

THE BROADCAST ENGINEERS' JOURNAL
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The Only Autonomous Union of Radio-TV Engineers & Technicians



**The Broadcast
Engineers' Journal**

**STATUS OF TV
NETWORKS**

LIGHTWEIGHT FIELD
AMPLIFIER & MICROPHONE

Read Carefully

IATSE Declares War of Annihilation
Against All Radio-TV Men

Read the Real Issues—and NABET's
Intention to Defend all
Radio-TV Men Against the IATSE

MARCH 1949

Vol. 16

No. 3

SINCE 1934 OF, BY AND FOR
THE BROADCAST ENGINEER

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THE BROADCAST ENGINEERS' JOURNAL

ED. STOLZENBERGER, EDITOR AND BUSINESS MGR.

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National Association Broadcast Engineers and Technicians

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ENGINEER

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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

FOR THE RECORD

From the maze of misinformation that certain officers of the IBEW-Radio Locals turn out, certain statements should be taken apart and examined. Truth should be the whole truth, nothing less. Statements by Union Officials, representing that Union as the Saviour of Radiomen, should be able to stand the full light of day.

Arnold King, President of IBEW Radio Local 1212, in his column in February, 1949 issue of "1212 News" makes a couple of statements that should be looked at. Shall we do so?

King says that NABET and 1212 in September agreed, in combined meeting, to exchange observers at the upcoming network contract negotiations. True, NABET did agree, and is still in accord with that agreement—BUT, Lawson Wimberly, Assistant to Dan Tracy, International President of IBEW, in a letter dated February 3, 1949, stated that the IBEW would NOT cooperate. Where does that leave King and his claim? King though he may be, when Tracy speaks, Arnold jumps, NABET still is willing to cooperate, even if the IBEW radiomen have to talk to us clandestinely.

King mentions that he was not admitted to NABET's National Council Meeting in Detroit. True, he was not—he was not invited. An invitation *was* extended to Tracy, and the IBEW Broadcast Advisory Committee, which Tracy refused. If King arrived in Detroit as an ambassador extraordinaire from Tracy, he failed to show his credentials. When the writer heard that King was in Detroit, a party of four called upon King at the Cadillac Hotel. No discourtesy was shown King whatsoever. King should be more explicit in his statements.

It is not the purpose of the writer to start another barrage of misstatements, such as was experienced two years ago. This writer is well enough known in the New York area among Broadcast men as a person who speaks the truth, no matter to whom, or of whom he speaks, and will continue to do so as long as he breathes.

Interestingly enough, back in September, when the IBEW radiomen were having hard sledding, and looking for a possible haven, King, at a meeting between IBEW men and NABET men in the Hotel Plymouth, admitted that NABET had a better National organization than the IBEW. For the record, he was right then and the same fact is equally correct today. At no time has NABET given away jurisdiction to other unions and it does not contemplate doing so.

What other union can make that statement?

At a meeting at the Hotel Astor, October 22nd, 1948, the IB and IA Presidents told the writer and other witnesses that

To Page 3

When this issue of the Journal goes to print, NABET will be negotiating with the networks (NBC, ABC, and WOR Mutual) for contracts covering AM, FM, Television, and such closely allied radio departments as Traffic, and Sound Effects. In addition, NABET Representatives will be negotiating a number of contracts with independent stations. The effectiveness of the NABET negotiators, and the force with which they can present their arguments to the various companies, will depend to a great extent upon a unified, forceful membership. It, therefore, behooves each NABET member to resurvey his status in the Union, in the light of present conditions, and make a sincere effort to demonstrate his willingness to cooperate in the spirit of good unionism.

This year, the Network Negotiating Committee will have the benefit of an innovation in national negotiations. A questionnaire, covering forty-five contract points has been distributed to the 800-odd network members, and their answers should go a long way towards indicating the road negotiations will take. Here again is an example of NABET reflecting the desires and needs of its members. Since this is the first time such a questionnaire has been distributed, it is far from perfect, but the results will be studied and if the indications are it is a good practice, considerable time and thought will be devoted to a membership type of questionnaire for future use.

NABET National Officers, in conjunction with NABUG (National Association of Broadcast Unions and Guilds), is spending considerable time and energy towards the drafting of suggested legislation in behalf of labor, for submission to members of the 81st Congress. The NABET membership can do their part towards promoting capable legislation by informing their respective Congressmen as to their desires and needs in this respect.

It is perhaps redundant to again call attention to our new Executive Secretary. However, all members should take renewed encouragement from the vigor and good union sense which Westover has displayed thus far in the execution of the duties and responsibilities of the office. We may safely assume that under his leadership full-time officers of NABET will do a better job than ever before.

J. R. McDONNELL, *President—NABET.*

URGENT! Every Radio-TV Man of whatever union affiliation is urged to make himself cognizant of the IBEW-IATSE deal that will deprive Radio-TV of their jobs. The IBEW double-cross of Radio-TV men is at work again! Write the NABET National Office for Guidance. This may be your last chance to switch to NABET—the only AUTONOMOUS union Of, By, and For Radio-TV Men.



George Maher

National
Representative
NABET

IBEW Endorses Division of AM and TV and Dumping of Supervisors in Accordance with IBEW Pres. Tracy Decision to "Give" Broadcast Jobs to IATSE! First Proof of the IBEW-IATSE Deal Detrimental to all Radio-TV Men in All Unions!

In these days of intense competition between labor unions, we, of NABET, feel that we should not forsake our principles in order to sustain ourselves in any situation within the broadcast industry.

And, we believe we are doing a commendable job in this respect. Our record speaks adequately for our accomplishments to date.

We are, therefore, somewhat at a loss to understand the reasoning behind the strategy being employed by the IBEW at WJBK in Detroit.

Here are the facts, and we shall ask that you, the reader, draw your own conclusions as to which of the two organizations actually has the interest and welfare of the broadcast engineer and technician really at heart.

There are a total of sixteen men employed at WJBK and WJBK-TV. Ten of these men, including two supervisors, are in the TV operation. Six of them are in the AM operation.

NABET believes we will be sustained by a vote of eleven to five, at least, in any election that the NLRB may conduct, since we have obtained fifteen signed authorization cards from the sixteen men employed at these stations, and we have petitioned the NLRB for certification on the basis that the sixteen men comprise the appropriate bargaining unit.

On the other hand, the IBEW has petitioned the Labor Board for certification on the basis of the TV operation alone being the appropriate bargaining unit, thus completely disregarding the interests of these men in the AM operation.

To add further to your amazement, the IBEW are saying that the supervisors should be EXCLUDED from the appropriate unit. Needless to point out, the supervisors involved are NABET supporters.

Is this sound trade unionism?

Does this mean that the IBEW is abandoning the fight to retain supervisors under the contracts that they have with CBS and some independent stations?

On the basis of our assumptions that five of these ten men might vote to sustain the IBEW, this exclusion of the supervisors would give the IBEW a majority of five to three in the TV operation.

To further enlighten our reader, the Management of the stations stated to the NLRB that, in their opinion, these supervisors were not supervisors within the meaning of the Na-

tional Labor Relations Act, and it was their belief that they should be included in any appropriate bargaining unit established by the NLRB.

For purposes of bargaining intelligently, it is self evident, of course, that Management also agrees that any appropriate bargaining unit should embrace all the engineers and technicians employed at the stations.

Believing, as we do, that any union should endeavor to effectively represent, for collective bargaining purposes, as many of the engineers and technicians employed in the industry, with no discrimination of any kind between those employed in TV and those employed in AM, we must admit that we are amazed to discover that our competition apparently is not so inclined.

We can only ask, "Where in this world is the IBEW going?"

/s/ G. MAHER,
NABET National Representative.

NABET Executive Board Meets to Defend All Radio-TV Men Against False Jurisdictional Claims by IATSE.

Feb. 18, 1949:—

The NABET Executive Board is concluding meetings to resolve issues raised by the intervention of the IATSE in a NABET NLRB representation case involving the ABC-NBC networks, in which IATSE makes claim to TV lighting jurisdiction.

NABET has steadfastly contested IATSE's false jurisdictional claims.

The meetings to date have disclosed that IATSE covets additional large segments of the technical television operation.

Radio-TV men everywhere can rest assured that NABET is exploring every avenue to protect their interests.

Ask your NABET Chapter Chairman for all details. Ignore rumors.

NABET is the ONLY Union of Radio-TV Men that is Fighting to Defend the Jobs of Radio-TV Men.

NABET Intends to Beat the deal between the IBEW and IATSE in the same way that NABET beat the deal between the IBEW and Petrillo. The TRUTH has always won, and NABET will win again!

FOR THE RECORD—from page 2

they had settled Television jurisdiction. The IBEW was giving—the IATSE was taking. NABET was told that it was supposed to bow the knee and do likewise. NABET is supposed to come into the IBEW under the "benign" protection(?) of that organization. This is the record.

The IBEW's record in Detroit, where they are attempting to split the men at WJBK into two units, AM and TV, indicate the length it will go to "organize" without any regard for RADIOMEN. The IBEW is interested mainly in the per capita "take,"—not the radiomen's welfare.

THIS IS THE RECORD.

CLARENCE WESTOVER (s),
Executive Secretary—NABET

TELEVISION NETWORKS EXPAND

A Review of the New York-Boston Micro Wave Circuit and the Nationwide Status of TV Coaxial Cable and Micro Wave Facilities.

BASIC CHARACTERISTICS

Microwave radio relay systems are basically a means of transmitting large amounts of information—for example, many different conversations—simultaneously over long distances. Using broadband radio beams rather than wire or cable, they provide dependable, high quality communications circuits on a large



The Boston terminal of the Bell System radio relay route between New York and Boston is situated in the Bowdoin Square Building of the New England Telephone and Telegraph Company. The special microwave antennas which receive and beam the communications signal can be seen on the roof.

scale—hundreds, conceivably thousands of telephone circuits and, if necessary, many television channels. Such circuits can also carry radio programs, teletype, and telegraph.

The microwaves used in radio relay are not seriously troubled by rain, snow or fog and—unlike the lower frequencies—static and most kinds of manmade interference have no effect on them. Further, they can be focussed into a very narrow beam, which makes it possible to operate additional relay systems in relatively close proximity. This high directivity—and consequent high efficiency—permits radio relay to operate on low power.

Microwaves do not follow the curvature of the earth and can therefore be transmitted only about as far as the horizon

before they shoot off into space. For longer distances, intermediate radio relay stations must be provided with an unobstructed line of sight between them.

EXCERPTS

The following comments on the radio relay system have been made by Bell System executives:

“We (the Bell System) are in the communications business and we intend to use the best and most economical means of giving communication service, whether by wire or radio. That point of view will continue to guide us and will lead, I feel sure, to the greatest service achievements.”

