness to show the unpredictable nature of the cost of hospital care. (Hospital business offices know this problem and their cooperation should be sought in getting together the facts.)

9—Talk with members of your local union who are unable to have needed medical attention because they cannot afford the cost so you can present first hand experiences of your membership.

10—Compare present hospital costs and medical costs in your community with types of benefits currently available and obtain actual doctor and hospital bills to demonstrate your point.

11—Inquire from members of your local union how they managed to meet family living expenses and hospital and doctor bills during periods of illness and present case stories in negotiations.

12—Talk with your local relief administrator and the heads of local private welfare agencies regarding the meaning of the UAW-CIO Demands For Workers' Security to persons who come to their agencies seeking relief for reasons of old age or sickness and present your findings in negotiations—these officials should be asked to assist you in presenting statement of need.

13—Talk with the family of members of your local union who have died in the past year and learn how they have managed on the death benefit allowed, if any, and learn what a lump sum of \$500 and \$159 a month for 15 or 20 months would have meant to these families during their period of readjustment. Present your findings in negotiations.

Emphasize Joint Board of Trustees

Particular emphasis is placed on the establishment of trust funds administered by a board with equal union-management representation in the UAW's new manual. Suggested contract provisions provide that under the trust agreement between the company and union the trustees be empowered to "pay benefits or to make provisions for benefits by payment from the fund, to decide upon all details of benefit schedules, methods of providing benefits, and the general operation of the fund, and to modify or alter such arrangements from time to time as they shall determine to be most advantageous in effectuating the general purpose of the trust."

The handbook is unusually well prepared as an instruction book. Not only are objectives outlined but later in the book they are renumerated in form of a check list for proposals.

Locals are urged to submit all proposals by employers to the regional director for clearance on the grounds that "individual employers have the financial resources to hire experienced consultants."

Union Contract Reports

Recent collective bargaining agreements regarding insurance, pension and welfare plan benefits are digested below. In many cases all employees are included under the plan, not just members of the particular union involved. In some cases insurance plans already in effect are included in the contract for the first time and thus are not actually new benefits.

Auto - CIO—JOHN DEERE CO., Moline, Ill.—Add'l ins. & hosp., liberalized pensions.

Brewery - CIO—CREMO BREWING CO., New Britain, Conn.—Wel. for inside workers.....HARTFORD brewery warehouses (13)—5c co. pd. wel.

Brick and Clay - AFL—BRAZIL CLAY CO., Brazil, Ind.—Add'l hosp.....HYDRAULIC PRESSED BRICK CO., Brazil, Ind.—Add'l ins.....NATIONAL FIREPROOFING CO., Brazil, Ind.—Add'l ins.

Electrical - AFL—SIGN EMPLOYERS' ASSN., Kansas City—1% of qr. payroll wel.....TOLEDO EDISON, CO. Toledo—Add'l sick.

Electrical - CIO—ELLIOTT ADDRESSING CO., Boston—Ins. & hosp.....SINGER MANUFACTURING CO., South Bend, Ind.—Improved ben. & retirement plans.....SONOTONE CO., White Plains & Elmsford, N. Y.—Co. pd. sick & acci. effective 1-1-50.....STAINLESS & STEEL PRODUCTS CO., St. Paul, Minn.—Wel.....STUPAKOFF CERAMIC & MFG. CO., Lathrobe, Pa.—Add'l hosp.....WILLIAM BROS. BOILER & MFG. CO., Minneapolis—Wel.

Firemen and Oilers - AFL—NATIONAL CARBIDE CO., Louisville—Co. pd. hosp. & life.

Fur and Leather - CIO—BURK BROTHERS, Philadelphia—add'l ins.....ALBERT TROSTEL & SONS CO., Milwaukee—Co. pd. surg. & hosp. for emp. & families.

Furniture Workers - CIO—AUER REGISTER CO., Cleveland, O.—Profit-sharing.

Gas, Coke and Chemical - CIO—NATIONAL GYPSUM CO., Baltimore—New, wel. plan.

Meat-Cutters - AFL—HUNTER PACKING CO., East St. Louis, Ill.—New wel.

RMA

July TV Set Output Low, Due To Vacation Shutdowns

July production of television and radio sets dropped to the lowest point of the year, the Radio Manufacturers Association reported, because of the large number of manufacturers who shut down their plants for vacation periods.

RMA member-companies reported 79,531 television receivers - about half of the monthly average of the second quarter of 1949 - were manufactured in July. Only 341,947 radio receivers were reported.

FM and FM-AM sets reported to RMA numbered 23,843, and an additional 17,991 television receivers equipped with FM reception facilities were manufactured by RMA member-companies.

I.R.E.—from Page 9

and graphical solutions are then provided for the following problems: 1. Determination of the polarization of a plane wave of an antenna from a minimum number of measurements. 2. Synthesis of a transducer that transforms states of polarization in a given manner. An extension of these methods to some mode transformers and directional couplers is indicated.

