

RADIO, TV and RECORDING

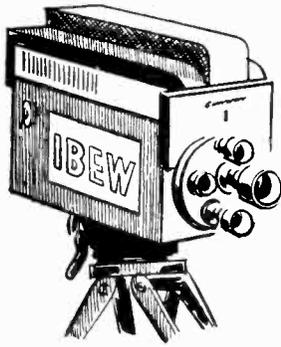
# TECHNICIAN-ENGINEER



MARCH, 1954

Tracy Becomes President Emeritus. International Executive Board appoints Milne as International President of the Brotherhood. Joseph D. Keenan named new International Secretary of the IBEW





'The novelty effect  
of television  
is over.'

## TV's Competition Unhurt, Says Report

**A**S TELEVISION passed out of its novelty period in most of the nation during 1953, nearly every industry it was supposed to hurt turned upward in income, attendance, or sales—many reaching their all-time peaks, according to the fifth annual report on the effects of television prepared by J. N. Jordan and recently published by the Radio-Electronics-Television Manufacturers Association.

"Newspapers, magazines, radio, books, concerts, track and harness racing and professional football had the best years in their history," said the Jordan report. "Motion pictures, college football, boxing and basketball were climbing again after a temporary decline. Major and minor league baseball attendance dropped 1.8 per cent and 7.8 per cent. The sports industry as a whole, with 15 million dollars in rights fees, raised its income from admissions plus television to approximately the all-time peak of \$284 million reached in 1949."

Citing the fact that more than half of all American homes (28,000,000) now have TV sets, the report points out that 56 per cent of these owners have had their sets for two or more years. "The novelty effect of television is over. Normal habits have formed—and the gloomy prophecies of empty stadia and theatres, curtailed reading, and the doom of radio simply have not come true—and will not come true."

Enumerating the many hours saved by modern electrical appliances, faster transportation, shorter working hours, automatic heating and power tools, the report concludes that television has merely filled a time vacuum created by our improved standard of living. "It never did have to hurt anything," Jordan said. "Our modern way of life has saved so much time for the average person that he is able to watch TV several hours a day, and still have as much time as before for other recreation."

Television does compete with other recreation, the report states. But it competes because it is good entertainment, not because it is free. Fifty million people staying home to watch "I Love Lucy" is tougher competition for any sport than the telecast of the sport itself. Similarly, 43 million people watching a Sunday World Series telecast knocks competing TV shows for a loop.

"Top attractions still sell out, whether televised or not," Jordan said, "and also draw the big TV audiences. Mediocre events neither draw well at the gate nor over the airwaves. Television has made people more discriminating. Good shows last longer. Bad shows flop faster. That is the problem all people in sports and recreation must face today."

The report pays high tribute to the way leaders in sports, entertainment and communications have met this problem. "To the credit of these men, few sought to fight, ignore or weep over TV; most strove to live with it," Jordan said. "They went out and worked to find the best ways to profit by this new competition. Radio increased local and spot programming and had its greatest year. Newspapers found that TV stimulated reader interest and broke every record in their 300-year history. Magazines stepped up color, enlivened their editorial matter, and increased both circulation and advertising revenue. Book publishers found a gold mine in paper back editions. Long-playing records and high fidelity boosted home music. New 3-D techniques and big productions stimulated movie going. Racing increased fan interest, opened new tracks and smashed every past record. Baseball teams shifted to new cities and found fans waiting. Boxing became a topic of conversation in millions of homes. Professional football built fans all over the country and hit new peaks in attendance and profits."

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# TECHNICIAN-ENGINEER

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Published monthly by the International Brotherhood of Electrical Workers, AFL, 1200 Fifteenth St., N. W., Washington, D. C., for the men and women in the recording, radio and television industries.

D. W. TRACY, *President*      •      J. SCOTT MILNE, *Secretary*  
ALBERT O. HARDY, *Editor*

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## With Brotherhood in an 'Overall Healthy Condition,' Tracy Resigns; Secretary Milne to Succeed Him

**D.** W. TRACY, International President of the International Brotherhood of Electrical Workers (AFL), resigned from that office March 16. His resignation was presented at the regular quarterly meeting of the Brotherhood's International Executive Council in Miami, Fla.

Mr. Tracy served the Electrical Workers' organization in an official capacity for a period of more than 40 years, and held the office of International President for more than 14 of these years. In his letter of resignation, Mr. Tracy commented on the tremendous progress which the organization has made, and the inevitable increase in the work load because of this steady growth. He selected the present time for retirement because of the overall healthy condition of the Brotherhood, and with the feeling that a successor would find its affairs in the best condition since the organization was founded in 1891. Mr. Tracy served as International President for a longer period of time than any of his predecessors.

Mr. Tracy was born and raised in Bloomington, Ill., and was initiated into the Brotherhood of 1913 in Houston, Tex. During the next few years he worked at the electrical trade in the Oklahoma-Texas area, where his ability and integrity were soon recognized. He was elected business manager of Local 716 of Houston, Tex., in which city he has maintained his residence ever since.

In 1920, he was elected International Vice President for the Seventh District of the IBEW, which includes his home state of Texas.

In 1933, Mr. Tracy was made International President of the Brotherhood and served in that capacity until 1940 when he was called upon by President Roosevelt to serve his country as First Assistant Secretary of Labor. During this period also, he was named by President Roosevelt as United States delegate to the International Labor Conference in Geneva, Switzerland, and later as delegate to the Labor Conference held in Lima, Peru.

In 1946 at the Twenty-Second Convention, in San Francisco, Mr. Tracy was again elected International President. In 1947, Mr. Tracy was elected to the Executive Council of the American Federation of Labor, on



D. W. Tracy



J. Scott Milne



Joseph D. Keenan

which he serves as a Vice President, and he is also a Vice President of the Metal Trades Department, A. F. of L.

Since Mr. Tracy resumed presidency of the Brotherhood in 1947, its growth has been phenomenal. It now has over 600,000 members engaged in many fields including the construction industry, utilities, manufactur-



President-Elect Milne and President Emeritus Tracy in a jovial discussion with the Secretary of Labor, James Mitchell.

ing, railroads, all types of communication, and, in fact, almost every type of work which involves the generation, transmission or use of electricity.