“Now we are going to use radio as an entirely new type of communication facility to carry a great volume of com-



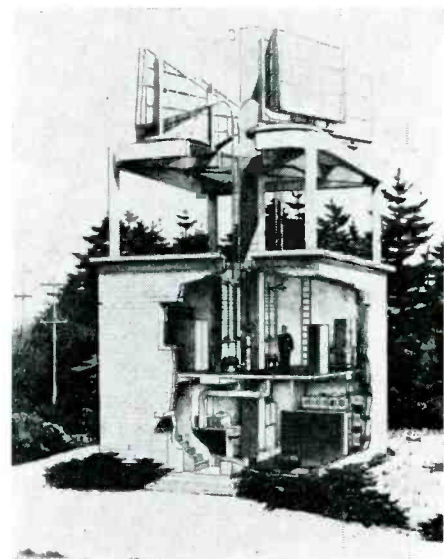
Because radio relay communication must be beamed along a line-of-sight path, all stations on the Bell System route between New York and Boston stand on hilltops. The special antenna horns of this station rise above the trees on John Tom Hill near Glastonbury, Conn.

munications between our major cities. Such a system actually becomes a workhorse, if you will—a means of providing communication circuits in great numbers—hundreds, eventually thousands of telephone circuits and, if necessary, dozens of television channels.”

“Bell System radio relay is not in any

sense a communication system merely parallel with, and outside of, the nationwide Bell telephone network. On the contrary, our radio relay is designed to become an integral part of the entire network.”

“To meet our objectives of dependability and high quality has demanded that we incorporate in this system a number of new and distinctive features. For example, the antennas which beam the radio waves from one station to the next are of radically new design. They are in effect lenses which concentrate the energy into a narrow beam of high intensity, much as an optical lens concentrates the beam of a searchlight, and they effectively prevent random radiation in other directions where it might interfere with other stations or routes. Furthermore, the wide bands of radio frequencies passing through the antennas may be carrying many different packages of electrical information at the same time. To separate these various units and route them properly, we have developed new microwave filters which are very interesting. I stress these points because to our minds they



Cut-away view of a typical radio relay station on the Bell System radio relay route between New York and Boston, showing the arrangement of equipment in the building. Emergency power equipment and storage batteries are on the first floor, radio equipment on the second floor, and the special microwave antennas which receive and beam the communications signal are on the roof.

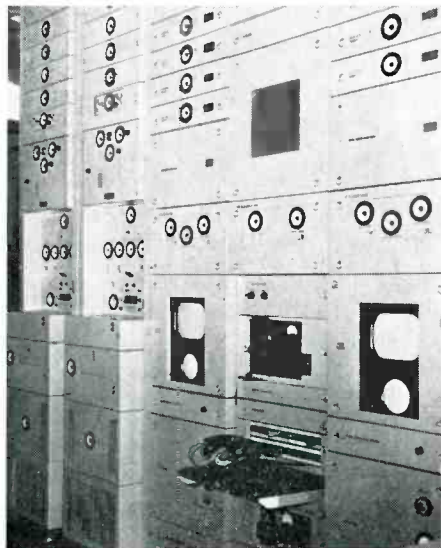
make for efficient, dependable, high-quality service."

RADIO IN THE BELL SYSTEM

The New York-Boston microwave radio relay system climaxed more than two decades of research on practical methods of radio relaying—or the application to radio of the repeater and carrier techniques developed for wire transmission. Radio itself, however, is by no means new to telephony. It has been in regular use in the Bell System for nearly thirty years as an integral part of the communications network—particularly for overseas service. Most of these uses involve longer wave lengths than the cigarette-length microwaves employed in the New York-Boston system. However, there are other microwave systems in operation, too—mainly short point-to-point links over water barriers, in difficult terrain, or where additional circuits were quickly needed to relieve traffic loads.

Radio Telephony In General

Perhaps the best known use of radio in the Bell System is for the overseas telephone service. Through terminals at New York, San Francisco and Miami, telephone subscribers in this country are connected to all the principal countries of the world. The Bell System also operates ship-to-shore radiotelephone service to vessels on the high seas, as well as a shorter-



The New York terminal and testing equipment of the New York-Boston radio relay system is situated inside the Long Distance Headquarters of the American Telephone and Telegraph Company at 32 Avenue of the Americas.

range coastal-and-harbor service for a large number of offshort craft.

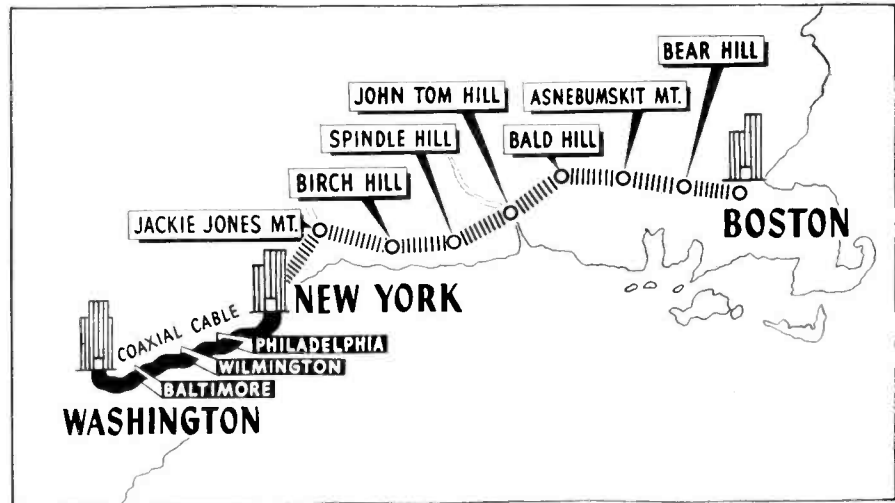
More recently, mobile radiotelephony has been inaugurated to provide communication to and from cars, trucks, railroad trains, etc. All customers of the general mobile service can be connected to any telephone in the Bell System network, as is the case with any Bell System subscriber.

Another important addition to Bell

ular commercial service. A two link relay system has been recently installed between Marysville and Redding, Calif., furnishing sixteen circuits to help handle heavy long distance telephone traffic north of San Francisco.

Another type of microwave system, developed to handle short television pickups, has been used in several places throughout the country—from West Point's Michie Stadium, for example, to

BELL SYSTEM COAXIAL CABLE AND RADIO-RELAY ROUTES BETWEEN WASHINGTON AND BOSTON



The approximate micro-wave jumps in miles are as follows: New York City to Jackie Jones Mt. is 35 miles; to Birch Hill 35 miles; to Spindle Hill 30 miles; to John Tom Hill 27 miles; to Bald Hill 23 miles; to Asnebumskit Mt. 27 miles; to Bear Hill 32 miles; to Boston Terminal 11 miles. The seven repeater stations are placed on facing hill tops between New York and Boston to make an unbroken line-of-sight path over the 220 mile relay link.

System facilities has been the portable radiotelephone apparatus used to provide emergency communications links. These saw invaluable service a year ago, for example, during the Florida hurricane, and the earlier one in New England, when the storm carried away most of the regular long distance lines in those areas.

Microwave Radiotelephony

Of the several microwave systems currently in use, many are modifications of the wartime AN/TRC-6—only American-built microwave radio-relay communications system to see actual combat use. Like other Bell Laboratories' developments for the Armed Forces, this dependable, high-quality system has proved itself in civilian service, too.

Equipment of the AN/TRC-6 type is used between Barnstable, Mass., and the island of Nantucket and between Los Angeles and Santa Catalina Island to provide eight two-way message channels for reg-

New York City and between Hollywood and Mt. Wilson in California.

Future Radio Relay Systems

Plans are well under way for a radio relay system to connect New York and Chicago via Philadelphia. This will contain new developments for better operation and greater carrying capacity—even over the longer distance involved.

Intercity Television Networks

Bell System Television Network

The combination of radio relay (New York-Boston) and coaxial cable (New York-Washington) used in the New York-Boston radio relay system comprised the longest television network a year ago. The approximately 500-mile circuit serves television broadcasting stations along this route.

with coaxial cable branches to Cincinnati and Louisville, is expected to be completed in 1949, and television facilities reaching Columbus, Dayton, Cincinnati, Indianapolis, and Louisville should be practicable shortly thereafter.

West Coast Area

Television facilities between Los Angeles and San Francisco are expected to be available in 1949. The basic coaxial structure from San Francisco to Portland and Seattle is expected to be ready for service in 1950, at which time a television circuit may be provided should a demand develop. Riverside and Stockton are points that could be reached from Los Angeles and San Francisco, respectively.

Other Points

Throughout the south, southwest and west, there are a number of cities where television stations are proposed and which are on the planned coaxial cable network. In the near future, Miami, New Orleans, Dallas, Fort Worth, Ames, Minneapolis, St. Paul and Salt Lake City will be added to the network. Because of the great distances involved and the resultant effort necessary to extend television facilities to these points, the formulation of definite plans for these will await the clarification of the broadcasters' requirements.

It is planned to begin television transmission tests in certain long sections of the transcontinental cable as soon as practicable after completion of installations of coaxial cable and equipment. Necessarily, the provision of facilities for transcontinental television service will depend upon the development of a demand by the broadcasters.

Factors in Television Service

There is much more to providing television network service than the setting up of transmission facilities. Operating features must be included to insure continuous and satisfactory operation. Switching facilities to provide for varying service needs from day to day and hour to hour must be available. Adequate monitoring arrangements are necessary to permit maintaining continual observation of results at strategic points in order to detect transmission irregularities as quickly as possible. Testing equipment and intercommunication circuits between terminals, switching points and main intermediate repeater points are essential to permit rapid clearing of trouble and efficient routine maintenance. Further, of utmost importance is the part which must be played by a large group of qualified personnel specially trained to operate as a coordinated unit. The furnishing of net-

work service to the sound broadcasters for a quarter of a century by the Bell System has provided it with a valuable background of experience and training with which to meet all of these requirements.

Extensive television network facilities in the more populous areas of the country will be provided if desired by the television industry. The Bell System will continue to work closely with the television broadcasters in order that its program of television facility provision may be coordinated with their actual needs.

Book Reviews

Installation and Servicing of Low Power Public Address Systems. By John F. Rider, Published by Rider Inc. Hard Cover, 5 3/4 x 7 3/4", 204 pages, price, \$1.89.

The text is divided into seven chapter headings, as follows: Fundamentals of Sound; Microphones and Phonograph Pickups; Impedance Matching; Amplifier Specifications; Loudspeakers; Installation; Servicing.

The text is in the well-known Rider style, gets right down to fundamentals, and is profusely illustrated. Rider has skillfully demonstrated the utility of the cathode ray oscilloscope in running down trouble in PA systems with numerous illustrations of waveform and their interpretation in terms of open grids, shorted grid on one side of a push-pull system, etc. Obviously worth \$1.89.—EdS.

* * *

Understanding Television—What It Is, and How It Works. By Orrin E. Dunlap, Jr. Greenberg, Publisher. Hard cover, 5 3/4 x 8", 128 pages, price \$2.50.

By chapters, the subject matter is grouped as follows: Introduction; Steps That Led to Television; How You See by Television; What Performers Should Know About Television; Testing Your Television IQ; Television Glossary; Television Stations on the Air; Television Bibliography; Index.

While this text was primarily intended for the alert layman inclined to keep abreast of this "modern age," the old-timer in radio might also find this text to be a rather smooth and painless "look-see" into TV—including a full-page line drawing of the image orthicon, the beam path, and how it works.—EdS.

