

# TECHNICIAN ENGINEER

APRIL, 1960

*Published for the Employees of the Broadcasting, Recording and Related Industries*

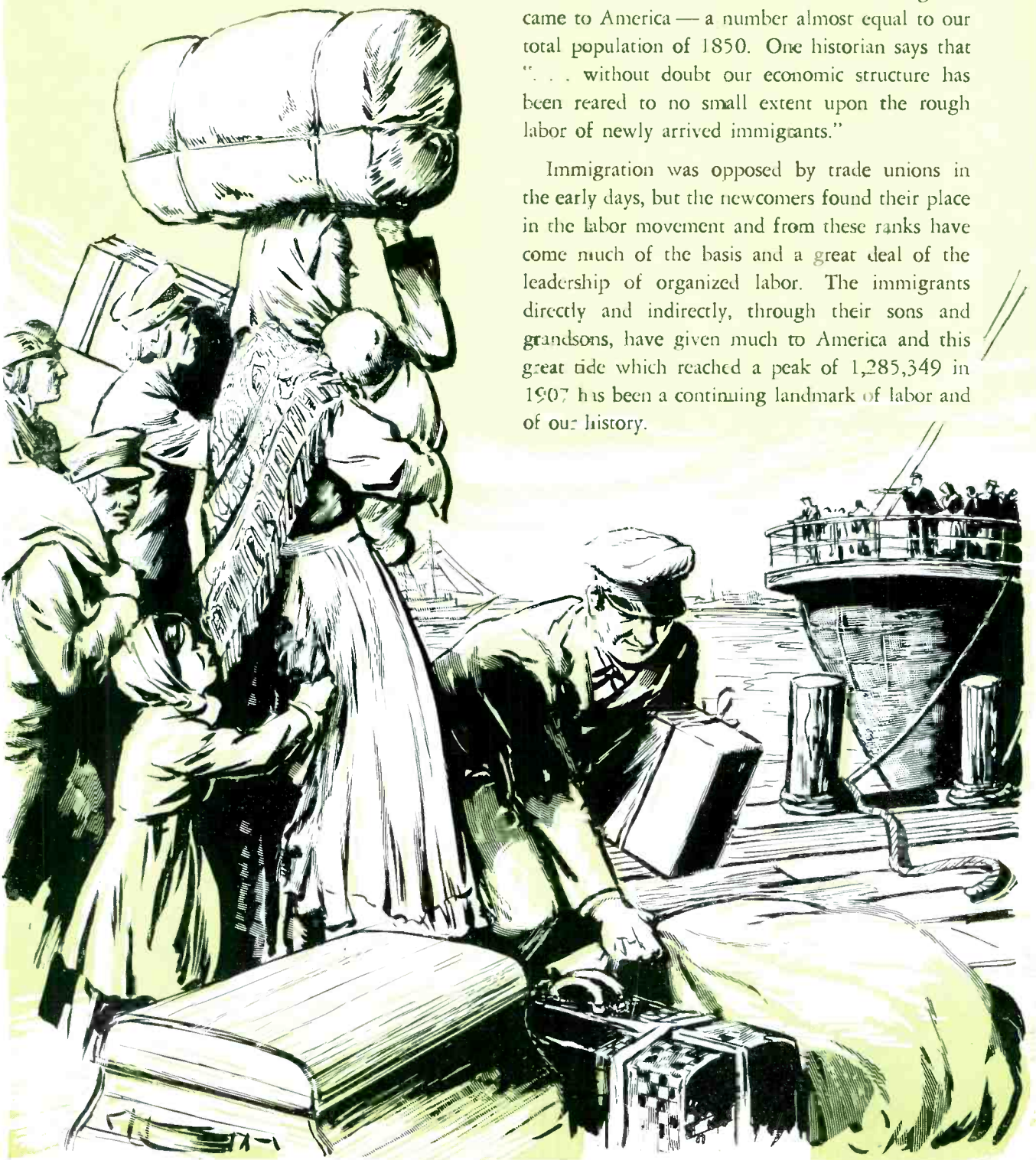
INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS — AFL-CIO



## THE TIDE OF IMMIGRATION

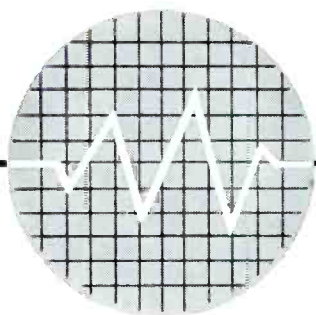
The impact of immigration from the Old World on labor and the nation was profound. Between 1860 and 1920 almost 28,500,000 immigrants came to America — a number almost equal to our total population of 1850. One historian says that "... without doubt our economic structure has been reared to no small extent upon the rough labor of newly arrived immigrants."

Immigration was opposed by trade unions in the early days, but the newcomers found their place in the labor movement and from these ranks have come much of the basis and a great deal of the leadership of organized labor. The immigrants directly and indirectly, through their sons and grandsons, have given much to America and this great tide which reached a peak of 1,285,349 in 1907 has been a continuing landmark of labor and of our history.



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The INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS  
GORDON M. FREEMAN International President  
JOSEPH D. KEENAN International Secretary  
JEREMIAH P. SULLIVAN International Treasurer



# TECHNICIAN ENGINEER

VOL. 9 NO. 4

ALBERT O. HARDY, Editor

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## *the cover*

Our composite cover for April shows some of the work and inspiration which goes into a springtime remote. The mobile unit of WSJS-TV, Winston-Salem, N. C., is set up in a new shopping center, bringing viewers at home all the activity of a grand opening. A busy engineer named Grant Smith climbs a ladder to find a likely spot for a microwave link. Later, he's in the bus, getting the monitors ready. The show is fed over green fields and hillsides to majestic, craggy Sauratown Mountain, 18 miles away, where a 12-bay antenna atop a 692-foot tower sends the signal to 75 counties of North and South Carolina, Virginia, West Virginia and Tennessee.

## *index*

For the benefit of local unions needing such information in negotiations and planning, here are the latest figures for the cost-of-living index, compared with 1959 figures: February, 1959—123.7; February, 1960—125.6.

## COMMENTARY

For many years the Brotherhood has maintained that trained civilian engineers should be performing the various jobs of electronic communications and recording at the White House in Washington. There are no plausible arguments advanced as to why Signal Corps technicians should be operating teletype, radio and tape recording equipment aboard Presidential trains or in routine day-to-day activities in the White House administrative offices. It is not felt necessary to have military yeomen performing clerical duties. Many vital positions are filled with "security cleared" civilian personnel.

For this reason, we say "amen" to a recent statement by Congressman Frank Kowalski, the man who, a few months ago, bared the use of GIs as servants. Congressman Kowalski says that "the White House is being run something like an officers' club." He says he's not op-

posed to using GIs to chauffeur civilian White House aides and using Navy cooks and stewards to prepare meals, but "the public should know just how much it costs."

