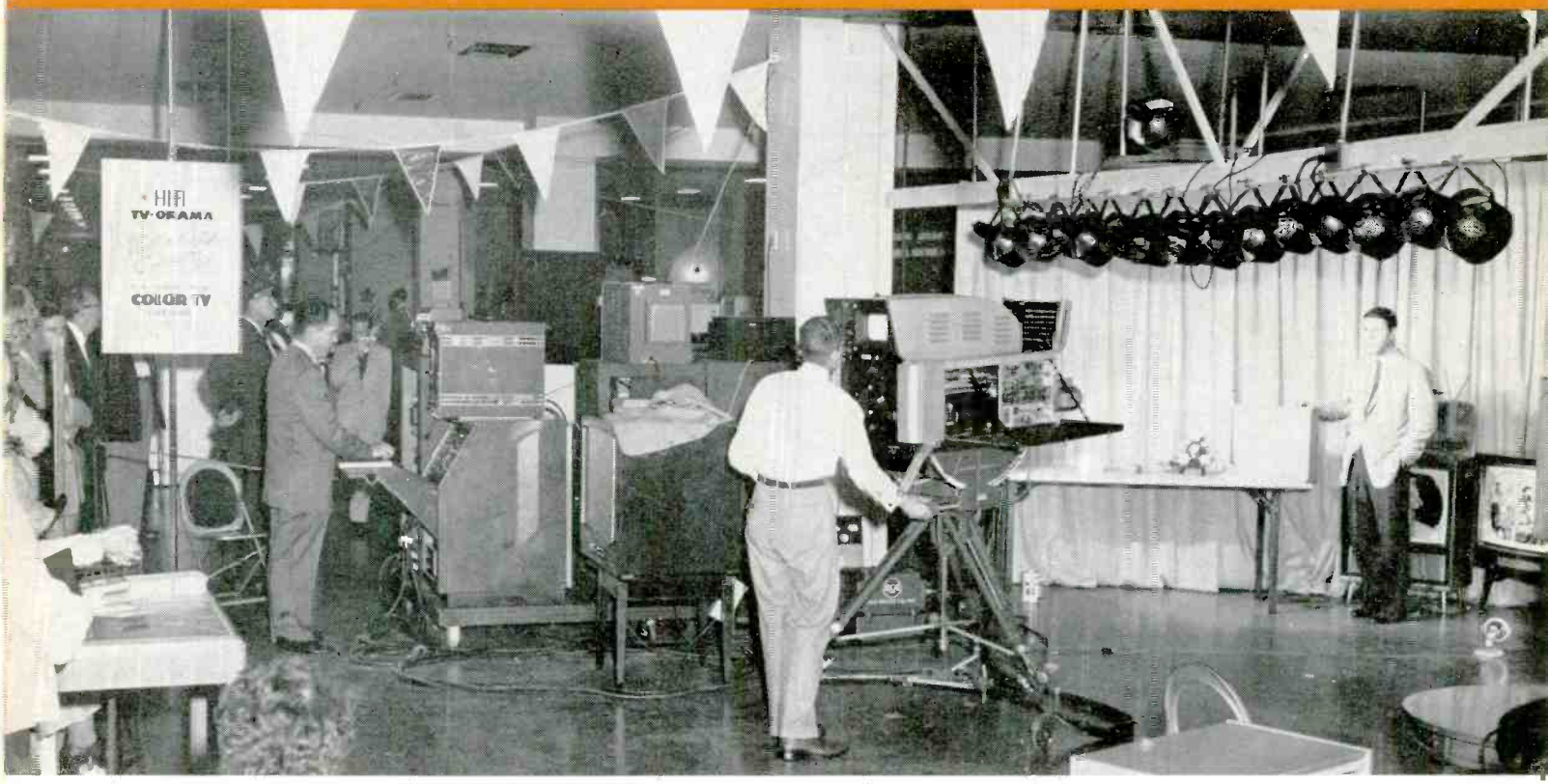
RADIO, TV and RECORDING

TECHNICIAN-ENGINEER

NOVEMBER, 1957



Department Store Closed Circuit Color TV Demonstration

RADIO, TV and RECORDING
TECHNICIAN-ENGINEER

VOLUME 6 NUMBER 10

PRINTED ON UNION MADE PAPER

. . . in this issue

. . . the cover

The "Color TV Caravan" has been making a tour of cities, presenting closed-circuit demonstrations in department stores. E. I. Dupont De Nemours and Co. utilizes the Caravan to present its fabrics, RCA to promote its color TV equipment and Allied Purchasing Corp. makes arrangements with its affiliated stores.