* * *

The Radio Amateur's Handbook—26th Edition—1949. Published by A.R.R.L., 6 1/2 x 9 1/2", paper cover \$2.00, 605 pages of data and text, 12 pages of index, and 118 pages of ham-gear catalogue of leading manufacturers.

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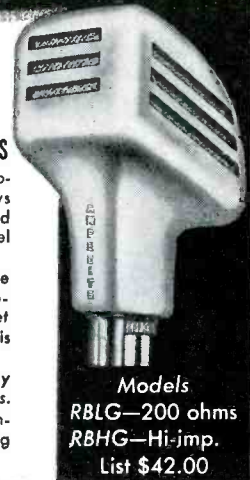
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The 25 Chapters of the ARRL Handbook cover the entire field from basic fundamentals to the latest techniques in single-sideband telephony. TV interference is treated, the latest in variable frequency oscillators, and a new section on practical filter design is included in the power supply chapter. The 26th Edition contains 1651 illustrations, 118 charts and tables, and 77 basic formulas. With this edition, ARRL's world-famous Handbook passes the two million mark. Whether engaged in the amateur or professional side of radio, you will want a copy of the Handbook within constant reach.—EdS.

If It Concerns
The Broadcast
Engineer



—he will read it in the
BROADCAST
ENGINEERS'
JOURNAL

Lightweight Field Amplifier and Microphone

A lightweight, portable remote amplifier designed to provide high-fidelity audio pickup facilities for AM and FM programs, has been made available by the RCA Engineering Products Department.

Featuring excellent frequency response, low noise level and low distortion, the new three-channel amplifier (Type BN-2A) is expected to find wide use in remote pickups.

The new amplifier is designed with a built-in power supply for use with standard 115-volt, 60-cycle, outlets, although



New lightweight, portable remote amplifier is designed to furnish high fidelity audio pickup facilities at sporting events, street programs, political and social meetings, park concerts or similar gatherings. The new Type RCA BN-2A three-channel amplifier, compact and completely self-contained, is only 14½ inches in length and weighs 29 pounds.

there are facilities for battery operation when desired. The three amplifier channels use RCA Type 1620 indirectly-heated tubes, shock mounted to insure low microphonics and maximum protection from the vibration often experienced during remote broadcasts. Each channel offers an overall gain of 92.5 db, more than adequate for any application.

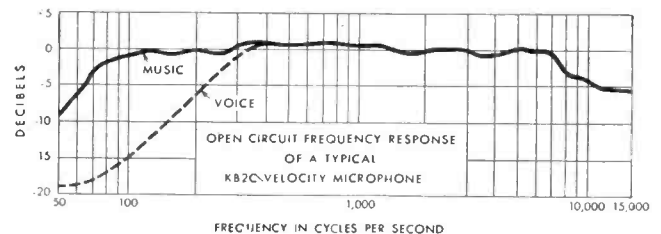
High-level mixing is used throughout, reducing microphonics and general noise level. The amplifier has capacity for four microphone inputs, the third and fourth switchable to channel 3. It is possible to feed a program to the output channel and a P-A amplifier simultaneously. Also, the cue circuit may be switched to isolate the remote amplifier, and feed PA direct. Monitoring facilities are provided in both circuits.

Portable, compact and completely self-contained, the amplifier represents a marked decrease in size and weight over other models. It is only 14½ inches in length, and weighs only 29 pounds. It is attractively styled with a sloping front panel to provide maximum visibility of controls and greatest ease in operation. The case has a deep umber grey metal-lustre wrinkle finish.

The Type KB-2C Velocity Microphone is a ribbon-type microphone designed for general studio and remote applica-



The new miniature RCA velocity microphone takes its place alongside its world famous big brother, the 44-BX. The midget microphone (RCA Type KB-2C) has a sensitivity and output level comparable to those of the larger model, but weighs only 12 ounces and fits comfortably in the palm of the hand.



tions. It has a frequency range suitable for reproduction of both speech and music, and a directional response that permits attenuation of background noise and reflected sounds. Although the microphone is small and light, its output level is equal to that of larger microphones.

The moving element is a corrugated aluminum ribbon suspended between the poles of a permanent magnet. The ends of the ribbon are connected to a transformer that provides an output impedance of 30, 150, or 250 ohms.

To permit compensation for the effect of distance between the sound source and the microphone on frequency response, a two-position screwdriver-operated switch is provided on the side of the microphone head. The response is essentially uniform between 80 and 8,000 cycles per second when the sound source is more than three feet from the microphone and the switch is in the M (music) position, or when the source is between one and three feet from the microphone and the switch is in the V position (voice) position. When the switch is in the V position, the frequencies below 500 cycles per second are attenuated, so that the low-frequency accentuation

caused by proximity of the source to the microphone is cancelled. Frequency response curves for distances between the source and the microphone greater than three feet are shown.

The microphone has a bi-directional characteristic about the horizontal and vertical axes, which is almost independent of frequency. The output is maximum for sounds originating directly in front of or back of the microphone, and minimum for sounds originating at the sides. To permit placing the microphone head at the angle of maximum response, the head can be tilted 30 degrees forward or backward.

A 30-foot, 3-conductor, shielded cable with a female plug is supplied with the microphone. The plug mates with a plug-insert in the microphone shank. A hinged cover on the shank provides access to the plug insert.

The position of the microphone has an important effect on program quality. Since the best position depends on many factors, such as the number of performers, types of musical instruments, and construction of the studio, it should be found by experimental placement, and by monitoring the program with high-fidelity head-sets or a high-fidelity loudspeaker.

When placing the microphone, observe the following general rules:

a. Place the microphone so that its front or rear surfaces faces the source of desired sounds, and its sides face the sources of reflections or other undesired sounds.

b. Protect the microphone from strong winds and explosive-type sounds or the ribbon may be damaged.

For speech pickup when the speaker is between one and three feet from the microphone, turn the V-M switch to the V position. For speech pick-up, when the speaker is three feet or more from the microphone, or for music pick-up, turn the V-M switch to the M position. Performers should not be closer to the microphone than one foot even when the switch is in the V position (unless special effects are desired) or voices will sound unnaturally deep.

Effective Output Level at 1000 Cycles—56 dbm. Sound pressure equals 10 dynes per square centimeter.

Voltage Output.

- a. 30-ohm tap: 460 v 10^{-6} volts.
- b. 150-ohm tap: 1.08 x 10^{-3} volts.
- c. 250-ohm tap: 1.54 x 10^{-3} volts.

Output for Speech at Two Feet—63 vu (250-ohm tap).

Output Impedance—250 ohms, may be changed to 30 or 150 ohms.

Frequency Range—80 to 8,000 cycles. (See fig. 2).

Recommended Load Impedance—Unloaded input transformer.

Dimensions and Weight—Height, 8 $\frac{3}{8}$ inches; width, 1 $\frac{1}{8}$ inches; depth, 1 inch; weight, 13 ounces (less cable).

Stand Fitting— $\frac{7}{8}$ -27 fixture thread.

Cable Supplied—30-foot, 3-conductor shielded, with plug.

Finish—Satin chrome and umber gray.

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

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IATSE DECLARES WAR OF ANNIHILATION

Against Radio-TV Men In Desperate Attempt to "Take Over" All Broadcasting

President J. R. McDonnell of NABET authorized the release of the following statement:

The IATSE and Motion Picture Operators of the United States and Canada (AFL) has made peace in the television industry impossible in the foreseeable future by reason of the exorbitant demands made upon NABET.

The Executive Board of NABET has been in session this week to deliberate current problems of television lighting as a result of a representation case before the NLRB, in which the IATSE is an intervenor.

NABET has been fighting to maintain the radioman's position in the industry that he has developed. The case, involv-

Every Radio-TV man everywhere should make every effort to learn the true facts relative to the sell-out by the IBEW to the IATSE in the Radio-TV

ing television lighting in network stations, was postponed January 26th to permit officers of NABET and IATSE to meet and seek a solution that would be acceptable to the industry and provide harmony between unions concerned.

NABET officers met with the IATSE and discovered that in addition to the question of lighting in television, the IATSE now demands additional work that normally is in NABET's field of technical operation in television. NABET President McDonnell said it is impossible to accede to such demands and NABET will defend with vigor its rights and the rights of radio-TV men everywhere.

See your NABET Chapter Chairman for all details. Ignore rumors.

jurisdiction, which exactly parallels the IBEW sell-out of turntable jobs to Petrillo's musicians. NABET's fight saved those jobs for radiomen.

NABET is making the same fight for Radio-TV in behalf of all radio-TV men.

Write the NABET National Office for assistance and guidance to beat the IATSE.

NABET Constitution

The four constitutional amendments submitted to the membership have all passed; the National Office is now printing new revised copies of the Constitution which will be distributed shortly.

NABET Network Negotiating Committee

Prior to the expiration of the NABET contracts with ABC and NBC, it is the practice for the Chairmen of each of the NABET chapters having network members, to elect from the network members concerned, a small group whose responsibility it is to renegotiate the about-to-expire network contracts. Because of the large volume of correspondence between the several Chapter Chairmen and the NABET attorneys relative to enforcement and interpretation of the existing network contracts, it is almost mandatory that the negotiators be chosen from those who have been close to the year-round job of contract enforcement and interpretation: the network Chairmen. The process of choosing the negotiators is a deadly-serious business, and the responsibility is not lightly regarded by those chosen. Every member, new or old, AM or TV, can be assured that the negotiators have made it their business to seek out every relevant detail that will further the cause of every NABET member — whatever his job function. The first meeting between the NABET negotiators and the ABC-NBC managements is scheduled for March 21st. Members are cautioned to recognize rumors as such, to quickly report them to Councilmen and Chairmen; at negotiating time, rumors serve the management side of the bargaining table, and provide a sounding board whereby the management can accurately "sample"—a la Hooper—the feelings and degree of support of the members on almost any issue; rumors are also thrown in by other unions, via their social contacts among our members. We should all know that the standard, now old-hat routine will be reenacted again: NABET negotiates first with

ABC, NBC, and WOR, and a few weeks later, after NABET has fought the battle and the new contract terms are known, then IBEW goes into negotiation with CBS and by custom, "negotiates" for their members an average of 50c a week higher than the just-completed NABET contracts with ABC-NBC. At a joint IBEW-NABET membership meeting in New York some months ago, the *memberships* of both unions clearly stated that they not only expected but demanded that the IBEW and NABET negotiators fully cooperate in these upcoming spring negotiations with ABC-CBS-NBC-WOR. The spokesmen for both unions clearly indicated that any other course would be detrimental to all the radiomen of whatever union they belonged. NABET has very recently made formal offer of cooperation to the IBEW headquarters in Washington; the International Office of the IBEW answered in effect: "the hell with the interests of the radiomen; IBEW will not cooperate..." NABET has become accustomed to this "to hell with radiomen" attitude of the IBEW. NABET will continue to prove its effectiveness as the *only* union of radiomen, and will fight the radioman's battle at the spring negotiations.

Membership Mailing List

NABET Exec-Secy Westover has gotten directly to the root of membership address list problems, both new members, and existing members who change their mailing address. The Journal, the National Office, and the Chapter Secretaries have been the recipients of the preponderance of criticism for "wrong address" of various members.

