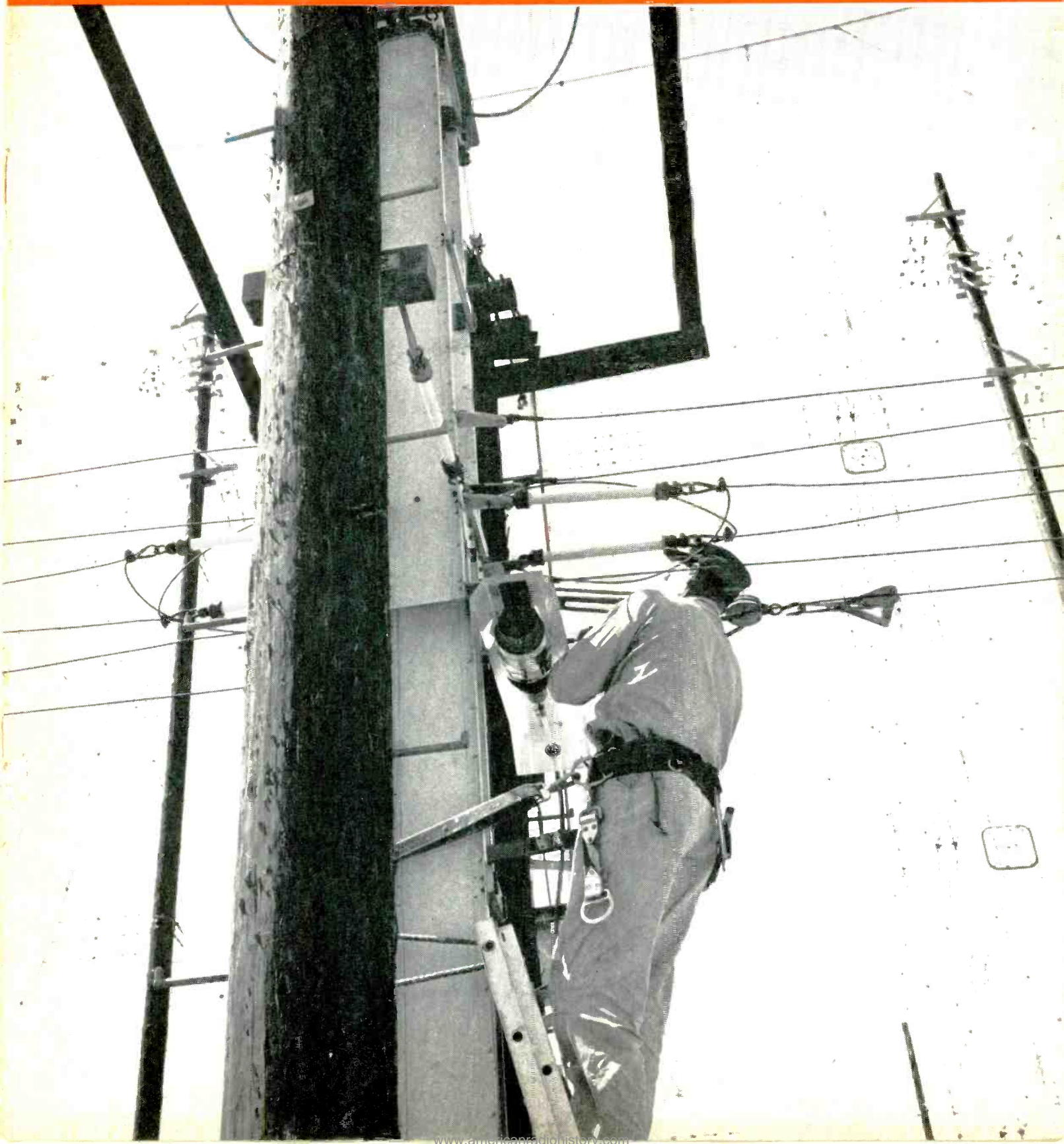


RADIO, TV and RECORDING

TECHNICIAN-ENGINEER



MAY, 1955



RADIO, TV and RECORDING **TECHNICIAN-ENGINEER**

VOLUME 1 NUMBER 5

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The INTERNATIONAL BROTHERHOOD of ELECTRICAL WORKERS

J. SCOTT MILNE	International President
JOSEPH D. KEENAN	International Secretary
W. A. HOGAN	International Treasurer

ALBERT O. HARDY Editor, Technician-Engineer

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... the cover

Ford Whittaker, a member of IBEW Local 428, replacing a vacuum variable condenser on one of the KCBR transmission lines. The vacuum in the condenser was lost about 15 minutes prior to air time, and the quick thinking and coordination of the crew was responsible for an on-time start. To Brother Whittaker's right is a coupling, flexible shaft and a double-bevel gear—coupled in turn to a Veeder counter. The Veeder counter acts as a dial for setting the condenser capacity.

guest-itorial

State "Right-to-Work" Laws are designed to impose restrictions upon organized labor, much greater than those imposed by the present Taft-Hartley Act. The real purpose is to prevent the "Union Shop" and to destroy the rights of labor to accomplish this purpose by prohibiting maintenance of membership in labor unions under state law.

The principle contention of those advocating "Right-to-Work" Laws is that no worker would be required to be a member of an organized labor movement in order to obtain or retain employment. They assert that they are not opposed to unions as such, but that the "Closed Shop" and the "Union Shop" provisions of a labor contract conflict with the individual freedom of a worker to exercise his right to work where and how he pleases. Therefore, the argument continues, in order to protect a worker against infringements upon his free access to a job, compulsory unionism should be prohibited.

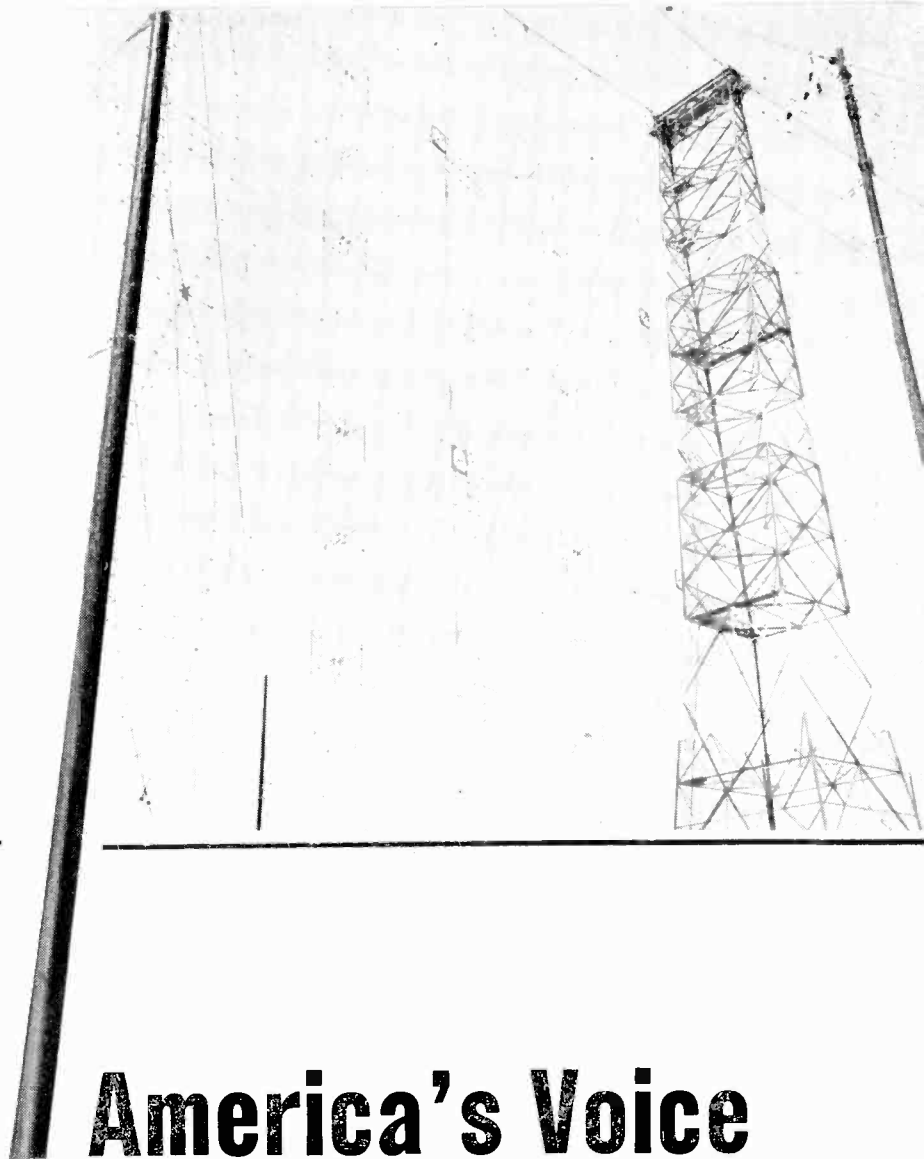
Lest the unwary fall prey to this type of reasoning, it must be pointed out that there is no such thing as unfettered freedom. Freedom to be genuine must be reasonable. A democratic government must curb those individual freedoms that come into conflict with society in order to serve the best interest of all the people. Thus the Constitution of the United States, the Constitutions of the individual States and the laws framed in accordance therewith are designed to establish a standard of conduct by which we, as citizens, are duty bound to exercise our individual freedoms consonant with society or public policy. Certain individual freedoms must be restrained, lest we might take up the occupation of bank robbery or some like vocation. Every law abiding citizen must subordinate certain freedoms in the interest of society as a whole. This is a fundamental American principle. Those within the ranks of labor in the United States are, without question, in the majority; therefore, it should be obvious to anyone that any individual freedoms which are subservient to the interest and benefit to the majority are in conformance with fundamental American principles.