Our cover shows an overall view of one demonstration and a model from the store gets a short course in TV from IBEW members John O'Brien and Frederick Preisler, Jr., (left to right). The model: Miss Anita Amorosi, and the department store—Hecht's, in Washington, D. C. (Pictures courtesy Hecht's Photo Department.)

commentary

Each time the McClellan Committee uncovers another case of crookedness on the part of a labor official, anti-labor politicians and big business spokesmen mount their soap boxes to call for new legislation to regulate labor.

But, as labor union officials have pointed out, there are plenty of laws on the statute books now. They might be enforced before we go about writing and passing new ones.

For instance: Sec. 302(a) of Taft-Hartley makes it a crime for an employer "to pay or deliver," or to "agree to pay or deliver" any money or things of value to a representative of his employes. This section applies also to payments through an employer's agent.

Sec. 302(b) of Taft-Hartley makes it a crime for a representative of the employes to "receive or accept," or to "agree to receive or accept" such gifts.

And, under Sec. 302(d), any person who violates the prohibition on bribe-giving and bribe-taking is subject to a fine of not more than $10,000 and a jail term for not more than a year, or both.

Decent trade union officials and members have been disgusted by the tales of bribery that have come out of the McClellan Committee hearings in recent weeks. They show business at its worst, paying out large sums to avoid organization of workers or to fix sweetheart deals.

—From an Editorial in the *AFL-CIO News*.

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 the 1956 figures:

Sept., 1957—121.1; Sept., 1956—117.1.

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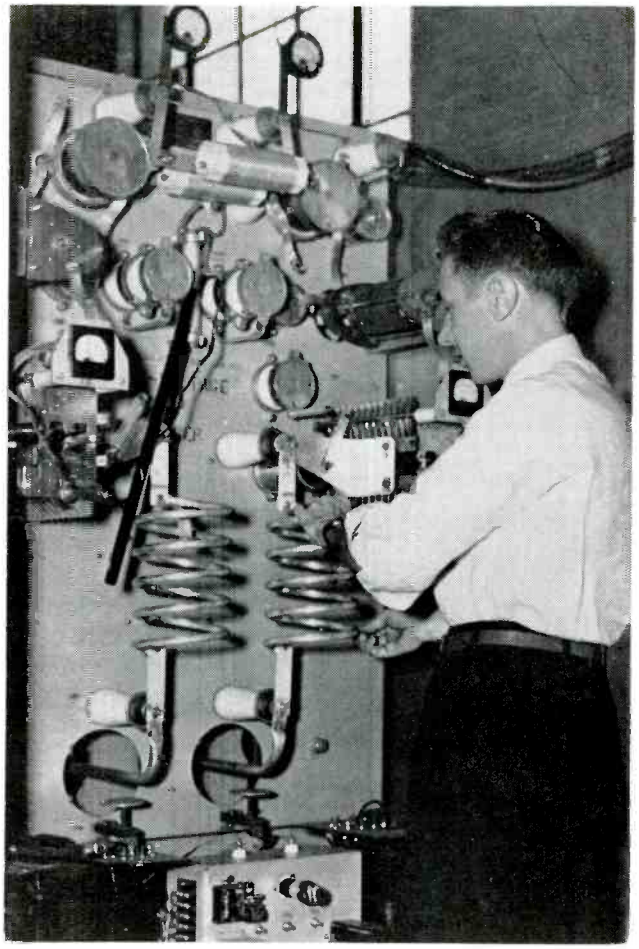
A view of the output stage of a transmitter at the NBS radio station WWV. Components are interchanged to cover the frequency range, 2.5 to 25 megacycles.



Time Signals

FOR TRACKING SATELLITES

WWV AND WWVH SIGNALS ASSIST THE ELECTRONIC AND ATOMIC AGE

WHEN American scientists began tracking the Russian satellite, they relied on the broadcasts of a relatively little-known government radio station for coordinated timing. The tracking stations used the time signals regularly broadcast by Station WWV at Beltsville, Md.

Tracking teams will also use the WWV signals when the United States launches satellites of its own. In its everyday work, WWV helps keep the country's clocks on time, its musical instruments in tune, and its broadcast stations in their channels. It also makes possible the accurate use of radar.