The Executive Council of the International Brotherhood of Electrical Workers accepted Mr. Tracy's resignation with regret, effective April 15, and immediately took action to make the former officer President Emeritus of the organization. Following this, the Council elected J. Scott Milne, to head the IBEW as its new International President. The Council will meet in Washington, D. C., on April 15 to reconfirm its action in accordance with the laws of the IBEW Constitution.

#### **About President Milne**

J. Scott Milne, at present, is serving as International Secretary of the International Brotherhood of Electrical Workers and has served in that capacity since July 15, 1947. Mr. Milne was born in Vancouver, B. C., of Scottish parents. After serving in the Canadian Army as a very young man during World War I, he came to the United States and was initiated into IBEW Local 125 of Portland, Oreg.

From his initiation in 1918 Mr. Milne took a keen interest in the affairs of his Local Union and of the Brotherhood as a whole. He served L. U. 125 as business manager and financial secretary.

In October, 1929, Former International President James P. Noonan appointed Mr. Milne as International Representative to work in the Ninth District in the states of Oregon, Washington, California and in the Canadian Provinces of British Columbia and Alberta.

Mr. Milne was selected to fill an unexpired term as vice president of the Ninth District in June, 1936.

On July 15, 1947, Mr. Milne was appointed International Secretary by President Tracy following the resig-

nation of the former International Secretary, to which post he was unanimously elected at the Miami convention of the Brotherhood in 1950.

It is significant that Mr. Milne is the first member in the entire history of the Organization who has served the Brotherhood in every capacity—International Representative, Vice President, International Secretary and now International President.

In conjunction with his duties as International Secretary, Mr. Milne is editor of the *Electrical Workers' Journal*. He is also secretary-treasurer of the Eastern Labor Press Association and president of the International Labor Press of America.

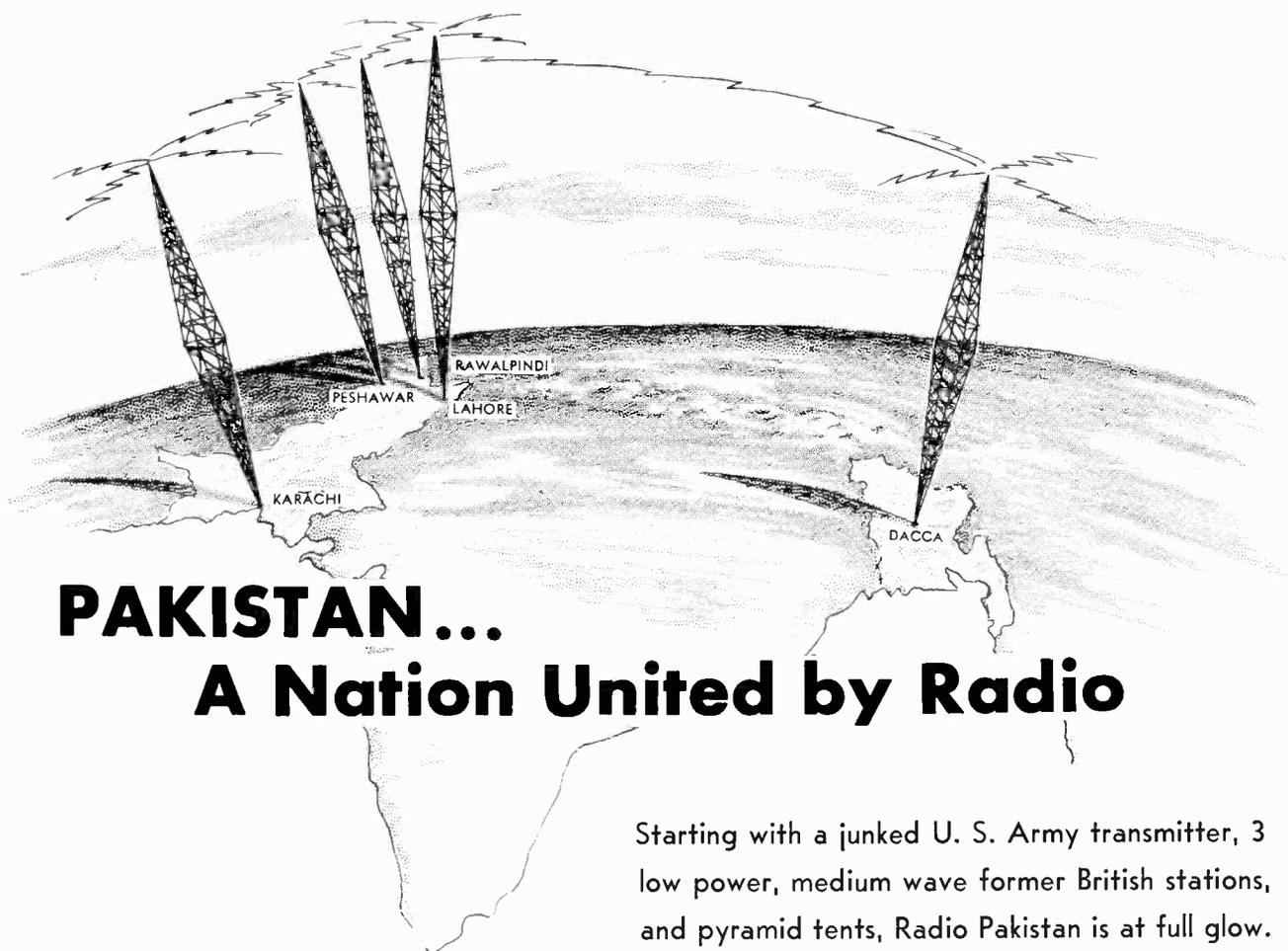
After his election to office of International President, Mr. Milne announced that he would appoint Joseph D. Keenan to the office of International Secretary, also effective April 15.

#### **About Secretary Keenan**

Mr. Keenan also has a long record of union service, as well as service to his nation.

He was initiated into L. U. 134 of Chicago as an apprentice in 1914. He served that Local as its recording secretary for many years. In 1937 he was elected secretary of the Chicago Federation of Labor.

During the war years, Mr. Keenan was very active in matters of national defense. In 1940 he served in the Office of Production Management as an assistant to Sidney Hillman. In 1943 he was appointed vice chairman in charge of Labor Production. In 1945 he accompanied General Clay to Germany and acted as labor adviser. The war over, in 1948 and 1949, Mr. Keenan served as director of the AFL's Labor's League for Political Education. In 1951 he was appointed secretary of the Building Trades Department of the AFL, which position he holds today.



