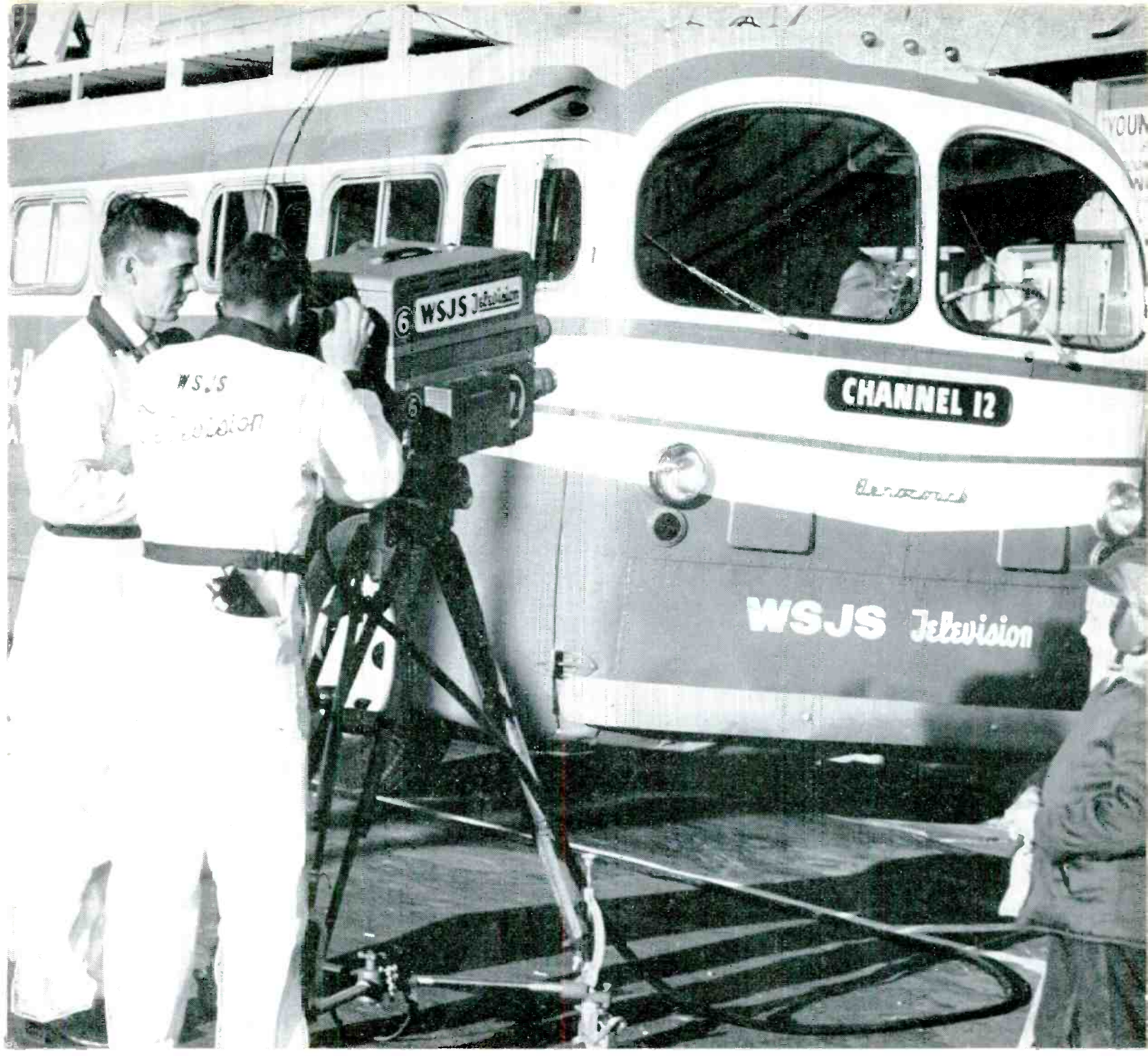


TECHNICIAN ENGINEER

MARCH, 1960

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

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS — AFL-CIO

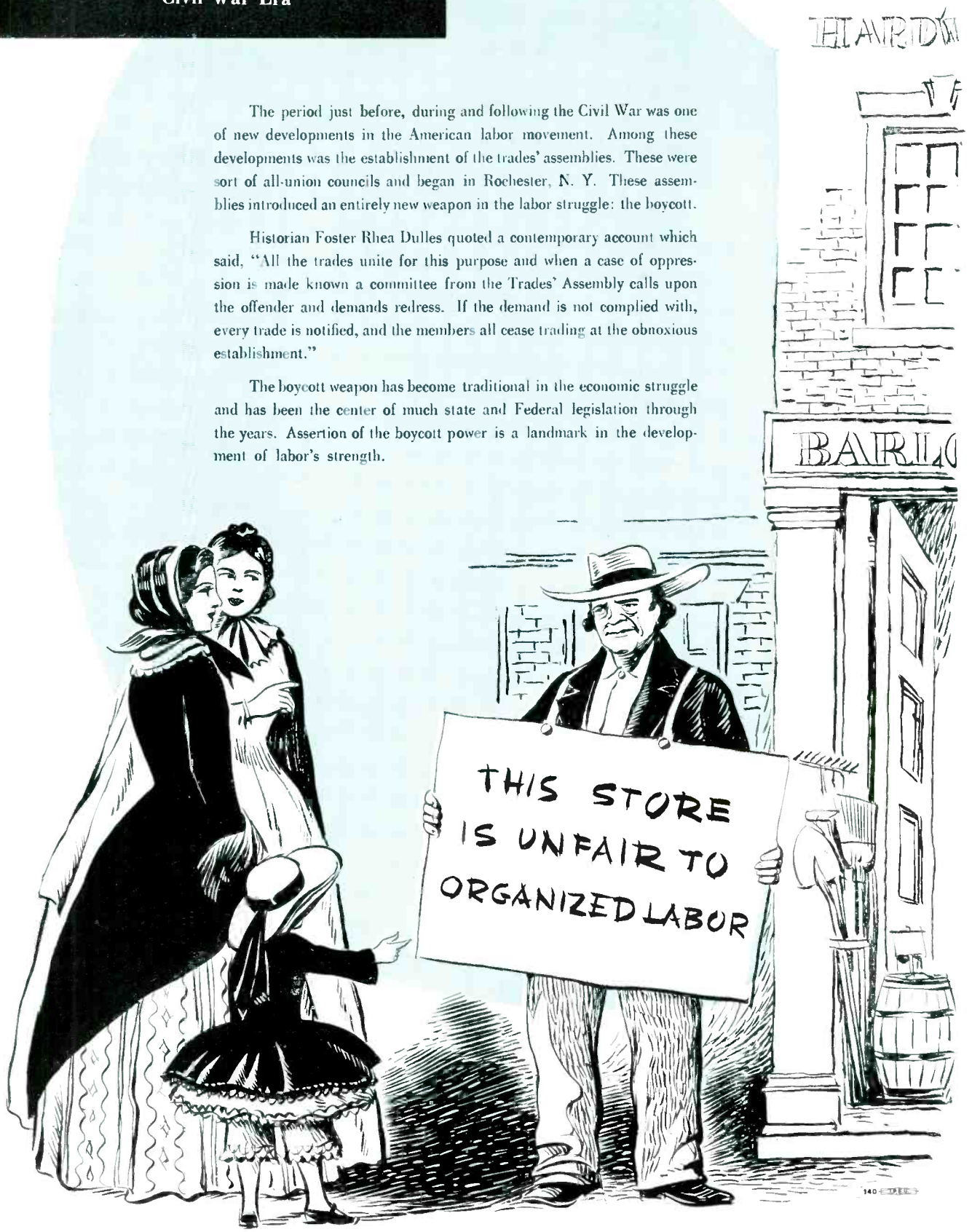
LANDMARKS OF LABOR No. 11

Trades Assembly and Economic Action Civil War Era

The period just before, during and following the Civil War was one of new developments in the American labor movement. Among these developments was the establishment of the trades' assemblies. These were sort of all-union councils and began in Rochester, N. Y. These assemblies introduced an entirely new weapon in the labor struggle: the boycott.

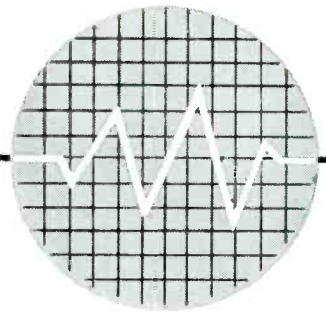
Historian Foster Rhea Dulles quoted a contemporary account which said, "All the trades unite for this purpose and when a case of oppression is made known a committee from the Trades' Assembly calls upon the offender and demands redress. If the demand is not complied with, every trade is notified, and the members all cease trading at the obnoxious establishment."

The boycott weapon has become traditional in the economic struggle and has been the center of much state and Federal legislation through the years. Assertion of the boycott power is a landmark in the development of labor's strength.



Reprinted from THE LABORER; official publication of the International Hod Carriers', Building and Common Laborers' Union of America

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



TECHNICIAN ENGINEER

VOL. 9 NO. 3
ALBERT O. HARDY, Editor

in this issue

the cover

Technicians of WSJS-TV, Winston-Salem, North Carolina, handle a remote pickup from the streets of the city. They are members of Local 1229. The mobile unit is a custom job put together by station engineers. (There'll be more about the men of Local 1229 in an upcoming issue.)

index

For the benefit of local unions needing such information in negotiations and bargaining, here are the latest figures for the cost-of-living index, compared with 1958 figures: December, 1958—125.5; December, 1959—124.0.

COMMENTARY

No company has the right to use its economic power and job influence to dragoon its members into political action.

The corporation employe who is projected into politics faces, quite often, the problem of submerging his own political convictions because economically he cannot afford to be openly unsympathetic toward the policies and purposes of the corporation.

I hope that no one is misled as to any altruistic purpose in such classes. The corporation, as such, has no ideological desire to render selfless and perhaps sacrificial public service. It has an axe to grind.

That axe is the desire to advance the business ideology of the particular corporation by projecting the "hired hands" into the political party action, after they have been sufficiently indoctrinated in the classes.

I regard company classes on company property, whether conducted by company executives or others, as a serious invasion of individual rights, and the invasion is even worse when it involves an employe's inviolable right to do and think politically as he pleases.

In my humble opinion, the worst course business can take is to conduct political action programs which, inevitably, will lead to "company machines" not unlike those political machines which have passed into limbo. Ultimately, business will pay a heavy price for such corporate political activity.

Arnold H. Maremont, president of Allied Paper Corp. at a meeting of the Town Hall of Los Angeles.

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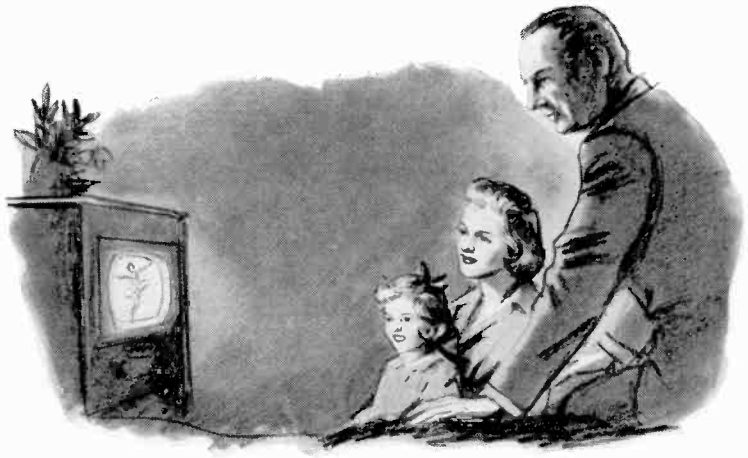
A Burning Question



Whatever happened to the public interest?