This is a tremendous undertaking, essentially because it involves telling members or Chapter Secretaries or both, that it is the individual member's personal responsibility to notify NABET of their correct and complete address at all times, through their Group Councilman to the Chapter Secretary, and from the Chapter Secretary to the National Office. The

National Office then corrects its records, and notifies the Journal of the change. The Washington Chapter has been doing exactly that for many months with a mimeod form letter, and has proved to the satisfaction of the Washington Chapter, the National Office, and the Journal that the complaints were clearly the result of the failure of the individual to notify NABET thru existing channels. The National Office has prepared the following form letters which will be sent to each Chapter and is self-explanatory:

NABET National Office
 Room 1002
 421 Seventh Avenue
 New York 1, N. Y.

.....Chapter/Section Chairman
 Dear

The names listed below are reported to Mr. Harry E. Hiller, National Secretary-Treasurer, and/or Mr. Ed. Stolzenberger, Journal Editor, by the postal authorities as no longer residing at the given address.

Until such time as we receive their corrected addresses, it will be impossible to send either the Journal or other mail. Will you please secure the correct address for this office and the Journal?

Sincerely,
 Clarence Westover
 Executive Secretary

* * * *

TO ALL CHAPTER AND SECTION CHAIRMEN
 AND SECRETARY-TREASURERS
 Gentlemen:

The National Office is continually being besieged by members, who claim they are not getting their copy of the Journal. Also, Chapters are writing that they do not receive cards for their members, etc.

Mr. Hiller, our Secretary-Treasurer, cannot alleviate this situation until he receives address changes or notice of transfer from the Chapters concerned.

This situation can be lessened immediately if all persons who change their addresses would notify the Chapter officials, who then in turn can notify this office. Your cooperation will be appreciated by Mr. Hiller, Mr. Stolzenberger, Journal Editor, and myself.

Sincerely
 Clarence Westover
 Executive Secretary

Membership and Chapter compliance should clean up the membership mailing list address problem promptly and permanently.

UA Elections at ABC and NBC

The Taft-Hartley law required that employees must engage in a UA (Union Authorization) election prior to contract negotiations. This election was recently conducted under Labor Board supervision, and the results of the "For NABET, or no Union" ballot was as follows:

NBC Engineers: Total members, 593.

For: 473; against: 6; challenged: 83; unvoted: 31.

ABC Engineers: Total members, 244.

For: 181; against: 2; challenged: 27; unvoted: 32; void: 2.

ABC Traffic: Total numbers, 26.

For: 21; against: 1; challenged: 1; unvoted: 3.

The procedure is to impound the challenged votes, and they are not included in the total of Yes-No votes. In all cases, the challenges were made by the companies on the claim that these persons were "supervisors as defined in the Taft-Hartley Act."

The percentage voting in favor of a Union Shop is overwhelming, indicating where the hearts are. The number not voting is higher than it should have been. The number of challenges is staggering, a good indication that the companies are going to use all means at their disposal to knock down our aims. Out of 837 members in the network stations, the companies propose to remove 110 from NABET and call them management. This is 13.1 per cent.

There is no doubt in our minds that these challenged members will not want to lose their Union rights and privileges. There can be no doubt that means will be devised to secure for these members a continuation of this American right to belong to the union of their own choosing.

C. Westover /s/ Westy,
 Executive Secretary

RADIO-TV MEN

NABET is the only Autonomous union of Radio-TV men. That is why NABET is the ONLY radio-man's union that is fighting the IATSE. Write the NABET National Office for NABET-Authorization cards. IBEW is NOT fighting IATSE's demand for your radio-TV job. Help NABET help YOU!

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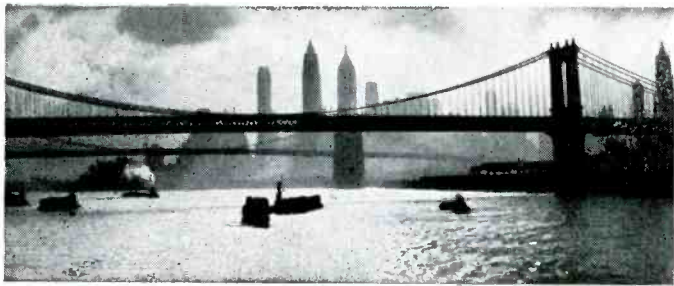
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NEW YORK—By Bob Zweck

I'd like to start this column by emphatically squeuching a current rumor. Despite all gossip to the contrary, "that other network" has not been successful in LURING any NBC engineers over to their camp! Some of the LESSER "talent" may be swayed, but not us; we like it here. No! No! a thousand times NO! (Who's weakening?)—ahem—What are they paying?

With the BIRTH(?) of TV, we here at Radio City sure have seen many new faces(?) come and go. Most of these faces have (and still do) belonged to ABC men. The days of "Hi Ya Joe?" recognition, I'm afraid, belong to the past. We seldom know who the fellow sitting next to us in the lounge might be. Just the other day, one of the "CHECKER" games was ended rather abruptly when, while playing, and discussing contract and working conditions, with the other hand, one of the strangers was heard to say: "Who carries HEAVY amplifiers? I just push the button and she stops at the floor. But what CHARACTERS get in and out of my car!" With that, he and two other strangers left. Later events revealed that one of the other strangers was an insurance salesman (they'll get your money one way or another) and the third some MISguided fellow looking for the personnel office (somehow, I think he changed his mind).....Nope, you never know who's sitting next to you in the lounge any more.....Along these lines, tho, we'd like to say "Thank-you" Chicago for

guys like Russ Sturgis and Jim Dougherty (why didja have to take him back?).....Hi Jim.....BUT—we have not been remiss in reciprocating with, for example, JOES like Courtney Snell who'll give you windy City people the DOPE on TV.

Congratulations and the best of good luck to our NEW chairman. In case you haven't heard by now, EDITOR Stolzenberger may now be addressed as CHAIRMAN Stolzenberger. He has been elected, and by a sizeable majority we might add, to succeed "Westy" as NY chapter chairman; Mr. Westover having been given the job of exec. secretary in the national office.

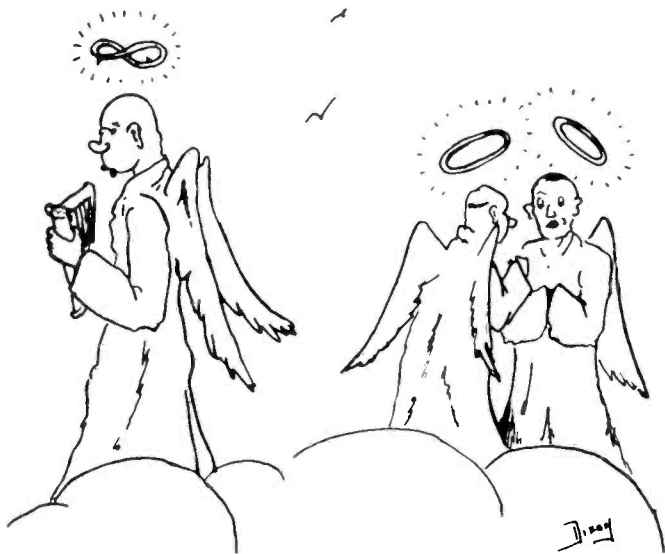
Here in NY, NBC has started a series of Television Orientation talks for its employees. This series will be presented on a weekly basis and will run for approximately two months featuring speakers from within the company who are presently engaged in TV operations. The lead-off speaker was Mr. Carleton Smith, Mgr. of Television Operations, who spoke on television problems; not technical ones, but those of establishing TV on a paying basis. Some points he made were: NBC leads all competitors in program sales. TV (at least here in the east) has bitten into movie attendance by, perhaps as much as 20% (we suspect the taverns might have been taken into consideration in this survey). That the ratio of radio relay to coaxial cable used (in the near future) will be 4:1. That currently it is cheaper to produce live shows than to film them first. The percentage of sporting events in programming has declined from something like 58% to a bit under 28% (this, bad news for the barrooms, but may be due to the growth of other types of TV PGMS). And lastly, that Hollywood has been SLOW in realizing HOW FAR this thing called video has PROGRESSED in the east. Elsewhere in this issue is a very-well put together piece by our Jim Coleman that the ivory towerites of the movie industry might well look over.

AND just before chimes cut my carrier, here is our excuse for being quiet in the lounge: "There is no wholly satisfactory substitute for brains"—but *silence* does pretty well;—hmmm—Oh, yes. There will be a slight pause—for author identification.—Bob.

SOLAR PHOTOGRAPHS TRANSMITTED FROM SWEDEN BY RADIOPHOTO AID IN FORECASTING MAGNETIC STORMS

Photographs of the sun taken in Sweden and transmitted to this country by radiophoto, whenever the sun is obscured in New York, are making it possible for RCA Communications, Inc., to continue without interruption its daily forecasts of sunspot activity. Observations of solar disturbances and the calculation of their effect on shortwave transmission, he said have been carried out by RCA for several years. The information provides advance warning of magnetic storms and permits rerouting of radiotelegraph traffic to circuits outside the areas affected. Until recently, General Ingles stated, forecasts of radio conditions have depended upon success in "shooting" the sun through a refracting telescope installed atop the RCA Central Radio Office at 66 Broad Street, New York. But a recent prolonged cloudy period revealed the need for a supplementary source of data in emergencies, and led to the present cooperative arrangement with the Royal Board of Swedish Telegraphs in Stockholm and the Stockholm Observatory in Saltsjobegen, Sweden. When observation by RCA

To Page 19



TV HEAVEN

"That's President Tracy of the IBEW—he's got hum on his halo."



WASHINGTON

By J. K. WILLIAMS

For the most part the Washington crowd is back at its old job of riding gain on commentators, but there are still many post portems being held on the recent Inauguration which is about the biggest job that ever arises hereabouts. Augmented by out-of-town help the gang here at the various installations really knocked themselves out to put on a good smooth show, but few were reluctant to once again stow the greater portion of the special events gear back to dusty corners.

What with the opening of Washington's fourth Television station, the NABET ranks have been considerably increased. A big welcome to all the gang at WOIC. More complete dope on these newcomers and transferees at a later date.

New blood for the NBC AM studio group in the persons of Keith Price W4NJQ and Don McDowell W3LCC. Keith comes over from A. T. & T. where he was a telegraph service man. Previously, Keith had worked for the Burlington Road as a Morse operator back in his home state of Nebraska. He is a CREI graduate and is all carried away with Television. Don McDowell, formerly of WINX Washington, Pounded Brass in the Maritime service during the war. Originally from Vermont, Don also worked for the Washington outlet for CBS, Ardent Ham, Don is currently chasing DX on 20 meter CW with a lineup that sports an 813 final.

Flexing his reflexes, Ed McGinley transfers from NBC Washington Radio Recording to the Television Control Room at WNBW. Ugly transportation problems arose therewith, and Mac is looking for a new car.

Frank Fugazzi—WRC—has just gotten the "word" from the Commission to soft pedal W3CEJ on 20 lone. Seems that Frank put on a fresh "B" battery one morning to keep a sked with CO6MP and sterilized two cages of Chinchillas over in the next county.