91. Propagation Conditions and Transmission Reliability in the Transitional Microwave Range.

THOMAS F. ROGERS, *Cambridge Field Station, Air Materiel Command, Cambridge, Mass.*

The propagation characteristics of the 5- to 15-cm microwave range are theoretically investigated and discussed. This range lies in a transitional region where absorption effects become pronounced. Quantitative sea-level values for absorption to be expected due to oxygen and

water molecule resonance are found as a function of path length and atmosphere water-vapor content; these results are extended to high altitudes where atmospheric pressure, temperature, and water-vapor content differ appreciably from sea-level values. Rainfall attenuation values are also given and, on the basis of information regarding expected rainfall intensity and duration in the temperate zone, figures of percentage reliability are arrived at for operation over this range. Values are given for system power gains necessary to maintain free-space received-signal conditions on various transmission paths.

92. A Forward-Transmission Echo-Ranging System.

DONALD B. HARRIS, *Collins Radio Company, Cedar Rapids, Iowa.*

A new type of echo-ranging system is described in which the receiver is located at a distance from the transmitter. It is shown that with a configuration of this type the range of the target with respect to the received station is equal to the difference in path between the direct and reflected waves divided by the versine of the angle of elevation of the receiving antenna. By making the radial writing speed proportional to this function, a PPI presentation system can be realized which shows a profile of the propagation path viewed from the side. This system has particular application in detecting targets such as, for example, atmospheric irregularities, which have a low reflection coefficient at normal incident angles. The system, therefore, promises to be useful in the study of propagation problems.

Following is the month-by-month tabulation on set production by RMA manufacturers during 1949:

	TV	FM-AM and FM	AM only	All Sets
January	121,238	147,733	561,900	830,871
February	118,938	98,969	498,631	716,538
March (five weeks)	182,361	71,216	607,570	861,147
April	166,536	37,563	468,906	673,005
May	163,262	28,388	449,128	640,778
June (five weeks)	160,736	40,512	471,342	672,590
July	79,531	23,843	318,104	421,478
TOTAL	992,602	448,224	3,375,581	4,816,407



RCA scientists develop new *direct-reading* Loran instrument which simplifies problems of navigation.

The homing pigeon goes to sea

BROADCAST ENGINEERS' JOURNAL—OCTOBER, 1949

Now science gives the navigator an improved "homing pigeon instinct," a way which—without checking the sun or the stars—he can head his ship directly home.

Already thoroughly proved, *Loran equipment* has been simplified through RCA research and engineering, so that almost anyone can learn to use it in a few minutes. Free of human error, readings appear *directly* on the instrument. A quick check gives position.

Brain of this Loran system is a circuit

developed at RCA Laboratories which splits seconds into millions of parts—and accurately measures the difference in the time it takes a pair of radio signals to travel from shore to ship.

Given this information, the navigator, hundreds of miles from shore, can determine his position quickly and accurately. Loran's simplicity adapts it to every type of vessel from merchant ship to yacht. Manufactured by Radiomarine Corporation of America, a service of RCA, it is already being installed in U. S. Coast Guard rescue ships.

The meaning of RCA research

RCA's contribution to the development of this new direct-reading Loran is another example of the continued leadership in science and engineering which adds *value beyond price* to any product or service of RCA.

* * *

The newest advances in television, radio, and electronics can be seen in action at RCA Exhibition Hall, 36 West 49th St., N. Y. Admission is free. Radio Corporation of America, RCA Building, Radio City, N. Y. 20.