IT is interesting to re-read the petition of February 15, 1956 of the NARTB (now NAB) to the Federal Communications Commission wherein the Commission is quoted as saying, on March 30, 1953 that the adoption of (new) rules to allow remote control operation of broadcasting stations would be *in the public interest* and that the *technical problem* was the critical issue. Specifically, the FCC said: "The basis for the amendments is both technological and economic. The economic basis is clear and needs no amplification. The Commission recognized that the critical consideration was whether the revisions would result in any degradation of our technical standards." While the 1956 proceedings and pleadings were confined to purely technical considerations, the extension of remote-control on an "economic basis" was still "clear" and needed no "amplification," three years later, according to the NARTB.

Now let us examine the record in the light of the present state of radio broadcasting, seven years after the *economic basis* was *clear*. In the 1952-3 proceedings, the NARTB said:

> "Unlike the other services, broadcasting must do more than merely communicate information from point to point. Broadcasting has a far more involved public interest duty to perform. This the Commission has always recognized. That duty consists of offering the American public a program service designed to meet their needs and desires. . . ."

"The basic need for the changes here proposed is an economic one. Exhibit 2, p. 5. . . ."

This exhibit reference is to the allegation that "the fundamental need for a change in the operator requirements is an economic one" and goes on to point out that "a well-rounded staff not forced to be selected to meet the first-class operator rule" would result in bettering the station's service to the public. This same Exhibit predicts the following, if the petition to relax the operator requirement is (was) granted:

1. Better announcing.
2. Better news.
3. Better programming.
4. Better public service and therefore a better service to the listening public, which is the main objective of the requests for rule changes."

Now refer to testimony before the FCC, on the occasion of its recent hearings:

> "There is a revolt brewing in America today against much of the cheapness in American life and our industry is now receiving the impact of that revolt."
>
> "If the Commission followed through and were to require applicants (for licenses) to live up to promises and commitments, it would have much less of a problem than it faces today. And legitimate applicants would not be required, under the press of promises loosely-made and with little intention of being kept, which are advanced by competing applicants, to enter into bidding and promising contests which have little semblance to reality, or else to vacate the field to a competitor with a more elastic conscience."
>
> "The Commission should remember that the legitimate broadcaster who is conscientiously attempting to render a good service must compete with the marginal operator pandering to the lowest common denominator."
>
> "I am simply recommending a new approach to the business of issuing licenses and renewals. I am insisting that the Commission should not concern itself with the individual programs of any station but it should concern itself as to whether the man given the authority to operate that station or to own it has proved to you, to the Commission, that he has properly and intelligently gone into the determination of the needs and wants of that community and then state to you the manner in which he proposes to

meet those needs and wants, and the Commission then acts upon whether or not he has intelligently gone about it."