Technical Classes for NBC Engineering personnel in the Washington area were begun on February 14 with Mr. John Stetson of WNBW doing the initial instruction. Ultimate goal of the classes is to acquaint personnel with fundamentals of Television. Mr. Stetson expressed the opinion at the beginning of his first lecture that any person who would master the fundamentals of electronics would be able to comprehend the most complex circuitry. The lecture proper revolved around molecular theories and other groundwork deemed essential as a good background.

Recent addition to the WRC AM-FM Studio group is GEORGE W. KEARSE, who is getting a taste of the Big Time glamor through the medium of staggering in at 5 A.M. to do morning opening up chores.

Slightly out of his element, VIC LEISNER WRC transmitter engineer, found himself face to face with a lot of field gear during the Inauguration. But VIC says he enjoyed getting out doing dance pick-ups and radio relay link duty.

KEITH WILLIAMS—NBC Washington Field Super recently drew a blank on his Florida Vacation. Keith says that out of 14 days in Orlando the sun shone only three days and it was so drafty that he had to wear long sleeved sports shirts on the golf course. Came back to D. C. where temperature had soared to a stifling 77.

After a seven month wait, BOB SHENTON NBC Recording Room impressario at last took delivery on a 1949 Olds. Pursuant to which great day all you can get out of him is "Hydramatic" "Rocket" and other mumblings about the new bus.

FRANK SPAIN — NBC Washington AM Studio—Transferred to New York research on January 24, after having remained in D. C. for the Inaugural session. After getting settled in the new job, FRANK hopes to get a small rig on Ten so he can keep his hand in on the band. Good luck, Frank from the Washington AM and TV gangs.

ART SEMMIG has just been switched from WRC AM Studio to NBC recording. ART did recording for the Library of Congress for a long spell and then did some recording research work on the coast before coming to NBC last year.

SAN FRANCISCO

By C. T. STEVENS

My agents are slipping, my grape vine has withered and died, the underground is so far under ground that I can no longer hear it. In other words, my supply of news has been brought to a skreetching halt. I am a total loss at dreaming up stuff to put in this column and furthermore if I did dream it up it wouldn't be any good. In words of one syllable fellas, if you will send me the latest gossip I will get into the magazine. A little help along this line will be greatly appreciated by all concerned.

Before my grapevine finally gave up the ghost and died (probably due to the snow) I did manage to get the following, a new jr. op is making his presence very well known around the O'Neill household and from sources heretofore considered reliable we hear he is practically eating them out of house and home. And along the same line it seems that the R. W. Woods are (as those high priced columnists say) infanticipating. It will be the first for them and we are not going to corn this thing up by making any wise cracks.

Item—Jim Summers, of the Pipe Bowl Cracking Summers, is now smoking again. He quit the weed for quite a time just to see if he could. It seems like as how that there should be a moral or something here but for the life of me I fail to see it.

A change, a very great change, has taken place in the conversation in the engineers' lounge. Nobody, well, almost nobody, ever mentions "surplus" any more. It used to be that all you ever heard in the lounge was the latest dope and prices at the various joints that sold surplus. And what is it that has taken the place of this favorite topic of conversation? You guessed it, television. There has been only one station, KPIX, on the air here for about a month up to now. As we are writing these deathless words KGO TV is just getting on the air with a test pattern. And it is very good, too, we might add.

We held our first meeting in the meeting place, the auditorium of the building of James F. Waters, De Soto and Plymouth dealer here in San Francisco. It is a really lush place, leather and chrome chairs and tables, lots of ash trays, heat and light. It is real fine. Our sincere thanks to the person responsible for making it possible.

Flash!!—Oscar Berg is taking a boat

ROCKY MOUNTAIN NEWS

By G. A. SOLLENBERGER

The news of the month has to do with the snow-bound western states and it seems to pile a little higher each week. This month's column was to be all about the Greeley, Colorado, engineers and their doings. No pictures arrived in time for this issue, but they made the news alright.

The KFKA transmitter is located several miles east of Greeley, and the snow storm in early January stranded Roy Harris there. Fortunately, a nearby farmer heard of his plight and plowed through hip-deep snow to bring him some food. The staff handled emergency messages and information for the location and aid of stranded travelers throughout the area.

Snow made it necessary for the relief engineers to plod through deep snow for about three days until the roads were again passable to automobiles.

This hardly parallels the snow of three years ago, when the two KOA engineers were stranded east of Denver, and had to eat very meagre monotonous tid-bits until the highway was again opened.

NABET would like to welcome Francis Kettler of KFKA into its fold along with all other Greeley ether technicians. Of course he could get some valuable experience if he should be snowed in. Latest report is that there is some more snow on the way.

To all the old NBC engineers, "Happy Jack Turner's" name will be familiar. "Happy Jack" died suddenly early the morning of January 19th. A real radio personality, Jack was well liked by many, and known to many thousands of people for his warm tone and friendly manner.

Garland Dutton previously reported recovering in a Denver hospital, is now back at KOA, and looking his normal self after an ordeal with a surgeon. Glad to have you back, Dut.

We just get one out, and another one goes in. Vernon Andrews, better known as WØZEA, is making favorable progress after a serious brain operation. Everyone has been vitally concerned with his condition and a daily bulletin transmits any late word regarding him. He is sitting up in bed and feeling better. Speediest recovery, Vern.

Chairman "Dad" Pogue has a new little girl at his house, as of Dec. 23rd, and in passing, George particularly wants to thank Rudd for returning his slippers. In the January issue was a couple of lines requesting the return of George's stray bunnies and a couple of days later, they arrived showing little wear, and proving

that it does pay to advertise in the B. E. Journal.

The first demonstration of its kind in this region was held in KOA's studio "A" the last week in January, for all audio bugs to listen to a group of loud speakers, all supposedly in the high fidelity class. Comparison was made using music (transcribed and recorded—heh!), tones, and a piano for the test that shows up many loud speaker's weaknesses. There were pros and cons on all types, and everyone was convinced that no loud speaker was perfect, but that each of the different types was particularly good for a certain type of sound.

Charlie Eining and Francis Morgan, both NBC'ers here, have decided to wait for the new contract to be signed before they get married—oh what's going to happen to the TV monitor Charlie is building.

The local personally-sponsored TV project is undergoing complete redesigning and rebuilding for high (250 lines) definition and is due to bear fruit within the next few weeks. Hope there'll be some pictures of this educational consuming hobby for next month's diary.

So until something else happens in the conservative West, particularly hereabouts, this Associate Editor would like to hear from any other stations where something happens and usually does.

SAN FRANCISCO from page 13

trip to Mexico! Maybe now the rest of us can sign up for our vacations.

NOTES FROM THE CUFF

There is no truth to the story that during our recent weather Charlie Kilgore was using skis to come down the Taylor Street hill to get to work.

I wonder if the other offices have as much fun with the clock system as we do?

Duke Furman is in a tizzy! He has a brand new car complete with built-in knock. And they can't find out what is causing it.

Is Red Sanders getting married? Remind me, I gotta check on that.

Also Norm Tapper. The rumors are flying thick and fast. Check this, too.

If anybody hears anyone signing W6PS it is a phony. I'm not on the air.

Russ Butler has moved to a beautiful (also ham location) spot in Orinda.

Earl (Mr. Fixit) Sorenson has a beautiful big TV set and has not seen a picture

on it yet. He is off the same nights that the only TV station is also off the air.

Lee Kolm just got thru with jury duty. Jefferson can now have his pet shift back.

Check this. Harvey and Rothery both taking chess lessons to prepare for a battle to end all battles.

Note to sound dept., Creekmore, Travinia, and Brownell. We hear that Horse Trader Ed now wants to use a 45 on his spots as the 38 is not loud enough. Oh, my aching VI!

And so endeth this lesson on "how not to write a column." If you don't like it, sue me! And again I state, if you want to be represented in the Journal you have got to give me some help and let me know what is cooking. When, as, and if you get the stuff to me I will see that it gets sent on to Stoltzy. Otherwise, henceforth, forevermore and hereafter hold your peace.

TRADE NEWS

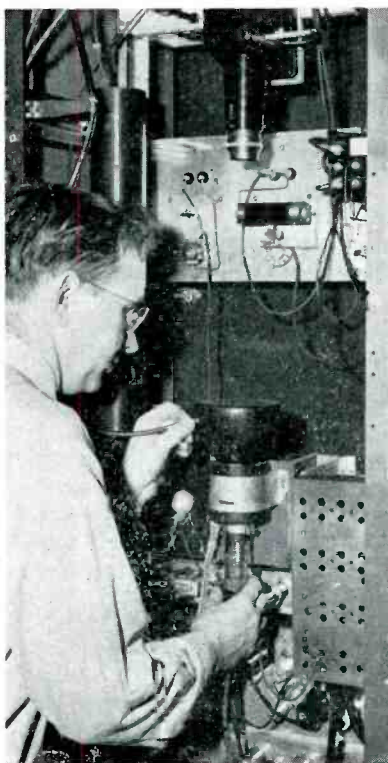
A new company publication titled "The Cannon Electric Cannonade" appeared in January. Prominent in the format is the center spread, devoted to latest developments in the connector and electrical specialty fields. Sections devoted to the various type series will keep the client abreast of various changes in materials, construction, identification of standard lines as well as new developments, many of the latter previewed before catalog material is available. Copies of the Cannonade will be sent free upon request. Write to the Editor, Cannonade, Cannon Electric Development Company, 3209 Humboldt Street, Los Angeles 31, California.

Latest television test device to be announced by RCA is a new attenuating coupler for convenient microwave relay receiver adjustments in the same location with the transmitter. The microwave receiver can be tuned, aligned and checked for proper sensitivity, and signal-to-noise ratio. Dependable results may be obtained in an ordinary test bench setup. With the attenuator as the path between the transmitter and receiver under test, the transmitted signal undergoes 52 decibels of attenuation; roughly equivalent to 10 miles of free space attenuation. The attenuator may also be used as a load when aligning the microwave relay transmitter. The attenuating coupler is a section of waveguide of the RG50/U type, modified to provide proper signal attenuation. Two set screws hold the attenuator in position. Coupling nuts provide

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ADDITIONAL DATA ON TV FLYING SPOT SCANNER

A "Flying Spot" cathode-ray tube for use in a video-signal generator which permits the telecasting of individual station call letters, test patterns, or picture material from easily interchangeable film slides or opaque material, without the uneconomical use of studio equipment, has been developed by the RCA Tube Department, and this data has been supplied by RCA.



Telecasting of individual television "station identification" patterns, heretofore possible only by uneconomical use of studio equipment, has now been greatly simplified by a new "Flying Spot" cathode-ray tube, developed by the RCA Tube Department. Above, L. E. Swedlund, Senior Engineer in charge of projection Tube Development at RCA's Lancaster, Pa., plant, adjusts the new tube in a video signal generator.

The new RCA-5WP15 Flying Spot tube is not a pickup tube, but a source of intense, actinic energy for scanning slides or opaque material making possible a relatively simple and inexpensive video generator permitting change of picture

at will. Up to this time, television stations have been limited to generating such video signals from a fixed pattern built into a monoscope or have used expensive studio equipment for transmitting test patterns. The new "Flying Spot" tube, which reproduces pictures with the half-tone fidelity of photographic film, permits television stations to broadcast individual call letters or test patterns with no more effort than is required in preparing and changing slides, "artwork" or other material.