Make your voice heard—work to prevent the passage of the so-called, "Right-to-Work" bills and preserve our democracy. "United we stand, divided we fall."

JERRY G. COLLETT,
Financial Secretary,
Local Union 45, IBEW.

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. Entered January 20, 1952, as second-class matter at Washington, D. C., under Act of August 24, 1912. Subscription Price: U. S. and Canada, \$2 per year in advance.

The first in a series of articles on The Voice of America to make our members—and all our readers—aware of the tremendous job the USIA is doing every day, around the clock and around the world.



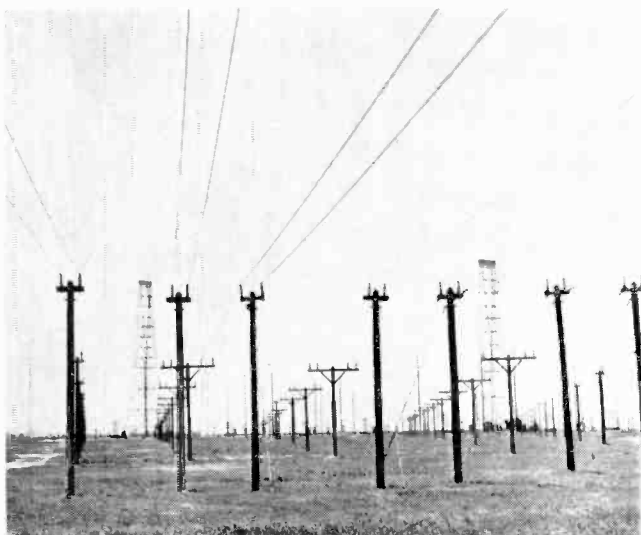
This is America's Voice

THIRTY-EIGHT languages, reaching over one hundred million radio listeners, are beamed to all parts of the world and an estimated 300 million listeners are made familiar with the standard cues: "This program has come to you from the United States of America" and "This is the Voice of America." For the people in countries under Communist domination, the Voice of America provides one of the few remaining links with the outside world and a continuing source of hope and encouragement.

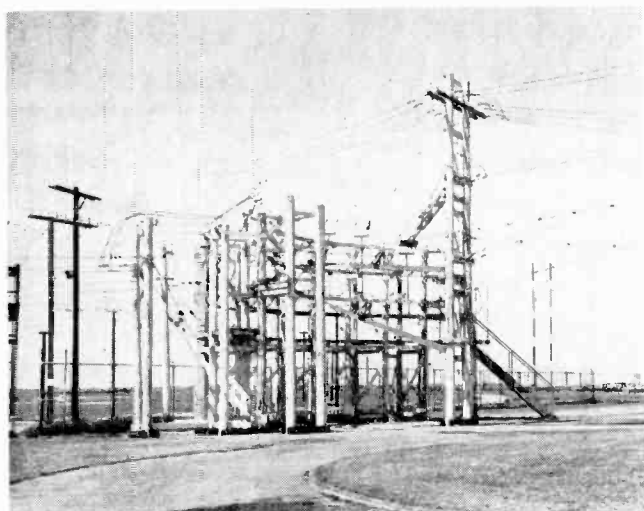
Prior to World War II, high-frequency international broadcasting from the United States was carried out on a relatively small scale by various private organizations. In 1941, there was a total of 12 shortwave transmitters broadcasting on an international basis—principally to Latin America. During the war years the need developed for a broadcasting organization in the United States for the purpose of broadcasting to the occupied nations of Europe and Asia, offering encouragement for eventual liberation and keeping their people informed

of the turn of world events. These 12 transmitters were brought under Government control and served as an emergency nucleus for the broadcasting services of the Office of War Information. During the early war years, under the sponsorship of the OWI, these broadcasts began to be known as the "Voice of America." By the end of the war, the network grew to almost 50 transmitters broadcasting from various locations throughout the world.

The problems encountered in international broadcasting are considerably different from those of domestic broadcasting as we know it here in the United States. One of the fundamental differences—and, as a matter of fact, the basic problem in international broadcasting—is that the audience is usually thousands of miles away from the studios in which the programs originate. The international audience, because of the great distance involved, must be reached by the sky-wave component of shortwave transmissions. Shortwave transmissions from the United States, besides being subject



Transmission lines leading to the curtains and rhombics.



The antenna switching system at the Delano installation of VOA.



Closeup of antenna switches. The boom is the moving contact.

to a degree of unreliability because of the inherent fading characteristic associated with sky-way transmission, are also subject to a large degree of unreliability as a result of the effects of the "auroral zone" upon short-wave transmissions. The shielding effect of the auroral zone prevents direct transmission from the United States of technically satisfactory shortwave broadcasts to many important areas of the world—on the consistent basis necessary to attract and maintain listeners.

OVERSEAS RELAY BASES USED

The development of VOA's system centers upon the use of overseas relay bases, at locations where it is possible to take maximum advantage of radio propagation conditions, to overcome the problems of direct short-wave broadcasting from the United States. While transmission paths passing through the auroral zones are heavily distorted and absorbed, paths that do not pass near the zone are not affected. For example, the circuit from New York to Tangier, North Africa does not pass near the auroral zones and, as a result, propagation conditions on this path are generally quite reliable. By locating a relay station at Tangier it is possible to transmit a reliable program from the United States to Tangier by shortwave—and then simultaneously relay this program from Tangier directly into the European or Near or Middle Eastern target areas—areas that cannot be consistently reached directly from the United States. By the use of appropriately located relay stations in this manner, the auroral zones can be by-passed and a technically effective transmission can be delivered to areas which are normally shielded from direct transmission from the United States.