These critical remarks of the present state of broadcasting were made by *broadcasters*. One further segment of testimony also bears repeating:

"Murder, violence and crime are all too prevalent in too many programs. Much of this is broadcast with screaming commercials, so as to be heard over the whole noisy din. Advertisers thrust upon us the most intimate functions of the human body, usually reserved for private talks with the doctor but now set to music. The public is presented at late evening hours with sometimes witty (and sometimes not so witty) series of conversations of a type that used to have its inception around a bar and when the participants had had a considerable amount to drink. I recognize, therefore, that at least in some areas the broadcast industry has to be concerned about obvious errors and shortcomings."

To get back to the burning question, "Where is the:

1. **Better announcing,**
2. **Better news,**
3. ***Better programming,***
4. **Better public service, etc.**

which was proposed to result from the relaxation of operator licensing requirements and remote control regulations of 1953 and the further relaxation in the *public interest, convenience and necessity* in 1956?" This is a question which should be answerd by both the Commission and the broadcasting industry. The Commission bears the bulk of the responsibility for the answer, because the FCC itself put the matter very neatly and concisely into a relatively few words, in 1952:

"It should also be stressed at the outset that there appears to have been no effort made in the oppositions to overcome the careful showing contained in the NARTB's Petition and in the supporting comments of many broadcasters to the effect that the relief requested will, while maintaining all engineering standards of the Commission, bring about finer program service; longer hours of service from existing stations: the development of new stations; and better technical service through the selection of finer sites; and thus a benefit to those to whom the Commission has its ultimate responsibility—the listening public." Enough said?

Senators at Scale

In Washington, D. C., the 100 members of "the world's most exclusive club," the U. S. Senate, were given an unprecedented opportunity to work at union wage scales, in fact the highest union scales in the country. Movie Director Otto Preminger, in Washington to start preparations for the filming of a picture based on the best-seller "Advise and Consent," disclosed that his would be the first movie actually using the Senate floor as a stage. Said Preminger, "If any or all of the Senators want to appear in the film I'll be glad to have them at regular union scales." An assistant director explained that the Senators would have to join the Screen Actors Guild. But he added, "Right now I can see George Meany rising straight up through the roof at the news that Senator Barry Goldwater has become an AFL-CIO member."

Brotherhood Stand On Natural Resources

WASHINGTON (PAI)—Strong support for a conservation and development bill as it affects the electric utility field has been expressed by President Gordon M. Freeman of the International Brotherhood of Electrical Workers.

In a statement prepared for a Senate Committee, the IBEW president supported a bill introduced by Senator James E. Murray, Montana Democrat, for a program of conservation and development of the Nation's natural resources. Senator Murray was joined by 30 other Senators on the bill which would create a Council of Resources and Conservation Advisors in the Executive Office of the President. The Council's annual reports would be referred to a new Congressional joint committee on resources and conservation.

"The United States has more than eight times as much electric power capacity per person as the average of the rest of the world," President Freeman said, "Total electric power capacity has almost tripled since the end of World War II, from 62.9 million kilowatts in 1946 to 183 million now.

"A continued growth in our industrial development means we must continue to have a plentiful power supply. It has been estimated that by 1979, the 100th anniversary of Edison's original electric light, the United States will be using more than four times as much electricity as in 1959—and the use will still be growing."

He pointed out that nearly 78 per cent of our power now comes from burning fossil fuels such as coal, oil and gas. Although no shortage is foreseen, the supply is not inexhaustible, he said especially in view of the expected huge increase in the need for electric power.

"The expected amount of energy which will be used 20 years from now when translated into the amount of conventional fuel needed to produce it, comes out to 735 million tons of coal, 5.9 billion gallons of oil, and 17.4 trillion cubic feet of natural gas," Freeman said.

In the power generation field the IBEW represents about 75 percent of the Nation's utility employees.

Our International president urged the speedy passage of the conservation measure so that comprehensive surveys, research and integrated planning could better be carried forward in the fields of hydroelectric resources, nuclear-fueled power and solar energy.

Miami Board Case Settled

Offers of Reinstatement and Payment of Lost Compensation Closes Unfair Labor Practice Case

WITH the payment of more than $27,000 to five formerly-discharged employes and offers of reinstatement to their employment at WTVJ (TV), Miami, the WTVJ, Inc. (now the Wometco Corp.) —National Labor Relations Board case brought by Local Union No. 349, IBEW, was brought to a conclusion last month.

The complaint, issued by the NLRB office in Tampa on April 10, 1957, charged WTVJ with coercing, threatening, interrogating and unlawfully discharging five of its employes. Subsequently, evidence supporting the complaint was entered on the record of hearing and the NLRB in Washington found violation of Section 8(a)(1) in that employes were interrogated, coerced and threatened, as these violations "flowed" from violation of Section 8(a)(3), since the employes were discharged because of their union activities.

Meanwhile, the Bureau of Veterans' Re-employment Rights took up the cases of two of the discharged employes, as the result of being importuned by the IBEW to do so. As a result, two of the employes obtained re-employment and reinstatement at a relatively early date, under the terms of the Universal Military Training and Service Act. The re-employment of the remaining three men, non-veterans, awaited NLRB action. When the Board's decision was issued, the company seems to have ignored it and the Board sought enforcement of its order in the Fifth Circuit Court of Appeals, the Federal court of jurisdiction, at New Orleans.

Upon direction of the Federal court, findings were made as to the various monies due the discharged employes; two individuals received sums in excess of $10,000 and $11,000 and varying other sums—one in excess of $4,100—were paid to the other men involved.

One of the continuing injustices in such cases arises from the Board rule that a Representation Petition must be set aside when the Board accepts and considers a charge of Unfair Labor Practice. Particularly because of the complexity of the situation at the time the original Representation Petition was filed in this case, the Board states that a new petition must now be filed to determine that matter. A further complication of the case was entered by the Board's decision that the production department at WTVJ did not (alone) constitute an appropriate unit for bargaining. The IBEW's interest in this department derived from the fact that directors, cameramen and lighting employes were a part of the department which included "program planning" personnel, whom the Board decreed to be "non-technicians." Without the latter, the Board said, the produciton department petitioned for "constitutes but a segment of an appropriate unit."

The long-standing case is thus closed, subject only to new proceedings which will be initiated by the Local Union. The sunny southern area of Florida is still clouded but perseverance and patience are ingredients in good supply in the Local Union in Miami. Another day will afford further opportunities, if what is past is prologue.

Building Trades Continue Legislative Fight

More than 3,300 delegates from al 50 states attended sessions of the 1960 Legislative Conference of the AFL-CIO Building and Construction Trades Department, held in Washington, D. C., early this month. They spent two days visiting Congressmen on behalf of labor legislation.