# PAKISTAN... A Nation United by Radio

Starting with a junked U. S. Army transmitter, 3 low power, medium wave former British stations, and pyramid tents, Radio Pakistan is at full glow.

**T**HE Far Eastern country of Pakistan occupies a unique position in the world of nations. Non-existent only six years ago, today it is a national state of 80,000,000 people. It is divided into two parts, with one thousand miles of hostile India separating East and West Pakistan.

It is a restless, ambitious nation, schooling itself in Western ways and yet clinging to the customs of its teeming population of Moslems—customs and beliefs which are guided by the teachings of Mohammed, Koranic law, and the political divergencies of the dominant Moslem League Party and the opposing Awami League, a splinter group.

Its establishment as a nation is a result of political conflict. When Great Britain moved to free India from colonialism, the Moslems and Hindus, violently antagonistic, could not agree on a national government. To relieve the deadlock the Moslem states of India were

separated from India and the new nation formed. By a freak of geography, and population density East and West Pakistan resulted. Seven million displaced Moslems crowded into the unorganized nation in one of the greatest migrations of history.

The new state inherited three low power medium-wave stations from British India—one at Peshawar, in the Northwest Frontier Province; one at Lahore, the capital of Punjab, 300 miles away from Peshawar; and one at Dacca, in East Pakistan, over a thousand miles away from Lahore. There were 19 engineers to man these stations. Karachi, the Federal capital, had no radio station at all.

Radio Pakistan engineers were at a loss, momentarily. They had to figure out how to maintain the technical efficiency of the stations when spare parts were left unredeemable at Delhi. They must set up a station at Karachi and devise a national network.

To keep the nation informed of latest developments, news units were created at Lahore and Dacca, and news was fed to Peshawar via telephone lines. There was no regular news agency in the new nation. The telephone lines connecting East and West Pakistan passed through India, and telephone service between the two segments

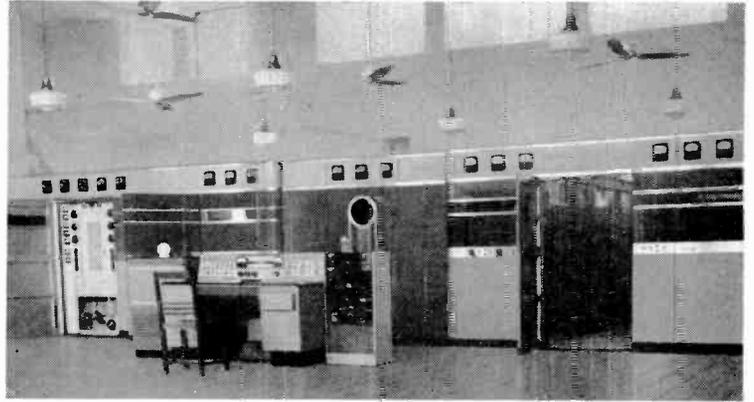
*Continued on page 7*

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*We are indebted to Mrs. Seiler of the Pakistan Embassy in Washington and to Mr. W. J. Reilly, advertising manager at RCA's Gloucester, N. J., plant, for the detailed information and pictures on Radio Pakistan.*

## PAKISTAN RADIO

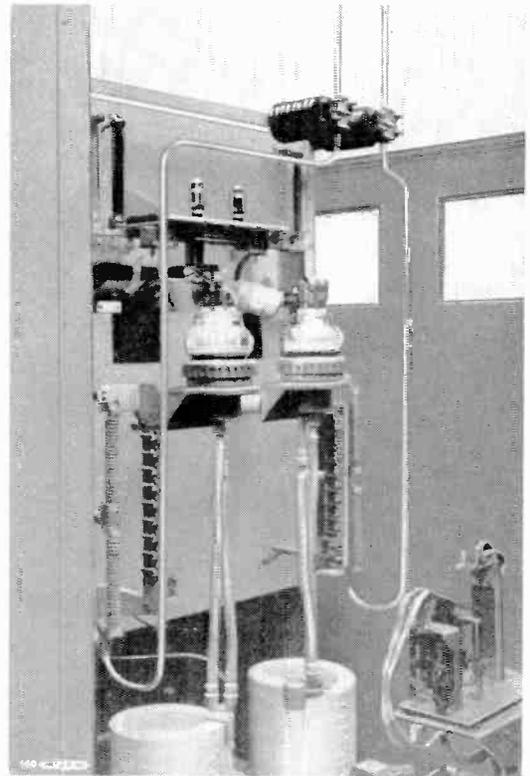
Equipped with transmitter and auxiliary equipment manufactured in America, Radio Pakistan is now a modern broadcasting facility for the new Asiatic nation. Multilingual Radio Pakistan prints its daily station logs in both English and Urdu. It broadcasts regularly in 17 languages and dialects to Europe, the Middle East, Africa, East Asia, Australia, and New Zealand. When the stations conclude transmission, the engineers "close down" rather than "sign off."



View of No. 2 RCA transmitter in Radio Pakistan's Transmitter Hall. Door-actuated switches connect an interlocking system which protects from voltage.



The Transmitter Hall houses two 50 kw, dual-channel, high frequency transmitters and one 10 kw medium frequency unit.

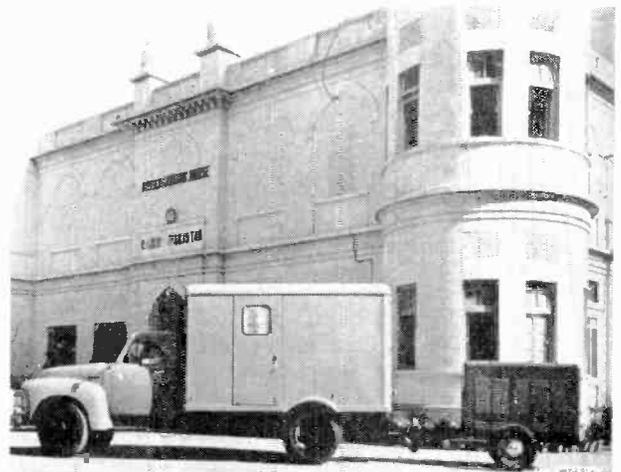


Tubes in the last modulator stage of a 50 kw unit, a type used also in the radio frequency power amplifier.



