

RADIO, TV and RECORDING



TECHNICIAN-ENGINEER

APRIL, 1957



RADIO, TV and RECORDING

TECHNICIAN-ENGINEER

VOLUME 6  NUMBER 4
 PRINTED ON UNION MADE PAPER

The INTERNATIONAL BROTHERHOOD of ELECTRICAL WORKERS

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... the cover

Four members of IBEW Local 1212, New York City, at work in the shops of the CBS Construction Department. Surrounded by boxes of equipment, they are wiring racks for a studio audio system. From left to right, the members are Dan Murray, Ted Perzeszty, Harvey Hausmann and Henry Stangroom.

The shop skill of IBEW engineers is clearly evidenced by the work of the New York local members employed in the network shops on Manhattan. For a full report on this operation, see the story beginning on Page 3.

commentary

Why does government spending keep on rising? Because "nearly everybody" wants money or services from Uncle Sam. So says an article in the magazine *U. S. News & World Report*. The article is a good antidote for the propaganda that it's just farmers and poor people who get Federal aid.

One of the biggest boosts in the spending fattens the profits of bankers. The "interest on money the government owes," the article points out, was \$4.6 billion in the year which began July 1, 1954, and will be \$5.5 billion in the year beginning next July 1. Thus, in three years of the Eisenhower Administration, the annual cost of interest on the public debt will have risen by nearly \$1 billion, and most of this extra money goes to bankers. This is continuing to rise.

Bankers are demanding that government spending be drastically reduced, but they don't mean the part of the spending which goes into their pockets.

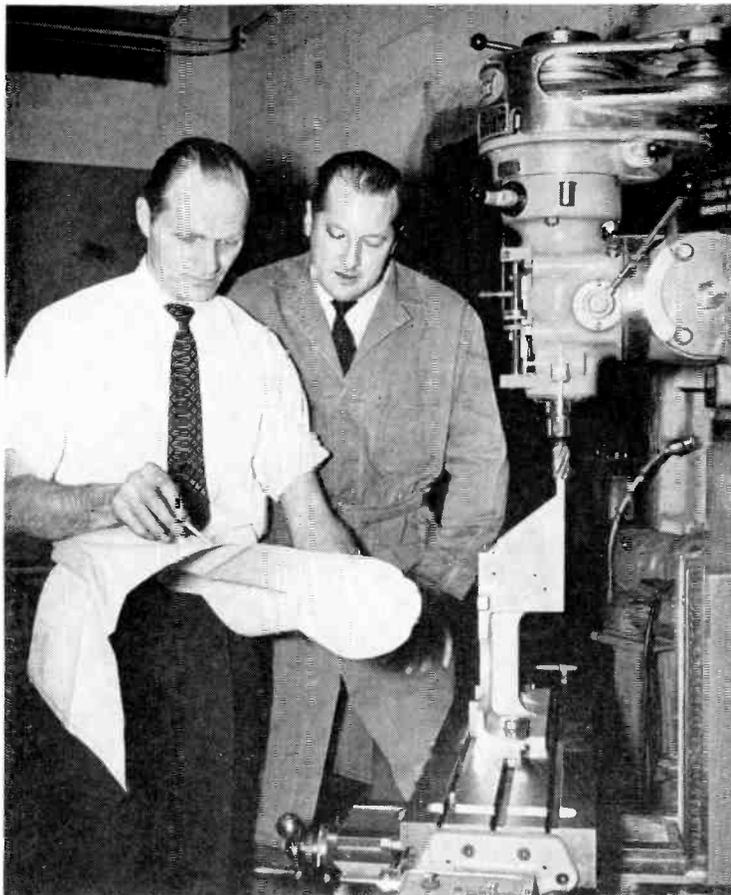
The same is true of other business interests. On the one hand they clamor for cuts in Federal spending, but on the other they demand increased government subsidies for their particular branches of industry. Remember all this next time you read that the rise in government spending is caused by such things as aid to farmers and "welfare programs" for the people.— From an editorial in *Labor*.

the 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 1956 figures: February, 1956—114.6; February, 1957—118.7.

NEVER
a
SHORTAGE
of
PROJECTS

*Construction and
Installation Goes
On, and On and On*



TOP PICTURE: Emil Lanendola, superintendent of the CBS Construction Shop, and Tony Maurer beside a milling machine, preparing to make a part for a zoomar lens.

BOTTOM PICTURE: Vince Bartilucci of Local 1212 fabricates the notched chassis for a cathode follower. Men employed in the CBS Technical Operations Construction Department construct many complete units of broadcasting equipment, using equipment on hand in the network's shops.

OUR story in pictures this month comes from the CBS Technical Operations Construction Department in New York. Right in the center of Manhattan, surrounded by executive offices of the company and flanked by Advertising Row's many agencies, a group of IBEW members spend their entire working hours working on many projects which are still warm—in fact, “hot off the drafting boards.”

This department is responsible for fabrication, assembly and final shop-checkout of the brain-children of design engineers who, to their great credit, have been responsible for many unique equipments. Many of the projects undertaken involve problems which cannot be solved satisfactorily by the use of commercially-available gear. Some such problems, of course, are worked out on the workbenches—contributing to the personal interest which is displayed by the men in their work.

The Construction Department has the advantage of having prototype equipment tested in day-to-day operations, particularly in the New York Studios and in field pickups. Hence, any “bugs” which show up can be corrected prior to the shipment of production models to other CBS facilities. In

addition, the standard production items are interchangeable between CBS stations and studios, mobile units, etc.; a great advantage to those employed in Technical Operations.