The overseas relay system of the Voice of America consists of the following units; Tangier, North Africa; Munich, Germany; Salonika, Greece; Manila, Honolulu, Okinawa, San Fernando, Philippine Islands; Colombo, Ceylon; the U. S. Coast Guard Cutter "Courier" and by lease arrangement of the BBC of the facilities at Wooferton, England. This system consists of some 47 high-power transmitters—a system that has reduced the distance factor from transmitters to target areas that are optimum for the effective delivery of broadcasts on short, medium or long waves . . . whichever is popular in the selected target areas.

SEVEN U. S. FEEDER BASES

The link from the United States to the relay bases is referred to as the "feeder" link in the overall system. It consists of 30 high-power shortwave transmitters located at seven feeder bases in the United States. These transmitters employ high-gain directive transmitting antennae for the dual purpose of feeding programs from the studios of the Voice of America to the overseas relay bases—for simultaneous relay and also as a supplemental means of direct coverage during periods of favorable propagation conditions. These bases con-

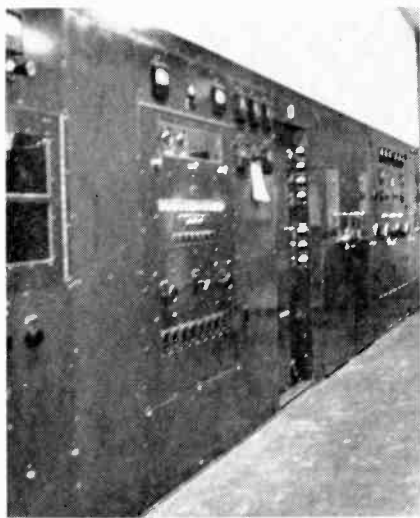
Technician-Engineer

sist of transmitters at Bound Brook, N. J.; Brentwood, L. I.; Schenectady, N. Y.; Wayne, N. J.; Bethany, Ohio; Dixon, Calif. and Delano, Calif.

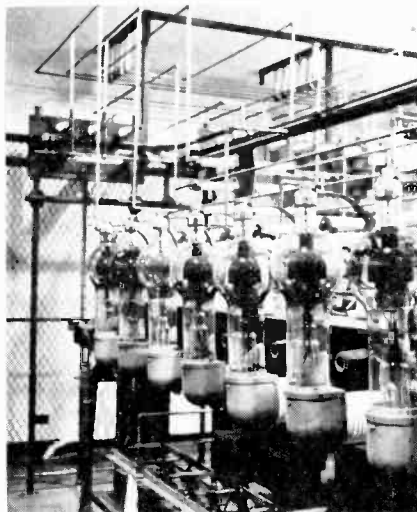
The efficiency of VOA facilities in the United States has been considerably increased by a special design of high-gain curtain antennae array. These antennae combine the broadband characteristics of a rhombic and the high gain of the conventional type of curtain array. The array is designed for broadband, low-angle radiation. The broadbanding of the array is accomplished by employing a plane reflector behind a four-

Southeastern Asia, the Far East, Siberia and South America. The Delano signals are a primary source for the relay stations at Honolulu, Manila, San Fernando and Okinawa.

The transmitter property is approximately a mile square and the transmission lines, towers and rhombic supports are most impressive sights. The casual visitor who has a smattering knowledge of technical information is also impressed by the enormity of the operation and the coordination of the entire staff at the plant. It is interesting as well as understandable that when all



A GENERAL VIEW of an operating panel of one of the 100 kw KCBR transmitters. There are five transmitters at the West Coast installation of Voice of America.



A THREE-PHASE mercury vapor rectifier bank for a 100 kw transmitter. This unit operates at the Delano, Calif., plant of VOA, operated by CBS under contract.



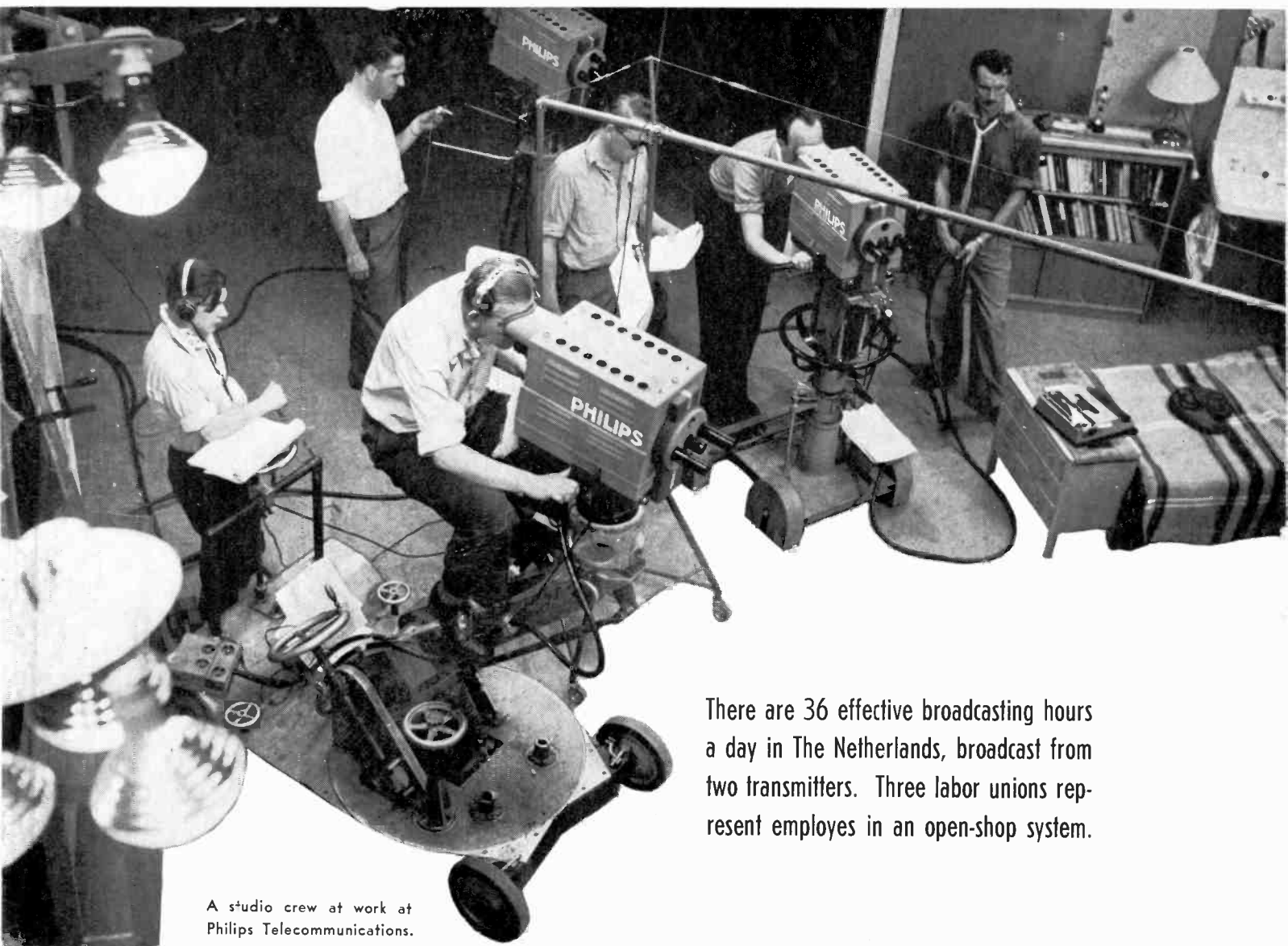
GENE GARRETT, KCBR engineer in charge; H. R. Guellotte, Director, Operations, CBS Radio; and Ted Denton, Technical Operations, CBS Radio, L.A.

tier, two-bay curtain array. The bandwidth of such a system permits use of a frequency range of about 1.5 to 1 with a standing wave ratio of less than 1.25 to 1. The low-angle radiation, which is centered around a vertical radiation angle of seven degrees is accomplished by placing the center of the array $1\frac{3}{4}$ wavelengths above ground. The complete antenna system consists of four individual arrays which are used on the 9-11, 11-15, 15-17 and 17-21 megacycle international broadcasting bands. The four arrays are supported as a single structure between appropriate towers. Field tests conducted with these arrays indicate that the antenna has a gain of 300 per cent—approximately 5 db—over some of the operating rhombics and that deep fading characteristics decreased approximately 50 per cent with the curtain system.