The brain of Radio Pakistan is this master control room in the Karachi transmitting station, also RCA equipped.

A mobile unit heads for an outlying province of West Pakistan to transmit a series of remote broadcasts.







## PAKISTAN, A Nation United by Radio

*Continued from page 5*

of the nation were almost nil. Under these circumstances, four news bulletins a day in four languages were issued by the existing stations.

To secure additional equipment, the chief engineer of Radio Pakistan was flown to England and America. But this was in 1947, and electronics equipment was still in short supply because of the war. He finally made arrangements with RCA for three short-wave and two medium-wave transmitters.

### **Problem in Karachi**

Setting up a station at Karachi was a problem. The city was surrounded by eleven airstrips left by the America and British air forces. A radio mast had to be at least five miles away from any of them. A site was selected 17 miles from the city, and suggested designs for a building were sent by RCA.

To serve Karachi in the meantime, the engineers set up a discarded Army 200-watt medium-wave transmitter found in a junk shop. This was installed in a makeshift hut, and offices were set up in tents surrounding the transmitter.

A 10 kw medium-wave transmitter arrived from the United States and was set up. Studios and offices remained in the tents.

Finally the main building was completed, and the transmitters were moved in. The local electric supply company could not meet its power commitments, so generators were obtained from America—two to run 50-kw short-wave transmitters and two to run the medium-wave unit.

The 10-kw transmitter at Karachi began operation in November, 1948. A short-wave installation at Dacca was completed in January, 1949, to give extended program service to East Pakistan and two serve as a link between the two parts of the nation. During the same year a 50-kw transmitter went on the air to complete the East-West link.

### **Beaming to Neighbors**

By that time Radio Pakistan had centralized its Home News Service and started beaming signals to its neighbors—Burma, Afghanistan, Iran, and the Middle East.

On Christmas Day, 1949, a second 50-kw unit went on the air.

Meanwhile, newly graduated engineering students had been recruited, and the manpower shortage was relieved.

Finally, a Broadcasting House was completed at Karachi in 1951, and Radio Pakistan moved out of its tents for good. For three years the tent city had been mistaken for passersby for a gypsy encampment.

Today, a low power medium-wave transmitter at Rawalpindi has been replaced by a 10-kw transmitter, and the installation of two 10-kw short-wave transmitters at Karachi is well under way.

## Soviet TV Fare

A SOVIET version of "Dragnet" ought to do well on Russian television. We read the other day that Jack Webb used plenty of closeups when he first got into TV because the picture screens were small then, and he was afraid that the audience wouldn't be able to follow the stalking methods of the Los Angeles police unless they got a close look at the actors.

Soviet television sets selling in Moscow today have only *four- or five-inch* screens, an Associated Press report tells us. The Soviets hope to get a set with an eight- or 10-inch screen in mass production by next year, but they have not yet solved the problem of how.

Of course, Russian TV wouldn't have an NKVD version of "Dragnet" . . . no rough stuff on their programs. Soviet television has no soap operas, no thrillers for children, no mystery plays, no disk jockeys, no comedians—and no commercials.

For an average American the Soviet telecasts would be pretty dull fare. But Muscovites love them. So far as Soviet citizens with TV sets are concerned, television is the biggest thing that's happened since the war.

### **Small Scale Operation**

Even so, Soviet television still is a very small scale operation. The entire U. S. S. R. has only three stations—in Moscow, Leningrad, and Kiev. Altogether there may be somewhere around 250,000 TV receivers in use, most of them in and around Moscow.

The principal Soviet television station—in Moscow—is on the air only 20-23 hours a week. Programs start at 8 each evening except Thursday (Thursday is the station's day off) and run to about 11 p. m.

On Sunday afternoons there is always a special children's program which runs about three hours. Sometimes on weekdays and Sundays there are special sports broadcasts, usually soccer games from the Dynamo Stadium.

The small TV sets are in great demand. They cost 1,275 rubles for the smallest screen and 2,500 for the next larger (a little over five inches). This is the equivalent at the official exchange rate of \$318.75 and \$625, respectively, or what an average Soviet worker would earn in two or four months. The cheaper and smaller set usually is out of stock and can be purchased only by getting on a waiting list.

When one can find a large screen set, such as one imported from the United States, the Moscow telecasts give an image of good quality. But Soviet television studios have much to learn about proper lighting, makeup for the actors and television techniques. They also have much to learn about programing.

According to the plans of the Malenkov government, Soviet television is scheduled to undergo a tremendous boom in the next few years. New stations will be built, with coaxial cables to link them in a network.

## Miscellany

### Application Fees

A radio station operator proposed that the FCC "subsidize the hundreds of radio stations which are operating in the red" if it decides to charge fees for radio and TV applications.

Gordon P. Brown, of Station WSAY, Rochester, N. Y., said that any fees should be based "solely on the ability to pay." Brown said that too many important areas in the United States have lost services of their local radio stations because of financial difficulties.

He said if the FCC adopts his proposed system of fees based on station and network earnings, it should provide enough to grant subsidies to stations operating at a loss.

The FCC recently proposed to charge fees of \$325 for major radio and TV applications and lesser fees for minor applications.

### Bleeding Heart Dept.

TECHNICIAN-ENGINEER,  
Mr. Albert O. Hardy, Editor,  
Washington, D. C.

RE: Telephone Repeater Circuit,  
Trans-Atlantic Cable, February  
TECHNICIAN.

DEAR SIR AND BROTHER:

I was just thinking of that poor little vacuum tube down there in the briny deep at the bottom of the ocean oscillating its little heart out. Forever removed from the touch of human hands, while life is ebbing away. How cruel can the electronic world get?

ALBERT C. SCHWARK,  
Financial Secretary,  
L. U. 1213, IBEW.

### To Cover Congress

Rep. Harold C. Hagen (R., Minn.) says he is preparing legislation to establish special gallery accommodations for news and newsreel photographers in the House and Senate similar to facilities already available for press, radio and magazine reporters.