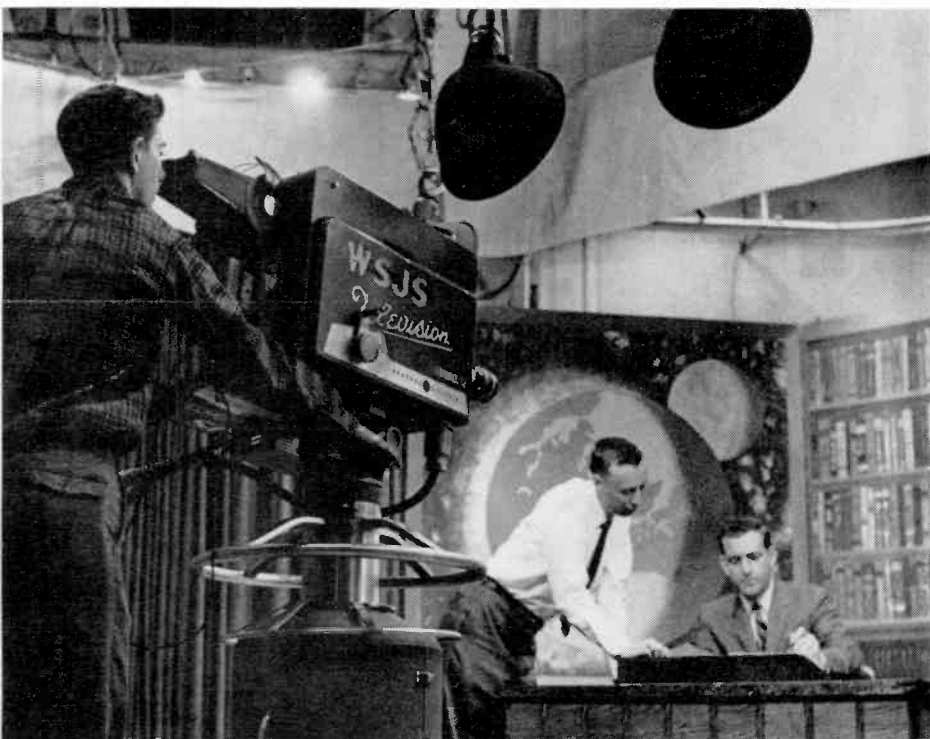
The Democratic representative from Connecticut has introduced a measure in Congress which would require the President to budget the costs of all services supplied by other government services.

Kowalski says there were 50 Army personnel being used to drive cars and 12 sailors employed in a "White House mess."

He reports that the White House has revealed only part of the costs of running the Chief Executive's offices.

"The White House has been saying that government should be operated as a business, but it is not being run like a business," is Kowalski's comment.

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An 11 P.M. newscast almost "on the air"—from left, Carl Spell, cameraman; John Curbett, director; Dave Rush, announcer.

# WSJS

## *An Example of Good Labor-Management Relations in Dixie*

**A** brief strike preceded the signing of the initial contract with WSJS, Winston-Salem, N. C., in the early 1940's. In the years which have elapsed since, hardly a ripple of discontent has troubled the waters of labor-management relations at the station.

At other broadcasting stations this peaceful condition could be due to several factors:

- Either the station or the local is so strong that the other is afraid to make a move.
  - The initial contract was "too good to be true."
  - There just aren't any problems at the station.
  - The status quo is good enough for all concerned.
- None of these reasons, however, apply in Winston-Salem.

The initial contract wasn't the best in the South. All good stations and all good technicians want to better themselves, and WSJS and members of Local 1229, IBEW, are no exceptions. During almost two decades of negotiations, working contracts have consistently improved.

In spite of the fact that North Carolina is a "right to work" state, where union shops are outlawed, an unusually high percentage of the operating staff are members of the local union. Station General Manager Harold Essex discusses labor-management problems with local union officers, and Local 1229 is recognized and highly respected as the bargaining agency.

In the ranks of Local 1229 are engineers, propmen,

announcers, film technicians, and others. Local officers include Beacham Leonard, of studio maintenance, president; Bryan McMurry, an announcer, financial secretary and treasurer; Charlie Vannoy, video control, recording secretary; and J. M. Weavil, cameraman, business manager.

This month (April 17) the station marks its 30th anniversary in AM. It was North Carolina's fifth radio station, going on the air for the first time with 100 watts and a staff of six housed in small quarters in the *Journal-Sentinel* newspaper building. (This is a newspaper-owned station.)

In 1941 the present studio and office building was constructed. By 1943 the station was operating with 5,000 watts, adding FM in 1947.

September, 1953, brought the first WSJS telecast. Today, WSJS Radio and Television have a combined staff of almost 100 people. Its television transmitter atop Sauratown Mountain transmits a maximum power of 316,000 watts to deliver a picture to an area of 75 counties in four states in the Piedmont area of the Appalachians.

About 18 months ago the station engineers completed the conversion of a commercial passenger bus into a custom-made remote unit, which now handles two camera chains. The bus is prepared for three cameras. It has a top platform six feet by 18 feet. Engineers made their own transformer, wound to specifications, which will take a voltage of from 100 to 250. Since the unit



went into operation the station has produced 33 special remotes. In addition, it has two remote telecasts every Sunday—local church services and a bowling show. The crews alternate between the First Baptist Church and the First Presbyterian Churches on Sundays.

The remote unit began operations with gusto in December, 1958, by covering two parades in one day, one 15 miles from the other, and both live. The equipment wasn't yet "buttoned down" in the bus when the crew went through this "shakedown." The first parade was from 10:30 to 11:00 A.M. and the second 4:00 to 5:30.

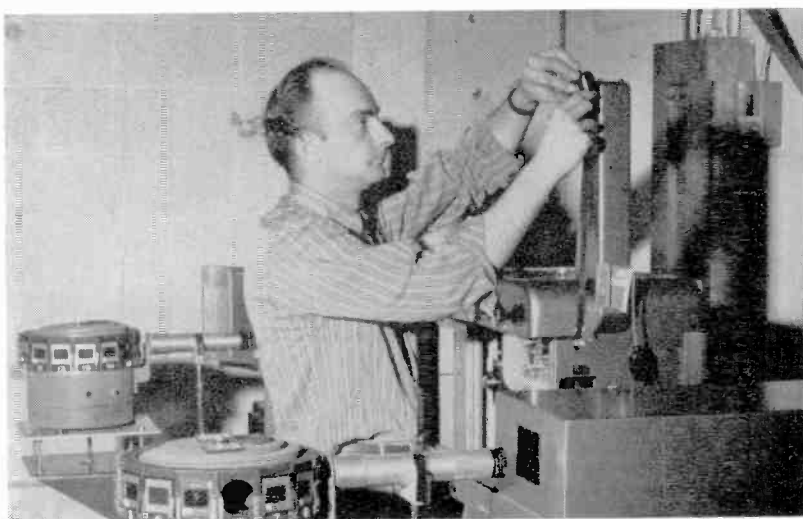
Last winter, the remote crews covered the disaster relief work being done for communities snowbound by 30-foot drifts. They interviewed Army helicopter crews,

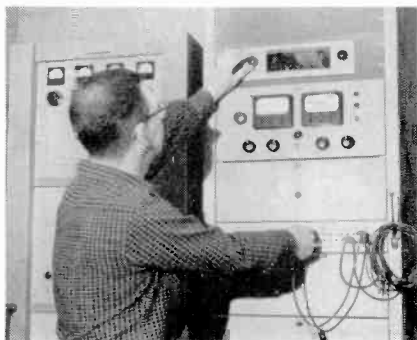
National Guard commanders, and other relief groups during the prolonged emergency. Cameramen went along on some of the survey flights.

During this period, the two men on duty at the TV transmitter were snowed in for two days on three separate occasions. The men on duty at the transmitter, incidentally, are paid \$22.50 more than the other station engineers to cover costs of travel, etc.

The AM transmitter at Old Town, however, goes remote in the late evening, and on Saturday and Sunday. But all is not lost by this situation. The shows which go on during these periods are taped in the studio and carried to the transmitter for rebroadcast. So skilled union hands have a part in this operation, too.