The pictures accompanying this story were taken at the Delano, Calif., plant, which is operated by CBS under contract with the USIA. One 200-kw, two 100-kw and two 50-kw transmitters are in operation at Delano. The antenna system includes nine rhombics and eight high-gain curtain arrays which are directed toward

five transmitters are operating the modulation peaks can be discerned on the line voltage meters. The ambient noise level is relatively low—considering the powers involved. Many single 50-kw standard broadcast transmitters are noisier than all five of the transmitters at Delano. The building itself is a model of “spit and polish” which would do credit to any organization. Soundproofing, reflected lighting and highly waxed floors contribute to comfort and to a feeling of pride on the part of the crew. Behind the panels copper, brass and aluminum reflect the filament lighting and the glow of mercury vapor reflectors. And behind the Iron and Bamboo curtains, listeners in many countries know the station by its identification—KCBR, Delano, Calif.

The pictures illustrating this article were all taken at the Delano, Calif., installation. We hope to show you pictures of other VOA facilities in later issues.



A studio crew at work at Philips Telecommunications.

There are 36 effective broadcasting hours a day in The Netherlands, broadcast from two transmitters. Three labor unions represent employees in an open-shop system.

BROADCASTING UNIONS IN HOLLAND

HOLLAND is a small country—not much larger than the states of Vermont, Connecticut, and Rhode Island combined. Under the Copenhagen Agreement, which allots broadcasting facilities in Europe, Holland is allowed only two AM frequencies (and two TV channels). The entire nation has to be served by two transmitters.

Because of sharp political and religious differences in the nation, there are eight broadcasting associations competing for broadcast time.

Approximately 1,800 people are employed by the eight associations. Most of them are members of three “officially recognized” unions—the NVV (Netherlands Federation of Labor Unions—*Nederlandse Verbond van Vakverenigingen*), the KAB (Roman Catholic Labor Movement—*Katholieke Arbeiders Beweging*), and the CNV (Christian National Trade Union in The Netherlands—*Christelijk National Vakverbond*).

The NVV is a member of the International Confederation of Free Trade Unions, the international organization to which the AFL and CIO also belong. KAB and CNV, meanwhile, are members of the International Christian Labor Union, which has headquarters in Brussels, Belgium.

The “closed shop” is unknown in The Netherlands. Employees are not obliged to join any labor union.

The three labor unions jointly signed collective contracts with five of the eight broadcasting associations. It is expected that in the near future similar contracts will be concluded with the three other broadcasting associations.

Members of the three forementioned labor unions are entitled to elect members for the “group councils,” whose duty it is to see to it that the provisions of the contracts between employers and employees are carried out as specified.

The Communist labor union in The Netherlands, the EVC (which is a member of the World Federation of Free Trade Unions in Vienna), has little or no following in Dutch radio circles.

In view of the relatively small number of employees working for the radio and television organizations, there is no separate organization to serve the broadcasting and television associations. Radio and TV personnel usually join the general unions.

Only three groups of employees have set up special unions. The musicians are organized in the *Nederlandse Toonkunstenaarsbond* (Netherlands Musicians League) NTB, which is a member of the NVV.

The 50 newsmen working for radio and television belong to the Dutch Journalist Guild, which is not a generally recognized union.

The actors, employed by the broadcasting and television associations are affiliated with the Federation of Dutch Actors.

The journalist and actors unions, as such, are not officially recognized and, consequently, cannot officially take part in discussions and meetings concerning the rights and duties of CAO's employers and employees.

There are no sponsors and no commercials in Netherlands radio, and, as yet, no commercial television either, although a proposal to allow TV sponsorship has been submitted to the Dutch parliament. The Dutch broadcasters explain their lack of sponsors this way:

"When radio and television in Holland are compared with broadcasting and TV in the United States, the question is frequently asked, 'Why don't you people have commercial television and radio?' and often in the same breath they add, 'Why do you follow that stuffy British system and not the American way?'"

"There are good reasons why the system in Holland is different from the American.

"In Holland the choice of programs is through necessity and not by intention limited to *two*. It is essential to keep this fact in mind when judging the differences between Dutch and American broadcasting. Holland has two AM radio frequencies and two TV channels compared with 20 and seven in the New York area alone. In addition American domestic stations do not have to compete with stations from abroad as foreign broadcasts on medium waves are not audible in the United States. In Holland, most European transmitters can be heard.

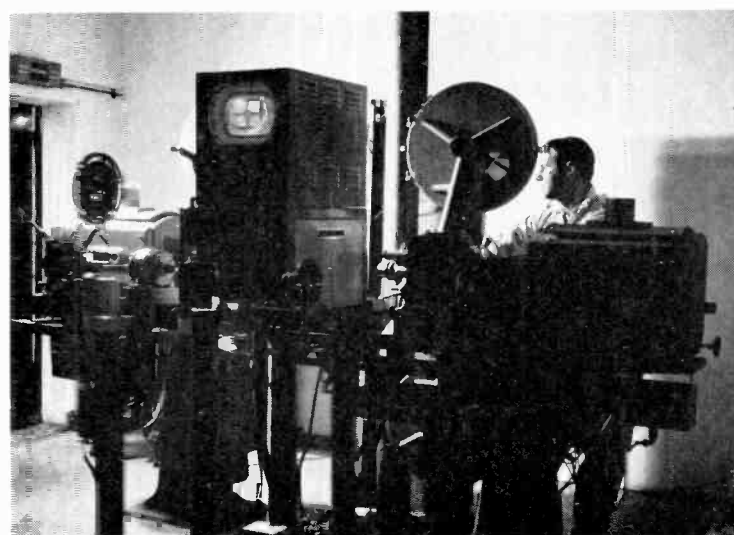
"Holland has only 36 effective broadcasting hours daily (from 6 a. m. till 12 p. m., on two transmitters). The entire population, both lowbrow and highbrow, has to be served with programs to their liking during these 36 hours. Imagine what would happen if advertisers were turned loose on this small allocation. Only a few advertisers would be able to buy time and there would be many disgruntled people among advertisers, sponsors, listeners and viewers.