## International Convention, IBEW

Chicago, Illinois  
August 27, 28, 29, 1954  
International Amphitheater



The Convention Call has been issued to all Local Unions and registration of delegates will take place at the Palmer House, beginning at 9:00 a. m., August 27th. Registration facilities will be available from 9:00 a. m. to 9:00 p. m., on August 27, 28 and 29.

The deadline for receipt of credentials by the International Office is July 1, 1954. If your Local Union is to be represented, it is not too early to set the necessary machinery in motion!

The Electrical Workers Benefit Association Convention will take place on September 2, 1954, beginning at 2:30 p. m. Credentials for this meeting must also be received at the International Office by July 1, 1954.

THESE ARE YOUR CONVENTIONS—  
PARTICIPATE IN THEM!

# Third Annual Progress Meeting

Chicago, Illinois

Convenes 9:30 A.M.,  
Monday, August 27, 1954



The annual National Progress Meeting of the Radio, TV and Recording Division of the IBEW will immediately precede the International Convention this year. Arrangements are now being worked out for the meeting place and all participating Local Unions will very soon be advised of final arrangements.

The date is definite—the city is definite and now is the time for each Local Union to make plans accordingly.



**THIS IS YOUR MEETING—PARTICIPATE!**



PHOTOGRAPH BY RICHARD BEATTIE

## What are the facts about cancer of the lung—?

JUST 20 YEARS AGO, in 1933, cancer of the lung killed 2,252 American men. Last year, it killed some 18,500.

WHY THIS STARTLING INCREASE? Our researchers are finding the answers as rapidly as funds and facilities permit—but there isn't enough money.

DOCTORS ESTIMATE that 50% of all men who develop lung cancer could be cured if treated in time. But we are actually saving only 5% . . . just one-tenth as many as we should.

WHY—? Many reasons. But one of the most important is not enough money . . . for mobile X-ray units, for diagnosis and treatment facilities, for training technicians and physicians.

THESE ARE JUST A FEW of the reasons why you should contribute generously to the American Cancer Society. Won't you please do it now?

**Cancer**  
**MAN'S CRUELEST ENEMY**  
**Strike back—Give**

### AMERICAN CANCER SOCIETY

GENTLEMEN:

- Please send me free information on cancer.
- Enclosed is my contribution of \$..... to the cancer crusade.

Name.....

Address.....

City.....State.....

Simply address the envelope: CANCER  
c/o Postmaster, Name of Your Town



You're paid at union scale . . . often in nice, crisp, and new "greenbacks." You can see the numbers in the corners, so you can tell a 10 from a 20. But if Abraham Lincoln's picture appeared on a 20, would you know the difference?



Walter Greaza, the Chief on NBC's "Treasury Men in Action," examines a spurious ten-dollar bill.

## How Well Do You Know Your Money?

**F**OLDING money has become increasingly hard to part with in recent years. The cost of living has caused the "greenbacks" to go thisaway and thataway. Here are some facts you might not know about the fast American buck and its relations:

Our Federal Government now prints three types of paper money:

Federal Reserve Notes . . . with GREEN seal and numbers.

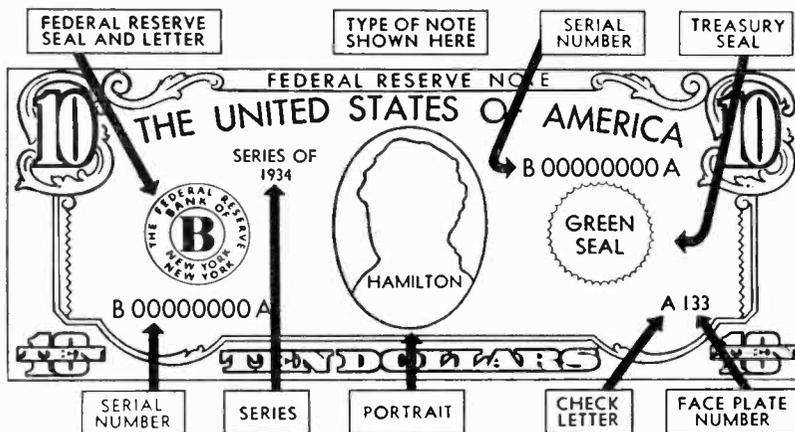
United States Notes . . . with RED seal and numbers.

Silver Certificates . . . with BLUE seal and numbers.

Special currency issued for emergency use during World War II still circulates to a limited extent. This includes National Currency Notes, Series of 1929, with BROWN seal and numbers; currency with the name, Hawaii, overprinted on the face and back; and Silver Certificates bearing GOLD Treasury seals and BLUE serial numbers.

### FEDERAL RESERVE NOTES

These are placed in circulation by the Federal Reserve



Above are indicated the main features for identifying genuine paper money.

Banks, each Bank placing its own notes in circulation through the various banks in its district. There are 12 Federal Reserve Districts, each with a number and corresponding letter for its symbol. Thus the Federal Reserve Bank of Boston, being in the First District, is represented by the number "1" or the letter "A." The others, in numerical order, are New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Minneapolis, Kansas City, Dallas, San Francisco.

Each Federal Reserve Note bears a regional seal at left of the portrait. This seal gives the name of the specific Federal Reserve Bank and the letter or number of its district.

### PORTRAITS

For your protection it is important that you know the faces of the great men whose portraits appear on United States money. Particularly you should be familiar with the \$1, \$2, \$5, \$10, and \$20 bills. Regardless of the type of bill, all bills of the same denomination bear the same portrait, as follows:

\$ 1	Washington	\$ 50	Grant
\$ 2	Jefferson	\$ 100	Franklin
\$ 5	Lincoln	\$ 500	McKinley
\$10	Hamilton	\$1,000	Cleveland
\$20	Jackson	\$5,000	Madison
		\$10,000	Chase

Compare a suspected bill with a genuine of the same type and denomination. Observe these things:

#### Portrait

Counterfeit: Dull, smudgy, or unnaturally white, scratchy; oval background is dark, lines irregular and broken. Portrait merges into background.

Genuine: Portrait stands out distinctly from oval background. Eyes appear lifelike. Background is fine screen of regular lines.

#### Colored Seal

Counterfeit: Saw-tooth points around rim are usually uneven, broken off.

Genuine: Saw-tooth points around rim are even and sharp.

#### Serial Numbers

Counterfeit: Poorly printed, badly spaced, uneven in appearance.