TOP LEFT: Beacham Leonard, Local 1229 president, and Harold Essex, general manager of the station, inspect an office souvenir. TOP RIGHT: Announcer John Parks, left, talks shop with J. M. Weavil, business manager of the local union. BOTTOM LEFT: Fletcher Smith threads a short reel of commercial film in the projection room. BOTTOM RIGHT: Charlie Vannoy, recording secretary of Local 1229, in video control.



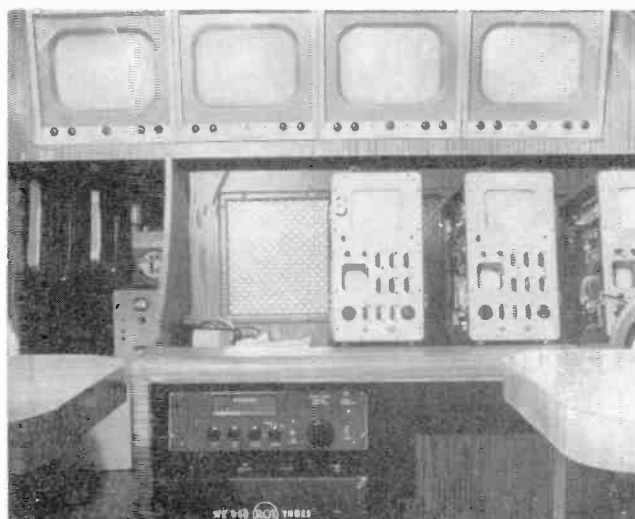


## WSJS-AM-FM OPERATIONS

WSJS was Winston-Salem's first radio station. It operates on 600 kc with 5,000 watts. WSJS-FM is at 104.1 megacycles with 41,000 watts. The transmitter is located at Old Town, seven miles west of the city. The pictures show, TOP LEFT: Charlie Clapp spinning discs in the main studio; BOTTOM LEFT: Russell Whicker at the transmitter, testing the North Carolina Civil Defense FM hookup. RIGHT: In 1958 a creek near the transmitter building at Old Town overflowed its banks, leaving Louis Kanoy and Harold Smith with soaked shoes. (A levee and other flood control measures now keep Old Man Creek away from the door.)

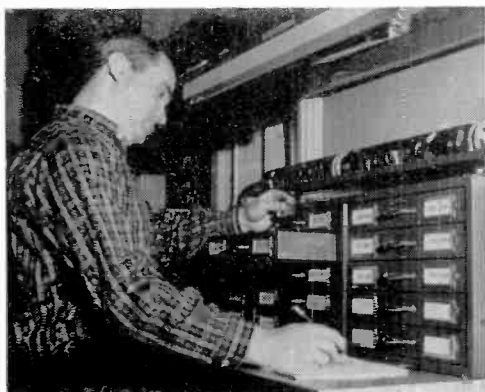
## TELEVISION REMOTE UNIT

Station engineers are justly proud of their do-it-yourself remote bus, converted from a stock commercial vehicle into an active, working broadcast unit. BELOW LEFT: Beacham Leonard indicates the automatic cable reel prefabricated and installed in a luggage compartment of the bus. BELOW RIGHT: A view of the control desk inside the bus. All paneling, rack construction, and interior work was done by staff engineers.





1



2



3



4

1. Photographer Charles Porter at the high-speed film processor.
2. Raymer Faust checks slides against the program log.
3. Wilbur Thomas on light duty in master control.
4. Dale Steele in the audio booth, awaiting his cue.

April, 1960



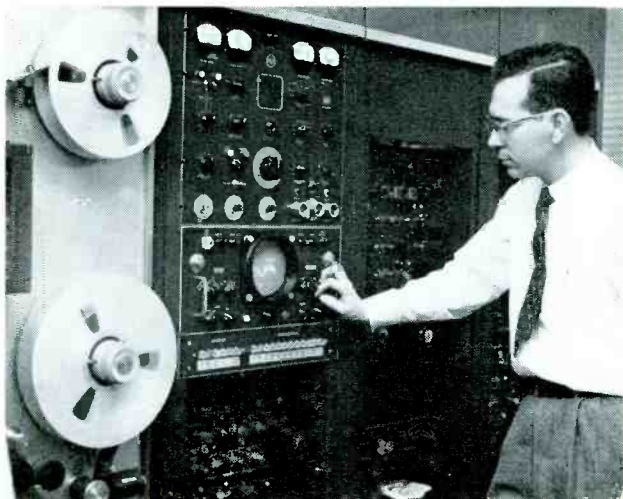
## THE SOUND OF THE CHIMES

The musical instrument displayed above by Bruce Fleming, Local 1229 member, has one mission—to sound the NBC chimes for WSJS. Announcer Fleming, former musician in a hill-billy band, didn't think the official network chimes were at proper pitch, so he took two 2" x 4" strips of lumber, ordinary doorbell chimes, three magnetic head phones in a series, three steel guitar strings and produced the Fleming Special. He used a condenser to knock out the overtones of the steel strings and hooked up the unit to master control. Now, when a button is pressed upstairs, the familiar three notes of NBC come off full level, without amplification.

**EDITOR'S NOTE:** Any custom jobs at your station? If so send a picture and a few paragraphs about same to The Editor, **TECHNICIAN-ENGINEER, International Brotherhood of Electrical Workers, 1200 15th Street, N. W., Washington, D. C.** We'd like to tell our readers about it.

BELOW: Charley Helms, Hassell Bailey, and Lee Walenhaupt discuss a blanking problem in the vidicon.



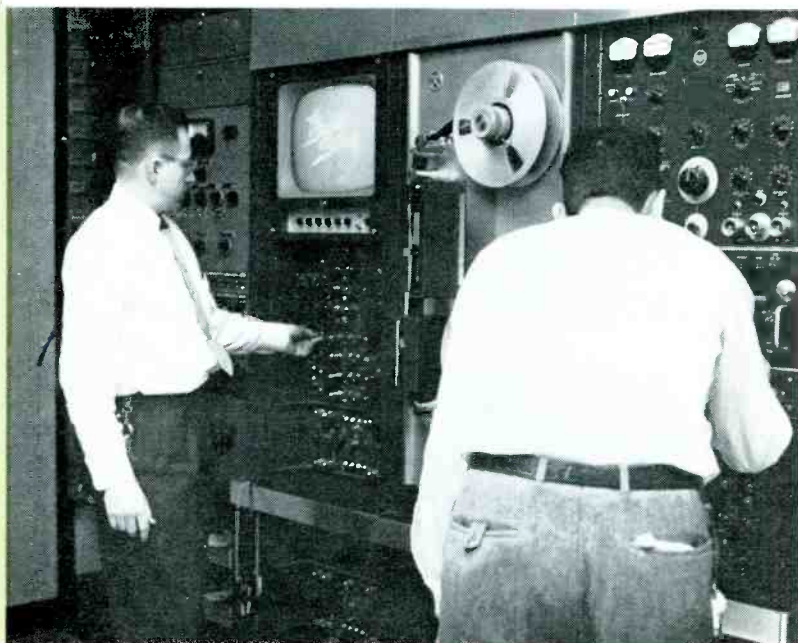


This is . . .