A new phosphor of unusual characteristics is used in the new Flying Spot tube. The phosphor which has a metallized back to double the effectiveness of the flying spot, emits very strongly in the near-ultra-violet region of the spectrum. In addition, the ultra-violet radiation has extremely short persistence, reducing to a single network the amount of equalization needed to minimize blurring or "trailing" in the reproduced picture.

The video-signal generator made possible by the new tube, consists essentially of (1) the Flying Spot tube with associated power supplies, deflection yoke, and scanning circuits to provide a small, rapidly moving beam of radiant energy; (2) a lens, such as a high-quality enlarging lens to project the flying spot on the subject to be scanned; (3) the subject, which may be a slide, opaque object or motion-picture film; (4) a multiplier phototube with associated power supply to intercept the light transmitted or reflected by the subject and convert it into video signals; and (5) an amplifier to increase the strength of the video signals.

Measuring only five inches in diameter, the tube, when mounted vertically, permits the video generator to be mounted compactly in a single, seven-foot relay rack or cabinet.

Application of the new tube, in addition to the reproduction of high-quality pictures from easily interchangeable black-and-white slide films, include the reproduction of black and white images from Kodachrome or other color transparencies by the use of suitable filters. The tube also makes possible unusual video effects such as double images—one produced by a slide, the other by modulating the beam of the tube. A future important application may be the high-quality transmission of motion pictures via television.

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A Rumbling and a Tumbling

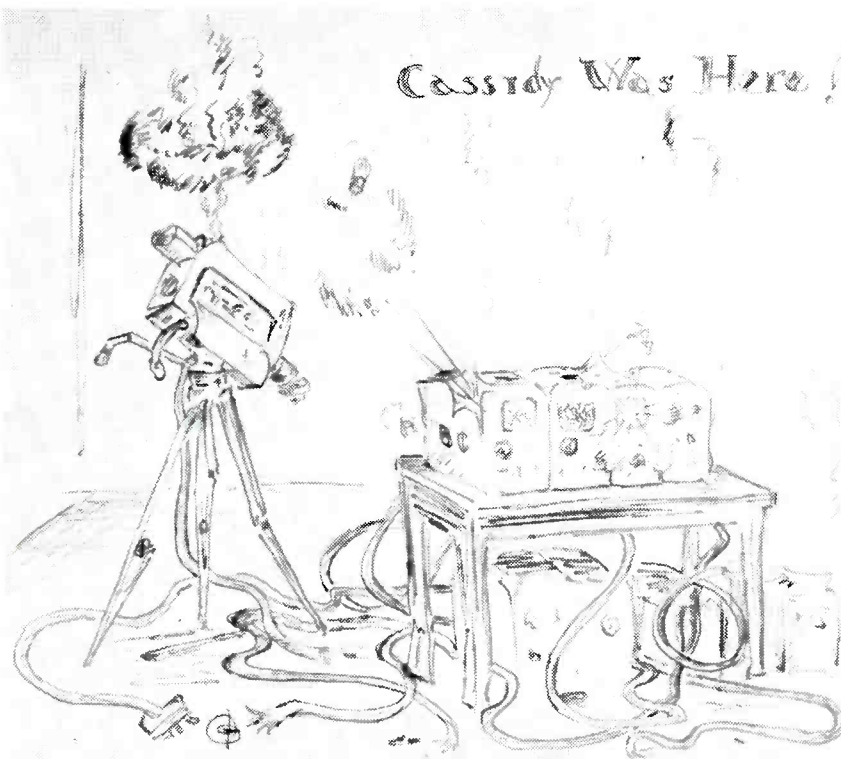
—By JIM COLEMAN

A guy named Edison played with moving pictures. Silent they were, yet they moved. Art absorbed them mid the winding and the grinding, as the scientists worked their way. There was a mumbly and a grumbly as the cameras ground their way their art to display. And as stocks a started soaring as our land they began exploring out California way. With the land market booming and the esthetics zooming as the scientists with their winding and eternal grinding paved their way. The salaries started zooming and the Latin lovers grooming, became the religion of the week to all the price could pay. And the scientist keep a grinding and a winding and soon a voice was heard. There was a knashing and a smashing as the arts began avasting as the voices began a smashing at the doors of sound photography. And the prices began to rocket to the heights beyond my pocket and vaudeville took a floppet as the electron voice boomed profit and the real estate skyrocketed. The theatres became more numerous till the churches were outnumbered and the homes became a place to sleep and eat. But the scientist kept a winding and a grinding and where Nipkow and Kerr left off there came another voice related to Fleming, Edison, Marconi, and DeForest to DuMont, Farn-

worth, Zworkin and others too numerous. As the soaps and comedy held sway the voices of all including the cinema did say this toy can't last, it belongs to the days we'll never see, as the Queens of lands across the seas came here to join in the melee. The scientist kept a winding and a grinding and his products we did see. Yet the prophets smiled and sunk more in what seemed an eternity. But their judgment was falacious as we will see. As the scientist toiled in his laboratory, as his test tubes kept a smoking and his cathodes kept a glowing he was preparing them for an unexpected eternity. But they smiled and bought more into their certainty. The salaries high, this art could well supply no argument need here be entered; like clippers of old and mines of Western yellow gold it poured to all within the fold and those demanding were not left in the cold. There came a bombing and a straffing and the scientists kept a making but for victory they toiled well and the industry of movies did her part and kept a moving with the television momentarily entombing. But when victory was ascertained and the bombing stopped up went the curtain and the scientist got to working for video was not too well. With iconoscope to start with there were pictures

good, but hot. Television receivers hit the market though the prices were up higher than suited the average buyer all the sets were bought we see. Mid the laughs and smirks of cynics who thought that this was it, there came another knocking as the scientists kept their striving and with Zoomar lens and Orthicon as prizes due to the scientists' striving and the money of the industry. We saw the sports world closer and the arts the studio invaded as the heat was now eliminated as was its misery. The arts were now inspired to work again beside us in this growing industry and the vaudeville survivors poohed out by celluloid imbibers were once again in a land of liberty. And as their wall had crumbled there came another creaking and a rumble and a crumbling just as Jericho once got it. So this industry that had skyrocketed paused and felt no true eternity. So they took their dollars gotten and tried to buy this new found tot who some day a David will be. But his Uncle Sam defied them and kept his nephew free. Cut expenses they all shouted, and friends and relatives were outed, but they still heard the rumbling and the crumbling as they faced eternity. Goddam the General they all shouted and his Princeton cohorts' ears were heated as they induced eternity. And the scientist kept a working keeping his eyes on progress certain as this is still the land of the free. From his many bottles and his other weird concoctions he improved the television conglomeration through and through. So today with home illumination the arts are now inspired to work in comfort beside us at the rates the arts desire in the new found eternity. And the loud creak of timbers and the rumble and the tumble and the approach of senility are heard as the glands of box-offitis produce less and less lymph fluid for the coffers and thus cause mad excursions into this new industry. And all round us we are crowded by the eager and excited by the able and the sharpies who with dollar and front office spin webs of vain security in this new certainty. This little baby David will not be so crated because he has friends in the laboratory who will keep his heart and liver in very good condition as this is still the land of opportunity. Those who now do enter into this new industry remember that David will grow larger and his friends who made his heart up will not abandon him to insecurity. So let's look

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TRADE NEWS—from page 14

for rapid attachment to both transmitter and receiver. The coupler is 24 inches long, excluding pins, and weighs 4½ pounds.

The new Studio Ribbon Microphone by Amperite has been designed to meet the most exacting reproduction requirements of Broadcasting Stations, Recording Studios, and Public Address. The frequency range covered is 40 to 14,000 cps; out put -56 db; harmonic distortion less than 1%; discrimination with angle—60 to 10,000 cycles, less than 1/10th that of a diaphragm microphone. Unit is shock-mounted in rubber. The case is unusual-



ly rugged and will withstand a great deal of mechanical abuse. Not affected in any way by altitude, moisture, or temperature. Available in 200 ohms output, 50 ohms on special order. Also available in hi-impedance. When used for public address, the feed back is unusually low due to the fact that the frequency response of the microphone is free from peaks.

List Price

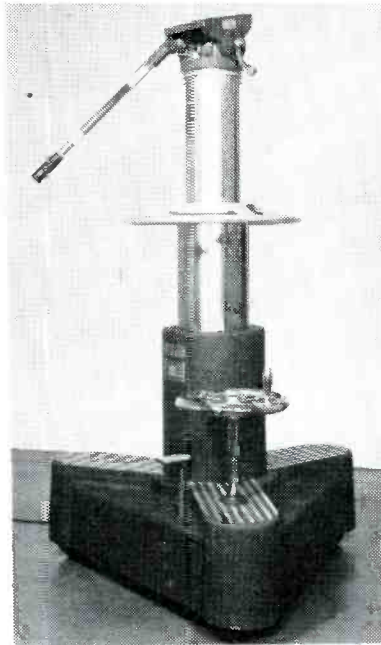
Model R80L—200 ohms \$80.00
R80H—hi-impedance 80.00

For further information, write to: Amperite Company, Inc., 561 Broadway, New York 12, N. Y.

Two studio mountings for television cameras—the TD-1A Studio Camera Pedestal and the Studio Camera Dolly—have been added to RCA's complete line of television equipment, it was announced by the RCA Engineering Products Department.

The new pedestal provides a convenient and useful mounting for the television camera in the studio or other indoor telecast locations. It operates smoothly and silently on three rubber-tired wheels, and

is mechanically balanced for ease of operation. The camera can be moved freely and quietly about the telecasting site, while a crank handle on the pedestal raises or lowers the camera between levels



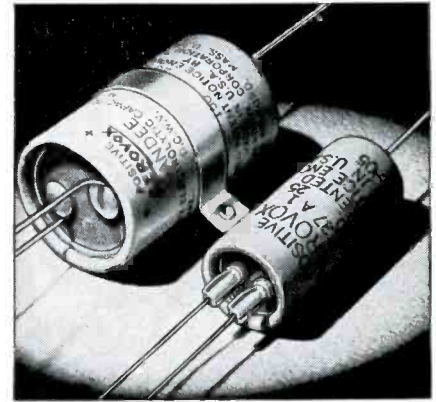
40 and 60 inches above the floor. Panning and tilting of the camera can be facilitated by means of a friction head which is supplied separately. The pedestal is finished in umber gray wrinkle enamel and stainless steel, and is styled to match other RCA television products.

The larger studio dolly is similar to those used in Hollywood film production sites, except that the rear wheels of the television dolly can be turned at right angles. This allows the rear end of the dolly to be swung around while the front end of the chassis pivots on a caster. The crane boom on which the camera is mounted can be raised to a height of 74 inches or lowered to 23 inches above the floor. Mechanical design of all controls assures ease of operation. Rubber-tired wheels provide smooth, quiet movement, and stops allow for holding the dolly in fixed position. The equipment is finished in umber gray wrinkle enamel and stainless steel.