Genuine: Figures are firmly and evenly printed, well spaced.

#### Paper

Counterfeit: Generally has no silk threads, but these may be imitated by very small red and blue ink lines.

Genuine: A distinctive paper in which very small red and blue silk threads are scattered. The silk threads are not always noticeable on bills that are badly soiled or worn.

Rubbing a bill on a piece of paper will not prove it is genuine or counterfeit. Ink can be rubbed from good bills as well as bad ones.

Above all, remember that not all strangers are counterfeiters, but all counterfeiters are likely to be strangers.

The federal agency responsible for the suppression of counterfeiting is the United States Secret Service, a branch of the Treasury Department.

#### Coins

Here are some methods of detecting counterfeit coins, suggested by the U. S. Treasury:

Drop the suspected coin on a hard surface. Genuine coins have a bell-like ring. Most counterfeits sound dull.

Feel the coin. Most counterfeits feel greasy.

The corrugated outer edge of a genuine silver coin is even and regular. That of a counterfeit is uneven, crooked, or missing in places.

As further proof, cut the edges of questionable coins with a knife. Genuine coins are not easily cut, but counterfeits are.

If you're a persistent fellow who wants to find out for certain, you can test the coin, or coins, with acid. Scrape the coin and apply a drop of acid. If the coin is not silver, it will turn black at once. Acid to conduct such a test is made with:

Silver nitrate, 10 gr.

Nitric acid, 1 cc.

Distilled water, 30 cc.

We are told that a solution of these items can be purchased for a few cents at any drugstore.

## Color Tube Deflecting Yokes



COLOR TV deflecting yokes roll off production line at RCA's Camden, N. J., plant. Yoke is designed for use with RCA tricolor picture tube in home color receivers, and is being produced in quantities to meet needs of manufacturers who are expected to produce 100,000 color sets this year. Deflecting yoke is vital element in scanning operation, during which tricolor tube's three electron beams "paint" color pictures on tube screen. Above, RCA color yokes undergo electrical test as they near end of production.

## Hermetically-Sealed Diodes

The General Electric Company has announced hermetically sealed ceramic germanium diodes, at no increase in prices.

Three JAN types (1N69, 1N70 and 1N81) and some commercial computer types are now available in production quantities. Other commercial types will be available in a few months, at which time most G-E diodes will be hermetically sealed.

The move to hermetically seal all its germanium diodes was made by the company, according to Sweeney, primarily to satisfy the critical demands of computer and military applications.

All features of the company's plastic case diodes have been preserved in the new hermetically sealed units, which are the result of several years of research and development. As in the past, the platinum-ruthenium whisker is welded to the germanium pellet.

The hermetic seal is metal to ceramic. Gas-tight ceramic cases with metalized ends permit solder seal to nickel pins. The diodes exceed the requirements of JAN humidity specifications.

## 16 mm Color Prints from 35 mm

Dynamic Films, Inc., is reported to have licked one of the most basic problems facing producers in regard to color TV film. That is the problem of getting a satisfactory 16-mm print from a 35-mm color negative in the new Eastman negative-positive process. A vice president of Dynamic says the 16-mm prints are superior to Kodachrome. He said Dynamic had overcome the problem of specular diffusion, caused no deterioration in the 35-mm negative and turned out the prints at a satisfactory rate.

# how **KINESCOPES** are made

Last month, in our feature article, "The Race for Color TV," we described for you some of the manufacturing steps for producing the tri-color tube—the silk-screening of the dots, the assembly of the tri-barrel electron gun, the assembly of the shadow mask.

This month we take you behind the scenes at an RCA kinescope assembly plant for a pictorial explanation of how a basic black-and-white kine-

parts and going through every step of the complete assembly, we conclude with the finished and packed product.

More than 28½-million television receivers were produced and shipped to dealers all over the country during the past five years. Each one contained an example of this super product of electronics—the picture tube.

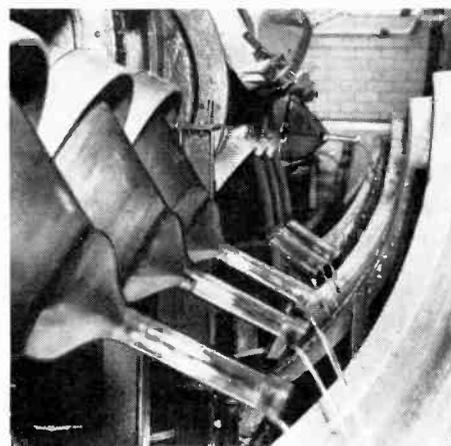
*All photographs are from the Department of Information, RCA*



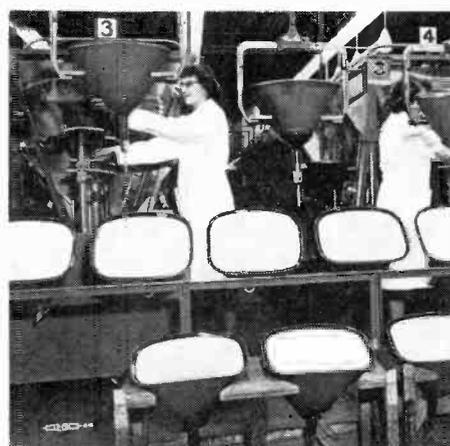
**4.** Purity of the phosphor solution is rigidly inspected to prevent the entrance of injurious foreign material.



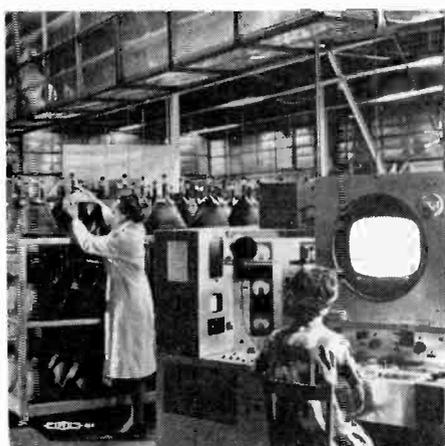
**5.** Metal tubes are placed on a crawling conveyor belt to permit the phosphor to settle on the face-plate.



