

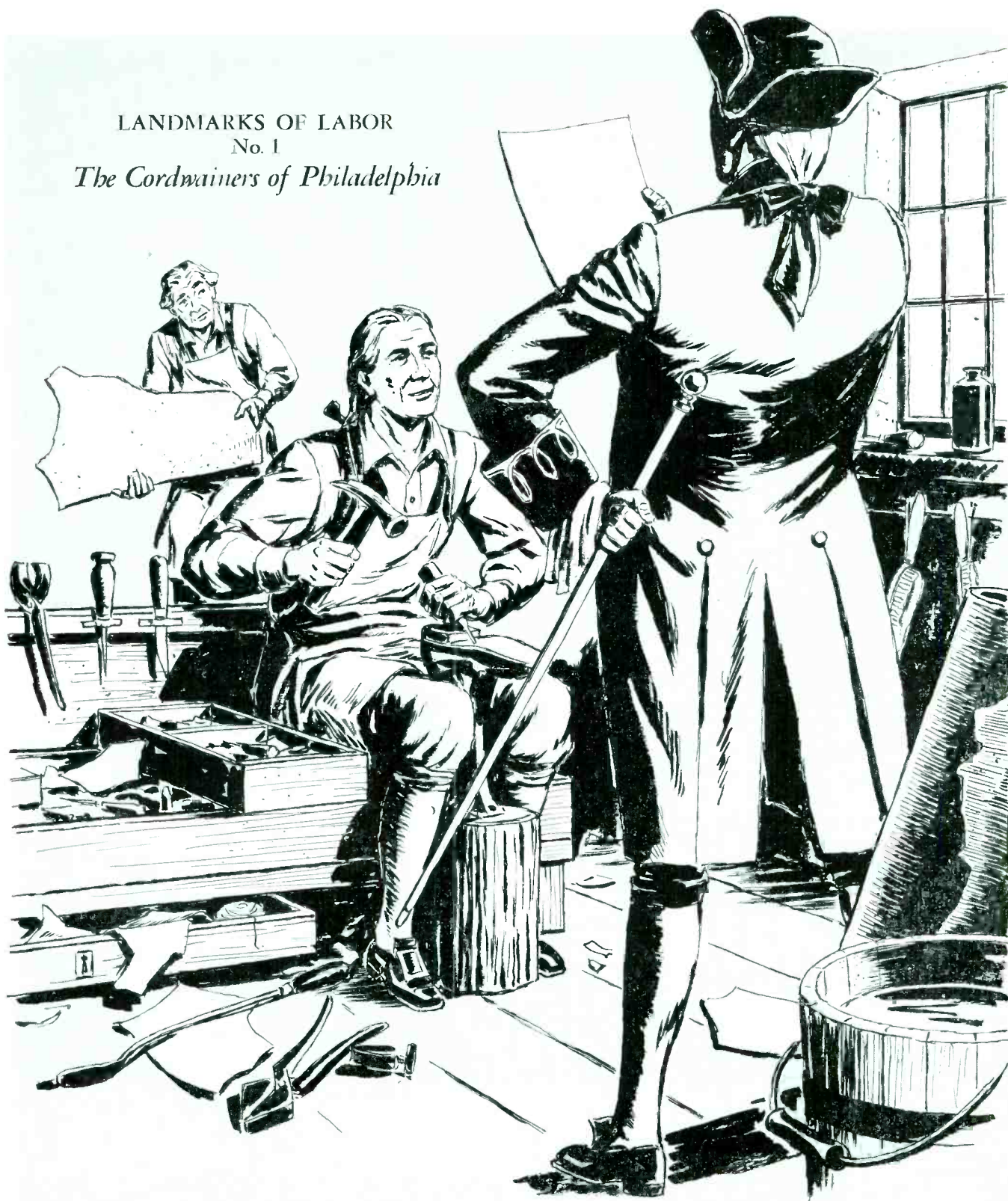
TECHNICIAN ENGINEER

APRIL, 1959

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

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS — AFL-CIO

LANDMARKS OF LABOR
No. 1
The Cordwainers of Philadelphia



The Cordwainers (shoemakers) of Philadelphia deserve strong recognition in the long story of working people to better their lot. The cordwainers had the first closed shop of workers and they were in the early days of the 19th century the target for a number of conspiracy cases. Court action under conspiracy laws was

used as a weapon with which to fight early efforts of organization and the resistance of the cordwainers as well as their foresight in developing procedures which were later to prove basic to labor's progress give ample proof to a claim in behalf of the cordwainers that they did establish a real landmark for labor.

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The INTERNATIONAL BROTHERHOOD of ELECTRICAL WORKERS

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... the cover

Gerald King-Ellison, a member of Local 292, Minneapolis, operates a radar weather display console at WCCO-TV. The unit is part of a Bendix radar system operating on the C band (5400 mc) which is designed to enhance the video presentation of weather reports by television stations. Approximately a dozen stations across the country are using radar for up-to-the-minute reports on the weather. Basically the system is a standard aircraft weather radar, except for the fact that the five-inch PPI screens for airport use have been replaced with 12-inch screens. For more on radar at WCCO-TV turn to Page 4.

commentary

How consistent is it for a state to forbid workers from having the union shop and accompanying dues check-offs—and at the same time impose a 100 per cent tax “check-off” of money to support private industry or farm groups?

That situation has existed in Iowa for a number of years. And Iowa’s Governor Herschel C. Loveless maintains it isn’t consistent at all. . . . Loveless has now spelled out what some of these special-interest Iowa taxes are. One law, he said, requires “the collection of a tax of one cent per pound of butter-fat from May 1 through June 30 each year, with the proceeds earmarked for expenditure by the Iowa Dairy Industry Commission in the promotion of the dairy industry in this state.

“For all practical purposes, this is a straight check-off operation with the State collecting the tax and providing the funds therefrom for use by a private industry group,” the governor noted, “although the members of the Dairy Industry Commission are in part ex officio and in part appointed by the Secretary of Agriculture.” And now the state’s beef cattle industry is seeking the same “compulsory check-off system” of state-collected “dues,” Loveless added.

—Labor Newspaper.

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 1958 figures: February, 1959—123.7; February, 1958—122.5.



Minneapolis Members Add Radarscope Picture to The Daily Weather Map

By BERNARD J. RENK

LOCAL UNION 292, IBEW Technicians, now find the study of meteorology an interesting challenge for intelligent interpretation of a new tool in Broadcasting.

A few radio and television stations (less than 12) are now using a new approach to weather reporting. Here at WCCO-TV, Minneapolis and St. Paul, a Bendix weather radar system operating in the "C" band (5400 mc) now lends new impetus to the weather reports.