The station and a twin (WWVH) in Hawaii are operated by the Boulder (Colo.) Laboratories of the National Bureau of Standards, Department of Commerce. Dr. Allen V. Astin, Director of NBS, pointed out that today the stations make available the standards of time, radio wavelengths and musical pitch in every American plant, laboratory and studio that needs them. They also tell the users of shortwave radio what the outlook is for broadcasting conditions, and during the International Geophysical Year notify scientists of periods when their observations should be intensified.

A piano tuner in Ohio, by dialing WWV on his short-wave receiving set, can find out whether his tuning fork is on pitch. Meanwhile a watch manufacturer in New York is checking his inspection instruments for accuracy, a Navy gunner is finding out why he missed a target, and the operator of a power station is bringing his output to a true 60 cycles per second.

On the left are the drums on which are mounted the sound track for the WWV code and voice announcements. Rack to right contains amplifiers and control equipment.

Government, university and private research laboratories rely on WWV. If there were no WWV, many an industrial organization would have to maintain its own source of time measurements at a high cost. Organ manufacturers would have to make some other arrangements to be sure their products were on key.

WWV guarantees accuracy of its broadcasts to within one part in 100 million. This is about the accuracy of the earth itself as a timepiece; because the earth varies a little in the regularity of its revolutions on its axis during each year.

Although WWV is maintained for United States users, its short-wave messages bounce around the globe. In 1954 Hurricane Hazel cut off the power for seven hours, and protests at the interruption poured in to the National Bureau of Standards from all over the world. Once when the power of one of the six transmitters was intentionally lowered, the French Embassy reported that this was preventing completion of a series of measurements in France. WWV kept the same power on this frequency until the experiments were over.

The station now has gasoline engines and generators for emergency use in case of power failures.

Twenty-four hours a day WWV answers unspoken questions such as these: What time is it? Exactly how long is a second, a minute, two minutes, three minutes, five? What is Note A above middle C? Can we reach London by short wave this afternoon? Will my station's broadcast signal be heard today?

In the course of every hour, WWV broadcasts twelve voice announcements of Eastern Standard time, twelve code signals of universal time, six periods of an audible tone at 600 cycles per second, five periods of lower audible tone at 440 cycles per second (A above middle C), two predictions of short-wave radio conditions, two signals about the International Geophysical Year, and one four-minute period of silence. All through the hour (except in the period of silence), ticks mark off the seconds. To indicate the end of a minute, the 59th tick is omitted, and there is a double tick at 60 seconds.

The voice says cheerfully, "National Bureau of Standards, WWV; when the tone returns, Eastern Standard Time is . . ." and adds the figures and "a.m." or "p.m." To the staff members at WWV, it is a familiar voice but unknown. It came recorded on a machine bought from an Atlanta manufacturer. The instrument neatly splices three records every five minutes to give the complete announcement; after the introduction come, for instance, "nine five" and "a.m."

The universal time (UT) is sent in International Morse code. (Universal time is the time as Greenwich Time, and is based on Greenwich, England, Noon Eastern Standard Time is 1700 UT.)

The 600-cycle audible tone can conveniently be converted by electronic instruments into other frequencies. For example, it can be divided by 10 for comparison with the customary 60 cycles of household circuits.

The 440 cycles per second would be recognized by a musician as A above middle C, the standard musical pitch in the U. S. Before it was supplied by WWV, musicians and manufacturers of musical instruments had to rely on standard tuning forks or organ pipes, both of which were affected by temperature changes. The WWV staff has been told that symphony orchestras and individual musicians rely on the musical tone.

Predictions of short-wave conditions are made in "radio propagation forecasts" that are issued every six hours. The NBS North Atlantic Radio Warning Service at Fort Belvoir, Va., near Washington, telephones the latest information to the staff at WWV. The forecasts are then transmitted

automatically and report the expected condition for the next six hours of the ionosphere—the ceiling of electrified gases high above the earth from which short waves are reflected. The predictions tell the State Department whether it will be able to send its messages without interruption to London and Berlin. They also give the radio broadcast networks a chance to plan their live broadcasts from correspondents abroad.

Twice each hour, like the radio forecasts, code reports for IGY scientists go out from WWV. A period of "alert" is designated whenever the sun is so active as to create conditions scientists will want to study. During the alert period, a "special world interval" may be announced for instance, when a magnetic "storm" seems probable within a few hours.