IBEW General Counsel Louis Sherman, who is also general counsel for the Building and Construction Trades, outlined problems facing unions during the current session of Congress.

AFL-CIO President George Meany with retiring Building and Construction Trades Department President Richard Gray.

International President Gordon Freeman, right, chats with Sheet Metal Workers' President Edward Carlough during a break in the busy sessions.

THE Taft-Hartley-oppressed building and construction tradesmen of the AFL-CIO sent delegates to Washington, D. C., early this month for the annual legislative conference of the AFL-CIO Building and Construction Trades Department. In addition to speeches by various Presidential hopefuls, the agenda called for two days of visiting on Capitol Hill. Delegates pushed hard for a six-point legislative program sorely in need of enactment.

The program would achieve the following:

- Obtain a Taft-Hartley amendment to reverse the Denver Building Trades Rule, so that union building tradesmen will no longer be compelled to work side by side with non-union workers.
- modernize and broaden the scope of the Davis-Bacon Prevailing Wage Act.
- obtain passage of a comprehensive school aid and construction bill.
- obtain passage of the Depressed Areas Bill to assist chronic unemployment areas by public works loans to such communities.
- obtain passage of a comprehensive housing bill, including appropriate levels of public housing, middle income housing, and housing for the elderly.
- obtain comprehensive corrective amendments to the Taft-Hartley Act including (1) repeal of Section 14 (b), (2) repeal of the mandatory injunction provision, and (3) reversal of the Brown-Olds rule.

Giving Made The Gift Unnecessary

The following letter has been sent to all international unions and state and local central bodies by AFL-CIO President George Meany, commending the labor movement for the strong and effective support extended the Steelworkers during the recent steel strike:

Dear Sir and Brother:

May I extend my sincere thanks to each and everyone of you who played a part in the success of the special AFL-CIO Steelworkers strike defense fund.

Your generous response to this unprecedented undertaking by the AFL-CIO was a moving demonstration of the solidarity and vitality of our cause. It was an eloquent answer to those cynics who disparage the strength of the trade union spirit and its place in the hearts of our members, and I am sure this response played an important psychological part in the outcome.

As you know, the steel strike has ended in victory—an historic victory for the Steelworkers, who stood united in the face of tremendous odds, and a sweeping victory for the entire labor movement over the most formidable attack launched against us in years. You can all be proud of your role in this triumph.

President David J. McDonald of the United Steelworkers of America has announced that his union is able and will absorb the entire cost of the strike. While expressing the deepest gratitude for the funds you contributed, President McDonald and his associates feel that their own organization, in view of the settlement, can and should make full repayment despite staggering costs to that union's treasury. His action is, of course, in keeping with the tradition of the Steelworkers and the trade union movement.

Accordingly, the United Steelworkers of America will shortly repay to the AFL-CIO special strike fund all monies received from it. We in turn will repay the contributions to those from whom we received them. By far the greater part of these contributions, of course, came to us from constituent organizations which in their turn collected from individual members, to whom the contributions will be returned.

Of course, you and the many other thousands of union members offered your financial support cheerfully and with no thought of any return except to win the battle in which we all had so great a stake. It should give us all a deep sense of satisfaction that the act of giving helped to make the gifts unnecessary.

With my warm thanks to each of you, I am

Fraternally yours,

GEORGE MEANY,

President.

Missile Borne TV

A missile-borne TV camera, designed to report instantly the results of a missile firing, was successfully launched for the first time at the Army's White Sands Missile Range on March fifteenth. RCA provided both the air-borne TV equipment and the ground receiving equipment.

The feasibility test holds great importance for the national defense in that an Army field commander using a TV reconnaissance device would know immediately whether the missile had destroyed the target and the amount of damage created. He would also have vital information on which to base further action. In the history-making test the miniature TV camera and transmitter were housed in a small capsule contained in the missile and ejected during flight. As the capsule, slowed down by its aero-dynamic design, fell gradually to earth, it transmitted high-resolution TV pictures of the target area in which the missile was about to land. Still aloft after the missile warhead's impact, the TV capsule continued to transmit pictures.

The TV capsule at White Sands Missile Range was ejected from the Redstone ballistic missile at 40 miles altitude. The receiver for the pictures transmitted during today's firing was located 75 miles from the impact point. The pictures were also recorded on video tape to permit Army development engineers to study the results.

The quality of the TV picture is said to be better than that of commercial TV and requires only 1/100th of the bandwidth normally required to transmit such a picture.

TV's Teaching Value

The publication *Teaching Tools* reports a survey recently made as to the effectiveness of television as an educational tool in classrooms. In 21 percent of the student groups investigated, TV enabled the students to learn signficantly more information. In 72 percent of the cases there appeared to be no difference, and in 7 percent the conventional methods proved superior.

William H. Allen, who conducted the survey, indicated four ways in which TV can help teachers:

- as enrichment to supplement the classroom teacher's regular instruction,
- as direct instruction in normal class situations where the TV studio teacher presents *basic* subject matter which the classroom teacher incorporates in the instruction.
- in large class groups where the course of instruction is built around the TV studio teacher's presentation, with the classroom teacher supplementing, clarifying, and extending; and
- as out-of-school viewing assignments to support school work.

WANTED:

New Inventions for the Armed Services

ANYONE who builds a better mousetrap or jet-engine silencer or high-altitude parachute will find a big welcome mat at the armed services' door.

The military also is in the market for some 750 other bright ideas ranging from stale-proof bread to the control of cosmic rays. And if someone can figure out a simple way to protect people from bomb radiation, there will be real rejoicing in the Pentagon.

A list of technical problems affecting the Nation's defense is drawn up periodically by the National Inventors Council, a liaison between civilian inventors and the military. The newest edition of "Inventions Wanted by the Armed Services" lists 320 new problems and cancels 135 others that have been solved or have become obsolete.

Present needs point up the usual "blue sky," or slightly impossible, problems. But many items in the Council's current want-ad are relatively mundane aids to military comfort and efficiency.

For example, the Army wants better field laundry equipment requiring little or no water. Also, for torn pants, an adhesive patch that will last three years; disposable paper garb for battle conditions where washing clothes is impossible; and an insect repellent to make a man's fatigues or pajamas repulsive to pests for at least 12 hours.

Perhaps in memory of all World War II veterans who suffered the sartorial indifference of supply sergeants, the military has called for an "automatic device or system to assess the fit of clothing on military personnel."

Food hasn't been forgotten. Mess cooks seek a better gravy base for irradiated meat, and something to give the "taste and aroma of freshly baked yeast-leavened bread" to the GI instant mix. For starving castaways the military has in mind a metabolizer to enable them to eat grass.

Here are some of the inventions sought in our particular field. They cover everything from microwave filters to voltage references.

WANTED:

Electronic Components and Systems

859. (Revised) Microwave Filters

Extremely sharp cut-off selective filters for the microwave region (L-band or X-band). A significant increase in signal-to-noise ratio would be realized by the use of filters having a band pass of a few kilocycles.