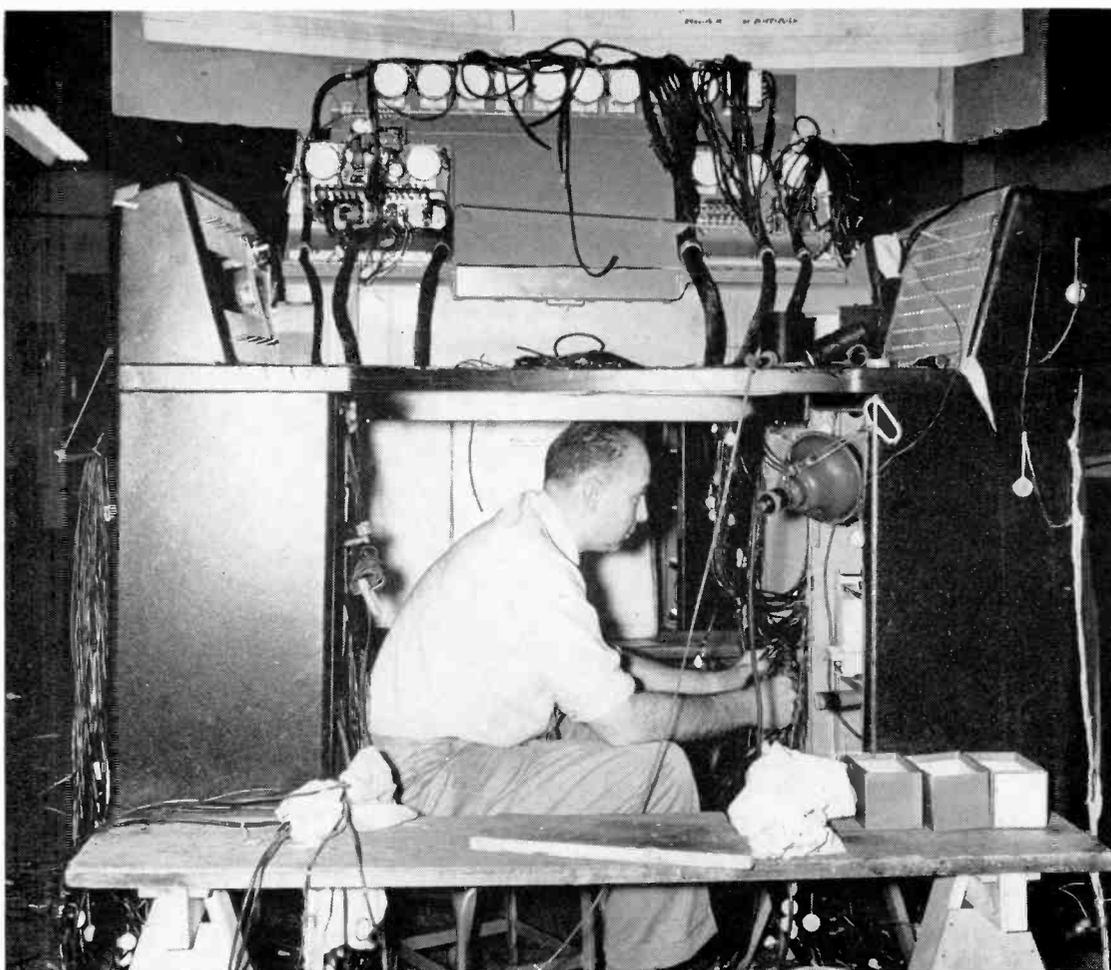
From stock sheet metal to brakes, punching, drilling, assembly and wiring—from receiving standard commercially-available bare racks and equipment to be mounted in the racks, variety of the projects undertaken is as commonplace as Mr. Heinz' famous "57." After assembly and checkout, much of the equipment is demounted for shipping ease and the final assembly—in Los Angeles, for instance—can be done with the complete confidence that it will fulfill the purposes of its fabrication.

From this shop, too, have come many recognized standards of construction—lacing and service of cables and connectors, procedures in rack and console wiring and many other examples of development by the shop can be found in the owned-and-operated stations and, indeed, in many other sta-

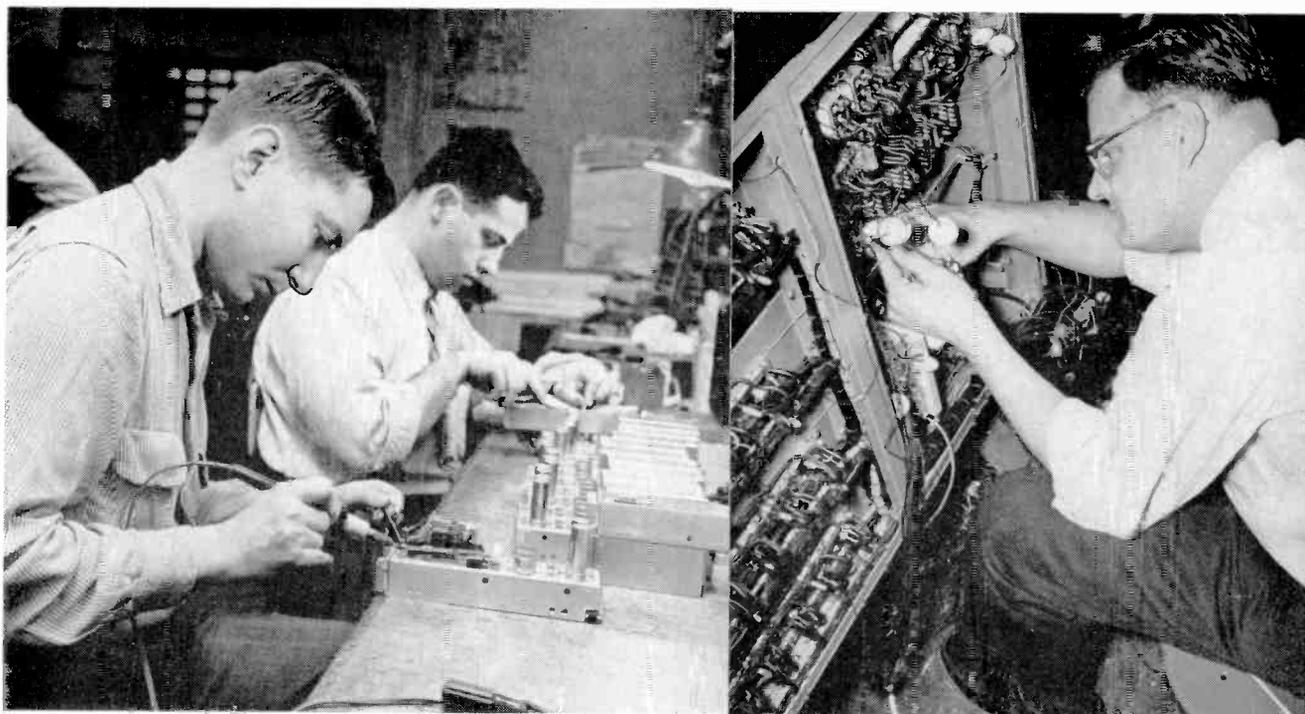
tions throughout the country. The first installation of special three-circuit jacks were wired into jack fields in this shop some years ago—the saving in jack field space and with no loss of circuit isolation has been adopted by many stations. Here, too, the first "CBS" compact audio consoles were made and tested.