Even the four-minute period of silence each hour has its purpose. The channel thus left vacant, which is not used by any other American broadcaster, permits the measurement of atmospheric noise.

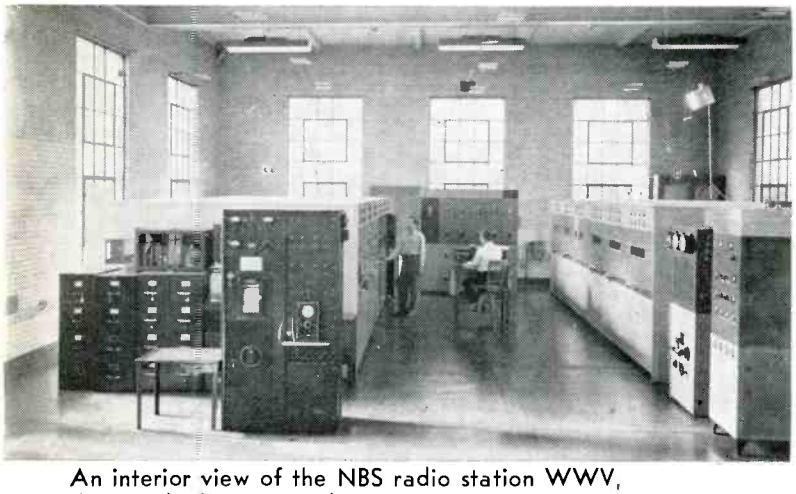
WWV is housed in a one-story, high-ceilinged brick building, set among clusters of antenna poles on twenty acres of land near Beltsville, Md.

WWV broadcasts on standard radio frequencies of 2.5, 5, 10, 15, 20 and 25 megacycles. The lower frequencies provide service over short distances and the higher over great distances. It is these frequencies that are used by commercial broadcasting stations to check whether their own frequencies are within the channels assigned to them. By means of electronic equipment, industrial plants, government and research laboratories can use these six to measure other frequencies.

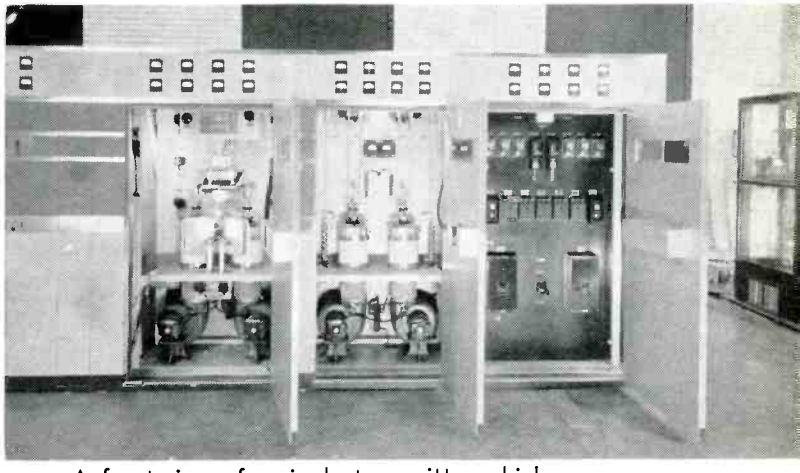
Including a standby, station WWV has seven transmitters.

The frequency and time signals are controlled by a crystal vibrating at the bottom of an air-conditioned well. Twenty-two feet below the floor of the station is a tiny room, kept cool and dry, in which a piezoelectric quartz crystal vibrates electrically at the rate of 100,000 cycles per second. Through electronic multiplication and division, this crystal controls all the frequencies down to one and up to 25 million cycles per second.

There are really three crystals in the well—one in use, one in standby, and one spare. Twice each hour the frequencies of all three are compared



An interior view of the NBS radio station WWV, showing high-power radio transmitters, each of which broadcasts one radio carrier frequency. The master crystal for all the carriers is in an air-conditioned well below the floor.



A front-view of a single transmitter which broadcasts one of the radio carrier frequencies utilized by the National Bureau of Standards radio station WWV. The three sections are: (left to right) (1) radio-frequency stage, (2) the a-f amplifier and (3) the control panel.

The site is near the Department of Agriculture's large research center.