973. Low Loss, High Power Ferrites for Use as Microwave Phase Shifter

974. A Broadband Maser Amplifier for Use in Microwave Region

975. A New Method of Electronically (Not with Frequency Change) Scanning an Antenna.

976. Reliable Long Life Cathode

An efficient indirectly heated unipotential thermionic cathode having 100,000 hours life in negative grid tube with current density of 500 mAdc/cm2.

983. Preformed Semiconductor Crystals for Device Fabrication

Germanium and silicon single crystals grown in ribbons or rods with uniform physical and electrical characteristics to the sizes suitable for direct fabrication into diodes, transistors, solar cells, etc., is desired. The semiconductor material should have the properties equal to or superior than material presently used in germanium and silicon transistors. The new growing method should permit the direct utilization of the semiconductor for device fabrication thus eliminating the conventional wasteful and expensive slicing, lapping and polishing operations.

984. Submarine Cable Repair

Physically damaged Submarine Cables must be fished and brought to the surface for repair and splicing. A method is wanted which makes the damaged portion rise to surface by interaction with the sea water with internal chemicals when the damage occurs.

985. Self Restoral Submarine Cable

When a break occurs in a submarine cable, the section between repeaters shall disconnect and the remaining repeater terminals shall start producing sonic waves. A new cable section when put in the area with temporary sonic seeking torpedo type carriers shall connect the two end repeaters with the new cable section to restore electrical signal transfer.

1000. Method of Transmitting Speech on Teletype Circuits

The use of narrow bandwidths for the transmission of speech requires eliminating the redundancy of speech waveforms and transmitting only the desired information. A single method of extracting this information, transmitting it in a code, and recreating speech at the terminal end, is needed.

1002. Microwave Delay Line

A microwave delay line of reasonable size, with stable electrical characteristics and capable of producing delays in the order of several hundred microseconds. It is desired that attenuation should not exceed 50-60 db, but higher values are acceptable. Bandwidth of at least .2 of a megacycle is desired.

1024. High Power, Broad Band Solid State RF Amplifiers.

1056. Transistors

Transistors with power gain and linear characteristics at extremely small emitter currents and collector voltages permitting efficient operation at very low signal levels.

1057. Solid State Microwave Oscillators

A solid state device is wanted capable of producing more than 50 mw of microwave power in the frequency range above 2000 mc/sec to serve as a solid state pump for parametric amplifiers.

1060. Non-Mechanical Microwave Cavity Timing Method for Gas Masers

Microwave cavities in X and K band should be tunable smoothly and without hysteresis over a range of at least ± two mc with a sensitivity one kc per reproducible control step. No electric or magnetic field is allowed to be present in the cavity besides the microwave field in order to avoid Stark or Zeeman influences. The total mechanism (without the cavity proper) should not weigh more than one-half pound and should be easily adaptable to drive by a servo control circuit in order to hold the cavity to the exact molecular frequency. The time needed for the tuning device to effect a frequency change of five kc should be less than one second.

1063. Phase-coherent Excitation of Molecular Beams in the MM-Wave Range

Ramsey excitation of a molecular beam results in a narrow spectral line whose center position depends to a small extent on the phase difference between the two exciting electromagnetic fields. For zero phase difference the center frequency is unshifted. For 180° phase difference the center is shifted by the amount of the bandwidth. A simple excitation method is needed to allow a Ramsey-type excitation of molecular beams in the region between 100 and 300 kmc with a maximum phase difference of two degrees between the two separated oscillating fields. For information on the Ramsey method see book by N. F. Ramsey, "Molecular Beams," 1956, Oxford University Press.

1064. High Powered Instantaneously Turable Resonant Circuit for the VHF and Lower UFH Range

A resonant circuit capable of handling 200 watts at a minimum efficiency of 50%. Four hundred watt maximum input. "Q" of approximately 50 to 100. Rate of Tuning to be in the order of milliseconds within the band. This could be an improvement of the existing power increductors.

1066. PCM Repeater

A PCM repeater for land or submarine cables, to handle capacities from 6 channels to 96 channels, having extreme reliability, of size small enough to become an integral part of the cable or connector, capable of being self-powered, self fault locating, and of such design that failure of several repeaters in a system will not affect operation of the system.

1068. Crystal Oscillator

A crystal oscillator which will automatically adjust its frequency so that the crystal unit operates at zero phase angle (resonance). It must be capable of this self-adjustment to within one part in 10^6 whenever there is a change in the crystal parameters, or when one crystal unit is replaced by another. The frequency range of current interest is 1-200 mc.

1074. Self-activating Spare Electronic Components

Need exists for methods and devices capable of activating a spare component immediately upon failure or malfunction of the original component. The electron tube, amplifier, or other device may incorporate multiple self-activating channels or else spare components may be employed which become active when needed. Simplicity, small size, and dependable operation are necessary.

1075. Frequency Conversion Device

A small, lightweight static device for increasing the frequency of single phase, 60-cycle power to frequencies up to 5 kilocycles square wave or sine wave. Two kilowatts output, efficiency 90% or better.

1076. Phase Multiplication Device

A small lightweight, static device for converting single phase 60 or 400-cycle power to balanced 3 phase power. Two Kilowatts output with efficiency up to 90% or better.

1077. Transistors

Transistor capable of operation at ambient temperatures well in excess of 250°C.

1078. Transistors

Transistors whose characteristics change considerably less with temperature than present units.

1097. Improved Communication Techniques

There is need for improvement of today's communication techniques or the invention of a new technique which is simple, accurate and usable for the transmission and reception of intelligible signals over a long global range.

Present:

Today's techniques of long range global communication by utilizing radio frequencies of approx. .1 thru 5000 megacycles is limited in range. Thus, today's communication techniques are not usable for the guidance of long range missiles, i.e. are not sufficient for guiding a missile accurately to a distant target. The effort to overcome present shortcomings was limited to existing communication techniques in general and resulted in the construction and use of costly and complex systems.

1101. Radio Noise Elimination

A need exists for a method to eliminate radio noise, without distortion of the intelligible signal.

Present:

All types or radio receivers are interfered by noise (man-made and nature-made). In transmitting speech, intelligible sound, frequencies or pulses; and straight continuous waves, interfering noise results in distortion of the received message. Thus, the guidance of missile systems and the accuracy of telemetered data are severely affected by noise. Today's techniques of eliminating radio noise in receivers, only limit or dampen the noise, or eliminate both, the noise and the intelligible portion (during occurrence of noise) of the signal.

WANTED:

Antennas

998. Techniques for Suppressing Sidelobes of High Gain Antennas Below any Specified Minimum

It has been shown theoretically that the optimum antennas for microwave communications is that having high gain and very good sidelobe suppression. Invention of techniques for achieving high gain and negligible sidelobes would result in a great saving in equipment and installation costs.

1001. Antenna Measurements

For use in interference prediction, as well as to determine antenna behavior outside of the design band, rapid and reliable technique is required for measuring three dimensional antenna response outside the design band. The technique should include consideration of aperture feeds at frequencies other than the design band.