Measurement equipment, distribution amplifiers, mobile units—name it and this shop can show experience in the field. The New Effects Department, working hand in hand with this department, supplies facilities for the many gimmicks and gadgets which are used to make new picture techniques available in Technical Operations. This is another phase of its activities which contribute to better pictures, better sound and the high quality of CBS programs.

Unfortunately, this is an unsung group—pretty much behind the scenes. Nonetheless, they "supply the ammunition" and are due a great deal of credit for their ability and their diligence.



ABOVE: In quarters just big enough to scratch one's back when it itches, Merritt Kirchhoff wires a console in the CBS shop. Local 1212 members employed in this unique operation are highly skilled in many phases of electronic fabrication and servicing. Measurement equipment, distribution amplifiers, or mobile units—name it and this shop can show experience in the field.



ABOVE LEFT: Leonard Minkoff and Robert Tassler wiring cathode follower units at a shop work table. ABOVE RIGHT: Ed Smith wires transformers in a console. Tags attached to the maze of wires helps to keep circuits aligned in this complex construction project.

BELOW: Morris Tucker and a CBS Chrysler station wagon which serves as special equipment for field measurements of radio and video signals. The wagon has more than \$15,000 worth of equipment—2½ kw generator, field telephone, air conditioner, mobile TV receiver, hydraulic 30-foot mast with azimuth.





PRESIDENT FREEMAN greets Secretary of Labor James P. Mitchell at the recent Legislative Conference of the AFL-CIO Building and Construction Trades Department in the nation's capital.

The Railway Labor Act, passed on May 20, 1926, required employers to bargain collectively and not to discriminate against their employees for joining a union. The act also provided for the settlement of railway labor disputes through mediation, voluntary arbitration, and fact-finding boards.

"The communications workers of this nation have fallen down the wage ladder," Freeman charged. "They find themselves hog-tied by state court injunctions when they try to go to arbitra-

President Freeman calls for a Communications Labor Act

WHAT the Railway Labor Act did for rail workers and the industry, a Communications Labor Act would do for workers in the communications field.

That's the stand taken by the Brotherhood Executive Council in an appeal to Congress to pass such an act.

As IBEW President Gordon Freeman states: "Long strikes which have crippled telephone service in many parts of the nation, the violence and destruction following in their wake, are all symptoms of a sickness which plagued the railroads of this country for many years until the enactment of the Railway Labor Act."

The economic facts in this industry, he said, make it desirable for labor, industry and the public "to establish procedures which will aid in resolving industrial disputes in a peaceful manner."

The legislative proposal sponsored by the IBEW will be modeled in principle on the procedures of the Railway Labor Act.

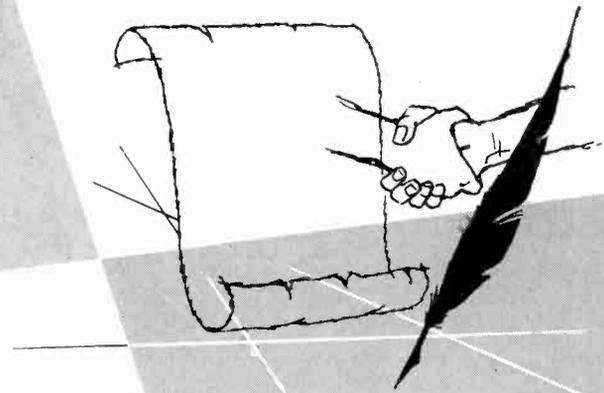
tion. Union security is non-existent excepting where the IBEW has succeeded in getting it."

Here are some of the things a Communications Labor Act would accomplish:

Reduce strikes as it has in the railway field; provide effective machinery for mediation and adjustment; make "straw bosses" and "leaders"—such as "service assistants" and "traffic supervisors" eligible to membership in unions and nullify the unfair provisions of the Taft-Hartley Act under which about 75,000 present union members may be deprived of union representation in a current proceeding before the National Labor Relations Board.

It would provide machinery for federal enforcement of arbitration in connection with the interpretation and application of contracts which is almost a complete failure under state law, and it would restore the dignity and wage status of the telephone workers through the force of public opinion as expressed by impartial emergency boards.

Integrity



Today's agreement has to be clipper-built and copper-fastened.

FRANKLIN DELANO ROOSEVELT said a long time ago that we had nothing to fear but fear itself. That summed up a panic-like situation that had arisen in the country at that time. Basically, it bucked the old nation up, and from that day to this we have gone forward economically, politically, and socially, except that through the machinations of a few power-hungry demagogues, we have developed an old maid's fear of finding a Communist under every bed. While alerting us to this potential danger of internal subversion by use of a maze of circus performances, we have been lured from the real danger to our country. And to cure that new danger, a good many of us are going to have to hit the saw-dust trail of the revival meeting. We are going to have to instill into ourselves and our people a reaffirmation of the basic things that are American, for in placing the emphasis on phony fears of foreign origin, we have lost faith in the things that are fundamental. And it is these fundamentals that have made us great.

Foremost among these fundamentals has been Integrity. The one thing that we have been praised with through the generations has been that an American's word is better than his bond. Faith in the integrity of a fellow American has been the only cement needed to make binding a compact.

That no longer holds. We have lawyers, we have agreements, we have contracts. However, there never was a contract written that couldn't be broken. Time was when only a memorandum was needed to aid memories. Today we try to

bind a man's integrity with legal words. Today's agreement has to be clipper-built and copper-fastened.

To be more specific—if a Congressman of one political stripe violates a law, you can hope for little assistance from his opposite member because he, too, has probably violated the same law with a different group. If Labor does not abide by its principles enunciated through the years by its leaders, then also; its opposite number in Industry has forgotten that it, too, has been mouthing mealy-mouthed and Machiavellian misnomers on basic principles in ghost-written speeches. Everyone seems to be operating on the basis of "Do what I say; don't do what I do." And, unfortunately, half the time you can't even believe what people say; they mean something else.

SO the integrity of truth is with us no more. So the integrity of faith is with us no more. And so integrity itself is with us no more.

Don't you think that the time has come when each of us—no matter how small his contribution to the general welfare may be—starts doing things in the old-fashioned way? Mustn't we each by our own example and by our own teachings and preachings find the way back to the simple way that made our country what it is—*great*? And mustn't we remember that its greatness came from the narrowness of the straight road we travelled as "we the people?" That straight road was paved with the core of the stone of *Integrity*.