**6.** At the end of the settling belt, automatic machinery tips the tube and decants the remaining liquid.



**10.** The tubes are now ready for the pumping system which removes all air and gases.



**11.** As a tube approaches completion it is tested for picture brightness under home lighting conditions.



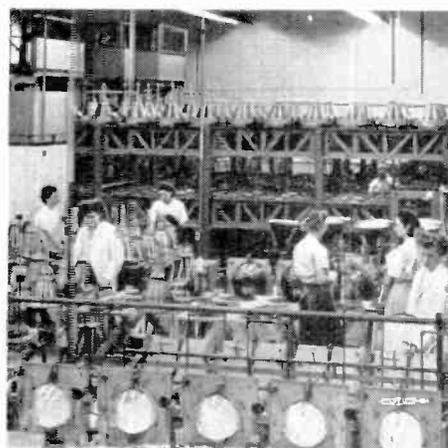
**12.** Final tests are made to insure that the tube will give a well-centered perfectly-focused picture.



**1.** Manufacturing process begins with inspection of all parts comprising the tube, whether glass or metal-shell type.



**2.** Seals between glass and metal parts are checked by polarized light, and by air under high pressure.



**3.** The phosphor solution is poured into the envelope where it settles to form the tube's luminous screen.



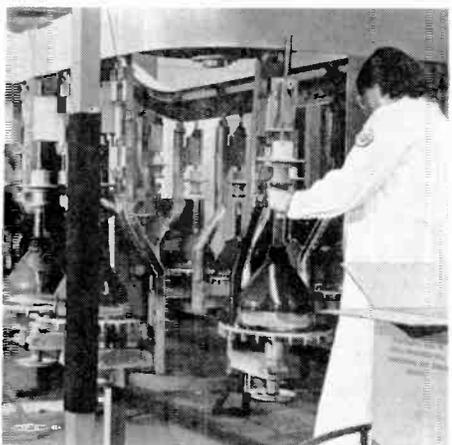
**7.** Kinescopes are baked in huge ovens to "boil" out impurities and to dry the inside graphite coating.



**8.** Electron guns are assembled here then microscopically tested to watchmakers' rigid specifications.



**9.** In this rotary machine the stem supporting the electron gun is sealed into the neck of the envelope.



**13.** After the tube has passed all tests it is given its final washing before paint is applied to the outside.



**14.** The kinescope is now branded with the RCA trademark, which is a warranty of top-quality picture tubes.



**15.** Having received the stamp of approval, the tube is given a final polish and placed in its shipping carton.

# Technical NOTES

## Hi-Fi Tape for Film

Bing Crosby Enterprises recently unveiled in Hollywood a new and enlarged application of magnetic sound tape that promises high fidelity reproduction for TV film and theatrical pictures for video showing.

The tape, known as "Scotch Strip," was developed by Minnesota Mining and Manufacturing Company, and it will be made available to the industry shortly. Crosby Enterprises will handle West Coast distribution of the tape.

The new use of the tape differs from present methods of recording sound for telefilm in that the magnetic tape is laminated on the film. It replaces the optical sound track currently in use.

## Conelrad for Aviation

The FCC proposed, last month, to extend to aviation radio services its Conelrad plan for broadcasts during actual or threatened enemy attacks.

The FCC proposed a new rule that would require aircraft radio communications services to operate under instructions of the CAA traffic control centers during an "alert." All aviation stations would be silenced during such an emergency unless required by the CAA centers to remain on the air for traffic control. The FCC set March 29 as a deadline for comments on its proposed rule.

The Conelrad plan silences TV and FM radio stations but permits AM stations to remain on the air to broadcast news information and civil defense instructions. However, they are required to operate in a way to keep enemy aircraft from using their signals as a radio beam to ride to their targets.

## Four Transistors By RCA

Four types of RCA transistors are now commercially available.

The revolutionary electronic devices which perform many of the functions of electron tubes are being offered to equipment designers and manufacturers, engineers, scientists and others exploring application possibilities of the transistor, according to R. T. Orth, vice president in charge of the RCA Tube Department.

Two point-contact and two junction types of RCA transistors are now in production at the company's Harrison, N. J., manufacturing plant, he said. Initial output, running into thousands of transistors per month, has been geared to meet demand which has been building up in recent months in anticipation of commercial availability.

The types, application possibilities, and suggested user prices of the four RCA transistors follow:

RCA-2N32: a point-contact type intended for large-signal applications such as in pulse or switching service, in electronic computers and counters and on-off control devices. Suggested user price: \$15.40.

RCA-2N33: a point-contact type intended for use as an oscillator at frequencies up to 50 megacycles. Suggested user price: \$23.

RCA-2N34: a P-N-P junction type designed for low-power, audio-frequency applications. Suggested user price: \$13.40.

RCA-2N35: an N-P-N junction type also designed for low-power, audio-frequency applications. Suggested user price: \$18.40.

## Workers, Arise!

Sworn testimony before a congressional committee disclosed that the Soviet Embassy at Washington doesn't like to have its employes join unions even if they are Communist unions. A short-wave radio operator was hired by the Russians to receive and transcribe Moscow propaganda broadcasts. He got his job through the American Communications Association but as soon as he took his new post he was encouraged to drop his union membership. Another former Russian Embassy employe commented, "They propagandize for unions but they won't even trust Communist unionists; they try to get more people into the Communist Party but they won't trust a member of the American Communist Party working for them."

## New Sound Catalog

A new 20-page illustrated RCA sound products catalog listing the company's latest line of sound equipment, has been published by the RCA Engineering Products Division.

The new booklet is divided into sections dealing with such sound products as microphones, amplifiers, speakers, intercommunications equipment, television Antenna-plex systems and unit-built cabinets and racks. Each section in turn presents a list of products designed to meet needs from portable systems to large sound installations.

Descriptions of each model include such information as special features, uses, specifications, and photographs. Many new items, such as the RCA Modernphone and Duo-Com intercommunications systems are listed.

## —This Broadcasting Age—

A recent news item from the *New York Journal of Commerce* reports that American families are wearing out their furniture faster now than at any time since the coming of the automobile. The answer, of course, is television. People these days are more content to stay indoors and stare at the one-eyed, illuminated cyclops while lounging on an easy chair, than to go out for an uncertain evening of entertainment elsewhere.

Copies of the new catalog may be obtained through local RCA sound products distributors, or by writing to the Sound Products Section, Radio Corporation of America, Camden, N. J.