The visitor is struck by the relative shortness of the wooden poles that carry WWV's antennas. From 20 to 100 feet high, they are proportioned to the six different wave-lengths used and are diminutive compared to the high towers used by commercial broadcast stations.

against a reference crystal as a check on their accuracy. The crystals were put in the well to shield them from noise, vibration, and temperature variations. When an engineer has to enter the well for maintenance work, its temperature may rise one-half a degree or more.

Crystals have an indefinite life, but are being continually improved and replaced. Two, the

NBS radio station WWV houses its transmitting equipment in the building pictured here, at Beltsville, Md., just outside Washington, D. C.

oldest at WWV, have been in use about 12 years, one about four years.

Several manufacturers make radio sets solely for the reception of WWV. These sets will receive several or all of the six standard frequencies. Some of the sets come equipped with oscilloscopes.

Why is the length of the second so important? Scientists may be conducting delicate laboratory experiments that depend on it. Electronics manufacturers need it to calibrate their instruments. Radar operators need it in order to calculate the distance of an object. The number of yards to a target is indicated by the time it takes the radio waves to reach it and be reflected back. As they move at 186,000 miles per second, an accurate time interval is a highly important factor. Depth-sounders that measure distance to the ocean bottom also require exact timing.

Jewelers use watch rate recorders, expensive electronic machines that print in less than a minute the performance of a watch. One jeweler was not happy to learn from his customer, an NBS employe, that the watch rate recorder might possibly be in error. It was easily checked by recording WWV time ticks instead of watch ticks.

A new milkman came in one day with a bottle for lunch. As he set it in the icebox he inquired politely, "You wouldn't by any chance have the time, would you?" The engineer in charge put down his sandwich and showed the milkman, among other things, what is probably the most accurate clock in the world.

There is never a planned shutdown at WWV. Lest there be a repetition of the seven-hour halt caused by the hurricane in 1954, two gasoline-operated generators have been installed. The engines can be started in 30 seconds, and after a two-minute warmup will supply enough electrical energy to operate two of the six transmitters at full power.

To give better service at Pacific Ocean points, the National Bureau of Standards established station WWVH on the island of Maui, Hawaii, in 1949. WWVH keeps in step with WWV, and broadcasts the same services on 5, 10 and 15 megacycles. Its radio predictions are for the North Pacific radio paths, such as Seattle to Tokyo or Anchorage to San Francisco. The forecasts are prepared by the NBS North Pacific Radio Warning Service at Anchorage. The pattern of the broadcasts is very similar for the two stations, except that the periods of silence are different, and no voice announcements are made.

The radio stations and related activities are directed from the NBS Laboratories at Boulder, Colo. The Boulder Laboratories, which maintain the USA primary frequency and time interval standards, monitor the frequency and time broadcasts. The time signals are kept in agreement with "uniform time" as determined by the U. S. Naval Observatory, Washington, D. C. When necessary, an adjustment of 20 milliseconds (20 thousandths of a second) in the broadcast signals of both stations, WWV and WWVH, is made on Wednesdays at 1900 Universal Time (2 p. m., Eastern Standard Time).

Stations in many countries broadcast their own standard time and frequency signals. Officials and scientists from the following countries, among others, have visited WWV: Australia, Canada, China (Taiwan), Colombia, Ethiopia, Brazil, France, Britain, India, Italy, Japan, Pakistan, Russia, Switzerland and Thailand.

Besides official and technical correspondence regarding WWV and WWVH, many letters from listeners and users of the broadcasts all over the world are received at the NBS Boulder Laboratories.

Under the same experimental conditions, atoms and molecules have the same vibration rates everywhere on the earth. This fact is being used, both at NBS and elsewhere, to develop atomic standards of frequency and time based on the unchanging properties of the atom. An atomic standard would be more constant and dependable than the present standard, the rotating earth, which varies from time to time and is also gradually slowing down.

NBS scientists predict that some day the quartz crystal oscillators at WWV and WWVH will be tied to an atomic frequency standard. When this is done the stations may need little or no outside information in order to broadcast the correct frequency. And the accuracy of the broadcasts may be even greater than is now possible.

IBEW Continues Opposition

Petition for Rehearing of Rule Relaxation Is Filed with FCC

A CONCISE statement of facts and conclusions leading to the belief that the Federal Communications Commission should reconsider—by rehearing—its most recent action in the Remote Control proceeding has been filed by the IBEW. The Report and Order is questioned by the Petition as the next legal step in the long-standing controversy as to the propriety and feasibility of applying remote-control methods to high-power and directional standard broadcast stations.