Basically, the system is a standard aircraft weather radar. However, the five-inch PPI indicators normally used in aircraft installations have been replaced with a console-type, 12-inch PPI unit. The radome which is mounted atop the Foshay Tower (443 feet above ground level) encloses a 30-inch reflector and antenna, with a gain of 30 db. With a transmitter peak power of 100 kw, this amounts to almost 100,000 kw radiated peak power on the nose of the beam.

The transmitter-receiver, synchronizer, amplifier, and power supply are contained under the roof of the building and may be serviced regardless of weather conditions. The primary power source is derived from a 400-cycle motor generator operated from a standard 220 three-phase system. Two 12-inch PPI indicator units and control unit are located on the 28th-floor TV transmitter location. A "Range-Marker" switch on each indicator simultaneously selects the desired operating range



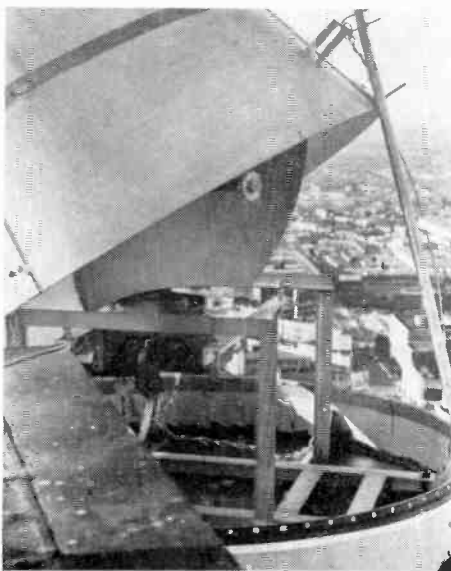
ABOVE: Gerald King-Ellison checks the voltages on the transmitter-receiver unit used in radar weathercasting. The Synchro-power supply unit is on the right.

BELOW: IBEW Engineer Stan Allison adjusting a shadow box he designed for camera pickup of the radar indicator. The camera, scope, and shadow box all fit neatly on a table top.



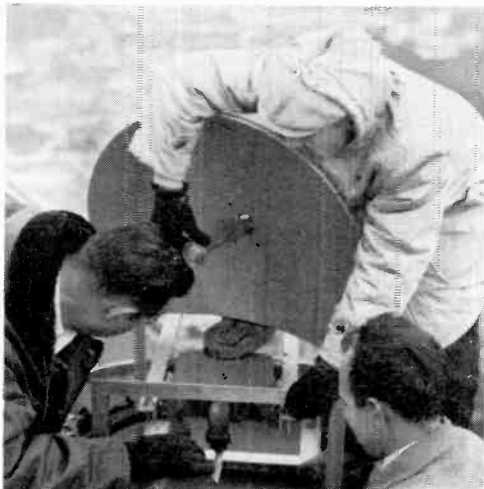
and its associated range marks. Three ranges are available: 150, 50 and 20 nautical miles.

For transmission of the Radar indicator information to the studio weather reporter and for on the air use, one PPI unit is scanned by a GE Vidicon camera equipped with a newly developed Machlett ML7351 long-persistence vidicon tube. A transistor video amplifier "white-clips" the vidicon channel output which is then fed to the studio master control. At the studio, a map to match the scanning range of the PPI display can then be "supered" over the vidicon output or a transparent map overlay can be inserted in front of the PPI indicator for each range.



ABOVE: The radome atop Foshay Tower, lifted to expose the radar antenna which picks up the local weather picture.

BELOW: Checking WCCO-TV's radar antenna are IBEW members Bernie Renk, Al Gensch, and Bill Baeten.



April, 1959

New York Writer Reminds: 'Unemployment is People'

Statistics on unemployment are cold and lifeless. The figure on how many workers are unemployed tells nothing of the real-life story of hardship and worry behind the figure.

New York Times reporters took a look at the human side of unemployment in high-unemployment states and their reports were summed up by *Times* Reporter A. H. Raskin who wrote:

"Unemployment is people—the individual hardships and heartache of 4,749,000 Americans, willing and able to work but unable to find suitable jobs."

The *Times* survey showed that unemployment has remained high in New York, New Jersey, Pennsylvania, West Virginia and Michigan despite a pickup in business. The *Times* survey did not include Ohio.

"Puzzlement is more apparent than anger in the attitude of men and women who have tramped the streets, month after weary month, with nothing to show for their efforts but holes in their shoes and a growing pile of debts," the *Times* stated.

The story noted that what "bears most raspingly on today's jobless is the sense of uselessness that comes with being unwanted and unneeded in the world's richest and most productive nation."

We invite the attention of those who consistently fight more liberal unemployment compensation with the lie that decent compensation encourages loafing, to the following sentence in the *Times* story:

"Confronted with the necessity of going on relief, most workers will grab a job at half or less than the standard they used to enjoy."

Million New Members Won By AFL-CIO Affiliates

AFL-CIO Organization Director John Livingston reported at the AFL-CIO Executive Council meeting that more than 1,000,000 members have come into AFL-CIO unions during the past three years.

AFL-CIO Unions have won 7,344 National Labor Relations Board elections involving 730,569 workers since January 1956.

Livingston said the total came to more than one million adding railroad and airline organizing and new members joining where they are not subject to the Taft-Hartley Act.

American Bakery and Confectionery Workers now has a total membership of 78,400. Also a growing majority of the 130,000 members who made up the expelled Bakery & Confectionery Workers.

There are more requests for organizing assistance than at any time since the merger despite McClellan Committee hearings, Livingston said.

Picketing and Boycott of Alabama Station

Ruled Legal by NLRB; Precedent Established

The National Labor Relations Board ruled early this month that picketing and consumer boycotts by a minority union are legal after all—if the union carefully states the purpose of its acts other than to force recognition by an employer.

Previously, the board has held these actions unlawful if directed against a company whose employees have rejected the union, and if the purpose is to force the employer to recognize the union.

But if the union states other purposes, the board held in a new case, picketing and consumer appeals are legal even if they produce the same economic pinch on the employer.

In the new case WKRG, a radio-television station in Mobile, Ala., brought charges against Local Union 1264 of the International Brotherhood of Electrical Workers after a series of events that allegedly culminated in the economic pressure against the station. The station can appeal the NLRB's decision to the U. S. Circuit Court of Appeals.

Gordon M. Freeman, International President, welcomed the decision of the Board as a partial withdrawal from its position in the Curtis Brothers and Alloy Manufacturing Company cases. President Freeman said he thought Member Fanning's concurrence in this case (based only upon his previous dissents, stating there should be a direct reversal by the Board of the Curtis Brothers and Alloy Manufacturing Company doctrines) was the preferable view.

The United States Court of Appeals for the Ninth Circuit has recently reversed the Board's decision in the Alloy Manufacturing Company case, and the United States Court of Appeals for the District of Columbia Circuit has recently reversed the Board's decision in the Curtis Brothers Company case.