1065. Miniature Antenna in the 6-60 MC Range

An antenna not over 6' in any dimension, weighing less than 100# and capable of handling 200 watts average power over the 6-60 MC range with an impedance of 50-75 ohms. Omni-directional to 90° beam width in the horizontal plane and a minimum beam width in the vertical plane of 20°. Linear polarization is desired.

1087. Wide Band Antenna with Medium Gain, Undirectional

A wide band antenna of 10 to 1 frequency range which must maintain a single lobe pattern and be circularly polarized and also capable of receiving linearly polarized signals. This antenna should have medium gain on the order of 10 db above a reference dipole. A system of 3 antennas would cover the frequency range of 10-100, 100-1000, 1000-10,000 mcs.

WANTED:

Power Supplies

663. Thermal Energy Conversion (New Title)

Improved techniques by which chemical, thermal, or nuclear energy may be converted directly into electrical energy at efficiencies of 20 to 30%. The energy converter should be suitable for field use and simple to operate. It should be rugged and capable of operation over a temperature range of —65° to 130° F.

1072. Static Power Supply

A simplified system for cutting of conduction (gaining control) of the controlled silicon rectifier for dc to dc converter circuits and dc to ac inverters. The system should not be affected by changes in load, input voltage and temperature.

1081. Requirements for a Light Weight Power Pack

A need exists for a power supply capable of delivering as much power as existing chemical cells, but weighing no more than half as much.

WANTED:

Radar, Tracking, TV

864. (Revised) Miss-distance System

A system which will determine the vector miss distance between a missile and an aerial target. The system should be of a passive or semi-active type and should possess the capability of measuring miss distance to the nearest foot at extremely high sampling rates at any altitude below the ionosphere.

1138. Emergency Utilization of TV Transmitters For Anti-air Detection

Feasibility study and operational plans should be prepared to utilize certain military radar components in conjunction with existing TV stations to provide anti-air detection in times of urgency.

1139. Field Portable Digital Radar

Since most data transmission systems today employ digital techniques, it appears reasonable that digitally compatible radars be designed for use with such data transmission systems. The radars output will be purely digital for the functions of trigger video-antenna position, etc.

1140. Development of a Wide Angle, Cold Cathode, High Resolution Cathode Ray Tube

In order to accommodate new military electronic systems it is necessary to develop a high resolution (in the order of 5000 lines per inch), cold cathode, cathode ray tube. Such a device would have a wide application in military data display systems.

1141. Development of a Large Screen, High Resolution, Multicolor System for a Radar and Alpha-numeric Data Display

This display system should be capable of displaying radar data in real time, at a resolution of at least 1250 lines per inch and with a minimum of three (3) colors. It should also be capable of accepting alpha-numerica characters for simultaneous display with the radar.

1142. "Safe Area" Destruction of Missiles Entering Defense Areas

A technique should be developed to correlate long range tracking radar capability and a high speed frequency scan directional radio with combinations of times and frequencies for the purpose of either causing self destruction of a missile in a "safe area" or changing the flight path.

WANTED:

Miscellaneous

996. Increased Efficiency of X-ray Generation

The possibility of space travel has opened up frequency ranges for communications, which have hitherto been impossible due to the earth's atmosphere. Photon communications may become practical if the efficiency of X-ray generation were greatly increased.

997. Methods of Focusing X-rays.

The use of photons for space communications would come close to reality if it were not so difficult to concentrate the energy in a desired direction. In order to make this a practical link a method for focusing photons would be required.

999. Highly Efficient Coherent Optical Sources

It has been shown that the optimum frequency for space communications is that frequency at which it is possible to achieve sources whose apparent size is that of a wavelength at the communications frequency. It is therefore desirable to obtain coherent, plane wave generators at the optical frequencies.

1013. Voltage Reference Requirement:

A stable voltage reference for AC, producing about 10 volts from 20 to 20,000cps, accurate to 0.01%.

1041. Means of Preventing or Limiting Heat Transfer to the Surfaces of Hypersonic Wind Tunnel Nozzles and Walls, Through the Use of Magnetic Fields To Contain the Flow or Other Approaches

Questions You Ask About Social Security

August 14 of this year will mark the 25th anniversary of the signing by the late President Franklin D. Roosevelt of the Social Security Bill. We will commemorate at that time the establishment of a welfare system which has brought benefits to millions of American workers, their families, and beneficiaries. Born of the New Deal, the Social Security law has given hope to countless men and women facing retirement, for checks have gone out to those in need since January 1940, five years after the law went into effect.

For almost a quarter of a century the rank-and-file worker of America has enjoyed a sense of security never known before, because he knew that his loved ones would be cared for when he was no longer able to be the breadwinner.

In spite of the longevity of the Social Security system, however, many covered workers still do not know what their rights and benefits are under the law. Many do not know about the disability "freeze" provisions or the extra provisions for women workers.

Beginning on this page are just a few of the many questions asked of Social Security field offices. If you would like to know more about Social Security, visit your nearest Social Security office and ask for a copy of the free booklet, "Your Social Security."

Q: I have given up my job after working for almost 15 years. My work was getting too hard for me. I am 49 years old and I know it is a good many years before I can draw my Social Security. I would like to know when and how I should go about having my wages frozen so when I become eligible for benefits I will be assured of getting the highest pay to which I would be entitled.

A: There is no way you can freeze your wages unless you are so severely disabled that your condition prevents you from doing any substantial work, not just from doing the job you are accustomed to. If this is the case you should contact your nearest Social Security District Office.

Q: I work for the Boeing Airplane Co. My wife will be 62 on April 2, 1960 but has never worked under Social Security. Will she be entitled to benefits after that?

A: She will be entitled to benefits only after you retire and file for your own benefit.

Q: I was born November 6, 1901 and worked under Social Security from March 22, 1952 to May 30, 1959. If I quit now will I be insured when I become 65 years of age?

A: Yes.

Q: I am very confused as to Social Security. I have worked under Social Security since it started. When I got laid off May 1, 1959 I went to the social security office and they told me I should work at least three more years. I am 57 years old and can't find a job. She said they hold out the five years I make the least, which will be the next five years. I thought when I had ten years in I was insured for the top benefit, and wouldn't have to work any more.

A: Since you have worked at least ten years you are fully insured. This means that you will be eligible for benefits at either age 62 or 65, whichever you choose. The amount of your benefit, however, will be based on your average earnings under Social Security, excluding the lowest five years. Therefore, the longer you work the greater your benefit will be.

Q: Can a widow get as much from her Social Security if she takes it at 62 as she can if she waits until

she is 65? Would she get the benefit of an additional raise if there should be one?

A: A widow is eligible for the full benefit on her husband's record at age 62, and would also be eligible for blanket raises, should there be any in the future.

Q: My husband, who was in charge of funeral arrangements upon the death of his father, has been informed by friends that since sufficient funds were left by the father to cover his burial expenses the next of kin could not claim a lump sum death payment. Is this correct?

A: No. In this case the lump sum would be payable either to the surviving spouse who was living in the same household with the deceased, or to the estate of the deceased.