The "reports and records" relied upon by the Commission are emphasized by the IBEW Petition as apparently being indispensable to the result (the FCC Report and Order), but unavailable to the IBEW and other interested parties. Such action is questioned by the Petition, at some length.

The full text of the Petition is reproduced herein below, for the information of our membership and all other interested parties.

United States of America

Before the

Federal Communications Commission

In the Matter of Amendment of Part 3 of the Commission's Rules and Regulations Relating to Remote Control Operation of Certain Standard, FM and Non-Commercial Educational FM Broadcast Stations.	**Docket No. 11677**

PETITION FOR REHEARING

The International Brotherhood of Electrical Workers, hereinafter sometimes referred to as "IBEW" respectfully petitions the Commission for rehearing in the above-captioned proceeding. Public notice was given by the Commission of the decision herein by publication of the Report and Order together with Amendments to Regulations, Part 3 in the Federal Register dated September 27, 1957, (Vol. 22, p. 7682, F. R. Doc. No. 57-7958).

The basis for the instant Petition for Rehearing is as follows:

1. The IBEW took the position in these proceedings that, with respect to low-power directional operations the material submitted in support of the petition was inadequate, and with respect to high-power, directional and non-directional, operations evidence was completely lacking. Thus at p. 40 of the IBEW Comments filed July 27, 1956, IBEW stated:

> "It can thus readily be seen that there is literally nothing with which the Commission may proceed. For the Commission to take any action other than dismissal of the Petition would not be in the public interest or in accord with its previously established procedures. No competent evidence has been submitted with the sole exception of Exhibit 7 relating to low power directional operations. That evidence, as pointed out above, is an insufficient showing of reliability. As to high power directional and non-directional no material, even of low quality, has been presented.
>
> "The IBEW respectfully submits that the Petition should be dismissed."

2. Some fifteen months after the assertion of IBEW's position as stated above and the submission of material in support of that position, the Commission has now issued its Report and Order wherein it is clearly stated that the Commission's determination to permit a relaxation of its rules relating to Remote Control Operations is based upon "the many comments filed in this proceeding . . . *and* our own knowledge and experience in the field, *obtained through reports and records.*" (¶22, Report and Order, emphasis added).

3. It thus clearly appears from the Commission's own Report and Order that the action of the Commission has been based as much on the reports and records referred to above as on material filed in the instant proceeding. The determination of the Commission herein has thus clearly been based on the non-disclosed material as much as it has been on matter of record herein.

4. Notwithstanding the foregoing, the Commission's Report and Order fails to inform IBEW and other interested parties precisely what "reports and records" were relied on by the Commission or what substantial and material facts were contained therein. The Commission, in other words, has plainly reached a decision herein on the basis of "reports and records," revealed to be indispensable to the result arrived at, but which IBEW and other parties have had no opportunity to examine, much less to rebut and refute.

5. The action of the Commission in basing its decision on matters not of record and, even now, not known to IBEW and other interested parties is not in accordance with the policies or provisions of the Administrative Procedure Act; the Communications Act of 1934, as amended; Public Law 901, 81st Congress, approved December 29, 1950; and the due process clause of the Fifth Amendment to the Constitution of the United States.

Wherefore, IBEW respectfully files this its Petition for Rehearing and requests that the Commission

(1) Vacate or suspend its order adopting amended rules herein pending redetermination of issues raised by the instant Petition;

(2) Furnish IBEW and other interested parties information as to the nature and identity of all reports or records referred to in ¶22 of the Report and Order herein and particularly as to the precise potions thereof relied on by the Commission.

(3) Permit IBEW and other interested parties opportunity to refute and/or rebut reports and records referred to in (2) above, such permission to include opportunity for access to any such material in the possession of the Commission not generally available to the public and reasonable time to evaluate and reply with respect to such material.

Respectfully submitted,

LOUIS SHERMAN
1200 Fifteenth St., N. W.,
Washington 5, D. C.

Attorney for
International Brotherhood of Electrical Workers

WILLIAM J. BROWN
1200 Fifteenth St., N. W.
Washington 5, D. C.