# AN RCA VIDEO

## OPERATING PROCEDURE

From the picture above, and then reading photos left to right: 1) George Catron examines the waveform on the scope, preparatory to recording. 2) Merle Osborn and George Catron keep a close supervisory watch on the recorder. 3) Royce Fish and Harry Remmers collaborate on re-alignment of the video "monster." 4) Having completed the preparatory alignment, Royce Fish threads the machine, while Harry Remmers waits.



## BY CLEATUS BARNETT

*Washington Unit Chairman, Local 1200*

**I**N October of 1959 The Washington Post Company made the decision to equip their Washington station, WTOP-TV, with video tape. The order was placed with RCA for two machines to be delivered as soon as possible.

Considerable preparation was necessary to receive the machines, because Broadcast House, home of WTOP-TV, was not designed to accommodate a video tape installation. The announcers' lounge on the third floor across the hall from the projection room was selected as the best site available.

Building electricians ran heavier power circuits to the

room. A one-foot by three-inch trench had to be chiseled out of the concrete floor around the perimeter of the room to receive the necessary cables. This trench had to be carried out of the room and down the corridor 50 feet to an existing trench outlet. In order to maintain a constant temperature and humidity in the tape room, an air conditioner was installed. This is set to maintain an unvarying 74 degrees.

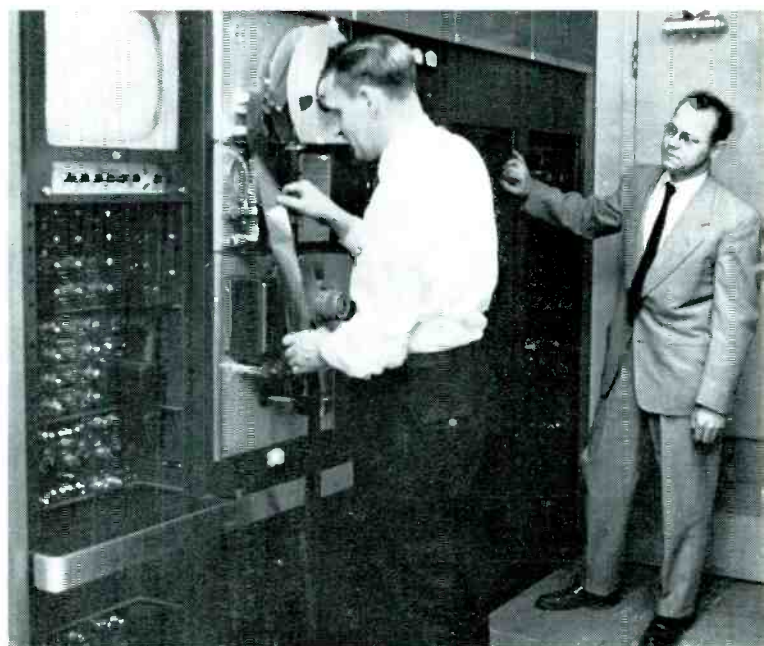
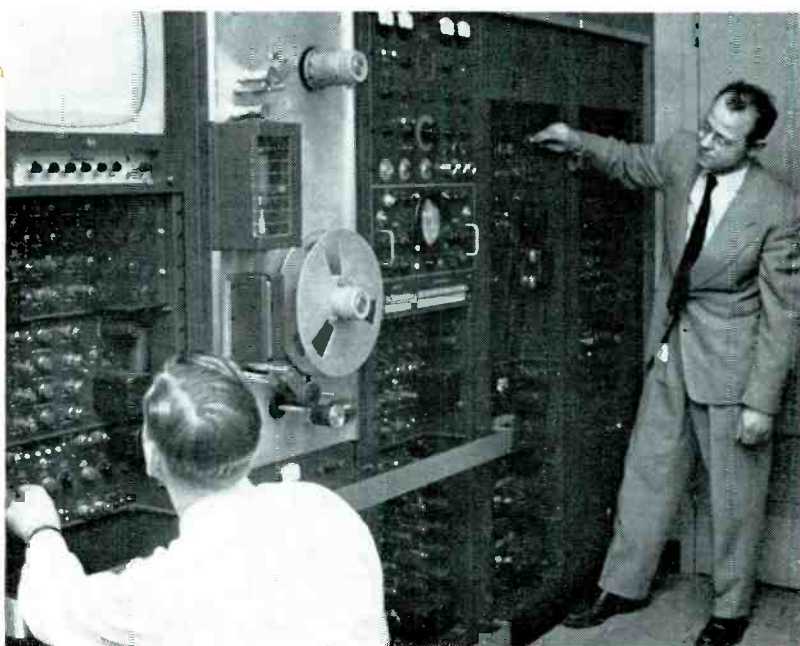
The first machine was delivered to Broadcast House in the middle of January of this year. The second machine was received two weeks later. Field engineers from RCA supervised the installation, with assistance from station engineers—Harry Remmers, Muriel Osborne, George Catron, Howard Stephan, and Leonard Euzent.

WTOP-TV Engineer-in-Charge Larry Wilkinson suggests that in the future anyone installing a video tape check the phase of his power lines. The RCA machine



# VIDEO TAPE INSTALLATION

...manned by members of Local 1200



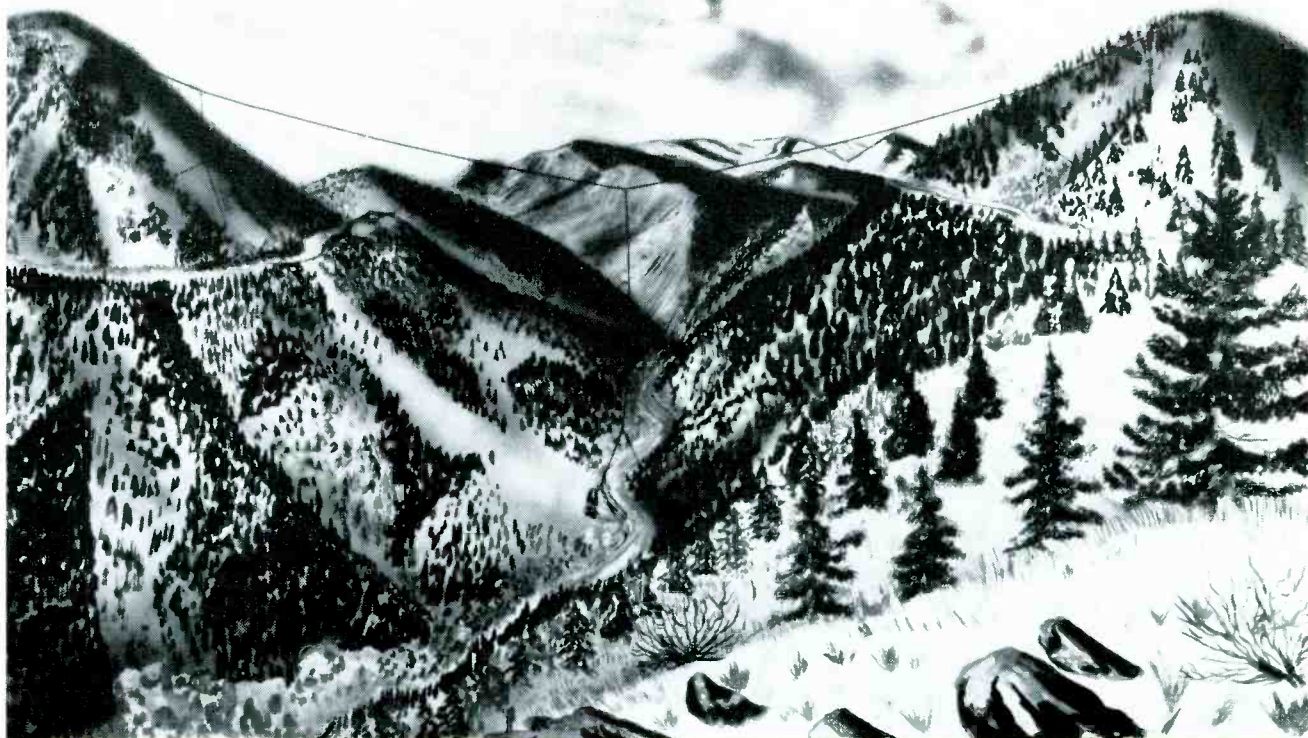
has five circuits requiring power. It is necessary that these all be of the same phase. Unknowingly, the first machine was connected with two circuits to one phase, two to another, and the fifth to the third phase. Needless to say, this caused some erratic action in the servos in the machine.