So that our members may have the full Board statement in its decision on the WKRG-TV Case, we reprint

it below, in full. (For further background on the case see pp. 3-5 of the Sept., 1958, issue of the *TECHNICIAN-ENGINEER*):

D-686
Mobile, Alabama

123 NLRB No. 55
UNITED STATES OF AMERICA
BEFORE THE NATIONAL LABOR RELATIONS BOARD
RADIO BROADCAST TECHNICIANS,
LOCAL UNION NO. 1264 OF THE
INTERNATIONAL BROTHERHOOD
OF ELECTRICAL WORKERS, AFL-CIO,
and J. C. BURNS, ITS BUSINESS AGENT
and Case No. 15-CB-223
WKRG-TV, INC.

DECISION AND ORDER

On August 21, 1958, Trial Examiner William F. Scharnikow issued his Intermediate Report in the above-entitled proceeding, finding that the Respondents had not engaged in any unfair labor practice and recommending that the complaint be dismissed in its entirety, as set forth in the copy of the Intermediate Report attached hereto. Thereafter, the General Counsel and the charging party filed exceptions to the Intermediate Report and supporting briefs. The Respondents filed a brief in support of the Intermediate Report.¹

Pursuant to the provisions of Section 3 (b) of the National Labor Relations Act, the Board has delegated its powers in connection with this case to a three-member panel.

The Board has reviewed the rulings of the Trial Examiner made at the hearing and finds that no prejudicial error was committed. The rulings are hereby affirmed. The Board has considered the Intermediate Report, the exceptions and briefs, and the entire record in these proceedings, and hereby adopts the findings, conclusions and recommendations of the Trial Examiner.²

In agreement with the Trial Examiner, we find that the General Counsel has failed to establish by a preponderance of the credible evidence that the Respondents have violated Section 8 (b) (1) (A) of the Act.³

ORDER

IT IS HEREBY ORDERED that the complaint filed herein against Radio Broadcast Technicians, Local Union No. 1264 of the International Brotherhood of Electrical Workers, AFL-CIO, and J. C. Burns, its business agent be, and it hereby is, dismissed.

Dated, Washington, D. C. PHILIP RAY RODGERS, Member,
JOSEPH ALTON JENKINS, Member,
JOHN H. FANNING, Member,
NATIONAL LABOR RELATIONS BOARD.

¹ The charging party requested oral argument. The request is hereby denied as the record, exceptions, and briefs, adequately present the issues and positions of the parties.

² Member Fanning concurs in the result reached herein only for the reasons expressed in his dissenting opinions in *Andrew Brown Company*, 120 NLRB No. 89 and *Machinery Overhaul Company, Inc.*, 121 NLRB No. 153.

³ The charging party asserts that the Trial Examiner was biased and prejudiced primarily because he resolved factual conflicts in favor of the Respondents' witnesses and against the General Counsel's witnesses. We find this contention to be without merit. "... [T]otal rejection of an opposed view cannot of itself impugn the integrity or competence of a trier of fact." *NLRB v. Pittsburgh Steamship Co.*, 337 U. S. 656, 659 (1949). Moreover, in accord with the Board's established policy not to overrule a trial examiner's resolutions as to credibility except where the clear preponderance of all the relevant evidence convinces it that the resolutions were incorrect, we find, contrary to the General Counsel's and charging party's contention, no basis for disturbing the Trial Examiner's credibility findings. *Standard Dry Wall Products, Inc.*, 91 NLRB 544, enf'd 188 F. 2d 362 (C. A. 1).



A view of the platform at the 5th National Legislative Conference of the AFL-CIO Building Trades Department.

Building Tradesmen Call for Fair Play

SOME 3,500 building tradesmen—representing the 3 million members of unions affiliated with the AFL-CIO Building and Construction Trades Department—descended on Capitol Hill recently to urge Congress to “play fair” with labor’s legislative program.

The “fair play” appeal was voiced by Richard J. Gray, department president, as the Fifth National Legislative Conference opened at the Sheraton-Park Hotel in Washington, March 2.

Gray asked that Congress pass the Kennedy-Ervin labor-management bill “without dismemberment,” noting that there is a move on to delete from the measure provisions helpful to building trades unions.

“This is our greatest danger,” Gray warned the union officials who came from every state in the nation. “We all know that this is the year of decision on labor legislation. If the building trades provisions are junked at this late date, after the Senate has approved them by overwhelming margins on two previous occasions, it may take years to revive interest in them.

“All we ask is for Congress to play fair with us. If there are any valid arguments against the building trades provisions, we will be glad to answer them. But we cannot accept further postponement of justice, merely for the sake of postponement.”

Delegates spent the first day of the four-day con-

ference listening to addresses by AFL-CIO President George Meany, Sen. John F. Kennedy (D., Mass.), five other Senators, three Representatives, both Republican and Democratic, and three labor spokesmen.

The second and third days of the conference were spent by the delegates making personal calls on their Senators and Congressmen, urging support for the legislative program. On the fourth day delegates made reports on their visits.

Meany told the delegates that the building trades “legislative program is a practical one. It calls for making up a deficit in this nation’s social and economic life. It calls for more schools, for more houses, for more airports and more and better roads.”

Then he stressed what he called the “indirect effect of a large construction program.” “What effect does it



IBEW President Gordon Freeman with O. W. Blaier, vice president of the Carpenters, on the conference platform.

have on lumber, on steel, on textiles, on local banks, on local merchants?” he asked.

“That is the thing that must be taken into consideration. Not just the direct effect of the money spent on construction itself.

“This program means millions of jobs, not only for the building trades, but for others. And this program will give a definite lift to the entire nation’s economy at a time when it is sadly in need of a lift.”

Meany, once again, left no doubt where the AFL-CIO stands in regard to largely non-controversial provisions of the Kennedy-Ervin Bill contained in Title VI, saying:

“Those opposed to us may as well know that under our American system we have a right to use whatever influence we have on members of Congress, and we make no apology for that. And if Title VI is defeated from the Kennedy-Ervin Bill, we are going to use that influence to defeat the Kennedy-Ervin Bill.”

Kennedy, in his address to the delegates, said that the U. S. Chamber of Commerce, the National Association of Manufacturers and the American Retail Federa-

tion are "hopelessly irresponsible" in their opposition to the Kennedy-Ervin Bill.

Other conference speakers included Senators John Sherman Cooper (R., Ky.), Pat McNamara (D., Mich.), Hubert H. Humphrey (D., Minn.), Thomas H. Kuchel (R., Calif.), A. S. "Mike" Monroney (D., Okla.). Among the Congressmen were Representatives John E. Fogarty (D., R. I.), Lee Metcalf (D., Mont.), and Albert Rains (D., Ala.).