From SOUND TALK, a publication of Sound Studios, Incorporated, Washington, D. C.

Reports

COPE Conferences

The AFL-CIO Committee on Political Education will hold a series of 11 area conferences this year, the first one scheduled April 27 at Boston. COPE Director James L. McDevitt, Deputy Director Alexander Barkan and members of COPE's national staff will participate along with area and local COPE representatives.

The conferences will discuss the political education and action program for 1957 and the problems and probabilities of the 1958 campaign.

The schedule and the states involved:

April 27—Boston: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

April 30—New York City: New York State.

May 3—Philadelphia: Delaware, Maryland, New Jersey and Pennsylvania.

May 7—Detroit: Illinois, Indiana, Kentucky, Michigan, Ohio and West Virginia.

May 18—Los Angeles: California and Nevada.

June 1—Albuquerque: Arizona, Colorado, New Mexico and Utah.

June 8—Kansas City, Mo.: Arkansas, Kansas, Missouri and Oklahoma.

June 12—Minneapolis: Iowa, Minnesota, Nebraska, North Dakota, South Dakota and Wisconsin.

June 14—Coeur d'Alene, Idaho: Oregon, Idaho, Montana, Washington and Wyoming.

The dates and places of two conferences to be held in the south have not yet been set.

State Battles Open

Organized labor is facing the severest threats of new "right-to-work" legislation in Delaware, Connecticut, Illinois and Ohio.

In all four states, where Republicans are in control of the legislature, showdowns are imminent on bills to outlaw union security.

After several weeks delay, the Delaware House

beat back two amendments to the pending "wreck" measure that would have made final passage more difficult.

The bill has passed the House on its first two readings. It was expected to hit the floor April 17 for final action.

In Connecticut, where a joint House-Senate committee held hearings on the "wreck" proposals May 25, no action has been taken to send a bill to the floor of either chamber.

The fact that the House Labor Committee called back a minimum wage bill it previously reported out led labor officials to speculate that state GOP legislative leaders may offer a "package deal" of labor legislation which will include the "right-to-work" proposal.

A new "wreck" bill introduced in Ohio has rallied state labor groups for an all-out fight. Sen. Lowell Fess (R.), who earlier had submitted a "right-to-work" bill aimed at hamstringing labor without completely outlawing the union shop, sponsored an out-and-out "wreck" measure just before the deadline for filing new bills.

A more serious threat to labor's rights in Ohio appears to be a bill which would restrict union political activities.

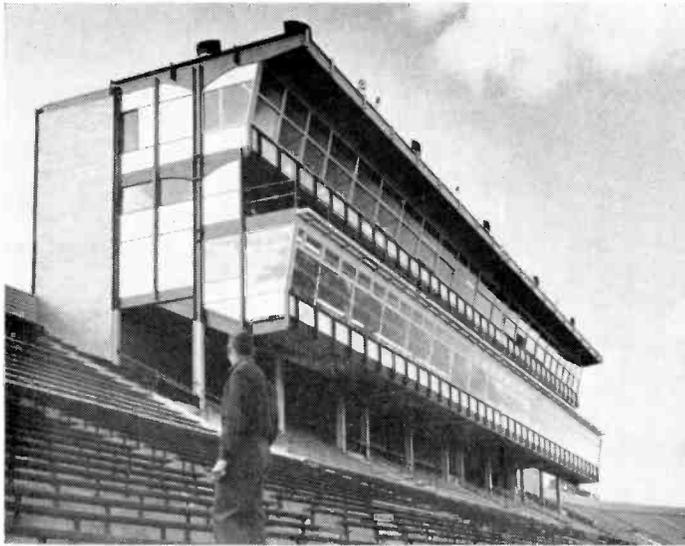
In Illinois, Rep. George S. Brydia, who represents a farming district near the Iowa border, dropped a "right-to-work" proposal into the hopper. Leading legislators of both parties in this state have, however, been outspoken against "right-to-work" laws.

Labor leaders in the state believe that anti-labor forces in Illinois have no real hope of enacting the Brydia bill but intend to use it to divert attention from legislative proposals to improve workmen's compensation and occupational disease acts, raise state employees' salaries and establish an effective state minimum wage.

He's Beating the Drum for . . .



. . . the 1957 Progress Meeting of the IBEW Radio, TV, and Recording Division. It'll be held in New Orleans, June 14, 15, 16. Your local union should be represented.



University of Michigan Press Box Is Ultra Communications Center

Perched on the rim of the University of Michigan's football stadium, the new communications center is a delight to spectators and sports announcers alike. It features both an open deck and glass-enclosed booths. The structure has exterior walls faced with gold-colored aluminum and blue-glazed brick, using the school colors for added beauty.



TESTED in action during the football season of 1956, the new University of Michigan Sports Communications Center at Ann Arbor has proved to be one of the finest "press boxes" of its kind in the world. Here is a sports observation post to warm the cockles of any broadcast engineer's heart.

Conceived and constructed with the idea of keeping pace with new developments in the fields of press, radio, photographic and television reporting, the center contains complete facilities for communication services.

In order to bring facilities into line with what was needed by all types of broadcasting personnel, leaders in all these areas were asked to submit ideas. Among those asked for their views were the National Football Writers Association and the Detroit Newspaper Photographers Association. The latter also represented the newsreel field.

The structure is 168 feet long, extending approximately between the 22-yard lines. The shape of the stadium and the height of the structure afford a complete view of all parts of the playing

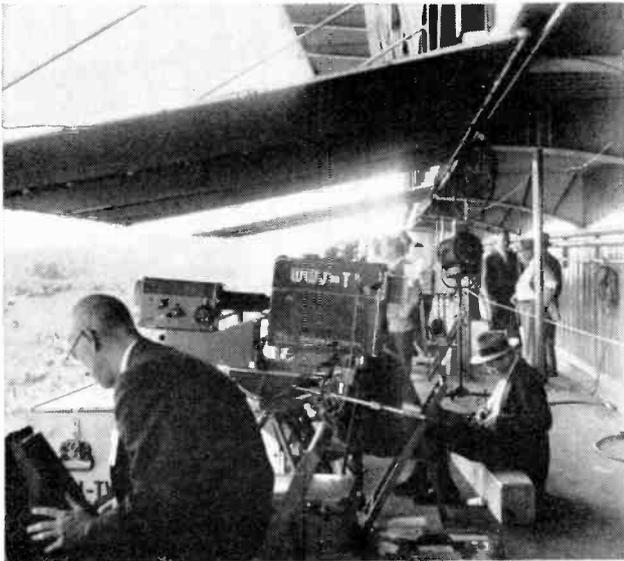
field from any of the three working press levels of the center.