The results have been good and the reception by the production department has been quite favorable. The station has been able to record programs at a more suitable time for later broadcast. For example, Public Affairs programs are recorded when public officials are available to participate.

The technicians are pleased to note the company is doing more outside work with the tape, thus increasing their work opportunities. In the short time the tape has been in operation at WTOP-TV it has been a happy experience for both management and the technicians.



Royce Fish is about to cut a tape. Note the microscope arrangement, which is very helpful in finding the exact frame and line.



Artist's conception of antenna across Sunset Canyon near Boulder, Colo., for new 20-kilocycle standard frequency broadcasts from Station WWVL. The copper-coated steel cable weighs more than a ton, stretches 3,400 feet from anchor to anchor, 900 feet above canyon floor. The antenna is less than a mile from historic town of Sunset, once a station on a narrow-gauge railroad known as the Switzerland Trail. Railroad telegraphers once tapped out messages to Boulder and mining towns of Ward and Eldora from this site. The new National Bureau of Standards station radiates the U. S. frequency standard (maintained by recently-developed cesium-beam atomic "clock") to points as far away as Hawaii.

### Station In Sunset Canyon Offers

## One Part in 10,000 Million

**F**ROM a picturesque valley in the Rocky Mountains, radio waves now carry the world's most accurate yardstick of radio frequency for thousands of miles across the globe—and do this a hundred times better than this standard has ever been broadcast before.

Broadcasting began April 5 from Sunset Canyon, about 20 miles west of Boulder, Colorado. Transmission is on the very low frequency of 20 kilocycles. Within their range these signals will substantially increase the accuracy of the National Bureau of Standards standard frequency broadcasts.

Signals from the Sunset Canyon station (call letters WWVL) may reach as far as Hawaii—maybe even to New Zealand—but they are not strong enough to provide good coverage over the entire globe. The Sunset station, however, is only the first step toward

eventually providing worldwide broadcasts.

Both time signals and the national standard of frequency are currently transmitted on a worldwide basis by two short-wave stations belonging to the National Bureau of Standards—WWV at Beltsville, Maryland, and WWVH on Maui, Hawaii.

**T**HE low-frequency waves from Sunset Canyon will follow the curvature of the earth with the ionosphere and the ground acting as upper and lower limits of a gigantic duct to guide the signals over the globe. Since the ionosphere will thus serve only as a boundary—not a direct reflector—it will have almost no effect on the speed of the waves. For this reason the 20-kilocycle frequency will provide a much more stable transmission than the short-wave frequencies of WWV and WWVH.



The Sunset station is the result of several years of effort and several more years will be required before a true global transmitter is on the air.

Many investigations, by such men as J. A. Pierce at Harvard, have shown that very low frequencies can transmit standard signals over long distance with great accuracy. A study in 1958 by two scientists at the NBS Boulder Laboratories, A. D. Watt and R. W. Plush, indicated that the 20-kilocycle frequency was the most efficient to transmit a standard frequency on a global basis. Radio waves, however, are not bound by international boundaries and use of the different frequencies must be approved by both national and international organizations.

**I**N January of 1959 NBS recommended that the 20-kilocycle frequency be adopted by the U. S. group of the International Consultative Radio Committee (CCIR). CCIR adopted the proposal in April 1959 and in December of 1959 the International Radio Conference at Geneva, Switzerland, adopted the 20-kilocycle standard frequency band for the International Telecommunications Union.

In January of this year the U. S. Government's Interdepartmental Radio Advisory Committee (IRAC) approved a National Bureau of Standards application to operate a 20-kilocycle standard frequency broadcast and this new service was registered with the ITU. This automatically placed a deadline into effect as international agreements specify that a valid registration requires a station to be in operation within 90 days after the application is approved. Technically it is vitally important that the United States and NBS start

operating at this frequency as it provides a means for the distribution of standard frequency with high precision over great distances.

To meet this deadline—and to rapidly and economically provide a better frequency standard for as large an area as possible—the National Bureau of Standards has modified an existing antenna in the Rocky Mountains.

The antenna is a copper-coated steel cable stretching more than half a mile across the top of Sunset Canyon. From the center of this another cable was dropped to transmitters at the canyon floor. This forms a top-loaded antenna, with the canyon walls acting as giant supports to hold the cables above ground. The tremendous size is necessary because of the great length of a 20-kilocycle radio wave (each wave is almost ten miles long while television waves, by comparison, range from about one to 16 feet).

Currently, users of WWV can, in a few hours, use the short-wave signals to measure frequency to a few parts in ten million. Users within the range of the WWVL Sunset station (several thousand miles) will be able to make measurements a hundred times better—to one part in 10,000 million.

**I**NITIALY the 20-kilocycle signal will only serve as a frequency standard. Before the signal can be used to measure time intervals, such as a millionth of a second, new equipment must be built that will modulate the signal so that a particular wave can be identified at both the transmitter and the receiver. This is more difficult at very low frequencies because of the length of the waves involved.

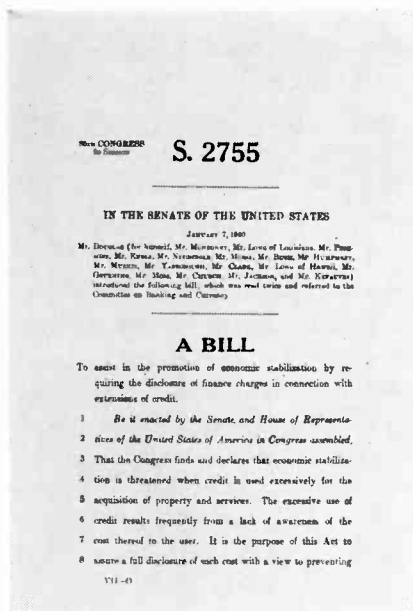
The original signal will be used primarily by research organizations in studies to prepare for the eventual worldwide transmitter.

Within a year it is planned that a pilot station (for the global transmitter) will be built on the plains of Colorado, and the Sunset equipment will be transferred to the pilot site. The pilot station will be much more effective (both because it will be on the plains and will have higher power) but it requires building tall towers to support the antennas. In addition to the 20-kilocycle signal the pilot station will also transmit a strong 60-kilocycle signal.

To meet as many needs as possible for a better frequency standard within the United States, the Boulder Laboratories of the National Bureau of Standards began broadcasting experimental, low-power, 60-kilocycle signals in 1956. Because of their low power these signals are not well received at distant points and their use is limited. More than 50 organizations, however, from coast to coast have been using the signals during the past two years and have obtained from ten to a thousand times better precision than they received from the



Crew member of an electrical contractor holds antenna away from a tree as heavy antenna cable for NBS radio station WWVL is hoisted into position.