• Delegates Specify Program

The following is the six-point program which the 3,500 delegates, who attended the four-day National Legislative Conference of the Building and Construction Trades Department, urged their Senators and Congressmen to support:

1. Enactment of the Kennedy-Ervin Bill (S. 505), including its specific provisions for the relief of building trades unions.

2. Comprehensive corrective amendments to the Taft-Hartley Act, including repeal of Section 14(b), which permits State "Right to Work" laws.

3. Modernize and broaden scope of Davis-Bacon (prevailing wage) Act.

4. Obtain passage of a bold and serviceable housing program which would result in the building of at least two million new homes each year, eliminate slums and redevelop slum areas. (In general, the Department supports the Sparkman Bill (S. 57) and the Rains Bill (H. R. 2357).

5. Win adoption of Airport Modernization legislation which would extend the Federal Airport Act for five years, providing \$100 million in Federal funds each year to be matched by local funds. (The Department endorses the Monroney Bill (S. 1) and the Harris Bill, (H. R. 1011).

6. To meet the educational crisis, obtain passage of legislation which would provide Federal-State financial aid totaling \$11.4 million in the first four years to build new schools and improve standards for teachers. (The Department endorses the Murray Bill (S. 2) and the Metcalf Bill (H. R. 22).



Senator John Kennedy of Massachusetts, a conference speaker, with General Counsel Louis Sherman.

Quotable Quotes

... from *SIGNAL, Journal of the Armed Forces Communications and Electronics Association*

High frequency crystal filters which operate to 40 mc are now being commercially produced. These filters, with bandwidths ranging from one cycle to several hundred kilocycles, have been made possible by new design techniques and simplified circuitry. Eliminating the need for multiple frequency conversion, the small rugged filters are already beginning to find wide use in many AM, SSB, and FM receivers as well as single-sideband generators. Further progress in the development of quartz resonators will make possible the extension of crystal filter ranges to 100 mc and higher. Filter bandwidths in the order of 1 to 5 mc may be achieved, permitting the application of such filters to wide-band systems such as pulsed radar.



An "atomic clock" incorporating certain new principles has been developed at ITT Laboratories, Nutley, N. J., for use as a highly stable frequency source required in self-contained airborne navigational systems.

The accuracy of this device can be illustrated by imagining two cars making a trip from New York City to San Francisco with their speeds regulated by two "clocks." Variation between the two cars, as regulated by the clocks, would be so slight that one car would cross the finish line first by a distance approximately that of the thickness of the chromium plate on the front bumper.



On the basis of present costs, it is estimated that for a ship to travel to the moon, to land, and return to the earth utilizing present technology, each pound of weight unnecessarily left in the pay load package would cost approximately \$100,000.

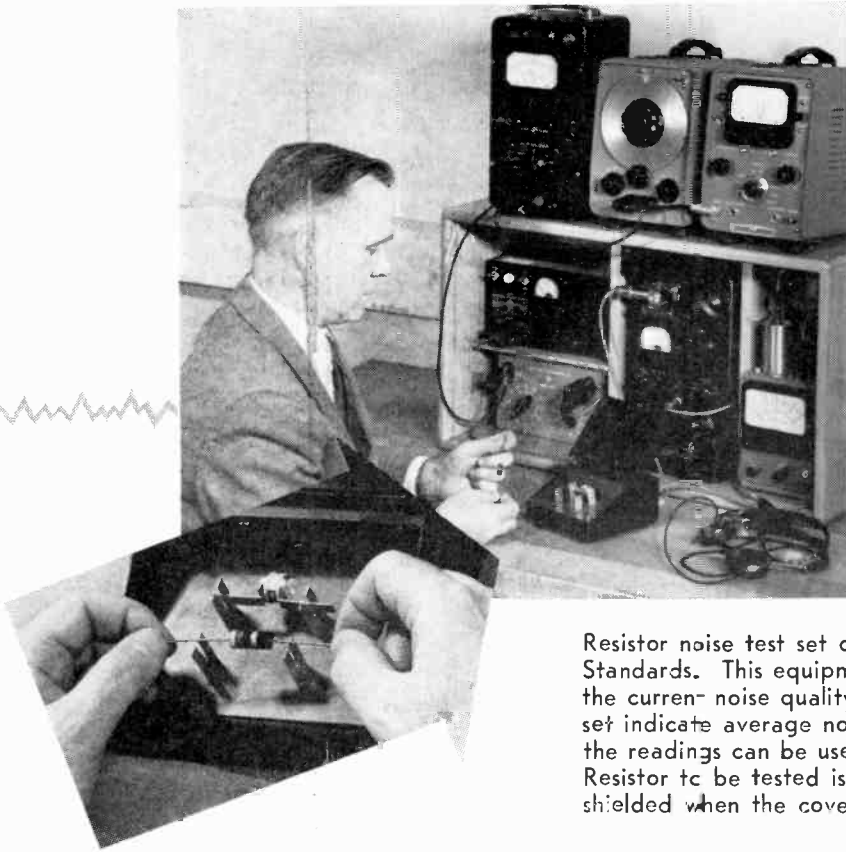
IBEW General Counsel Sherman reviewed the long history of attempts to repeal sections of the Taft-Hartley Law which bear heavily on the building and construction trades. He urged delegates to be specific when they talked to their Congressmen about legislation.



Technician-Engineer

MEASUREMENT OF RESISTOR

NOISE



Resistor noise test set developed at the National Bureau of Standards. This equipment is designed to measure and evaluate the current-noise quality of fixed resistors. Two meters in the set indicate average noise and applied d-c power, in db units; the readings can be used to compute the index of noise quality. Resistor to be tested is placed in terminals, and is electrically shielded when the cover is closed.

A METHOD to evaluate the noise quality of fixed composition resistors has been developed for the Navy Bureau of Ships and the Navy Bureau of Aeronautics. With this technique, the noise quality is determined by measuring the increase in the mean fluctuation voltage at the terminals of a sample resistor when direct current is passed through the resistor. Two meters in the test set, one indicating average noise and the other the applied d-c power, can be read in decibels for readily computing an index of noise quality or conversion gain. The method was developed by G. T. Conrad, Jr., of the National Bureau of Standards' engineering electronics laboratory in Washington as part of a broader program concerned with the standardization of test methods for electronic components.

All resistors exhibit a certain amount of noise which appears as a fluctuating voltage at their terminals. The spectral density of their *thermal* noise depends only upon temperature and resistance and is independent of frequency. When direct current is passed through a granular type resistor, an additional fluctuating voltage, called *current* noise, appears at the resistor terminals. The spectral density of the current noise depends upon the type of resistive material, the fabricating process, and the structure, size, and shape of the resistor. In general, the spectral density is also a function of frequency. For a typical resistor at 1000 cps, the current-noise spectral density may be as much as 1000 times the thermal-noise spectral density.