Another TVR ID Appears

Television recordings made by IBEW members of Local 1217 in St. Louis, Mo., are now identified by this label. The development of the label was a joint project of the local union and Technisonic Studios. In our December 1956 issue, Page 9, we showed a similar ID card used by another IBEW Local.

Your Contributions to COPE
Are Insurance For You—
Give Now and Benefit Later

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233), SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF

Radio, TV and Recording Technician-Engineer, published monthly at Washington, D. C., for September, 1957.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, International Brotherhood of Electrical Workers, 1200 Fifteenth Street, N.W.; editor, Albert O. Hardy, 1200 Fifteenth Street, N.W.; managing editor, none; business manager, none.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) International Brotherhood of Electrical Workers (an unincorporated labor organization), 1200 Fifteenth Street, N.W., Washington 5, D. C.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

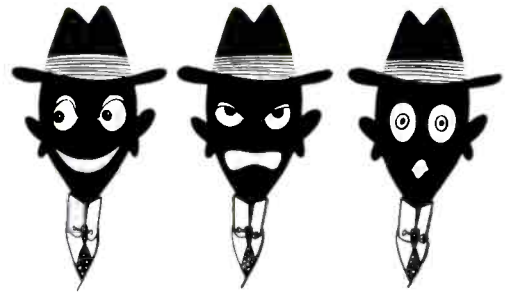
4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

ALBERT O. HARDY, *Editor.*

Sworn to and subscribed before me this 23rd day of September, 1957.
(Seal) LAWSON WIMBERLY, *Notary Public.*
(My commission expires September 30, 1957.)

It takes all kinds of members to keep an organization going full steam. Run down the list below and you'll find. . . .



There's One at Every Union Meeting

1. The Confused Listener

He tries to be helpful but can't follow the proceedings. He rises to say there's a motion before the house; and has to be told it was rejected half an hour ago. He has a habit of sitting in the last row and of complaining he can't hear. Throughout he carries an outraged attitude of "why don't people tell me these things."

2. The Professional Seconder

He never thinks up an idea, and is so overwhelmed when someone else does, that he comes in with a loud "second the motion." Any nonsensical scheme any one can think up gets his nod. He then settles back to enjoy the confusion, or dozes until time for him to chime in with another second.

3. The Willing Voter

He takes little part in business but votes in loud voice. He is always eager to swell the vote of the prevailing side. A dangerous yes man.

4. The Behind-the-Hand Mutterer

He fumes, fidgets, mutters to his neighbor, but seldom takes the floor to speak. If you sit beside him you will miss hearing the most important points of the meeting. He votes no consistently, and mutters, "What can you do in a mess like this—it's a gang of dopes."

5. The Explode-at-the-Door Man

He sits quietly through the meeting as if everything were to his liking, but at the door he boils over. You hear him say, as he rounds up a few discontented members, "And another thing I didn't like . . ."

6. The Next-Day Complainer

After thinking it over he decides the meeting had better be run over. As he corners you he says, "Are you going to stand for that?"

7. The "We-Always-Do-It-This-Way" Member

He is a traditional, forever looking over his shoulder. The old way is the only way. If a change of any kind is suggested, or a new idea brought forth, he fears the new officers are leading up to ruin.

8. The Super-Parliamentarian

He knows all the rules when they are not needed. But when you run into difficulty, and call upon him for advice, he has forgotten his rule book.

9. The Stay-at-Home Member

Meetings bore him. He has his own way of wasting time. Besides he doesn't want to feel responsible for anything that happens. The blood is not on his hands if he didn't go to the meeting.

10. The Obstructionist

He delights in tying the meeting into knots. Anything that he can do to make the meeting so long or unpleasant that members will stay away next time, he will gladly do. He may work with henchmen to wear down the membership so that his gang can take over.

11. The Pre-Meeting Specialist

Before the meeting is held, he explains just what should be done. He is still going strong at dinner time, but by meeting time he is exhausted and has to be guided home.

—*Maryland Labor Press.*

"Study your union card, Sam, and if the idea does not square with that, it ain't true."

SAMUEL GOMPERS' ROPE OF SAND

'MY job as the president of the AFL was coveted by no one in the early days," Samuel Gompers wrote in his autobiography. "There was much work, little pay, and very little honor."

The top officer of the AFL back in 1886 was to receive $1,000 a year and to "devote his entire time to the interests of the Federation."

"The office fairly went begging," Gompers recalled. John McBride of the Coal Miners frankly stated that he could not afford to accept a position to which he would have to devote his full time upon such a meager salary.