The second level contains the working press section with 202 seats, wire and telephone facilities, and a loud speaker for a running account of the game. The front row contains 74 seats, the second 70 and the back row 58 seats. In addition to having sufficient working space and wide aisles, each desk is equipped with a shelf and behind each seat is space for luggage or coats. Alternate seats are wired for Western Union operation.

A statistics section is set up on the press level, and line-ups, a running play-by-play, half-time and full-game statistics are distributed at all levels.

A snack bar is set up at the rear of this level, but food is taken to all levels by a staff of student waiters.

On the third elevation is the photographers' deck, which contains space for 38 still or newsreel cameras, in addition to special sections for television cameras. A telephone is located on this level which allows communications between the control center on the press level and the sidelines.



The third level of the center is the still, newsreel, and TV camera deck. It contains space for 38 still or newsreel cameras, plus special sections for TV coverage.

When television crews come to the stadium for game coverage any special needs they may have are taken care of by maintenance electricians. The electricians remain in the communications center throughout the game and telecast . . . in case they are needed. Members of IBEW Local 252, Ann Arbor, are in the maintenance crew.

The fourth level contains 17 radio and television booths, plus the president's box, timers' booths and booths for the public address system

and for coaches of both teams. The large middle booth is for television and may be used for radio when the game is not televised. No banners or pennants may be displayed from the front of the booths or anywhere else in the center. The fourth level also contains six darkrooms with electrical hook-up for wire transmission of photos.

From the control area of the center, on the press level, communication is maintained by telephone with each radio or television booth, the photo level, the sidelines, the public address system, and outside points within and without the stadium. There is a microphone to make announcements within the center itself, which can be cut into the public address system at any time. There are three telephone pay stations directly behind the control area.

The first level contains the President's dining room complete with kitchen facilities.

Only one telecast was made from the communications center during its first year—that was the pick-up by WWJ-TV (Detroit) of the UCLA game for transmission to the west coast.

WXYZ, an IBEW-contract station in Detroit, covered four games last fall, and the station is expected to do the same this year. Coverage varies according to how University of Michigan games stack up against others in the nation in importance.

All things being equal, the new U of M Communications Center expects a full house next football season.

Progress Meeting City Is A Busy Port



Looking down Canal Street from the Mississippi waterfront. The paddlewheel steamer at center is a favorite of tourists to the city.

The Radio, TV and Recording Division of the IBEW meets at the Roosevelt Hotel in New Orleans, June 14, 15 and 16. Sessions are to be held in the Roosevelt Hotel.

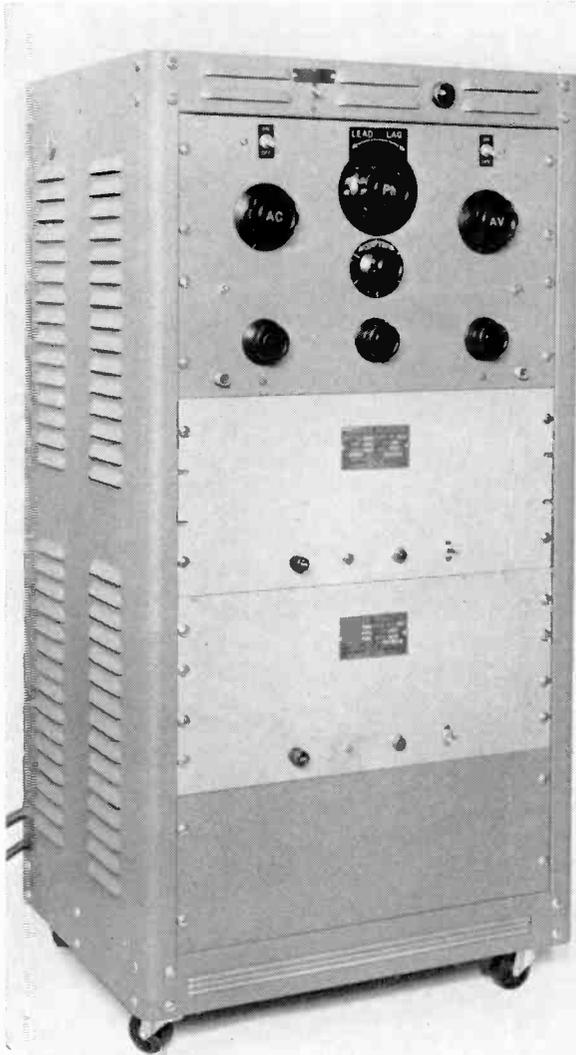
This is a view of the growing New Orleans skyline as seen from the Mississippi River.

Situated on the river, 110 miles from the Gulf of Mexico, New Orleans today serves as the logical and natural gateway to the world for the mid-continent area of the United States, which embraces more than half of the total area of this country.

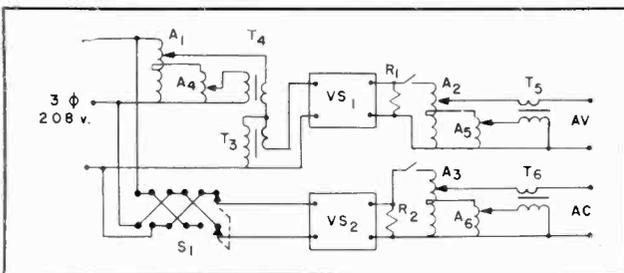
This city is the country's second port in the valuation of exports and imports and during the postwar period has developed into one of the most promising industrial frontiers.

Power Supplies for Instrument Calibration

Useful, Inexpensive Power Supplies
Provided by Semi-Portable Units



One of the two semi-portable power supplies constructed at the National Bureau of Standards for use in 60-cycle instrument calibration work. One supply uses 250-volt-ampere stabilizers and the other, 1-kva units. The circuit arrangements in these supplies are not new, but their combination with modern commercially available voltage stabilizers results in very useful power supplies which are relatively inexpensive and simple to construct, and can be conveniently moved about from bench to bench for instrument and meter testing.