Ordinarily, the circuit design engineer is not concerned with thermal noise, since its voltage level is relatively low. In many cases, current-noise is not important either, although it can be as large or larger than thermal noise. However, in some extremely sensitive low-frequency circuits, such as high-gain audio amplifiers and infrared detectors, current-noise becomes important because it could mask the signal. Thus the circuit designer must know, quantitatively, how much this phenomenon may affect the operation of his equipment. As there has been no reliable, reproducible method of estimating current noise, the Bureau undertook the development of a noise test set that would give the electronics engineer technical information on resistors in a form suitable for these special applications. The resulting test set is now being considered as a military standard.

The noise test set consists principally of modified, readily available laboratory measuring equipment, all of which can be conveniently assembled and operated on a small desk top. A shielded box holds the resistor under test; normally a shielded room is not necessary. The equipment permits rapid measurement of fluctuation voltage at the resistor terminals without interference from power line hum, broadcast stations, or other sources. The set accommodates resistors over the range of at least 100 ohms to 20 megohms, and also provides an adjustable d-c power source having a maximum test voltage of approximately 400 v with currents up to 100 ma.

The test set measures conversion gain, the quantity recommended for evaluating noise quality. Conversion gain is defined as the ratio of available current-noise power to applied d-c power, expressed in decibels. It is a measure of the efficiency with which a resistor converts applied d-c power to noise—the more efficient the conversion, the poorer the noise quality.

The center frequency of the pass band used in measuring conversion gain is 1000 cps. This frequency, although arbitrarily selected, has proven to be a reasonable choice insofar as instrumentation is concerned. Since current noise varies inversely with frequency, measurement of conversion gain would be expected to vary in a similar manner.

Six of these noise test sets have been constructed and delivered to the Navy. However, before delivery, a series of experiments was performed to determine how well one set could reproduce the measurements obtained from any other set. Results indicate that the variation between sets is less than 1 db. The experiments were performed with resistors in the range from 1 kilohm to 1 megohm.

● Conversion Gain

Conversion gain, which is expressed in the familiar decibel, offers several advantages as a current-noise index for fixed resistors. First, because experimentally established noise measurements on a series of "identical" resistors tend to have a normal distribution when expressed in conversion gain units, the noise properties of the group may be expressed simply and completely in terms of the mean and standard deviation. Hence, conversion gain is particularly well-suited for application of statistical sampling procedures in estimating noise quality of a manufacturer's product.

Second, conversion gain is an analytic quantity in the sense that it can be used by design engineers to estimate circuit interference. Finally, conversion gain is readily measurable. The Bureau's test set, providing readings directly in decibels, reduces computation of measured conversion gain for each sample to simple addition and subtraction.

● Equipment and Operation

The test set measures current noise in terms of the rms value of the voltage present across the resistor under test. The instrumentation is so arranged that the value of the conversion may be readily calculated from the simple algebraic summation of attenuator dial settings and meter readings. Where the current noise is small compared to the noise in the measuring system, a correction is introduced.

The separate units of the system are connected with shielded cables. A variable d-c supply furnishes d-c loading power to the test resistor through an isolating resistor. This resistor, wire-wound so that it does not generate current noise, prevents the very low output im-

pedence of the d-c supply from effectively shorting the terminals of the test resistor. The d-c voltage applied to the test resistor is measured by an electrometer with a specially calibrated scale. Its extremely high input permits impedance a simultaneous measurement of d-c voltage and noise.

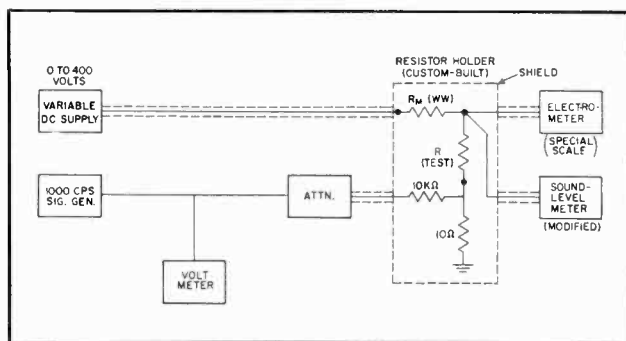
A modified sound level meter—essentially an a-c voltmeter—contains a high-gain amplifier with a narrow pass-band centered at 1000 cps. It has an output measuring circuit consisting of a linear detector, integrator, and meter for reading the mean detector current. The meter scale is calibrated in decibel units. A signal generator, with its associated voltmeter and attenuator, and a dividing network in the resistor holder, comprise a calibrating circuit.

In determining conversation gain of a resistor sample, the equipment is first calibrated. The noise present in both the resistor and measuring circuit is then measured before applying d-c power to the resistor: the resulting observation indicates the background or "set" noise. A second noise measurement is made while d-c power is applied to the resistor: this observation indicates the "set" noise plus the current noise, or "total" noise present. Current noise is computed from the difference between set and total noise, and, when combined with the measured d-c power used, gives the value of conversion gain. A relatively simple calculation is all that is needed.

● Results of Measurements

Since the primary function of the test set is to evaluate the noise quality of various kinds of fixed resistors, a program was carried out wherein a large sampling of resistors was tested. They were grouped according to type (composition, deposited carbon, metallic film, etc.), ohmic value, power rating, and manufacturer. Ordinarily statistical techniques provided the basis for analysis and comparisons of the groups.

A characteristic common to nearly all the groups tested is that current noise varies inversely with power rating or physical size of the resistor. In general, for a given manufacturer's product and resistance value, 2-watt resistors are significantly less noisy than their 1- and 1/2-watt counterparts, which are in turn less



Block diagram of resistor noise test set.

noisy than the $\frac{1}{4}$ - and $\frac{1}{8}$ -watt units—although the latter difference is less pronounced. The 2-watt deposited-carbon resistors were usually found to have low-noise properties in comparison with the $\frac{1}{2}$ - and 1-watt metallic-film and metallic-oxide-film resistors tested. Therefore, in applications where low current noise is extremely critical, an economic advantage may be gained by use to good-quality 2-watt deposited-carbon resistors, if their large physical size is tolerable.

Results of the statistical analysis show that no one resistor type can be chosen as the most quiet regardless of resistance value. The metallic-film and metallic-oxide-film types, are, as a class, the least noisy in most cases. Where low cost is important, larger-sized deposited-carbon resistors of certain manufacturers can be substituted. For the lower resistance values—1 kilohm and below, and for higher values—1 megohm and above, certain composition resistors compare very favorably with the deposited-carbon resistors tested.