Q: I am 54 years of age and worked steady from May 1927 to March 1939. I also worked three months one summer and three weeks another summer. Do I have enough time in to draw Social Security benefits?

A: No. You would need approximately eight years of work under Social Security, the exact amount depending on your exact date of birth.

Q: I have a grandson who makes his home with me. His parents give me nothing for his keep. Would this child be eligible for benefits on my husband's Social Security record? My husband passed away April 15, 1958 and I received only the lump sum death payment. The child is now four years old.

A: No, since the law provides for payments only to the children of workers—their natural children, stepchildren or adopted children, but not their grandchildren.

Q: You state a husband can receive a lump sum upon the death of his wife. Does this apply to all persons or just those who have worked a certain length of time under Social Security? My mother received a lump sum on the death of my dad. She has never worked. Two weeks ago she passed away. Would we be eligible for a lump sum for her?

A: No, as the lump sum is paid only on the death of an insured worker.

Q: I have worked for three years, from 1942 to 1945 and then off and on until 1956. I have been drawing unemployment compensation every time I was laid off. Am I still eligible for social security when I reach 62?

A: Drawing unemployment compensation has no effect on your future eligibility for social security benefits, so if you have the required number of quarters of coverage you will be eligible.

Q: I sell on commission, which is worth a fairly good amount to me. Will I have to give this up if my husband draws his Social Security? I am ten years younger than my husband.

A: No. As long as you yourself are not receiving Social Security benefits there is no limit on the amount of your earnings.

Q: Since I have been married the last time I have not had my Social Security card changed to my new name. I'm not working now and haven't for the last eight years, but I did work a couple of times with it in my former married name. Will this hurt when it comes to drawing Social Security benefits?

A: You should contact your Social Security office to have your card changed to your new name, and also to obtain a post card form to send to the Division of Accounting Operations for a copy of your wage record. The work you did since you changed your name may not be posted to your record, and if not you can correct this but should wait no longer to do so.

Q: My wife has worked fifteen years full time under Social Security. If she worked part time for three years, then quits, will she be entitled to full benefits at 62?

A: She will be eligible for benefits, but the amount will depend upon her average earnings.

Q: I am 63 and drawing Social Security benefits on my own record as I have worked all my life. If my husband should pass away could I draw anything from his Social Security—a lump sum or monthly payments?

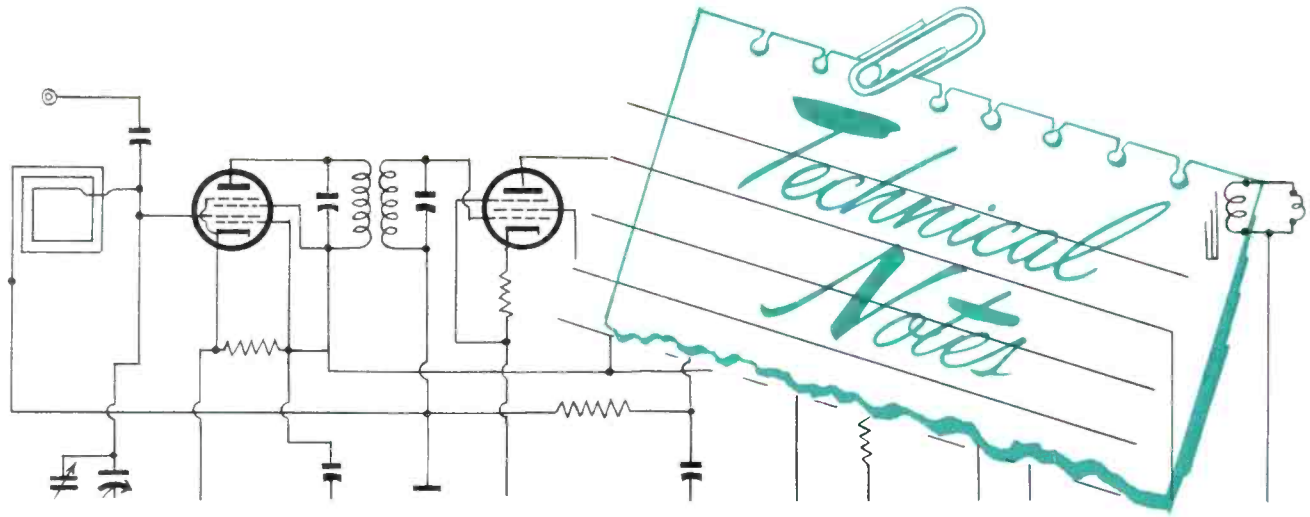
A: Yes, if you are living with your husband you would be eligible for a lump sum death payment. You would also be eligible for monthly payments on his record in lieu of your own if that benefit would be higher.

Q: I have paid into Social Security nine months at earnings of $100 per month. Could I draw benefits on this? What do you call six quarters? Does this all have to be worked under one employer? I've been told that if you don't work nine months under one employer you don't get credit.

A: Nine months work under Social Security is not enough to qualify anyone for benefits. Six quarters is about a year and a half—you must work and make at least $50 in each quarter. It is not necessaryy to do any specified amount of work for one employer in order to qualify.

Q: My mother, age 66, receives Social Security payments of $43.10 monthly. At her death she wants to know if I am entitled to a lump sum payment for burial expenses, as she has no insurance.

A: Assuming she receives this benefit on her own record, you would be eligible for the lump sum when you have paid her burial expenses, unless she should be survived by a husband who was living with her, who would then be eligible.



Better Radar Images

A radar system of such sharpness that it can track people walking or outline airplane and ship shapes so that general types can be identified, has been made possible by a new magnetron tube, the type 7093, just announced by Amperex Electronic Corporation, of Hicksville, Long Island, New York.

The Amperex magnetron and the radar system designed around it can be expected appreciably to improve safety and ease navigation at airports, harbors and rivers and other heavy traffic locations where extreme resolutions at close distances (up to 5 miles) are required.

Radarscope view of Schiphol Airport, Amsterdam, Netherlands, using radar system incorporating Amperex type 7093 magnetron. Small donut-shaped area at center of photo is the dead zone. Range (radius of circle) is 1500 meters (1641 yards).

The outstanding feature of the Amperex type 7093 magnetron is its extremely short pulses of 2/100,000,000 of a second (0.02 microsecond). In practice this means that two objects, one directly behind the other and as close as 4.5 yards, will appear on the radarscope as two objects. In the usual radars, these two objects would appear as only one on the screen.

And because its pulse length is so short, a radar using the type 7093 will distinguish objects to within a few yards of the radar transmitter. In conventional radar systems a large area immediately surrounding the radar is a dead zone. This is an extreme drawback when working in close quarters such as rivers and harbors. But if a radar system utilizing the type 7093 is mounted on a ship, the shape of the ship itself is visible on the radarscope.

The Amperex type 7093 operates at the extremely high frequency of about 35,000 megacycles (35 billion cycles per second). At this high a frequency the radar pulse can be shaped easily in a beam only 0.3 degree wide, which means that at 1,000 yards objects as narrow as 4.5 yards will either be defined or distinguished in great detail, depending on size.