Circuit diagram of the NBS power supplies. Auto transformers, A_2 , A_3 , A_5 , and A_6 , and the 120/5 v transformers, T_5 and T_6 , are used to control the output voltages of the two voltage stabilizers, VS_1 and VS_2 . Switch S_1 shifts the phase angle between the two channels in 60 degree steps; auto transformers, A_1 and A_4 , and the 120/5 v transformer, T_4 , provide 0-60° and 0-2° phase shifts respectively, for coarse and fine control.

THE National Bureau of Standards has constructed for its own use convenient, inexpensive power supplies for calibrating a-c electrical instruments and meters over wide ranges of voltage, current, and power. Devised by F. L. Hermach and E. S. Williams of the Bureau's electrical instruments laboratory, these power supplies incorporate commercially available 60-cycle electronic voltage stabilizers that operate from an ordinary 3-phase line. Although the circuit arrangements are not new, their combination with commercial voltage stabilizers results in power supplies that should prove useful to other standardizing laboratories.

For instrument testing, the most important requirement upon the power supply is that instrument pointer fluctuations be negligible while a measurement is being made. The standardizing of a-c ammeters and voltmeters is greatly facilitated by a power supply whose output is exceptionally free of fluctuations. Moreover, the output should have good wave form and be adjustable in fine and coarse increments over wide ranges of current and voltage. If wattmeters and phase-angle or power-factor meters are also to be tested, the supply should have two similar outputs of the same frequency, adjustable in phase so that "phantom loading" may be used. In the past, sine-wave motor-generator sets, both troublesome and expensive, have been used as instrument calibrating sources. However, they are now largely supplanted at NBS by power supplies using commercial stabilizers connected to simulate the desired test conditions.

The power supplies use two a-c voltage stabilizers fed from a 3-phase line through phase shifters, to produce two single-phase voltages which are independently adjustable in magnitude and in phase. Each supplies a multi-range im-

pedance-matching transformer, one to give an output, "AV," suitable for tests of voltmeters to 800 volts, and the other an output "AC," for tests of ammeters to 100 amperes.

For tests of wattmeters, watt-hour meters, and power-factor or phase-angle meters, the voltage circuits of the standard and test instruments are supplied by connection to AV and the current elements in series are supplied by connection to AC. The phase angle and the voltage magnitudes are then adjusted to obtain the desired test values. In this well-known phantom-loading method the sources are required to supply only the losses in the instruments, and there is no need to correct readings for these losses.

The quantitative requirements which power supplies such as these must meet to be suitable for instrument testing have been evaluated. They can be simply determined with the indicating instruments usually available in most standardizing laboratories. The voltage stabilizers should have stabilization ratios of 20 or more, time constants of recovery from input voltage changes of not more than about 0.04 second, and output-voltage phase-shifts of not more than about 4 minutes of angle for 1-percent changes in input voltage; they should not produce stray fields in excess of 0.05 gauss (magnetic flux density) in locations where instruments are tested. Moderate wave-form distortion is easily tolerated if only rms instruments are tested, but the form factor and crest factor must be known to a few tenths of a percent if rectifier instruments and the usual electronic voltmeters are to be tested with an rms standard.

Single Sideband System Could Double Stations

A new system of standard broadcasting called "Compatible Single Sideband System" has been developed by Kahn Research Laboratories of Freeport, Long Island, which, it is said, could double the number of AM stations in the country.

The new system is being tested on WMGM, New York, which is manned by IBEW technicians. It is designed to reduce fading at night, co-channel and adjacent channel interference during the daytime, and improve fidelity as compared to standard double sideband transmissions.

WMGM has tested the system, using only the lower side of the 1050 kc carrier, along with the Kahn adapter and with the upper sideband filtered out. Optimum reception is obtained by detuning from $1\frac{1}{2}$ to 2 kc below 1050 kc, the WMGM assigned frequency.

Southwest Pacific DJs

Pictures Recall Armed Forces Radio



An all-request show and a jug of coffee.

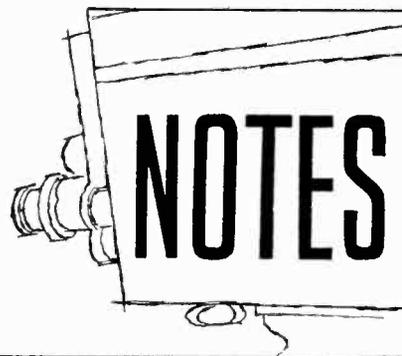


The control board and part-time continuity.

The Air Force pictures above recall the days of World War II when many a GI's only contact with the world of broadcasting was the signals coming from scattered, impromptu Armed Forces Radio Service stations. Though the facilities for broadcasting were makeshift, many of the men who staffed these units went on to successful engineering and programming careers in postwar radio and television.

These pictures were taken at WVTB, which started off as AFRS Station No. 2 at Nadzab in the Markham Valley of New Guinea in 1944. Operating on 1480 kc, the station mixed latest news of the world and some local talent with a steady schedule of spinning discs.

NOTE TO READERS: If you have any photos of recording or broadcasting of interest, send them to Albert O. Hardy, Technician-Engineer, IBEW, 1200 15th Street, N. W., Washington, D. C.



TV at Penn Station

The world's biggest closed circuit TV installation (107 cameras, 100 TV receivers) is now operating at Penn Station in New York City in a streamlined ticket sales and service operation maintained by the Pennsylvania Railroad.

When a customer comes to the ticket counter, and requests a bedroom, on the Broadway Limited to Chicago, for example, the ticket agent tunes in a space chart on a counter TV receiver, which immediately shows what accommodations are available on all Pennsy trains to Chicago for the next two weeks. When the customer makes his choice, the agent dials the "space distributor" for confirmation. The space distributor selects the appropriate Pullman reservation, which a facsimile machine transmits back to the counter where the customer is waiting. The transaction is completed when the actual ticket is printed automatically by "Ticketeer." The whole procedure has taken two minutes.

Telephone requests for reservations are taken by clerks who dial coded numbers to tune in space availability charts. They can confirm reservations via an automatic writing machine at their fingertips. The fact that all clerks can tune in the same reservation charts simultaneously is a big timesaver for passengers.

A supervisory control center monitors the ebb and flow of incoming phone calls to make sure that no caller has an unduly long wait. Centrally located in the elaborate Penn Station installation, the man who operates the control center is able to expedite calls for information and reservations with dispatch.

Miniature Quartz Cell

A small quartz cell—about the size of a peanut—is the heart of a device called the Ionovac, and it is designed to replace the larger vibrating diaphragms used in loudspeakers.