## True-Interest Bill Hits Credit Sharks

The hard-pressed average consumer has an excellent opportunity, this month, to get Congress to pass a "true-interest" disclosure law. Such a law, proposed by Senator Paul Douglas of Illinois, would help to protect you against the credit deceptions practiced by far too many money lenders, used car dealers, discount houses, furniture dealers, and what-have-you.

The Douglas bill (S. 2755) would make lenders and dealers tell you both the true annual interest rates and total finance charge when you borrow or buy on time. No longer could they merely say that the loan costs you "only three percent a month" or "you pay only 7 percent" or "you can buy this car for just \$27 a month."

No lender or installment seller in the country now tries to tell you the true annual interest rate, except on mortgages. Not a single state requires that lenders or sellers really tell the true rate.

A TV set may be advertised for \$250—"\$50 down and \$20 a month for 10 months." The Douglas bill would make the retailer tell the rest of the story, which might show the real price to be \$230, with the other \$20 representing finance charges. That would be 20 percent interest on an annual basis.

On that same TV set the buyer might make his \$50 down payment and borrow the rest from a finance company at "only 2½ percent per month" interest. The true interest rate, on an annual basis, is, of course, 30 percent! The Douglas bill would have the finance company say so.

Senate Bill 2755 has thrown the National Association of Manufacturers into a dither. The *NAM News* calls the measure "one of the most far-reaching and potentially dangerous bills that has been proposed in years."

If you think otherwise, write your Senator or Congressman, and let him know how you feel.

## Station in Sunset Canyon

(Continued from preceding page)

short-wave broadcasts. Because of the reliability and accuracy of these signals some organizations have been able to cancel plans for installing expensive atomic frequency standards within their own laboratories.

Both the 60-kilocycle signals and the short-wave broadcasts will continue even after the global 20-kilocycle transmitter is put in operation. The global station will provide standard time interval and frequency signals which will be accurate anywhere in the world to a few parts in 10,000 million for measurements made in a short period and will thus serve U. S. possessions and bases overseas. The 60-kilocycle broadcast, however—when its power is increased—should provide even better service within the United States (accuracies to part in 100,000 million). It is also relatively easy to modulate the 60-kilocycle signals but this frequency is too high to be particularly effective beyond the continental limits of the United States.

The range and accuracy of the 20- and 60-kilocycle signals are critically needed by such groups as the U. S. Air Force, the National Aeronautics and Space Administration, the Atlantic, Pacific, and White Sands Missile Ranges, and the Smithsonian Institute (for Satellite tracking). The special receivers, however, which are required to pick up these low frequency broadcasts cost several thousand dollars.

This is the reason the short-wave broadcasts will always be of value. They require only the simplest receivers and their accuracy is sufficient to meet the current needs of television and radio stations, electric power companies, amateurs, smaller businesses, and the general public.

In fact, the WWVH broadcasts from Maui should be improved by the initial Sunset transmissions. If the Sunset signal extends to Hawaii, as expected, it will be used to control the WWVH transmissions and thus increase their accuracy from ten to a hundred fold.

## Important Notice

*The International Office has received a letter from the Department of Labor in regard to the handbooks which they have published to assist labor organizations in preparing the financial reports required under the Labor-Management Reporting and Disclosure Act.*

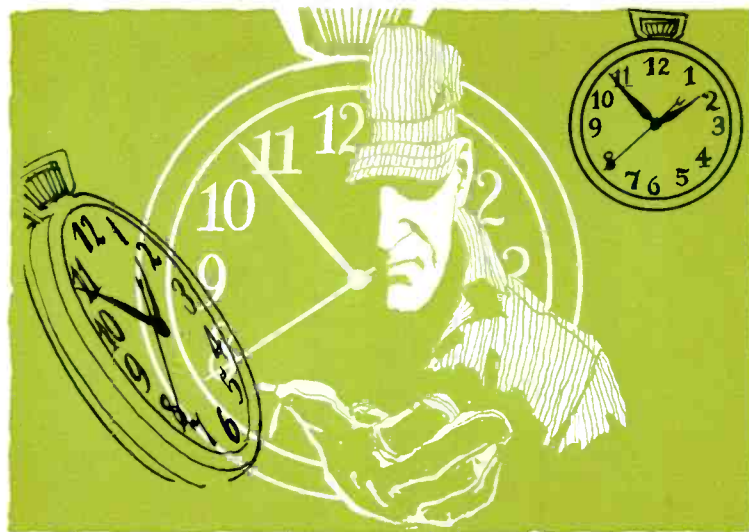
*TA Aid No. 1 is for those organizations using the short form report, (LM-3) and this handbook is being sent to all organizations which have filed the LM-1 report.*

*TA Aid No. 2 is for those organizations required to file the long form report, (LM-2) and this handbook is not being mailed to the labor organizations.*

*Those desiring to obtain a copy of TA Aid No. 2 should communicate with the Department of Labor in Washington, D. C., or the regional office nearest you.*



*Railroad men,  
growing prematurely  
gray, took things  
into their own  
hands. Europe  
and Asia  
were impressed.*



## **TIME ZONES, STILL EVOLVING, KEEP U.S. ON BUSY SCHEDULE**

**L**IKE time itself, American time zones do not stand still. Since the United States was legally divided into four standard time zones in 1918, many revisions have been made in their boundaries. One sweeping change pushed the Eastern zone westward to take in all of Ohio and Michigan's lower peninsula. Another extended the Mountain zone to embrace Montana.

The most recent change approved by the Interstate Commerce Commission, the federal agency responsible for fixing the zones, puts most of the eastern half of Kentucky and three more counties of Tennessee in the Eastern zone. Three westerly cities—Louisville, Nashville, and Indianapolis—have asked to be included on the ground that their major economic ties reach to the East.

The zones of the 48 contiguous states—Eastern, Central, Mountain, and Pacific—are roughly 15 degrees of longitude in width, the National Geographic Society says. The time in each is reckoned, respectively, from the 75th, 90th, 105th, and 120th meridians west of Greenwich, England.

Before the zones were set up, keeping time was a casual matter in the United States. Each town and city operated on local sun time. People set watches by their jeweler's clock. Some large cities erected "time balls" atop a tall, prominent building. At noon, the ball slid down a mast so everyone could synchronize watches.

The system—or lack of it—worked well enough in the leisurely days before the mid-19th century. But it created utter confusion when the railroads spun webs of steel across the continent. A person traveling from Maine to California had to adjust his watch 20 times.

Trains operating out of Philadelphia faced this typical situation: Philadelphia time was five minutes slower than New York time; seven minutes faster than Harrisburg time; 19 minutes faster than Pittsburgh time.

Railroad men, growing prematurely gray, took things into their own hands. Through the prodigious efforts of such officials as William F. Allen, railroads in 1883 established four standard time zones for train travel.