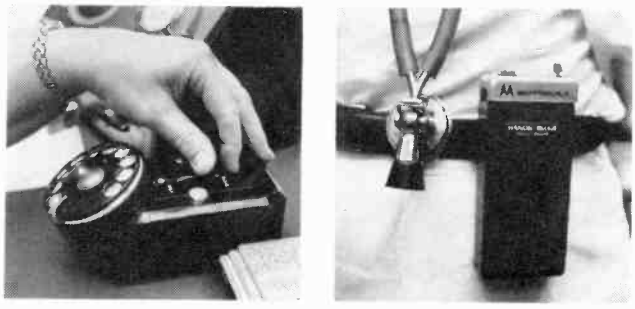
The combination of high frequency with proper antenna and extremely short pulse length means then a radar system that will resolve down to 4.5 yards in depth as well as width (both in bearing and range).

Military applications are also foreseen. The type 7093 can help make possible extremely high resolution military mapping radar systems for bad weather and nighttime reconnaissance when aerial photographs cannot be taken. Mounted in an airplane, the radar system will give a continuous, highly detailed picture of the terrrain over which the plane is flying. And for a permanent record, the changing radarscope display can simultaneously be tranferred to a moving strip of film.

In addition to its short pulses and high frequency, the

Amperex type 7903 also features high peak power output of more than 25 kilowatts, extremely small size and weight (4.2 lbs.).

Hospital Intercom



Motorola is marketing a handy radio paging system, whereby the central switchboard of a hospital, factory, or similar establishment can dial code numbers and transmit signals and messages to key personnel. At left, above, is the dial and the switches at the message center. At right, a receiver is clipped to the belt of a hospital physician. It's no longer necessary to call Dr. Kildare over the PA system.

Pumping the Radar

A significant improvement in the sensitivity of ground-based radars, equivalent to a 50 per cent increase in range or a 125 per cent increase in area covered, has been achieved during tests by the combination of a new type amplifier tube and a special method called synchronous pumping, that permits the full capabilities of the tube to be used.

The new equipment developed by Zenith Radio Corporation was tested on an L-band radar at the Rome Air Development Center, Griffiss Air Force Base, New York.

Zenith's parametric amplifier tube, together with the synchronous pumping method originally suggested by Kenneth G. Eakin of Rome Air Development Center, can also obtain a comparable increase in sensitivity of other types of radar, both civil and military, the announcement said.

Synchronous pumping is a sophisticated method of operating a parametric amplifier in connection with a radar set. Following this technique, the amplifier is energized by radio frequency power having precisely twice the frequency of the signal transmitted by the radar.

Until use of this method in tests by Zenith at the Rome Air Development Center, many scientists believed that some measure of impairment of the performance of parametric amplifiers, caused by the so-called idler channel, could never be avoided. However, with synchronous pumping, the idler is used in such a way that no impairment whatever occurs, and the full capabilities of the amplifier are realized. This was fully confirmed by the experiments at the Air Force Installation, the announcement stated.

Reading Time

From Tinfoil to Stereo *by Oliver Read and Walter Welch, Technical Book Division, Howard W. Sams & Co., Inc., 2201 E. 46th Street, Indianapolis 6, Ind. 576 pages. $8.95 through March 31; $9.95 thereafter.*

This volume is a step-by-step story of events of the development of Edison's crude device, almost a plaything, into a mighty industry and a major medium of entertainment. This latest Sams publication is a complete history of the phonograph and recording industries, from earliest times up to the most modern stereo equipment.

In 29 chapters, and with the inclusion of hundreds of rare photographs, dozens of which have never before been published, the authors have assembled into one volume the complete history of a major American art form. *From Tin Foil to Stereo* is a book that will appeal to anyone interested in the history of American ingenuity and industry, and is a bit of "Americana" of special interest to hi-fi enthusiasts, audio engineers, hobbyists, antique collectors, historians, etc.

A larger-than-average 64-page Appendix includes much background and technical information that has heretofore been difficult, if not impossible, to locate, i.e., reproduction of Edison's original drawings of the phonograph, a complete corporate genealogy chart of the phonograph and recording industries from 1877 through 1958; a comprehensive bibliography, etc.

Thomas Alva Edison shown in his lab at Menlo Park, N. J., in 1906, listening to his new Triumph Phonograph. This device was unique in being the first phonograph containing a triple spring motor.

STATION BREAKS

Dragnet at KING-TV

A children's show on KING-TV, Seattle, Washington, had an unexpected added attraction recently when a burglary suspect broke into the building adjacent to the studios. The show "Wunda Wunda" was being taped. Al Smith, the director, alerted to the trouble next door, interrupted the production, trained lights and cameras on the fire door where the police had entered the adjacent building.

The show was under way 15 minutes later when police marched the handcuffed suspect across the set, to the surprise of the performers, but not of the Local 77 technicians, who taped the entire sequence.

Tape proved its versatility when the station ran the entire episode later as a special newscast.

Unionists of SAG

In any strike of the Screen Actors Guild there's a real pro in the membership to "roll the union on"—Actress Shelly Winters.

It seems that Shelly once worked in a five-and-ten-cent store in New York. The salesgirls were up in arms about lavatory facilities and other things. She organized them and called a strike, but decided she needed help. Where to go? She dialed information and told the telephone operator her problem. The operator gave her the name of the old CIO Retail & Wholesale Union. (PAI)

Wichita Mat Service

Sets and props at Station KARD-TV, Wichita, Kansas, are getting steady use by members of Local 271, thanks to an idea dreamed up by the general manager. The basic flats, props, and all bric-a-brac has been photographed and listed in a catalog. This catalog is made available to advertising agencies, salesmen, etc., and sponsors are encouraged to make various combinations of the standardized flats and props for their shows.

Lawyers' Closed Shop

In New York City, the men who conjure up legal arguments against the closed shop and union shop for union-hating industrialists last week started considering a closed shop to end all closed shops—for themselves! Lawyers practicing in New York State were told by Chief Judge Charles S. Desmond, of the Court of Appeals, to set up a compulsory organization which every lawyer in the state would be required to join. According to Judge Desmond, who made his proposal to the Fordham Law Alumni Association, the lawyer's closed shop would collect annual fees and all by itself decide who would and who would not be permitted to practice law in the State. (PAI)

Dallas Name Changes

As a result of the publication last month in the TECHNICIAN ENGINEER of the list of local union business managers, we have received a correction from Dallas, Texas:

Howard E. Chamberlain is now business manager of Local 1257. Mail should be addressed to his attention, at 3248 Sheila Lane, Dallas 20. The telephone is FL. 7-3430.

Red Network Grows

The U. S. Information Agency reports that the Communist bloc expanded its number of television stations more than 50 per cent last year.

The Sino-Soviet bloc added 67 new TV transmitting stations in 1959, USIA said in a year-end report. The Soviet Union added 45 of them and now has 136 of the 189 Communist TV outlets.

The free world, excluding the United States and Territories, Canada and Armed Forces units, put 282 new stations on the air during 1959 to bring its total number of TV outlets to 1,088.