Marketed by the DuKane Corporation of St. Charles, Ill., the small cell is open on one end and narrows down to a tiny hole the size of a pencil lead inside. Air within this small space is bom-

barded with high frequency, high voltage current which ionizes it into a violet cloud. This cloud is electrically similar to the ionosphere, a layer of air up to 250 miles above the earth's surface.

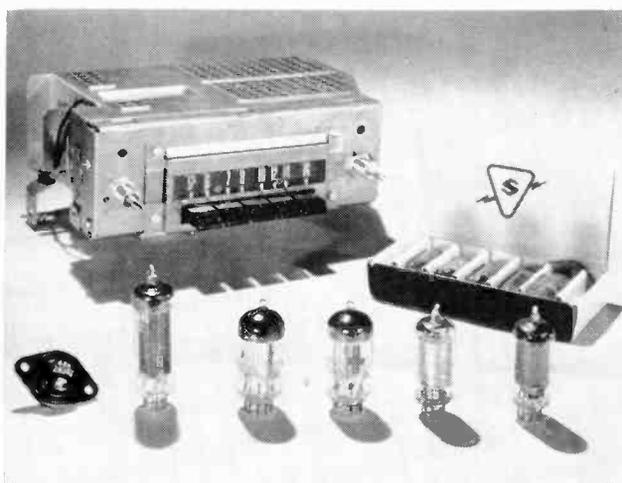
Changes in the electrical field creating the ionized cloud vary the breadth of vibration of the ionized particles. William Torn, senior developing engineer, reported.

"Each vibration causes an expansion of the 'cloud,' followed by a contraction, thereby producing sound waves in any strength, form and frequency needed."

This electronic method of sound production is superior to the presently used vibrating diaphragm because it responds faster to electrical changes and is capable of higher fidelity sound reproduction, he said.

The Ionovac is being offered first to the high fidelity market as a loudspeaker.

12-Volt Hybrid Receiver



NEW YORK—This combination of five receiving tubes and one transistor (foreground), manufactured by Sylvania Electric Products, Inc., is presently being used in a new style automobile radio known as the 12-volt hybrid set. Tubes in the 12-volt hybrid line achieve optimum performance at 12.6-volt plate supply directly from the car's battery-generator supply.

Circuitry in the new design permits elimination of the buffer condenser, rectifier, vibrator and transformer—troublesome and expensive components in most conventional auto sets.

Four Receiving Tubes

Four new receiving tubes, including one for use with 110-degree television picture tubes, have been made available to the renewal market by Sylvania Electric Products, Inc., according to an announcement by H. H. Rainier, manager of the Distributor Sales Department.

Mr. Rainier said that type 10DE7 is already in use in the new 110-degree Sylvania sets and that other manufacturers will be using it in the near future. This tube is a miniature double triode for use as a vertical deflection oscillator and amplifier. It employs a 600 ma heater with controlled heater warm-up time for use in series string TV receivers.

Type 2CY5 is a miniature tetrode designed for use in VHF television receivers.

Sylvania types 12DQ6A and 17DQ6A are higher rated versions of their prototype. The 12DQ6A replaces the 12DQ6 which has been used as a horizontal deflection amplifier by many manufacturers. The 17DQ6A is a glass horizontal deflection amplifier for use in 450 ma series string TV receivers.

Ferrite Isolators

A full line of high-performance ferrite isolators was shown publicly by Sylvania Electric Products, Inc., for the first time at the 1957 Institute of Radio Engineers (IRE) Show at the New York Coliseum, March 18-21.

Ferrites are non-metallic magnetic materials, frequently consisting of nickel, iron and aluminum oxide, with unusual electrical properties. Ferrite isolators are small devices which increase the reliability of such microwave equipment as radar by protecting the microwave power source against energy reflections arising in the transmission line or antenna.

Five ferrite isolators make up the new Sylvania line. Types FD-1037, and FD-1013 have frequency ranges of 8500 to 9600 megacycles, and Type FD-977, for airborne weather radar, is centered at 5400 megacycles. The line also includes Types FD-962 and FD-963, low-power isolators for microwave link applications, the first with a frequency range of 7100 to 8000 megacycles, and the second with frequencies from 4600 to 5000 megacycles.

"Sylvania's chemistry laboratory at Flushing, N. Y., has developed ferrite materials of high consistent quality. The microwave physics laboratory at Mountain View, Calif., is carrying out advanced work on ferrite devices," a Sylvania manager said. "Our special tube plant in Woburn,

Mass., is applying its product development capabilities and modern manufacturing methods to the production of the new isolators."

Other specifications for the new Sylvania isolators: FD-1037—length, 3 inches; isolation of 25 db minimum; insertion loss, 1 db maximum; VSWR, 1.13 to 1; average power, 100 watts maximum; peak power 125 kilowatts maximum. FD-1013—length, 2 inches; isolation, 10 db minimum; insertion loss, 0.6 db maximum; average power, 100 watts maximum; peak power, 100 kilowatts maximum. FD-977—length, 5 inches; isolation, 15 db minimum; insertion loss, 1 db maximum; average power, 125 watts maximum; peak power, 125 kilowatts maximum. FD-962— isolation, 35 db minimum; insertion loss, 1 db maximum, average power 20 watts maximum. FD-963— isolation, 25 db minimum; insertion loss, 1 db maximum; average power 20 watts maximum.

Image Orthicon Advance

Details of another advancement in image orthicon television camera tube development were announced for the first time at the opening of the National Association of Radio-Television Broadcasters Convention at the Hotel Conrad Hilton this month. According to L. F. Holleran, General Marketing Manager, RCA Electron Tube Division, RCA's new Super-Dynode design improves picture quality, simplifies camera chain operation, and lengthens the life of the tube.

"Directly interchangeable with all previous RCA-5820's and RCA-6474's," Mr. Holleran said, "the corresponding Super-Dynode versions exhibit distinct advantages in both black-and-white and color television.

"In black-and-white operation, the Super-Dynode 5820 reduces dynode texture which sometimes occurs during the photographing of 'low-key' scenes and 'mood' shots. In color camera work, the Super-Dynode 6474 saves adjustment time on dark-shading, reduces color shift in dark areas and minimizes undesirable background texture in low-light areas.

"When an existing image orthicon is replaced with the Super-Dynode version, circuit changes in the camera are unnecessary. Furthermore, once the change has been made, dynode burn-offs are not required, and stabilizing runs are eliminated."