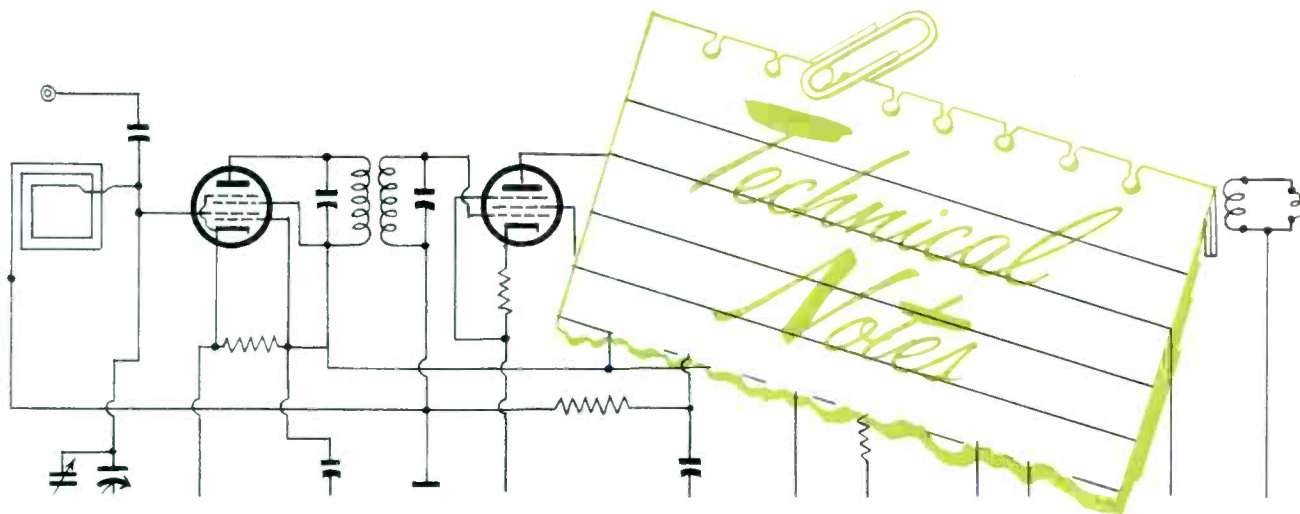
The epic event impressed Europe and Asia. An international conference met in Washington in 1884 to divide the entire world into similar standard time zones. The plan gradually was adopted nearly everywhere.

Not everyone at home was pleased about "railroad time." A New York newspaper called it a "gigantic scheme of plunder" to enrich watchmakers. An Indianapolis paper complained bitterly, "The sun will be requested to rise and set by railroad time. The planets must, in the future, make their circuits by such time-tables as railroad magnates arrange."

Though railroad men saved their sanity, confusion lingered on. Some localities continued to use a different time from railroads serving them. In some cases two lines serving the same point had different time.

Finally, to increase national efficiency in World War I, Congress passed the Standard Time Act on March 19, 1918, legalizing the four railroad zones. The ICC was given the job of defining boundaries and making changes when necessary. The act itself carries no provisions for enforcement or penalties for violation.

Now, however, standard time is accepted not as a convenience but a necessity. Evolution of the zones continues as borderline areas find it advantageous to switch from one zone to another.



## Portable Amplifier

A new lightweight, low-drain portable broadcast amplifier with built-in studio quality and 100 per cent transistorization has been introduced by General Electric Company.

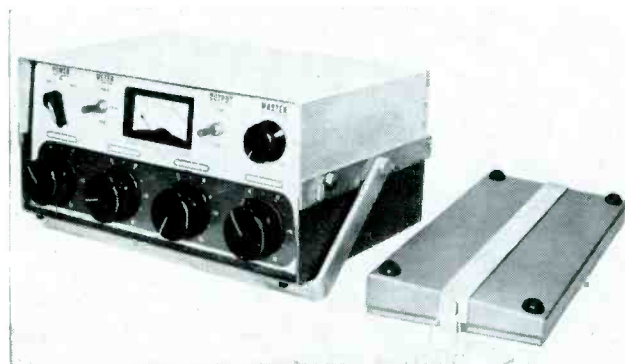
The amplifier is unique in that it is equipped with a high-level input for tape or transcription in addition to the four customary microphone inputs.

Designed for use on AM-FM-TV and recording audio applications, the amplifier is particularly effective in broadcasts of sports events, spot news and music programs.

It is the first portable amplifier with a laminated plastic front panel—designed to preserve the permanent markings against wear and to allow space for operators to write in additional information and erase it without damaging the surface.

Designated the BA-26-A, the portable is of compact design, using plug-in transistors. It weighs 19.5 pounds—approximately half that of the older tube model. The single-unit assembly is 15 $\frac{3}{4}$  inches wide, 6 $\frac{3}{4}$  inches high and 13 $\frac{1}{4}$  inches deep.

It is the first portable having a regulated self-contained power supply with a range of 95 to 135 volts. In addition, the new G-E amplifier has provision for operation by batteries.

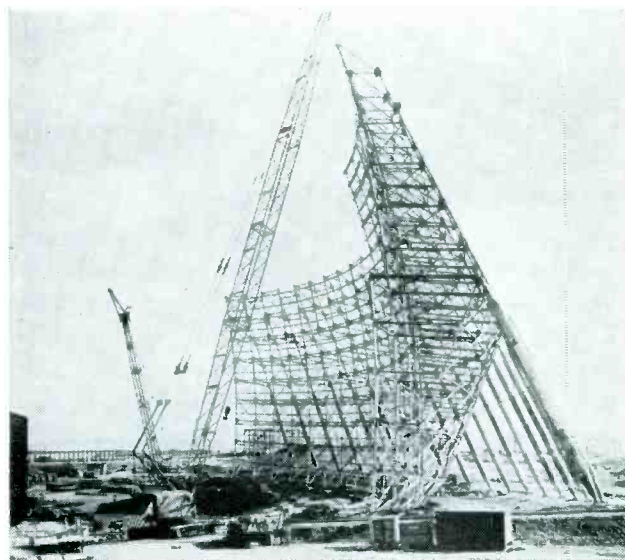


THE BA-26-A PORTABLE AMPLIFIER

The efficiency of its out-of-studio performance is assured because it is operated totally by transistors, which considerably lessen the drain on available power supply.

The BA-26-A also contains a built-in tone generator, originated by GE, for setting up signal levels.

## Protector Reflector



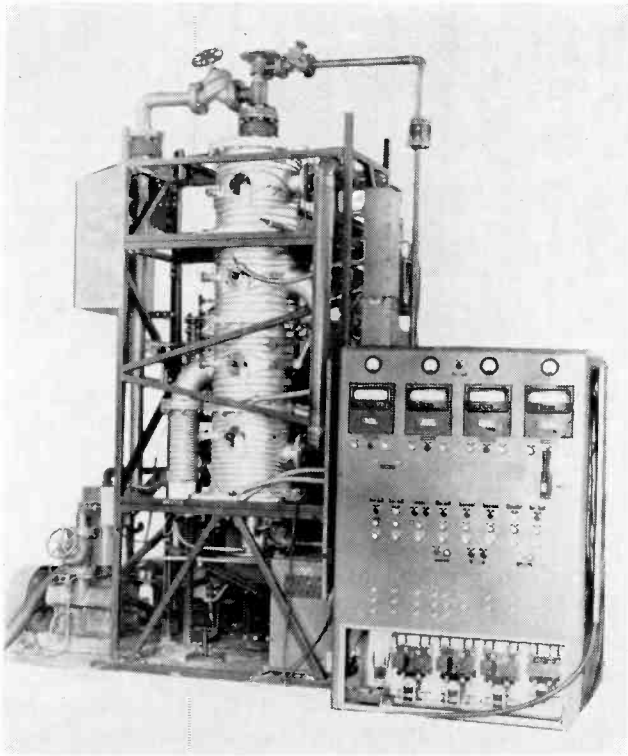
A radar system with antenna reflectors high as a football stadium and more than twice as long are being installed in the Arctic to give a 15-minute warning in case of missile attack on the North American continent. The reflectors are 165 feet high and 400 feet long. They are built to withstand a six-inch coating of ice in winds up to 185 miles per hour. The reflector surface is made of 2,240 panels bolted to the truss structure. Each reflector weighs 1,500 tons.