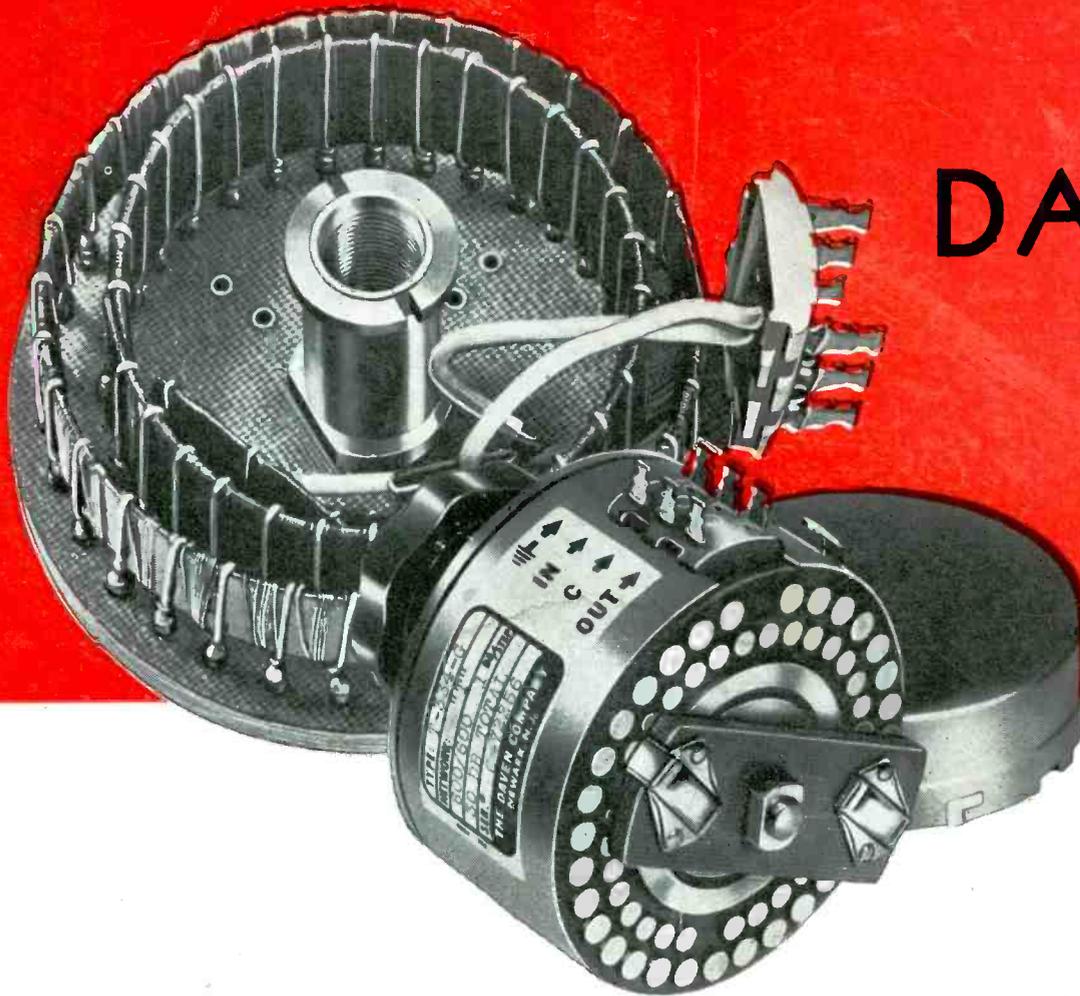


RADIO CORPORATION of AMERICA
World Leader in Radio — First in Television

TWENTY YEARS OF ATTENUATOR PROGRESS

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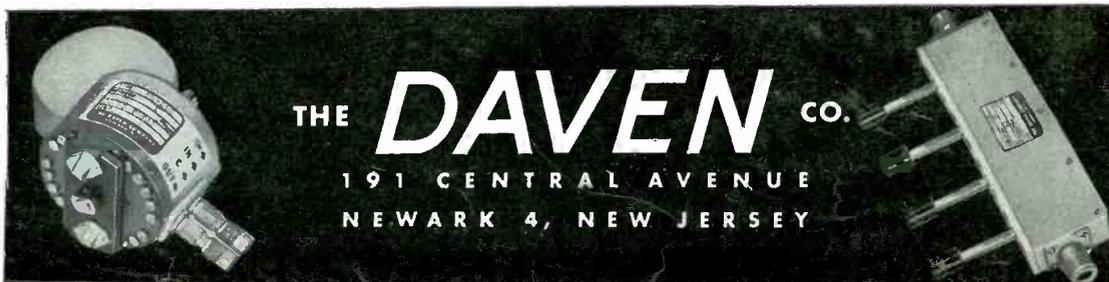
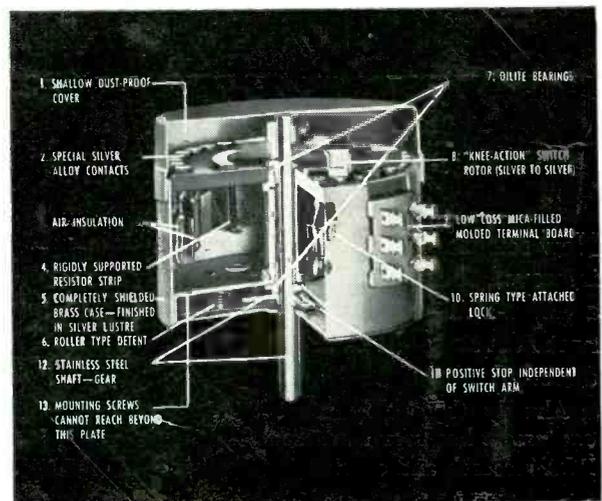
As one of the oldest and most progressive manufacturers of attenuators, we take pride in presenting our recent contribution to the users of fine volume controls. . . the "Knee-Action Switch."* This revolutionary type of rotor is now being offered on Daven attenuators and switches at no additional cost.

For longer life and uninterrupted performance, we offer a switch with the following advantages:

- ★ Multiple wiping blades of the "Knee-Action Switch" are enclosed in a tamper-proof housing.
- ★ Each blade conductor is individually spring loaded, giving a perfect balance to the entire conducting surface.
- ★ Uniform pressure on the contacts and slip rings is assured, resulting in low, even contact resistance, over the life of the unit.
- ★ The considerably shorter rotor arms, result in lower overall switch resistance, due to the reduced conducting path.
- ★ For specialized switch applications, where space is limited, this new type of switch construction permits up to 6 poles on a 2 $\frac{3}{4}$ " diameter deck. A greater number of poles may now be obtained than heretofore, on all smaller diameter units.

*PATENTED

For Further Information Write to Dept. BE-5



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