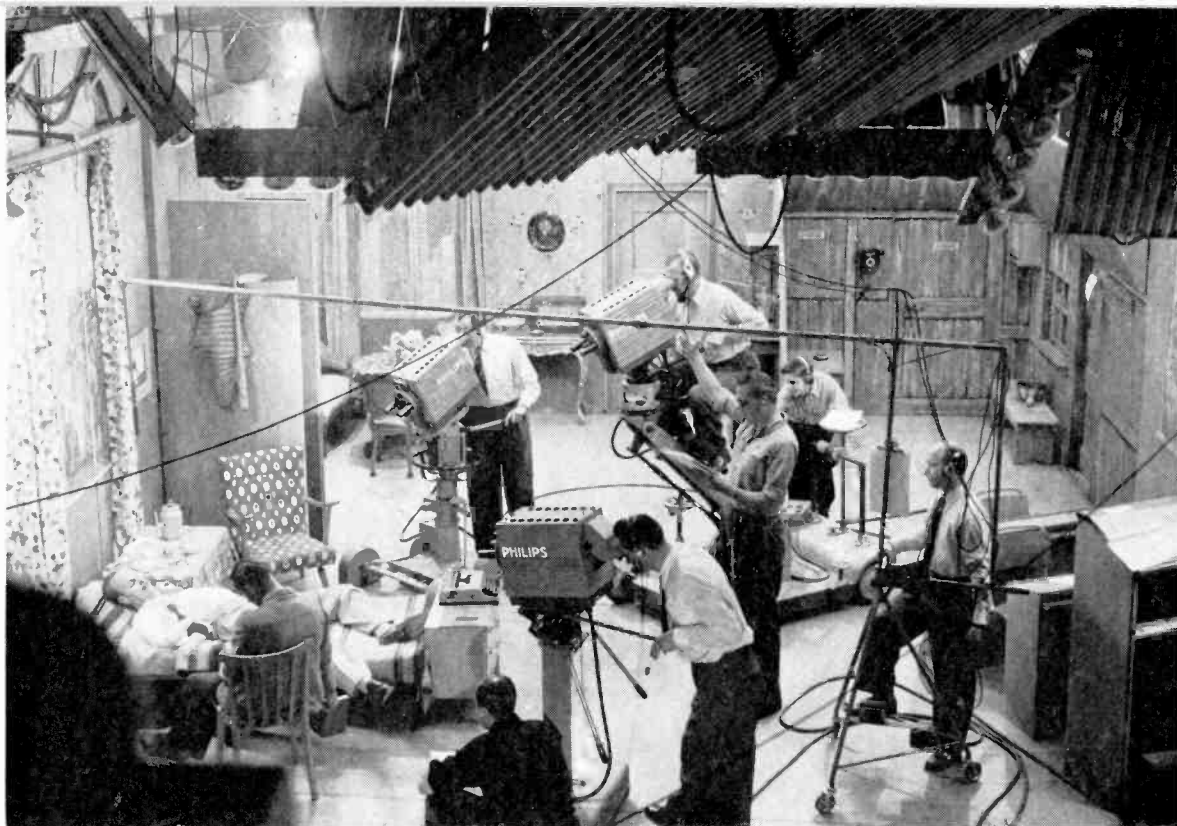
A Dutch producer working a show with members of his staff beside him. Note the woman engineer at right.



A Dutch technician checks a test pattern in the control room as operations begin for the day.



An old film camera which was in use by Philips Studios before the company's Irene Studio burned down.



Shooting a scene from a Dutch comedy, "The Education of a Footballer." Note the similarity to American equipment.

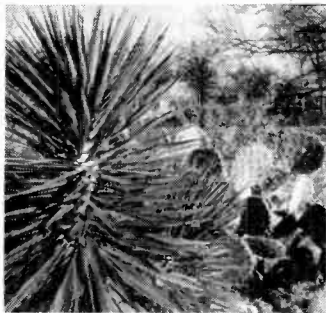
"But all this would be tolerated if such a system would improve broadcasting and if it would bring artists on the air which would otherwise not be heard. This, however, is not the case. Commercial broadcasting in Holland would appear overnight if it would improve the quality of the program (as it will in television). All available talent is engaged in broadcasting at fees higher than an artist can earn anywhere else in Holland. No worthwhile talent is left out; nobody is frozen out. For all practical purposes the present system is the best for a country like The Netherlands, and in some respects it even has advantages over the 'all-out commercialism' of the United States. It leads to more variety; more diversity. The artists are not the slaves of a system which requires a weekly program for at least 13 weeks or more. The artists do not have to produce something new every week; they can take their time. The present American system of the 13-week series, which even for the United States with its enormous wealth of talent may prove too costly, would be disastrous in a country with limited resources."

Sound broadcasting started in The Netherlands in September, 1919, the first country in Europe to start transmitting regularly. Like many other institutions the new medium in Holland was soon organized along religious and political lines. By the end of 1926, five private corporations held the broadcasting licenses—the same as today: AVRO (neutral), KRO (Catholic), NCRV (orthodox-Protestant), VARA (Socialist), VPRO (liberal Protestant). The corporations were financed by voluntary contributions from their members; each cor-

poration producing its own programs. After World War II the corporations set up a joint foundation called the *Nederlandse Radio Unie*, which organization maintains and makes available to all members—studios, technical equipment, transcription and music libraries, orchestras, etc. Member associations, however, retain individual rights in planning and producing their programs. The board of the *Nederlandse Radio Unie* consists of representatives of all corporations. Broadcasting licenses are granted by the government who supervises them through a permanent delegate of the Ministry of Education, Arts and Sciences.

Since 1945 the government has levied a tax to finance the entire broadcasting service. These fees amounting to 12 florin—per set per annum (a little more than \$3), bring a total of fl. 25,000,000 a year. This amount covers the maintenance of transmitters and meets the main part of the budgets of the *Nederlandse Radio Unie* and the broadcasting associations, who receive additional funds from the sale of weekly program guides and from voluntary subscriptions of their members. Through an agreement between the radio corporations and the newspapers, only skeleton broadcasting programs are printed in the press, making it necessary for the listener to subscribe to a program guide; as a result 65 per cent of the Dutch listeners subscribe to the program weeklies.

Background material for the above article was supplied by the Netherlands Information Service, New York City. Photos are from Philips Telecommunications Hilversum, Holland.



Last Call!

FOURTH ANNUAL PROGRESS MEETING

BAKER HOTEL, DALLAS, TEXAS • JUNE 17-18-19, 1955

IBEW LOCAL UNION NO. 1257, DALLAS, TEXAS

May 25, 1955

Dear Brothers:

Hope y'awl are plannin' to have one of yore men at the Progress Meetin'. Yore delegate should bring along his swim suit and some everyday duds, 'cause we want him to spend some time on the Lazy S F Ranch.

If y'awl would like to see "Kismet" at the State Fair Musicals on Thursday night or Saturday night, we suggest that you send now for tickets. Write to: Brother H. E. Chamberlain, 3248 Sheila Lane, Dallas, Tex. Prices are \$3.75, \$3.25, \$2.50 or \$1.50—add two-bits if you want tickets mailed to you, or we will hold them here for you.

Many of the ladies will want to see an informal style show at the Zodiac Room of Neiman Marcus at chow time on Saturday. Better drop us a card if you want to go—the only cost will be for chow consumed and you gotta eat at least 30¢ worth.

Right now, Cinerama Holiday—the second Cinerama production is not sold out and we think that tickets will be available. Baby sitters will be available. Takin' care of the kids will be no problem—Ma and Pa can go out and kick up their heels without worrying about their offspring.

Air Conditioners are on and we are pumpin' water and sand out of the Red River, to cool the place off. Y'awl come! The Friday afternoon session of the meetin' will be at the Ranch and we wantcha to have chow with us there on Friday evenin'. Y'hear?

Ol' Tex,
Local Union 1257

President Milne Elected To AFL Executive Council

J. Scott Milne, President of the International Brotherhood of Electrical Workers, was elected the 15th vice president of the American Federation of Labor at the recent spring session of the AFL Executive Council.



J. SCOTT MILNE

President Milne fills the vacancy created by the death of IBEW President Emeritus Daniel W. Tracy, earlier this year.

Brother Milne has a distinguished background in the IBEW. His work with the Brotherhood began in 1918 when he joined Local 125 in Portland, Oreg. Later he became Business Manager and financial secretary of that local. In 1929, he

became an international representative; in 1936, Vice President of the Ninth District; and in 1947, International Secretary.