How Tax Laws Favor the Rich

One of the lucrative rackets which has been growing rapidly in the United States is shown in the flood of mail that comes from tax advisory firms which will tell wealthy people all the tricks of *dodging taxes*. One of these firms sends out this statement: "Some 10,000 of the country's leading business and professional men have been able to skyrocket their income and capital through the revolutionary tax saving and capital building techniques developed by this firm."

This firm tells of "confidential memos" which it can send out to subscribers on ways to reduce taxes. One tells "how to save income, estate and gift taxes through trusts." On the same page of Labor, the publication of the Railroad Brotherhoods, where this tax dodging is revealed, appears an editorial under the heading "It Seems Taxes Aren't Ruining Rich, After All."

Labor points to this statement in a recent issue of *Business Week*, a favorite publication of wealth and business: "*The rich are still with us.*"

Business Week then cites that Americans having an income from \$100,000 to \$500,000 a year grew from 15,716 in 1948 to 22,008 in 1956, the last year for which such breakdowns are available. Those who reported \$500,000 to \$1 million income grew from 415 to 597 in the same period. There are 300 persons in the United States who have an income of more than \$1 million a year.

—Political Memo from COPE.

Annual Progress Meeting

The Annual Progress Meeting for IBEW members in the broadcasting, recording, and related industries is scheduled for June 12, 13, and 14, at St. Louis, Missouri. Your local union should be represented at this important annual gathering.

April, 1959

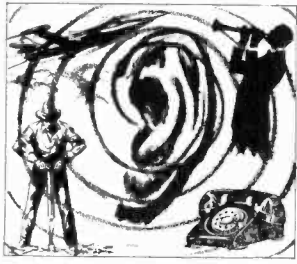
Signs of Our Times



"LET'S JUST SAY I'M AN AMBITIOUS, ENTERPRISING YOUNG MAN WILLING TO TAKE A FEW RISKS IN ORDER TO GET AHEAD..."



AWK...CHECK HIS PULSE...
AWK...CHECK HIS HEART...
AWK...CHECK HIS CREDIT...



THERE'S A LONG HISTORY BEHIND . . .

An Earful of Sound

Listen!

The sudden blast of a horn tears you from your day-dream. Instinctively, you step back—and the speeding car misses you by inches.

Listen!

A voice on the other end of the phone gives you important information for a business deal . . . the glorious music of a concert-hall orchestra wells up, fills you with a sense of beauty.

Thousands of times each day, sounds of pleasure, warning and communication play a vital role in your life. They're so common, they're usually taken for granted.

Yet the fact is, without sound the world would be a strange, unreal place. Daily living would become incredibly complex—and extremely dangerous. Most forms of advanced communication—expressing com-

plicated ideas—would die away. Some experts even claim man would lose his powers of advanced reasoning and revert to a semi-animal level.

This brings out an important fact: sound is one of nature's greatest miracles and one of the world's most fascinating stories.

Ancient man regarded sound with special wonder. Lacking knowledge, he explained it by supernatural means. As learning advanced, he came to realize that sound was a *sensation* and hearing a *sense*.

But the early theories were still far from reality. One said that sound was an actual object—much like food—and received into the ear like food went into the stomach.

A later more advanced theory was based on the early scientific principle of "like perceiving like." Everything in the body corresponded to something in the outside world, the theory stated. Since sound depended on air movements, the ear contained "internal air" that reacted to such movements, and "heard" them.

Strange as these theories were, they persisted for centuries. In fact, it wasn't till modern times that man found out how the hearing process really worked. And we still don't know all the answers!

A quick look at the ear explains why. Though one of the smallest of the body's organs, it's also one of the most complicated, divided into three separate parts called the inner, middle and outer ears.

The outer ear, including the part you see, contains a passage that conducts sound vibrations to the ear drum. These vibrations move through the air just as ripples move over the surface of water. The vibrations are then transmitted to the body's three smallest bones—the *hammer*, *anvil* and *stirrup* of the middle ear.

Up to this point, the sound is nothing more than vibrations. It has to be translated into meaning—noise or music or rustling leaves or falling rain. This final miracle takes place in the *cochlea*, a snail-shaped liquid-filled device of the inner ear. This device is smaller than a pinky nail—yet contains 15,000 hairs!

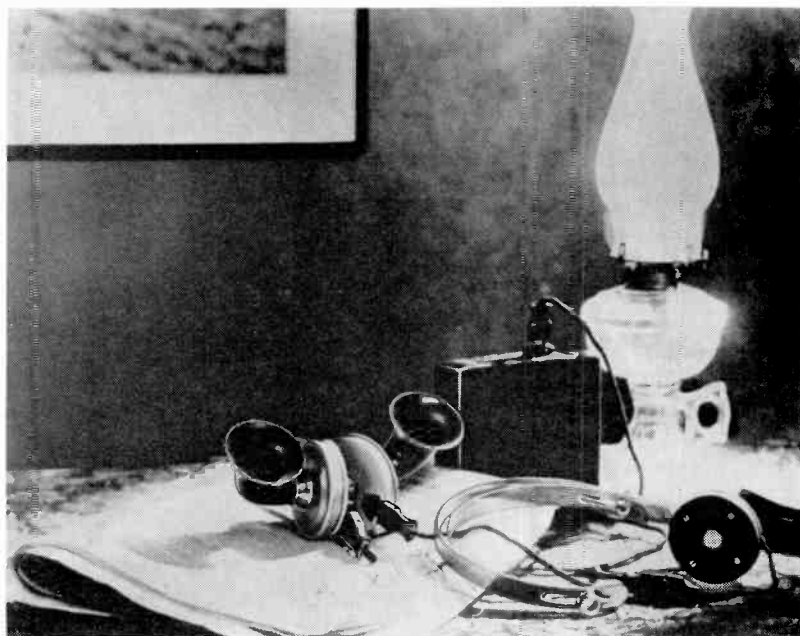
The vibrations set the fluid in motion and, in turn, this moves the hairs. The movements of the hairs are next transmitted to nerves and to the brain—the sound makes sense!

Below: A great moment in history and the development of modern hearing aids was the coronation ceremony of Queen Alexandra, wife of Edward VII of England, on August 9, 1902. The queen, who suffered a hearing loss, was able to hear the ceremonial oath of the Archbishop of Canterbury with the help of one of the first Acousticon aids made, requested especially for the occasion. Here the Archbishop is placing the crown upon Alexandra's head. Miller Reese Hutchison, inventor of the instrument, was royally cited with a "Reward of Merit for Scientific Investigation and Invention," and went on to even greater fame as a benefactor to mankind.





ABOVE: The tiny unit worn behind the ear of the man and in the hair of the woman (attached with a hair clip) is just 1½ inches long and ¼ oz. in weight. RIGHT: First electrical hearing aids, like this 1900 Acousticon, were bulky and cumbersome.