Advantages of the Super-Dynode design are not confined to station and studio operation. In color TV reception especially, the inherent stability of the Super-Dynode design should be evident to the home viewer in clearer colors.



Simple dialing procedure for using completely automatic "dial-direct" mobile two-way radiotelephone system is demonstrated by Du Mont engineer James A. Craig.

'Dial-Direct' System

The first completely automatic "dial-direct" mobile two-way radiotelephone system has been made available by Allen B. Du Mont Laboratories, Inc. The announcement is made by Fred M. Link, director of operations of Du Mont's Mobile Communications Department.

Designed and developed by Ramsey McDonald, representative for Du Mont two-way radio in Indiana, the system allows phone calls to-and-from vehicles to be relayed, completely unattended, through local telephone systems.

Mr. Link points out that reduced costs to the user, because of the automatic features, greatly expand the potential application of such equipment. Unlike other radiotelephone systems, it operates on a 24-hour basis, and no manual operators are required.

The low cost, Mr. Link believes, will open radiotelephone service to the general public, as well as truck and other vehicle fleet operations. Also, the system can be utilized by boats or rural radiotelephone installations in isolated areas.

The system consists of a dial radiotelephone in a vehicle, employing a two-way radio system as a carrier to the local telephone company installation. Also, a transmitter-receiver base station is interconnected with the local telephone system. Termination and switching equipment at the base station automatically transfers the radio calls to the telephone system and telephone calls to the radio system. Calls can also be made from vehicle to vehicle. Only two telephone lines are required to interconnect the base station equipment with the telephone company's central office. One

line is utilized for calls from telephone to radio; the other for radio to telephone.

To illustrate the system's operation, Mr. Link cites Mr. McDonald's use of the automatic radio-telephone. His mobile radio-telephone number, listed in the Richmond (Ind.) Telephone Directory, is 166-53. A party at a local exchange dials 166, and then receives a special radio dial tone. Upon dialing the suffix (53), a signal or call lamp in the car is lighted and a bell or horn sounds. When the telephone handset in the vehicle is picked up, conversation begins.

A call from Mr. McDonald's car is placed by lifting the handset and listening for the dial-tone, which is the normal background noise of the FM receiver. Then by dialing 9, the base station transmitter is automatically activated, and the local telephone system is immediately switched in. After receiving the normal dial tone the local number is dialed directly.

Scatter System

A new single sideband tropospheric scatter system will be developed and tested at General Electric Co.'s technical products dept., which has been awarded a \$4,594,905 contract by the U. S. Air Force Air Material Command, Wright-Patterson Air Force Base, Dayton, Ohio.

In announcing the contract recently, William J. Morlock, general manager of the GE department, described scatter as "over-the-horizon communications, and as a stepping stone to transoceanic telecasting." A mockup or prototype of the uhf system will be developed under the contract. It will comprise giant, high-powered antennas similar in appearance to lattice work on a huge billboard; high-power transmitters; klystron tubes; terminal equipment and related apparatus.

Army Transmitter

The Army is going to install at the Pentagon in Washington a radio transmitter which can send messages anywhere in the world.

The service announced April 12 the advanced design short wave transmitter will be known as the World Spanner. It was designed by the Army Signal Engineering Laboratories at Fort Monmouth, N. J., and Continental Electronics Inc. of Dallas, Tex.

"The big set is almost 50 times more effective than the loudest commercial broadcasting station," the Army said.

The World Spanner—mounted in a 50-foot square room—will send 64 teletypewriter messages or four separate voices at the same time.

Station

Breaks

Candelabra Tower

FIRST "candelabra" tower in broadcast history ever to carry three station antennas at the same level will be constructed for WAAM (TV) WBAL-TV and WMAR-TV, all Baltimore, under a joint contract awarded in the name of Television Tower, Inc. (WBAL and WMAR employ members of IBEW Local 1400.)

To be designed and fabricated by Dresser-Ideco Co., Columbus, Ohio, the triple antenna structure will be 731 feet high, with a triangular top platform 105 feet on each side.

The new tower will occupy the present site of the WAAM transmitter. RCA is supplying the antennas, transmission lines and transmitter equipment, and is working on electronic problems involved in the structure through tests on operating models of the antennas.

A building to be located in the center of the platform will house an elevator landing and transmission line leak detectors. To provide easy transportation for the station's engineers and maintenance personnel, a elevator will run up the full height of the tower.

Safety Committee

A safety committee has been activated by Local 1212, New York City, to study accident reports as they are submitted by shop stewards, to investigate causes of mishaps, and to make recommendations for effective preventive measures.

The committee presently consists of Nat De Gutz, chairman, and Mike DeIseo, but it will be enlarged as circumstances require to meet the needs of the membership.

National Pact Covers WHCT

CBS' most recently-acquired station, WHCT, Hartford, is now covered by the National Technicians' Agreement of May 1, 1956. CBS assumed the operation of this station on September 15, 1956, following a series of proceedings before the FCC, which delayed the transfer of ownership for some seven months. Nonetheless, the IBEW has a continuous history of bargaining re-

lationship with the station which dates back to its initial operation. . . . August, 1954. Prior to that time, a series of agreements (still in effect, but with another owner) covered the associated AM operation for many years.

This is the second CBS owned-and-operated station which operates on a UHF channel—in this case, Channel 18. The first such station acquired by CBS was WXIX, Milwaukee—where the IBEW-CBS Agreement has been in effect since May 1, 1956. The addition of WHCT has been made effective as of November 15, 1956—sixty days following the transfer of the station to CBS ownership. Agreement to do so has just been announced by Local Union No. 1294 President Samuel C. Edsall.

Blinking Yellow Light

To assure a microwave contact between the remote location of a "Person to Person" TV-show pickup and the telephone company trunk, an amber light is installed atop the telephone company building in downtown Washington, D. C. Assisted by this blinking light, AT and T men are able to line up their microwave dishes and check beam interference.

One day last month, someone forgot to turn off the light and it blinked all night, much to the consternation of many citizens of the nation's capital.

The tower at National Airport called police to find out what it was. A citizen observer saw the light from the railroad yards and reported to a local newspaper that the light in the sky had "half the diameter of the full moon." Pilots of planes circling the area were puzzled and radioed the airport tower for information.

Finally, three policemen arrived at the night guard's desk at the telephone company and phoned upstairs to ask "if anybody up there has a flashing light." Someone quickly recollected his thoughts, and the light was turned off.

Technician-Engineer