Special Conventions Set To Facilitate Merger

Plans for the eventual merger of the AFL and CIO by the end of 1955 go into action during August.

On August 8, the AFL Executive Council will meet at the Conrad Hilton Hotel in Chicago. There, progress of merger talks to date will be assessed and plans for coming conventions formalized.

On August 11, a special convention of the American Federation of Labor will be held at the Conrad Hilton. This convention has been called for the sole purpose of amending the AFL constitution so that the next regular convention can be postponed from September 15 to December 1.

On August 12, a special conference of officers of national and international unions will be held in Chicago. This conference will consider the proposed constitution for the merged AFL-CIO, which is to come up for final approval at the December 1 convention in New York.

If that convention and a simultaneous CIO convention ratify the constitution, a joint convention of the merged organizations will open at the 71st Regiment Armory, 33rd Street and Park Avenue, New York City, December 5.

Our Respects

Just at press time, we heard of the untimely passing of George Heller, National Executive Secretary of AFTRA. To his family, his friends and his many trade union associates, our deepest sympathy. And to George, our last respects. May he rest in peace.

New Constitution Brings AFL-CIO Merger Closer

Early this month the AFL-CIO Unity Committee agreed on a constitution to govern the merged federation of America's two leading labor organizations. The constitution was presented to the AFL Executive Council and to the CIO Executive Committee, and both voiced tentative approval. (Final action on the constitution was to be taken by a convention of the merged organizations.)

In the main, the new constitution includes the basic provisions of the present AFL charter with a number of additional provisions. Concerning these, a joint statement by AFL President George Meany and CIO President Walter Reuther commented:

"This new constitution carries out implicitly the language and the spirit of the merger agreement which our joint unity committee signed on February 9.

"It recognizes the equal status of craft and industrial unions.

"It offers a closed-door policy to unions controlled or directed by Communists or other totalitarians.

"It recognizes that all workers, whatever their race, color, creed, or national origin, are entitled to share fully in the benefits of trade unionism.

"It provides effective remedies for keeping the new organization free of both corruption and totalitarianism, and for quick and effective penalties against unions which fail to measure up to the high ethical and moral standards to which the public has the right to expect of our affiliated organizations."

Three State Legislatures Facing Anti-Labor Bills

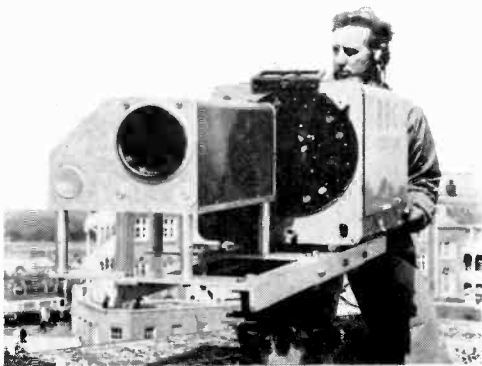
The legislatures of three states—Ohio, California, and Texas—have anti-labor legislation on their agendas.

In Ohio, pressure from Republican leaders brought about a last-minute reversal of an adverse committee vote on the Kile Bill, which is designed to place severe restrictions on political activities by unions and union members. Phil Hannah, secretary-treasurer of the Ohio State Federation of Labor, called the State Chamber of Commerce the real sponsor of the bill.

In California, AFL attempts to amend the state jurisdictional strike law got overwhelming support from the state assembly, which voted 56 to 11 to ban exploitation of the law by company unions. At the same time, the assembly pigeonholed legislation to increase the state minimum wage.

In Texas, the state legislature went into payless, overtime session to complete action on three anti-labor bills sponsored by Senator George Parkhouse. The worst of these measures would prohibit picketing by a union unless it represents a majority of all the employees of the establishment picketed—the joker being that there is no provision for determining the will of the majority.

TV DEVELOPMENTS IN GREAT BRITAIN



Equipped with a zoom lens, these two views show a BBC TV camera being used for the coverage of outdoor sports events. Lens magnifies smoothly to five times original sizes, the viewer seeing object being magnified apparently move toward him until entire screen is filled by subject.

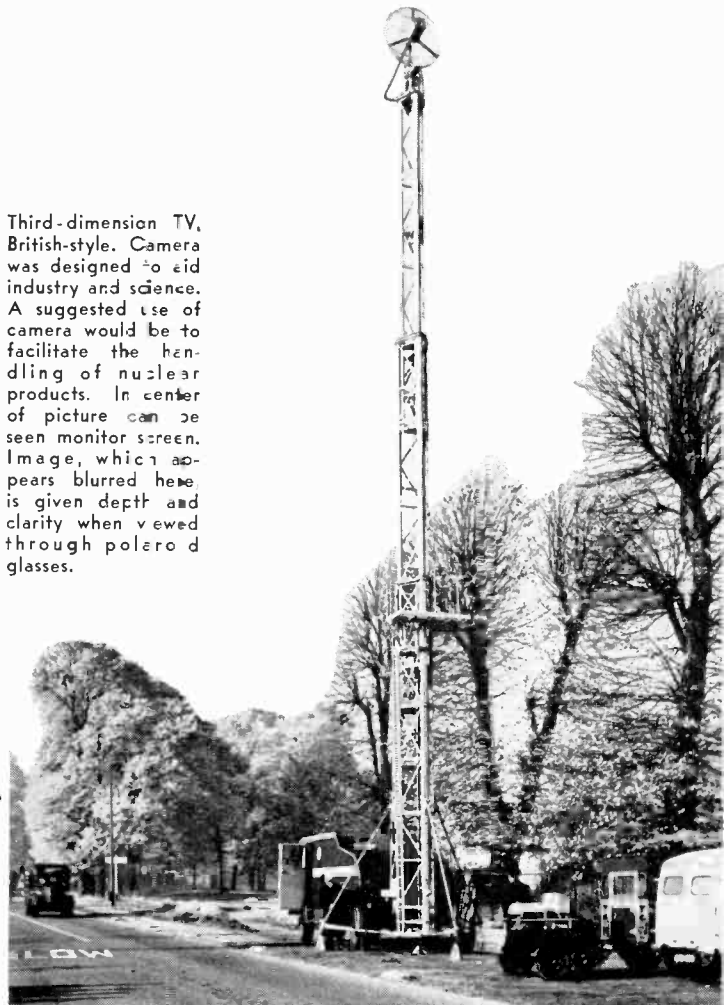


Like something straight out of Jules Verne is this special underwater television camera, which was developed by Engineer D. R. Coleman, standing beside his brainchild. Equipment will be used to hunt fortune in gold in ship sunk off New Zealand in 1886. A similar camera was used by British to locate Royal Navy submarine sunk in English Channel and also to locate and recover wreckage of Comet jetliner which crashed off Elba in Mediterranean.



Third-dimension TV, British-style. Camera was designed to aid industry and science. A suggested use of camera would be to facilitate the handling of nuclear products. In center of picture can be seen monitor screen. Image, which appears blurred here, is given depth and clarity when viewed through polero d glasses.

New BBC telescoping mast, the "giraffe," which can extend 60 feet, clearing obstructions that might block transmission or reception of signals. A system of hydraulic rams raise, elevate and extend novel mast. Topped by a four-foot paraboloid aerial which can be continuously rotated, mast is here seen set up beside an English roadside.





cornerstone ceremonies for the new AFL headquarters

Newsmen, cameramen, and technicians, line the stairs to the construction office to watch the ceremonies.

WIELDING a gold-plated trowel, and flanked by AFL President George Meany, with a silver-plated trowel, President Eisenhower applied mortar to the base of the new AFL Headquarters Building in Washington on April 30. As 2,000 persons watched. Meany and Ike, each holding honorary Bricklayer cards, spread the mortar well, and the cornerstone was lowered into place by Steve Dickinson, stone setter from Local 2, Stonemasons Union. Thus, with attendant ceremonies, the new "House of Labor" began moving upward into the Washington skyline.