But hearing is only part of the story. The other part is how the sounds appear to the brain. For example, a man who works in the office hears thousands of sounds—but actually listens when the telephone rings. Same while he sleeps—and the alarm wakes him. His brain has been trained to react only to noises that have a meaning.

The reason for this is that too much noise would be a constant distraction. Noise is disorganized by its nature—a series of irregular sound waves that jar the brain. Music, on the other hand, means an orderly pattern of sound waves something to soothe or please the brain.

But if man took centuries to find out *how* the ear worked, he understood that loss of hearing was a handicap from earliest times. Unfortunately, progress was just as slow in this direction. For centuries all the hard-of-hearing could do was cup their hands to the ear or use a hearing horn.

Discovery of electricity brought a real solution—the modern hearing aid. But early models had many drawbacks. They were bulky to use and didn't reproduce sound faithfully. Batteries weighed pounds and had to be replaced often—and at great cost.

As electronic knowledge grew, man's inventive abilities to solve hearing difficulties has increased. Advances such as the development of miniature transistorized circuits make possible hearing aids as small as a child's finger and so powerful they capture any sound and reproduce it faithfully.

Such, for instance, as the compact "Stylear" eyeglass type hearing aid and the "Privat-Ear," miniature behind-the-ear aid, both recently introduced by Acousticon International, pioneer in hearing aid progress. The

precision engineered instruments provide better hearing for a majority of the hard-of-hearing and help to overcome the reluctance that some people have to wearing an aid.

Among those working today to further improve the outlook for America's 17 million hearing handicapped number many devoted otologists, audiologists and hearing aid makers. A fuller life, improved personality and greater individual potential are the rewards for restored hearing losses. And the social stigma once attached to hardness of hearing, preventing persons from seeking help with a hearing instrument, is a thing of the past.

They can share again the miracle of sound.

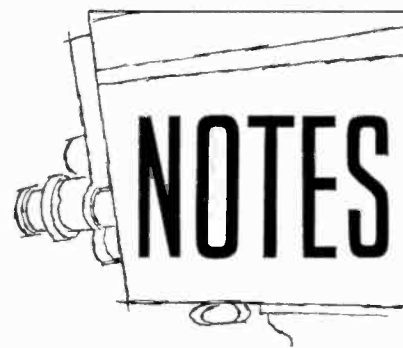
The Sound of Digging

Though scientists fear that a prolonged absence of sound might drive space travelers to insanity, in some quarters, being **crazy** is a good thing. The jargon of hipsters (among whom **crazy** imputes laudatory excellence) is wondrous. If you happen to be a **cube** (a square but a square) know ye that a phonograph record is properly delineated as a **biscuit**. To buy one you need **bread** (money) or **grain**, as the cooler cats now put it. A **jam can** is a juke box . . . a **killer** an instrumentalist who plays well . . . and **jazz**, far from meaning music, now refers to talk that doesn't make sense.

Now interesting both lions (cats with grain) and music lovers of more conservative bent, is stereophonic sound. Seated comfortably, or at a dance (even if you call it a **drag, hop, brawl, blessed event** or **ape fest**) stereo music offers a "new sound."

Will soothing music ever contribute to world peace? Perhaps. For as every hipster digs, jive hath grease to cool a tiger.

Technical



TV Equipment Leasing

A new monthly lease plan for television studio equipment has been announced by the General Electric Company at Syracuse, N. Y.

The new plan, unique for the broadcast-equipment industry, will permit television studios to rent the most modern equipment available over a five-year period. No outside leasing companies or financing firms are involved.

Equipment included in the lease plan are TV cameras, control equipment, switchers, film scanners, audio and video gear, and other studio accessories manufactured or supplied by the company's technical products department. Rental will be on a monthly basis.

The plan is designed to permit broadcasters to pay for use of the equipment while it is in service, rather than paying in advance as is done in an outright purchase.

Minimum value of equipment covered under the new monthly lease is \$5,000. Finance and insurance charges will be included in monthly payments.

Under terms of the plan, stations participating can be assured of having up-to-date equipment by the option-to-replace-equipment feature. This permits a station owner to periodically replace rented equipment with new, at adjusted monthly rates depending upon original lease terms.

Traffic Signal System

According to *Electronic News*, installation of a control device combining electronics, radar and radio networks which will permit Los Angeles to have one of the most advanced traffic signal systems in the nation has been announced.

S. S. Taylor, general manager of the city's Traffic Department has stated that work will begin within 90 days on a \$150,000 pilot system at 34 downtown intersections.

Plans call for a radar detector to be suspended above each intersection in the pilot plan. It will count the vehicles on key streets and transmit this information to a central point. Then an electronic computer will take

the speed and direction of all cars and decide which of several hundred different timing combinations will provide the smoothest traffic flow. The device will transmit this information back to the intersection to operate the traffic light, Mr. Taylor stated.

Such a system is expected to increase the efficiency, safety and capacity of Los Angeles street systems as much as 25 per cent.

Remote TV Dimmer

A new method of light intensity control employing high power miniature silicon controlled rectifiers was introduced recently by Kliegl Bros. Universal Electrical Stage Lighting Co., New York. The new dimmer device is only a fraction of the size of existing equipment and will operate with much greater efficiency and flexibility, Kliegl claimed. The new SCR dimmer can be attached to a light bank or spot on the tv set and remotely controlled, not possible with older systems such as the motor driven autotransformer, magnetic amplifier or electronic (thyatron) dimmers, it was said.

The heart of the new Kliegl unit is the silicon controlled rectifier developed by General Electric Co. and just entering commercial production. The initial SCR dimmer is a 4 kw model, but models in the 5 kw, 10 kw and 12 kw range will be available soon. The SCR dimmer is said to be 98.5 percent efficient electrically, losing only 40 w in each 4 kw, responds instantaneously to control and has infinite loading capacity from 1 w to 4 kw. It does not require any auxiliary boosters or transformers, Kliegl said, and per kilowatt weighs only 1¼ lbs., compared to the 8 to 25 lbs. of other systems. Because of its tiny size, a complete control board can be enclosed in a single suitcase, Kliegl said. The price is not set but will be comparable to magnetic amplifier dimmers.

Metal Inspections

Electronic inspection is now considered an indispensable safeguard in many industries. Candy makers have found, for example, that their cooking kettles, tanks, and pipes sometimes build up deposits along the interior

walls. Fragments of this deposit occasionally break off and get cooked and packaged with the final product. In breaking away, such particles take with them a thin metallic scale from the tank or pipe. This is enough to cause lights to flash and bells to ring in the presence of the metal detector.