Stud terminals in place of conventional rivet-type terminals for the dual leads, have slashed the bulk of the new PSR midget-can dual-section electrolytics to considerably less than the previous sizes, according to Aerovox Corporation of New Bedford, Mass.

The dual-terminal end tells the story at a glance. The new stud terminals to

which the usual bare pigtailed are positively crimped, have reduced terminal diameters without loss in mechanical



strength or change of standard pigtail leads. The space saved by the stud construction reduces the tubular diameter up to 40% of that of conventional-design units, and the bulk up to about one-third. The previous rivet-type terminal unit and new stud-terminal unit, both of the same ratings, are shown in the accompanying illustration.

A commercial radar set with two viewing screens, which gives the unit the ability to see near and distant objects at the same time much in the manner of a "bifocal" set of eye-glasses, has been developed for the first time by marine electronic engineers at General Electric Company's Electronics Park, Syracuse, N. Y. The "bifocal" set has been tested experimentally aboard the Leon Fraser, a Great Lakes iron ore carrier. It is expected to extend the utility of radar set applications considerably. Sharper pictures at all ranges are produced. Result of a program to design radar for the narrow channels and harbors of the Great Lakes as well as open waters on the ocean, the net set has seven-inch and twelve-inch scopes. The former gives a radar picture with a two-mile radius at all times and is called a "safety" scope. The larger screen, known as the "working" scope, is adjustable to one-half, one, three, eight, 20, or 40 miles.

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

State Unemployment Insurance Benefits

State	Size of firm (minimum number of employees and/or size of pay roll in a calendar year)	Weekly benefit amount for total unemployment		Duration in 52-wk period
		Min.	Max.	Minimum and maximum weeks
Ala.	8 in 20 weeks	\$4.00	\$20.00	10 to 20
Alaska	1 at any time	8.00	25.00	8 to 25
Ariz.	3 in 20 weeks	5.00	20.00	12
Ark.	1 in 10 days	5.00	20.00	4 to 16
Calif.	1 any time; \$100 in same quarter	10.00	25.00	12+ to 26
Colo.	8 in 20 weeks	6.00	17.50	10 to 20
*Conn.	4 in 13 weeks	8.00	24.00	6+ to 22
Del.	1 in 20 weeks	7.00	18.00	11 to 22
*D.C.	1 at any time	6.00	20.00	10+ to 20
Fla.	8 in 20 weeks	5.00	15.00	7+ to 16
Ga.	8 in 20 weeks	4.00	18.00	16
Hawaii	1 at any time	5.00	25.00	20
Idaho	\$75 in any quarter	10.00	20.00	10 to 20
Ill.	6 in 20 weeks	10.00	20.00	10 to 26
Ind.	8 in 20 weeks	5.00	20.00	6+ to 20
Iowa	8 in 15 weeks	5.00	20.00	6+ to 20
Kans.	8 in 20 weeks or 25 in 1 week	5.00	18.00	6+ to 20
Ky.	4 in 3 quarters preceding year with wages of \$50 in each quarter, or 8 in 20 weeks	7.00	20.00	22
La.	4 in 20 weeks	3.00	18.00	7+ to 20
Maine	8 in 20 weeks	6.75	22.50	20
Md.	1 at any time	6.00	25.00	10 to 26
*Mass.	1 in 20 weeks	6.00	25.00	5+ to 23
*Mich.	8 in 20 weeks	6.00	20.00	9+ to 20
Minn.	1 in 20 weeks	7.00	20.00	12 to 20
Miss.	8 in 20 weeks	3.00	20.00	16
Mo.	8 in 20 weeks	.50	20.00	1+ to 20
Mont.	1 in 20 weeks or \$500 in a year	7.00	18.00	16
Nebr.	8 in 20 weeks; \$10,000 any quarter	5.00	18.00	7+ to 18
*Nev.	\$225 any quarter	8.00	20.00	10 to 20
N. H.	4 in 20 weeks	6.00	22.00	23
N. J.	4 in 20 weeks	9.00	22.00	10 to 26
N. Mex.	\$450 in any quarter or 2 in 13 weeks	5.00	20.00	12 to 20
N. Y.	4 in 15 days	10.00	26.00	26
N. C.	8 in 20 weeks	4.00	20.00	16
N. Dak.	8 in 20 weeks	5.00	20.00	20
Ohio	3 at any time	5.00	21.00	18 to 22
Okla.	8 in 20 weeks	6.00	18.00	6+ to 20
Oreg.	4 any time \$500 any quarter	10.00	20.00	7+ to 20
Pa.	1 at any time	8.00	20.00	9 to 24
R. I.	4 in 20 weeks	10.00	25.00	5+ to 26
S. C.	8 in 20 weeks	5.00	20.00	18
S. Dak.	8 in 20 weeks	6.00	20.00	6+ to 20
Tenn.	8 in 20 weeks	5.00	18.00	20
Tex.	8 in 20 weeks	10.00 for 2 weeks	36.00 for 2 weeks	1+ to 9 2-week periods
Utah	\$140 in any quarter	5.00 depending on cost of living	17.00 depending on cost of living	15 to 25
Vt.	8 in 20 weeks	6.00	20.00	20
Va.	8 in 20 weeks	5.00	20.00	6 to 16
Wash.	1 at any time	10.00	25.00	12 to 26
W. Va.	8 in 20 weeks	8.00	20.00	21
Wis.	6 in 18 weeks	8.00	24.00	8+ to 24
Wyo.	\$500	7.00	20.00	5+ to 20

UNEMPLOYMENT INSURANCE PROVISIONS

From information supplied by the Labor Information Bulletin, Dept. of Labor

Wisconsin Led Nation with Establishment of System in 1936

Wide variations in terms and conditions under which workers in business and industry are paid unemployment compensation are shown in a recent report on State unemployment compensation laws compiled by the Federal Security Agency.

Laws for payment of unemployment compensation exist in all 48 States, as well as the District of Columbia, Alaska, and Hawaii. They were enacted in all States (except Wisconsin) by 1938, within three years after passage of the Federal Social Security Act on August 14, 1935. Wisconsin's compulsory unemployment insurance statute had become operative in 1936.

The Social Security Act furnished the incentive to other States to establish their own unemployment insurance systems by levying a uniform payroll tax of three per cent on employers of eight or more workers in at least 20 weeks during a calendar year.

In those States which established their own unemployment insurance system by levying a uniform pay-roll tax on them, employers were allowed a 90 per cent credit against the Federal tax for the contributions paid to their State provided the State law met certain specified Federal standards. In addition to offering reduction in the Federal tax to employers, the act provided that the entire cost of administering the State laws would be paid out of Federal funds.

Tax Collection

Under the present Federal-State system the Bureau of Internal Revenue determines who is subject to the Federal unemployment tax act, and it collects that part of the tax which is not offset against contributions paid by subject employers under State laws. The Social Security Administration of the Federal Security Agency determines whether State laws meet Federal requirements for tax-offset credit, and whether the laws and their administration meet the minimum requirements for administrative grants.

The States have full responsibility for enacting and administering their own laws subject to Federal requirements. They determine who shall be covered by the law, what employers shall contribute and how much they shall pay, what benefits shall be provided, under what conditions, and for how long.

In 1947 there were an estimated 45,600,000 workers with wage credits and an estimated 37,000,000 with insured status under State laws. A total of \$1,095,519,752 was paid in contributions into the unemployment trust fund by 1,337,919 subject employers. During that year \$776,163,900 was paid in benefits to 3,983,504 beneficiaries. The balance in the trust fund at the end of the year amounted to \$7,303,282,819 in accumulated contributions plus accrued interest.

Contributions

While the present 51 laws are all different, in some respects they all follow the same general pattern. In general, they provide that all subject employers must pay contributions based on their pay rolls, out of which benefits are paid unemployed workers under certain conditions. Only two States now also required a contribution from covered workers.

Wages paid agricultural workers, domestic servants, government employees, and those in non-profit institutions are exempt from the Federal unemployment tax act. Wages paid for other services are taxable. State laws, as a rule, exempt the same services, although some include smaller businesses and other work not subject to the Federal tax, as the accompanying chart indicates. Twenty-two States include eight or more employees; two States, six or more; eight States, four or more; two States, three or more; 12 States, one or more; and five States base coverage on employer pay roll. The Federal tax is 3 per cent of wages up to \$3,000 paid to any one person by one employer. Against a maximum of 90 per cent of that tax, an employer may credit his State contributions which generally follow the "standard" rate—2.7 per cent of the first \$3,000 in wages paid an individual worker.

Contributions collected by State agencies must be deposited to the account of individual States in the unemployment trust fund in the Treasury of the United States to be drawn upon for the payment of unemployment benefits only. In 1947, 50 State or Territorial laws made provision for experience rating which permits a reduction in the 2.7 per cent rate on the basis of the individual employer's experience with unemployment. Mississippi passed a similar law early this year which became effective on July 1.

Benefits

A worker in covered employment does not automatically draw benefits when he becomes unemployed. He must have earned a certain amount in wages or worked a certain number of weeks in a "covered" job during a certain period of time before becoming unemployed. He must also be able to work, available for work, and willing to accept a suitable job. He must register for work at a public employment office and file a claim for benefits. He may be disqualified for benefits if he left his job without good cause, was discharged for misconduct in connection with his work, or if he was directly engaged in a labor dispute resulting in a stoppage of work.

Both employers and workers have the right to appeal if they are not satisfied with the decision of the State employment security agency.

A worker may not be disqualified for benefits if the job offered is vacant because of a lock-out or labor dispute; if the wages, hours, and conditions of work are substantially less favorable than those available for similar work in the locality; or if he would be required to join a company union or to resign from, or refrain from joining, a bona fide labor organization.

The minimum and maximum weekly amount a qualified claimant may receive for total unemployment is shown on the accompanying table and differs in the various States (including Alaska, Hawaii, and D. C.). The maximum ranges from \$15 to \$36 a week (with dependents' allowances) and the minimum from \$3 to \$14. Five States are now paying a maximum of over \$25, 42 are paying from \$18 to \$25, and only three States under \$18. The five States marked with an asterisk include dependents' allowances. In those States dependents' allowances vary both as to the definition of compensable dependency and to the amount granted. In Connecticut, Massachusetts, and Michigan a dependent must be under 16 or 18 years.

Just as the amount of weekly benefits differs in the various States, so does the length of time for which benefits are payable. In 18 States the maximum duration varies from 21 to 26 weeks; in 22 States 20 weeks is the maximum; and in 11 States less than 20 weeks.

In 35 States the length of time a worker can draw benefits depends upon his previous earnings, while 15 States provide a uniform duration period, which means that if a worker has qualified for benefits he can draw them for the same period of time if he cannot get a job before the period ends. Even in those States, however, the period differs, ranging from 14 to 26 weeks. One State provides three different duration periods for different classes of claimants.

The estimated average potential duration of benefits in 1947 was 19.95 weeks, whereas the estimated actual duration was only 11.1 weeks, which would indicate that 44 per cent of claimants obtained other employment before their claims to benefits were exhausted.