ABOVE: AFL President Meany shakes hands with President Eisenhower, before a crowd of 2,000. The two leaders shared mortar-spreading duties.

LEFT: IBEW Officers Joe Keenan and J. Scott Milne beside the cornerstone.

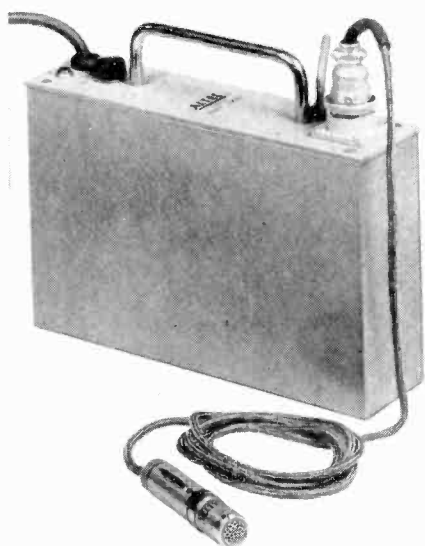
The \$3½-million eight-story building, located on 16th Street, at H, just across Lafayette Park from the White House, is expected to be completed in December in time to be occupied by the unified AFL and CIO. The steel framework has been

erected, and concrete is now being poured.

President Eisenhower, in a brief talk at the cornerstone ceremonies, said, "I certainly appreciate what the labor movement has done for the men and women of America."

He said that the AFL, "soon to become greater by its junction with another great organization will by that measure have still greater responsibilities in carrying out the kind of pledges that have been made by your leaders in the past, and I am sure are earnestly followed by them at this point. I am proud to be here and participate in this ceremony."

Meany said the building is "symbolic of the tremendous progress won by the workers of this country in the past three-quarters of a century, a building where the trade union movement will carry on its endeavors for even greater advances by American wage earners in the years to come."



THE M16 MICROPHONE system for cardiovascular studies, popularly called the "heart microphone," consists of a type 21BR-150 microphone, a 165A base, a P-525A power supply, and a 2A microphone attachment.

REPRESENTATIVES of Altec Lansing Corporation direct a demonstration of the Altec M-16 Heart Microphone System for the benefit of an assemblage of physicians at St. Joseph's Hospital, Far Rockaway, N. Y. Other equipment necessary for this demonstration included the speakers, visible at left rear, amplifier, Ampex tape recorder, an oscilloscope, and speaker at right.

electronics probes the human heart

THE ever-expanding field of medical electronics has already brought relief to the deaf through hearing aids, therapeutic shock treatments for the insane, and a myriad selection of research and diagnostic instruments. Now it adds a "heart microphone," a dramatic new research, teaching, and clinical aid which amplifies the sounds of the human heart.

The "heart microphone" was recently demonstrated to cardiologists and members of the press in Los Angeles and New York. In addition, it has been shown to medical groups such as the doctors at St. Joseph's Hospitals, Far Rockaway, N. Y., shown in the photograph at right.

Already in use at Johns Hopkins Hospital, Baltimore, and at Georgetown University in Washington, D. C., the specialized microphone was developed by the Altec Lansing Corporation of Beverly Hills, Calif.

The new device consists of the microphone system shown in the picture above, plus a Rieger Bowles stethoscope head—a standard medical unit already in medical supply houses. The Rieger Bowles head is a conventional bell-shaped, rubber-tipped stethoscope head plus a diaphragm, which slips onto the Altec mike.

In reality a super-sensitive ear, the "heart microphone" (Altec Lansing M-16) is applied to the chest of a patient. Heart sounds are picked up by the device and transferred to tape by means of a high quality magnetic tape recorder. A speaker enclosure and speaker are employed to amplify the sounds picked up.



Putting the sounds on tape has three purposes. It keeps a permanent record of the heart condition of a patient for a practicing physician. Abnormal conditions of the heart, meanwhile, can be played back in medical school classes as a teaching aid or used in medical research work.

A technique of listening to the taped results of the heart "listening" has been developed for teaching purposes. This technique consists of having the listener hold a clinical stethoscope approximately two feet from the loudspeaker. This method conveys to the listener a transition between the heart sounds ordinarily heard with a conventional clinical stethoscope as contrasted with the sounds heard with the electronic stethoscope.

Technical NOTES

Transistor Tester

Sylvania Electric Products Inc. announced in March the development of a new test instrument expected to lead to improved techniques in the production of transistors.

The new instrument, known as a "radio frequency bridge," was described by its co-designers, Anthony Hlavacek and Ge Yao Chu, engineers at Sylvania's Electronics Division transistor laboratory in Ipswich, Mass., at the national convention here of the Institute of Radio Engineers.

The frequency bridge, the engineers reported, is utilized specifically to measure resistance in a junction-type transistor.

Messrs. Hlavacek and Chu said that as a final check in the production process, the frequency bridge makes it possible to determine whether a transistor meets certain necessary performance standards which heretofore could not be measured and could not be determined until the transistor had been applied directly to a circuit.

While the instrument is being used to test only certain types of transistors—it is being used currently in the production of Sylvania high frequency transistors—the engineers stated the radio frequency bridge is expected to lead to valuable discoveries in the techniques of production of all types of transistors.

Because the transistor is a relatively new device, manufacturing techniques are, in some phases, still in the development stage. As these techniques approach optimum, Messrs. Hlavacek and Chu said, transistor performance will improve even beyond today's high standards.

Operation View

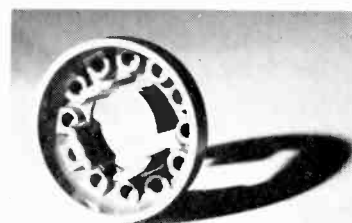
In a demonstration of its effectiveness as a medium for teaching surgical practices, the RCA "TV Eye" closed-circuit television system was recently used successfully to project intimate details of delicate eye and ear operations to medical observers outside of the operating room.

The demonstration was held at the Eye and Ear Hospital of Pittsburgh, Pa., as a highlight of the recent joint meeting of the Pennsylvania Academy of Ophthal-

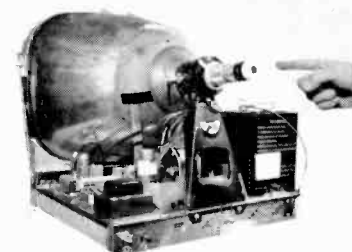
mology and Otolaryngology and the hospital's Annual Mid-Winter Clinical.

The compact "TV Eye" camera, which weighs less than five pounds, was mounted in the operating room and connected by closed-circuit to standard home television receivers in the hospital auditorium, one floor away. A sound system enabled the surgeons to provide a running commentary with the televised operations, which were seen and heard by approximately 100 doctors.

A close-up of Sylvania's new "Pin Cushion" (a plastic base protective cap) for TV picture tubes.



AT LEFT, hand points to "Pin Cushion" in place on television picture tube. The cap is said to reduce accidental damage to base pins on picture tubes.



Picture Tube Cap

The Sylvania "Pin Cushion," a new plastic protective cap, which fits over the base pins of a television picture tube, and which has been found to reduce accidental damage to base pins on TV picture tubes, has been announced by Sylvania Electric Products Inc.

These new "Pin Cushions" are made of plastic, are light weight, durable, easy to handle, and fit snugly on picture tube bases. The caps prevent bent or broken pins as the base pins are kept in perfect alignment, especially when TV tubes are being shipped. In addition, the cap keeps the pins clean, thus assuring maximum electrical contact, and the "Pin Cushion" makes it easier to slide the ion trap magnet over the tube base, eliminating the danger of bent pins.