In some industries, on the other hand, the presence of metal in a packaged product is essential rather than undesirable. A large Brooklyn pharmaceutical manufacturer packages hypodermic needles in large quantities, sterilizing, wrapping, and sealing them automatically. A detector is stationed over the moving belt to make certain that each box contains its needle.—*Electronic Age*.

Eidophor Competition

In our March issue we described in detail the workings of Eidophor, a theatre-size color TV system sponsored by CIBA, the pharmaceutical manufacturing firm.

We find now that Smith, Kline & French Laboratories, another major drug producer, has also gone into this activity. SKF announces a 1,500-lb. electronic projector capable of presenting pictures 9 x 12 feet in compatible color.

Built by Philips Electronics of Holland, the SKF-underwritten system is actually three projectors in one, with each projector sending forth a different color.

Color TV for Japan



More than \$100,000 worth of the latest color television studio equipment was shipped March 30 by the General Electric Company's Technical Products Department in Syracuse, N. Y., to Tokyo, Japan for showing at the three weeks-long Japanese Trade Fair, May 4-22. Shown during final testing the equipment consists of two complete color camera chains, a color film scanner, and control equipment, including monitors. The equipment, latest in transistorized color cameras, will be exhibited by the Japanese Miruben-lida Co. Similar equipment shipped to the fair last year was sold to a Japanese television station. According to reports, the Japanese are more enthusiastic about color TV than any other country, including the United States. It is reported that 10 Japanese TV stations are color equipped.

Korean Communications

The need for low cost mass communications, so vital to the survival of every culture, became strikingly evident to Dr. Byung Woo Kong, a noted Korean eye surgeon, in 1944 as he arduously began to translate by hand numerous medical textbooks into the Korean language. He then conceived and began to develop the idea for Korean typewriters, teletypewriters and typesetters. These efforts eventually resulted in a Korean typewriter, a combination Korean-English typewriter (both built by Smith-Corona), an adaptation of the Korean keyboard to the Kleinschmidt teleprinters used by the U. S. Army Signal Corps, and a typesetting machine for the mass production of low cost newspapers and books on which he is now hard at work.

The first problem encountered in the development of the typewriter was to devise a means to adapt the standard typewriter keyboard to the Hangul language. The Korean alphabet is phonetic, consisting of fourteen consonants, ten vowels and fifteen additional characters called "sub-consonants." For keyboard purposes the basic characters are designated as consonants, double consonants, sub-consonants and vertical and horizontal vowels, any three of which may appear in two spaces to produce a syllable or word. The consonants appear above the center of the type line, while the sub-consonants are typed directly below with the horizontal vowels falling between. Several characters are identical, except for position on the line, being placed above, below or between other letters. The problem of subconsonants was solved by placing them on "dead" keys which do not advance the carriage.

In his design of the combination Korean-English portable typewriter, Dr. Kong employed essentially the same method. Each type pallet contains an English and Korean character. Depressing the shift key produces the Korean character, and the carriage advances normally for English characters.

Ham TV Station

What apparently is the first road demonstration of a "package" amateur television station in action was held in Denver recently. It was produced by the Electron Corp. Division of Ling Electronics, Inc. The Ling equipment includes the Ling-Mitter ham TV transmitter and Ling Spectator camera. Hams use uhf converters on regular TV sets to receive TV signals. Factory tests indicate excellent picture reception up to 18 miles.

FCC spokesmen say that amateurs have been telecasting for 10 years but so far as they know no one up to now has produced a package TV station for ham use. Of the four bands in the spectrum assigned to amateurs, only 420-450 mc is used for TV in addition to voice, code and facsimile transmissions. Audio accompanying picture is usually transmitted on another amateur band.

Station

Breaks

Self-Sufficient Traveler

Members of Local 1225 employed at Station WXLW, Indianapolis, Ind., are operating a 45-foot mobile unit which seems to have everything. Christened "Traveler," it carries an 8 x 19-foot studio, an 8 x 10-foot control room, an 8 x 10-foot lounge, a bath, and a workshop.

The unit is towed by a heavy-duty truck, which also houses a 10 kw gasoline generator for the unit's power supply. "Traveler" can broadcast under its own power within 30 to 40 miles of Indianapolis while stationary or in motion. For greater distances the unit connects with telephone lines.

Features of the giant facility include a showcase for sponsors' products, a 6 x 8-foot roof deck, 250 gallons of water, air conditioning, turntables and tape recorder.

Delayed Photo Credit

Our January issue omitted mention of the fact that the pictures for the story "KTVU, San Francisco, covers a Requiem Mass for Pope Pius XII," sent to us by Local Union 202, were taken by Brother Joe DeNarie. Our thanks to him and our congratulations for the fine quality of the pictures.

Occupational Hazard

An announcer on a TV color spectacular fainted during a rehearsal. When he came to, the director asked him what happened. "I don't know," the dazed announcer replied, "Suddenly everything went black and white!"

Tall Texas Tower

Station KENS-TV, San Antonio, Texas, which employs members of Local 1348, is now operating from a new tower, which stretches 1,531 feet into the Southwest sky. The tower is owned jointly by KENS-TV and WOAI-TV. It took 15 months to construct and is doubling the coverage of the two stations.

Another Conelrad Test

A nationwide half-hour broadcast silence was scheduled for April 17 for all AM, FM, and TV stations which are not in the Conelrad defense plan. Those 1300 sta-

tions which are authorized for Conelrad broadcasting tested their equipment warning the public in case of national emergency. Working on the assumption that an estimated 65 million auto and portable battery-powered radios may be the only connection among survivors of an enemy attack, the FCC and the Office of Civil and Defense Mobilization are learning to cooperate effectively in the use of these facilities.

A Reasonable Income

During the past three years the average factory production worker in the United States not only has failed to secure an income that would enable him to maintain his family on "the commonly accepted standards of living," but has actually fallen behind.

This is the conclusion that can be drawn from the latest family budget report of the Heller Committee for Research in Social Economics of the University of California.

The Heller report for 1958 estimated that a wage earner with two children and living in a rented home needed \$6,086.88 a year, or \$117 a week, to give his family the standard of living "that public opinion currently recognizes as necessary to health and reasonably comfortable living." This was \$4.90 more than in 1957 and \$10.50 more than in 1956.

For a wage earner who owned his own home, the figure was \$6,435.11 a year, or \$123.75 a week. This was \$4.44 more than last year and \$11.25 more than in 1956.

Yet the average weekly earnings of factory production workers during 1958 was \$83.71—far from the budget called for in an area whose cost of living is about the same as in Chicago and Los Angeles and is only a shade higher than such cities as St. Louis, Boston, Minneapolis, and Baltimore.

Not only was income far below the necessary minimum, but during the same three years the cost of living climbed far more rapidly than did income. (PAI)

Technician-Engineer