SOLAR RADIO PHOTOS—from page 12

in New York is impossible, a photograph of the sun, taken by Dr. Yngve Oehman in charge of solar work at the Stockholm Observatory, is transmitted to New York by radiophoto. Investigations conducted for several years by RCA engineers, General Ingles added, revealed that the relation between sunspot activities and their effect on shortwave radio communication was not a matter of sunspot size, but of the position of the spots on the sun's surface. It was learned that the maximum effect on radio wave propagation is created when the solar disturbances move into a "critical zone," an area about 26° in radius from the optical center of the sun. Basing deductions on this fact, engineers of RCA Communications are now able to forecast magnetic storms more accurately than ever before.

NABET EMPLOYMENT SERVICE

Due to the day-to-day changes in status and availability of unemployed NABET members, it has not been deemed practical to publish such a list of names in each issue of the Journal. Instead, each available member should immediately notify the National Office, with copies to his Chapter Chairman, of availability together with brief resume of experience, etc., and notify them immediately of any change in status or availability. The Chapter Chairman for the area, and the National Office, each of whom are called upon to fill vacancies, will thus be kept up-to-date to the mutual advantage of all concerned.

NABET invites inquiry from all Radio-TV men who are fully convinced of the futility of the IBEW as a haven for Radio-TV men.

To save your job in Radio-TV, you will have to have the courage to sign a NABET Union-Authorization Card, which will be provided by any NABET Officer (see list page one.) IBEW radiomen from coast to coast are contacting NABET. Be organized among yourselves and designate a committee to provide the liaison with NABET. In NABET, the Radio-TV man's interests come FIRST.

NABET guarantees AUTONOMY for the Radio-TV man. Contact NABET today!

LENS RESPONSE MEASUREMENT

A new degree of realism in television, motion pictures, and still photography may result from a new method of measuring contrast characteristics of both optical and electrical lenses which was described to members of the American Optical Society at their recent convention.

The procedure, developed by Otto H. Schade, advance development engineer of the Tube Department of the Radio Corporation of America, is also applicable to contrast measurements for different types of photographic film and television screen materials.

Employing what is essentially a television pickup and reproduction system, it provides the optical and photographic industries, as well as the television industry, with the first known practical method of analyzing and rating the ability of various types of lenses to show picture detail.

For industries developing or using image-forming devices, this method means the end of guesswork and, for the first time, permits objective selection of lenses that will produce the best results in various types of systems. Data on the imaging power of the human eye have been incorporated in the procedure for plotting the overall response of lenses and other elements, so that the practical value of improvements in picture quality can be determined in terms of the observer's ability to detect them.

The theoretical values by which lenses have been rated heretofore, Mr. Schade explained, are based on their limiting or highest power of resolution—that is, the greatest number of lines of picture detail per millimeter which they can focus on film or viewing screen.

However, useful resolutions for photography and television are limited, respectively, by the response of photographic film and the width of television frequency channels. To improve picture detail within these limitations, the research engineer in these fields must strive for sharper contrast of light and dark picture elements within lower ranges of resolution—about 50 lines per millimeter in photography, and one-fifth as many lines in television. The system developed by Mr. Schade affords the first practical means of determining the contrast response of lenses in these ranges, or in any specified range from zero to the limiting resolution.

The equipment chain employed in the system, he explained, consists essentially of a specimen mount, a lens mount, a microscope, a television camera, a tele-

vision picture tube or kinescope, and an oscilloscope, arranged in that order. A test pattern made up of a series of vertical and horizontal lines of diminishing size and spacing is mounted before the lens to be tested or rated, and a greatly reduced image of the pattern is produced. The microscope enlarges this image before it is picked up by the television camera, providing a large, easily studied televised image on the kinescope, and a large, accurate "trace" or wave-form image on the oscilloscope. The latter image is formed by feeding a portion of the electrical signal from the television camera to the oscilloscope.

Using this trace or wave-form as a basis, Mr. Schade has worked out a system for plotting curves on a chart to show the contrast or detail response of a given lens at any degree of resolution.

Similar ratings for the electrostatic or electromagnetic lenses used in television camera tubes can be charted by an application of the same principle, while ratings for similar lenses in kinescopes are established by a modification of the system employing RCA's "flying spot" scanning tube to analyze the kinescope image.

"It is theoretically possible to compute the detail contrast of a lens at any resolution," Mr. Schade said, "if we know the size and light intensity distribution of the light spot formed as the image of a point of light. The finer the spot, the better the detail contrast.

"However, since this spot assumes all kinds of queer shapes, particularly in the case of optical lenses, when it is moved over the picture area, measurement of its size and light distribution is very difficult. Even when such measurements can be made, there remains the problem of using the spot to generate a picture before we can determine how it affects detail contrast.

"An obvious approach would be to attempt to measure the detail contrast itself with a microphotometer, but that, too, is very hard to do by any photographic process. The excessive time required for such measurements, and the difficulty of accurately correcting results to compensate for characteristics introduced by photographic film, have made it prohibitive.

"It remained for television to provide the practical means for obtaining these data, which are needed, not only by television itself, but by all activities concerned with image-forming devices. A television system is actually a continuously tracing

microphotometer in which a tiny "scanning aperture"—the electron beam—analyzes the image along hundreds of parallel lines, translating light intensity into electrical currents which can be made visible again as an image on a kinescope or as a trace of light on an oscilloscope.

"By using a microscope as a camera lens, the tiniest image detail can be magnified to a size so large as to occupy the whole kinescope screen, or to produce large, accurate traces on the oscilloscope. The light sensitivity of the image orthicon camera tube permits instantaneous observation and measurement of detail response beyond that of the best camera lenses, and even of lower-power microscope objectives.

"The trace on the oscilloscope can be calibrated quickly, easily, and accurately by focusing on the photo surface of the television pickup tube a measured amount of light sufficient to cancel one of the dark lines in the kinescope image. This is done by mounting a small mirror at an angle to superimpose the light slit image on the test pattern image, and by using a phototube to measure the amount of light required for cancellation.

"A general method has been worked out for measuring and plotting the detail response of lenses, film, and television imaging devices in the form of curves showing all values of detail response from zero to the limiting resolution, and for various angles and colors of light.

"A simple method is also provided for finding the overall response of systems in which several imaging processes occur, such as a motion picture process involving camera lens, film, and projection lens, or an even more complicated television process where a scene may be picked up by a camera lens, transformed into an electrical image by a television picture tube, limited in resolution by an electrical channel, reconstructed as an optical image by a kinescope, and projected by an optical lens to a viewing screen."

A TUMBLING—from page 16

around and pick new artists for this medium who will give with the scientists and the industry. For we are in the saddle as the other fellows sadden as they hear their own death rattle. And there's a rumble and a tumble as the beams begin to sway, as the celluloid industry finds its art does not now pay. Thus is all eternity.

FINIS (not 4 us).

—James V. Coleman.

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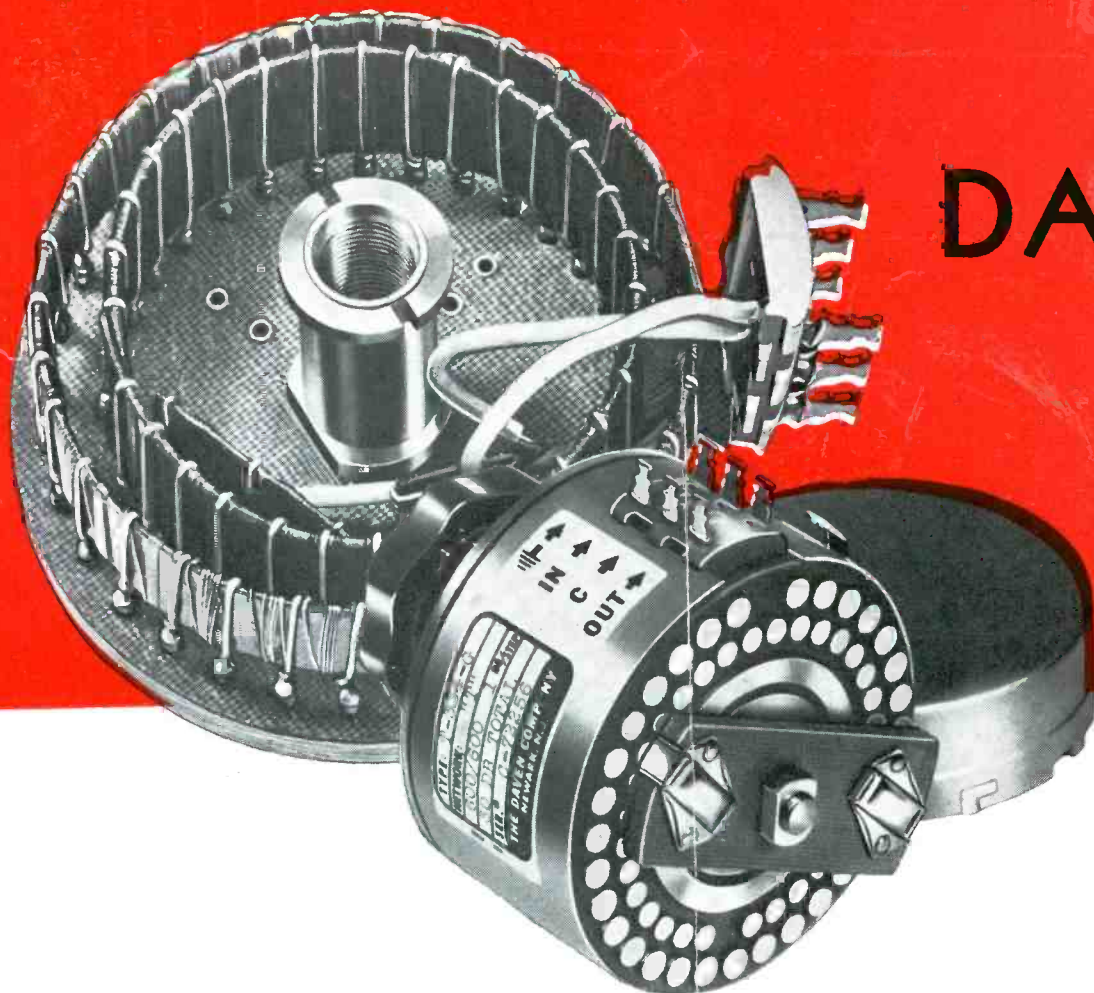


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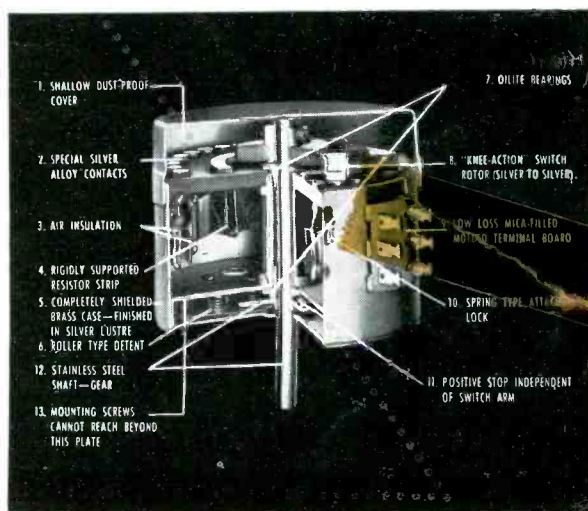
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