Engineers' Catalog

Altec Lansing Corporation has just issued an engineering catalog that will be of interest to professional sound equipment users. This catalog, the first of its type ever issued, contains complete technical data on all Altec engineering sound products. The 36-page catalog covers AM-FM tuners, transcription reproduction arms, 12 different broadcast, public address and scientific microphones, more than 20 amplifiers and preamplifiers, power supplies, control consoles, 19 different speakers, horns, cabinets, and matching transformers.

Altec points out that the catalog items, many of them available for the first time, are of sufficient scope to provide sound systems of any size and that it is the first time such a complete catalog has been available to the industry.

The new catalog is available to all professional users without charge from authorized Altec Lansing Engineering Sound Contractors and from Altec Lansing Corporation at 9356 Santa Monica Blvd., Beverly Hills, Calif., or 161 Sixth Ave., New York 13, N. Y.

Cathode-Ray Tube

A new direct-viewing 5-inch cathode-ray tube designed for use as a view-finder on portable TV cameras has been announced by the Tube Division, Radio Corporation of America. The tube (RCA-5AYP4) provides a $3\frac{3}{8}$ inch by $2\frac{1}{2}$ inch image of the televised scene.

Focused electrostatically and deflected magnetically, the 5AYP4 has an electron gun designed to provide high resolution and uniform focus over the entire picture area.

The face of the new tube is practically flat and has an aluminized white fluorescent screen that not only improves picture contrast and brightness but also eliminates the need for an ion-trap magnet. An external conductive coating on the tube, combined with the internal conductive coating, forms a supplementary filter capacitor.

Maximum design-center rating for the ultor of the RCA-5AYP4 is 10,000 volts and for the focusing electrode 1500 volts.

Transistor Manual

A new manual of practical applications of junction transistors, entitled "28 Uses for Junction Transistors," has just been issued by Sylvania Electric Products Inc.

The new 48-page booklet of practical transistor circuits has been prepared from Sylvania laboratory data accumulated from tests of many devices. Although the booklet's primary audience is the experimenter and the electronics hobbyist, it also contains many items of interest to engineers and technicians.

The manual has held theory down to a minimum and only essential junction transistor material is included.

However, various bibliographies of more detailed transistor theory are included in the pages.

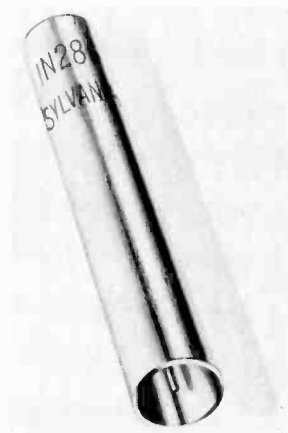
The contents of the booklet are divided into five chapters: Elementary Transistor Theory, Transistorized Amplifiers, Transistorized Oscillators, Transistorized Control Devices, and Transistorized Instruments. It is profusely illustrated with charts and diagrams.

Each copy is priced at 25 cents and can be obtained by writing to Sylvania Electric Products Inc., 1100 Main Street, Buffalo 9, N. Y.

Silicon Diode

A new silicon crystal diode, the 1N286, a broad-band, coaxial, point-contact type, has been announced by E. H. Ulm, product sales manager of the Electronics Division, Sylvania Electric Products Inc.

The new diode is designed for use as a crystal mixer and its unique internal geometry makes it possible to cover the band of frequencies from 10,000 to 20,000 Mc. This is the



The 1N286 Silicon Diode.

only product of its type now available.

With the crystal holder made in WR-75 wave guide the band of frequencies from 10,000 to 15,000 Mc can be covered and with the crystal holder made in WR-51 wave guide the band of frequencies from 15,000 to 22,000 Mc can be covered.

Because of its broad-band characteristics, the Type 1N286 is particularly useful in such applications as tunable frequency radar systems and countermeasure devices.

First in Auto Radios

Philco Corporation demonstrated a completely tubeless, transistorized automobile radio on April 27.

The new set, according to its manufacturer, employs 11 transistors, each smaller than a pencil eraser, to completely replace all the electron tubes found in a standard car radio. Also done away with are such items as the power-transformer, rectifier and vibrator, reducing greatly the weight and size of the new set, in comparison with existing auto radios.

Philco, who is introducing the new radio in Chrysler Corporation's Chrysler and Imperial lines of cars, claims the set requires less than one-tenth of the battery power consumed by standard auto radios.

Station Breaks



More of the Same

It sounded like the same old "stuck" record this month as spokesmen for the nation's two biggest business groups — the U. S. Chamber of Commerce and the National Association of Manufacturers — testified before a Senate Labor subcommittee against "any" increase in the minimum wage under the Federal Wage-Hour Act.

Under questioning by Senator Paul Douglas (Dem., Ill.) the NAM's witness—Thomas O. Moore, a North Carolina knitting plant operator—said he was against any minimum wage, no matter how low.

Thus, the NAM went on record as opposing even President Eisenhower's modest 90-cent minimum wage. Organized labor advocates a legal minimum of \$1.25 an hour as against the present "floor" of 75 cents.

The C. of C. spokesman, Dr. Emerson P. Schmidt, its director of economic research, also opposed any hike in the minimum wage. Thus, both organizations were repeating the stand they took ever since a minimum wage "floor" was first proposed. They opposed the 25-cent minimum established in 1938 and every increase thereafter.—From *Labor*, The Railroad Workers Weekly.

Curtain Comment

The world generally attributes the invention of radio to Guglielmo Marconi, the Italian scientist.

But Moscow radio said on May 6 the Soviet Union will celebrate tomorrow as the 60th anniversary of the invention of radio by "the great Russian scientist Alexander Popov."

Color Prediction

Color television sets will outsell black and white receivers next year, Brig. Gen. David Sarnoff, chairman of the Board of the Radio Corporation of America, predicted recently.

Sarnoff told RCA's annual stockholders meeting that production of two new TV receivers will begin this week at the company's Bloomington, Ind., plant. One will sell for \$795, he said, and the other for \$895.

RCA also is expanding its TV tube manufacturing center at Lancaster, Pa., to make more than 30,000 color tubes a month, he said.

Sarnoff said the RCA "team" is aiming for sales totaling \$1,000,000,000 this year.

WXYZ-TV Boost

A two-year program to achieve maximum transmitting power by WXYZ-TV Detroit, on ch. 7, reportedly was climaxed last month with the final installation of super power equipment, including a 50 kw transmitter. The station at that time was due to boost its power to the maximum 316 kw video, 158 kw audio.

The power increase involved the installation of approximately \$250,000 worth of equipment, James G. Riddell, president, said. The change also makes it possible for the station to transmit color programs, Mr. Riddell added.

About Picketing

The Oregon Labor Relations Act contains a provision which prohibits picketing for organizational purposes if the Union involved is not recognized or certified as the bargaining agent.

The State Supreme Court recently held that this prohibition would outlaw picketing which had a lawful purpose as well as picketing which might have an unlawful objective.

Accordingly, such a sweeping restriction abridges the right of free speech guaranteed by the Fourteenth Amendment to the U. S. Constitution.

The Price Index

As a service to our readers, we begin publication, this issue, the latest consumer price index as reported by the Bureau of Labor Statistics. Just below this statistic we shall list the price index for a year ago.

Our purpose in doing this is to give local business agents and officers comparative figures to use in their negotiations and in their contract and wage considerations. These statistics offer a quick comparison for the determination of wage needs today as compared to those a year ago. The current statistics are:

April 15, 1955—114.3.

One Year Ago—114.6.

Technician-Engineer

ALEXANDER BROWDY
1962 STEARNS DR.
LOS ANGELES 34 CALIF
65 BN