## New Radio-Frequency Generator Useful as Signal Tracer

A new RCA radio-frequency signal generator, useful as a TV and radio signal tracer as well as an alignment oscillator and marker generator, has been announced by the Tube Department of RCA.

The compact, lightweight instrument (WR-49A) is specifically designed for a wide range of AM radio, FM radio, and TV service operations and other applications which require a continuous wave or modulated rf signal of sinusoidal waveform from 85 kilocycles to 30 megacycles.

Convenient for both shop and field operations, the new tester can be used for alignment and signal tracing of AM and FM radios; alignment of low-frequency if amplifiers in home TV sets; and signal tracing and general trouble shooting in virtually all sections of the TV chassis.

The instrument incorporates numerous operating conveniences designed to speed and facilitate radio and TV service operations. An important feature of the generator is the built-in blocking capacitors connected in series with the rf and af cable connectors. The capacitors provide DC isolation of the attenuator circuits and prevent damage should the output cable be connected to a test circuit containing dc voltage. This feature eliminates the necessity of stringing dc blocking capacitors to the tip of the instrument probes each time the test operation involves direct current.

Other operating conveniences include: a separate range switch for the quick selection of one of the instrument's six tuning ranges; a fine-tuning control to facilitate precise setting of the output frequency, and a special dial and tuning assembly which makes possible rapid tuning and reading of the exact frequency setting.

Engineering features of the new test instrument in-

clude: a Hartley type rf oscillator and a transformer-coupled audio oscillator for efficient and trouble-free operation; a built-in rf attenuator system having "high" and "low" output terminals and "coarse" and "fine" adjustments for smooth, efficient attenuation of the rf output signal; a copper-plated steel case and chassis to provide optimum radio-frequency shielding of the instrument and minimize radiation; a specially designed, fully shielded cable to minimize radiation and hum pick-up in the receiver or adjacent test equipment; and a cathode-follower output stage to isolate the oscillator and insure good wave-shape.

Indicative of the instrument's versatility, the generator may be used in such general radio and TV servicing applications as trouble shooting picture-if and video amplifiers; locating an inoperative video, if, or rf section in a TV set; locating an inoperative picture-if amplifier, rf-amplifier, or rf-oscillator stage; localizing an inoperative stage in the sound-if amplifier; localizing intermittent picture trouble in cases where the scanning is not affected; localizing intermittent sound trouble; and checking approximate stage gain in a video amplifier, audio amplifier, or a picture-if amplifier.

Other applications include locating an inoperative section in an AM radio set; locating an inoperative stage in the audio amplifier of a radio or TV set; locating an inoperative stage in the if amplifier of an AM radio; checking if transformers and if-coupling capacitors; locating an inoperative rf stage or an inoperative rf oscillator in an AM radio; and peak aligning of AM and FM radio receivers.

The WR-49A signal generator measures only 7½ inches high, 10½ inches wide, and 6 inches deep, and weighs only 8 pounds. It bears a suggested user price of \$59.50.

# Station Breaks



## TV in the Arctic Night

Television transmitted by IBEW technicians has arrived at Lake Minchumina, within the shadow of the Arctic Circle, and life in central Alaska will never be the same again.

This is the gist of a story out of the Fairbanks, Alaska, *Daily News Miner*, reporting that television signals are somehow getting up over the sky-high, frozen heights of the Alaska Range to bring programs from Anchorage, home of IBEW Local 1547, to a TV set in the tiny shore village of Lake Minchumina, 200 airline miles from the transmitter.

In getting to their destination, the signals must leap from near sea level, up and over a solid wall of rock containing Mount McKinley, a 20,000-plus-foot giant, highest peak on the North American continent.

The receiving set, a 17-inch Zenith, was packed in across the Alaska mountains by Olin Rudd, Anchorage television dealer, and had every native from miles around for its first night audience. The "pictures out of the air" have not only been fascinating to the trappers of the area, but to technicians as well. The only explanation for the fact that signals are arriving regularly from a station 200 miles away is that the so-called Fresnel Effect is at work. This is an optical theory, adapted to the behavior of television waves. In the case of Lake Minchumina, engineers say that the TV signals from Anchorage are bent as they cross the Alaskan Range and are diffracted downward to the village.

## GI Broadcast Graduates

The Veterans Administration said the educational benefits of the World War II GI Bill have done much to build up the nation's reservoir of trained manpower—including that of the broadcasting industry.

The VA released a study of the records of the 7,800,000 veterans who received training after June, 1944. The total represents more than half the membership of the armed services in World War II. The trainees included 2,000,000 at colleges; 3,500,000 at schools below the college level; 1,500,000 on the job; and more than 750,000 on the farm.

Television and radio training attracted 438,000 veterans, the study showed. Engineering was the most popular among the professions, with 450,000 veterans taking training.

## Shreveport Wage Increase

Local 1178 reports that contract changes were agreed to on December 18 with Radio Station KCIJ, 5,000-watt-daytime independent station in Shreveport, La. Wage rates for the station's transmitter engineers and the technician-announcers were advanced 17½ cents per hour to a top of \$2.22½ per hour. Wage rate for the chief engineer was advanced 17½ cents per hour to a top of \$2.47½ per hour. The bargaining committee of L. U. 1178 reports harmonious relations with KCIJ throughout the past year—and a pleasant, business-like bargaining attitude on the part of the company representatives in the recent negotiations.

## Local 202 Studies Seminar

IBEW Local 202, San Francisco, has been seriously considering the possibility of a color seminar, exclusively for broadcast men of the San Francisco Bay area. Preliminary discussions have been held with the instructors of John O'Connell Trade School toward this end. The trade school is currently conducting a series of color TV seminars, primarily for TV service technicians. Broadcast men want to delve deeper, however, into their own facet of the business.

## GE Office

Creation of a new General Electric replacement tube southeastern sales region, with headquarters in Atlanta, Ga., and appointment of C. Byron Farmer as regional sales manager, were announced last month by GE.

The new region will cover the expanding replacement markets in the states of North and South Carolina, Tennessee, Georgia, Alabama and Florida.

The region is divided into two sales districts, each headed by a GE sales manager.

## Errata

In the February issue, Page 15, Directory of Local Unions, the address for J. S. Andrews, of Local 662, should read "803 Underwood, Dalton, Ga."