## Tape Terms Defined

Minnesota Mining & Mfg. Co. has re-issued its glossary of high fidelity and tape recording terms in a revised format. Technical, semi-technical and slang words peculiar to hi fi and tape usage are defined in the four-page glossary which is free upon request. Write Dept. E9-520, 900 Bush Ave., St. Paul, Minn.



## Vacuum Furnace



The Rube Goldberg contraption above is a continuous-production vacuum furnace. It's designed for continuous processing of ceramic electron tubes. Unfinished tubes are placed in a mechanical carrier and moved through a vacuum system in the furnace; the parts are heated, evacuated, degassed, and hermetically sealed. The unit was developed by the National Bureau of Standards for the Navy Bureau of Aeronautics.

## Coordinated Signal

The United Kingdom and the United States have begun coordination of their time and frequency transmissions.

Coordination was begun early this year in order to help provide a uniform system of time and frequency transmissions, which is needed in the solution of many scientific and technical problems in such fields as radio communications, geodesy, and the tracking of artificial satellites.

Participating in the project are the Royal Greenwich Observatory, the National Physical Laboratory, and the Post Office Engineering Department in the United Kingdom and, in the United States, the U. S. Naval Observatory, the Naval Research Laboratory, and the National Bureau of Standards.

The transmitting stations which are included in the coordination plan are GBR and MSF at Rugby, England; NBA, Canal Zone; WWV, Beltsville, Md., and WWVH, Hawaii.

Coordination began in January. It is expected that by the end of 1960 the time signals from all the participating stations will be emitted in synchronism to the thousandth of a second.

## Labor Law Compliance Officers in 22 Cities

Compliance officers for the new Bureau of Labor-Management Reports have been assigned to 22 cities in the United States and acting compliance officers-in-charge have been named for each city, Secretary of Labor James P. Mitchell announced.

The Secretary said that a minimum of three compliance officers were now in each of the 22 cities. He said the new acting compliance chiefs were in charge of all Bureau activities in the field for the present. The main duties of the compliance officers and the departmental field officers are to assist labor organizations and employers in compliance with the law.

Acting compliance officers-in-charge are:

Atlanta—Herman O. Baker, 1371 Peachtree Street, Room 521.

Boston—Martin Stern, 18 Oliver Street.

Buffalo—Donald H. Williams, 503 Post Office Building.

Chicago—Gerald G. Gotsch, 105 West Adams Street, Room 1100.

Cleveland—Eino Michelson, 602 Engineers Building.

Dallas—Albert M. Hiatt, 114 Commerce Street, Room 225.

Denver—Joseph Kendall, 730 17th Street, Room 311.

Detroit—John O. Jackson, 314 East Jefferson Avenue, Room 82.

Kansas City—Merle Rider, 2000 Federal Office Building.

Los Angeles—Walter I. M. Brockbank, 1031 South Broadway, Room 1202.

Miami, Fla.—Carl E. Crouch, 1200 Southwest First Street, Room 107.

Minneapolis—Chris L. Pederson, 711 West Lake Street, Room 603.

Nashville—James D. Walpole, 801 Broad Street, Room 759.

Newark, N. J.—Cullen P. Keogh, 201 Federal Building.

New Orleans—Robert J. Hurtado, 406 Masonic Building.

New York—Lawrence T. Davey, 341 Ninth Avenue.

Philadelphia—John B. Flanagan, 809 Lafayette Building.

Pittsburgh—William B. Kane, 212 Ninth Street, Room 1010.

St. Louis—Arno C. Cooper, 812 Olive Street, Room 1036.

San Francisco—Harold M. Terfansky, 630 Sansome Street, Room 315.

Seattle—Willard A. Doyle, 225 Federal Office Building.

Washington, D. C.—Abraham S. Friedman, U. S. Department of Labor, Room 2203.



# STATION BREAKS

## WEFM to Go Stereo

In comments filed March 15 before the Federal Communications Commission, Zenith Radio Corporation urged FCC authorization of a new multiplex FM broadcast system that permits broadcasting of high-fidelity stereophonic music simultaneously with such subsidiary services as background music for stores, restaurants, etc.

The new system was developed by Zenith and experimentally tested under FCC license during the past year over the air from WEFM, the company's high-fidelity FM station in Chicago, which is manned by members of Local 1220. WEFM, now in its 21st year, is the oldest FM station under continuous operation in the United States.

With the Zenith stereo system, the station can transmit a main carrier and two sub-carrier signals. Those listening with conventional FM sets will detect no change in the quality of programs received, and will pick up the normal, aurally balanced program from the main carrier when stereo is broadcast. Stereo receivers, which Zenith believes will cost less to manufacture than those for any other known FM stereo system with equal performance, will reproduce full stereophonic high-fidelity from the main carrier and one sub-carrier. The other sub-carrier can program an entirely different service, such as background music for stores, without interference to or from the stereo broadcasts. The latter type of program is available only to other types of receivers not normally used in the home.

## Rigged Election!

In London, England, the Communist-controlled Electrical Trades Union gave a close imitation of its counterpart in the United States, the United Electrical Workers, which was kicked out of the labor movement 10 years ago as a Kremlin stooge. The ETU offered plenty of evidence that it had learned its lessons well from the UE. Recently, for example, the ETU re-elected a self-professed Communist, Frank Haxell, as its top national leader. Haxell's "victory" was by 19,600 votes to 18,577—out of a total ETU membership of 230,000! The Communists left nothing to chance. They rigged their 1,000-vote margin by throwing out the votes of more than 100 of the ETU's 675 local unions—and then refusing to reveal which locals were among the 100. This proved too much for the British Trades Union Congress to

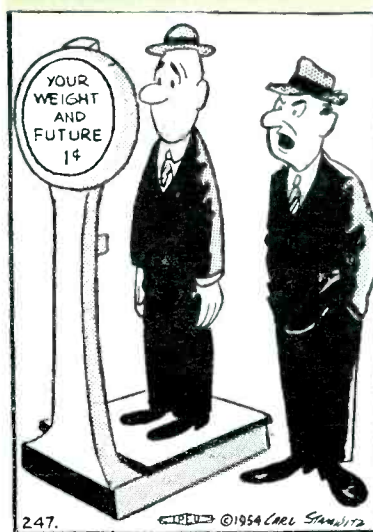
swallow and the BTUC, which has never expelled a union in its history, was well on its way toward dumping the ETU just as UE was dumped in the United States and Canada.

## Ike to Officiate

President Dwight D. Eisenhower has accepted organized labor's invitation to officiate at the opening of the mammoth AFL-CIO Union Industries Show scheduled for May 6-11 at the National Guard Armory, Washington, D. C. AFL-CIO President George Meany and Joseph Lewis, the show's director and Secretary-Treasurer for the AFL-CIO Union Label and Service Trades Department, which sponsors and produces the exhibition, presented the invitation to President Eisenhower at the White House.

Over 375 action-packed displays make up the Union-Industries Show. Exhibitors are AFL-CIO unions (including the IBEW), their employers and government agencies. Displays valued at several million dollars will portray virtually every craft, skill and service of union members.

## LAST LAUGHS



"As long as you stay non-union, Sam, your future isn't worth one cent!"

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1962 S STEARNS DR  
LOS ANGELES 34 CALIF  
FM