"Finally I was again nominated and persuaded in the interest of the movement to accept the nomination and election," wrote Gompers.

His headquarters was an eight-by-ten-foot cubicle made available by the Cigarmakers in New York. It had little furniture other than a kitchen table, some crates for chairs, and a filing case made of tomato boxes. Later, he obtained an old roll-top desk and a secretary.

The short (5′ 4″), sturdily-built Jewish immigrant was a mass of energy, and he quickly set about breathing life into the collection of craft unions which made up the new American Federation of Labor.

He once boasted that "the Gompers are built of oak," and his appearance underlined the statement. He had a strong jaw beneath a broad forehead. In the early 1880's he had dark, unruly hair and wore a drooping walrus mustache with a little tuft of hair on his chin. In later years, he was to be clean shaven, with a glittering pince-nez shielding his dark, snapping eyes. He dressed well, and his manners were gracious. Business leaders sometimes patronizingly spoke of his being "very much of a gentleman."

For more than half a century, men had tried unsuccessfully to form a national labor movement in America. Some international craft unions had been formed, but the National Trade Union and the Knights of Labor had failed to hold them together.

How then, many asked, can a little man such as Gompers, operating on a shoestring, succeed?

The answer is found in two parts—the first being the driving spirit and genius of Gompers himself, and the second being his firm conviction that a national labor organization must be founded on the bedrock of voluntarism. Each affiliated union should be autonomous, as was each state to the federal government.

George Meany says in an introduction to the newly revised edition of *Seventy Years of Life and Labor*, Gompers' autobiography: "He believed with his whole soul in personal freedom, in democratic government and in the ultimate triumph of voluntary human cooperation over any form of compulsion or dictatorship. To this day, the American Federation of Labor and Congress of Industrial Organizations functions on a completely voluntary basis, as an association of free and self-governing trade unions."

The leader of the Communist revolution, Nikolay Lenin, trying desperately to spread the doctrine of the Red Manifesto in the '20s, called

such an approach to organization of workers, "a rope of sand." This bourgeois philosophy, he laughed, will die for lack of proletariat direction. While the Marxists marched around the world each May and October, waving their placards and predicting worldwide revolution, Gompers, Peter McGuire, John Mitchell, and other early American labor leaders moved slowly but steadily onward.

Gompers, in fiery oratory, told the Communists that his rope of sand would prove more powerful than chains of steel. To his associates he gave one perennial and undeviating bit of advice: "Organize! Organize! Organize!"

Philip Taft in his excellent book, *The AFL in the Time of Gompers*, relates many incidents on those early days of struggle.

Gompers was a tireless traveler on behalf of trade unionism.

"When requests came for me to address a labor meeting, I replied that I would be glad to do so if my expenses were paid," he related. "My services I willingly contributed. I thoroughly enjoyed traveling, the swift motion of the cars, new faces, new scenes, the cosmopolitan talk of the smoker. To me it was at once an opportunity for getting information and sowing the seeds of labor."

Once known as "Stuttering Sam," he outgrew any hesitations in his speech and eloquently bespoke the cause of the workingman across the nation.

Gompers had been apprenticed to the cigar-making trade at the age of 10. He was 14 when he joined a union. Twenty-two years as a union member were behind him when he became AFL president.

Though he held firmly to his "rope of sand," he was a practical hardheaded leader. He saw the necessity of discipline, of building up large reserve funds with which to finance strikes and weather depressions. He avoided ties with politicians, radicals, and utopian dreamers.

An old Swedish immigrant once told him, "Study your union card, Sam, and if the idea does not square with that, it ain't true."

One day in 1874, when young Sam was 24, he witnessed a riot in New York City which made him shirk sensationalism and radicalism in his trade union work. A meeting of the unemployed had been called to impress upon city authorities the need for relief during the current depression. The meeting was at first approved, and the mayor had promised to speak. Evidence that radical agitators were prepared to address the proposed gathering then caused a last-minute cancellation of the police permit.

At the scheduled hour, Tompkins Square was, nevertheless, densely packed with working people who knew nothing of the change in official attitude toward the meeting. Suddenly a squadron of mounted police appeared on the scene. Without warning, they charged into the crowd, indiscriminately swinging clubs and hitting out at everyone within reach. Men, women and children were ridden down as they fled in panic. Scores of innocent bystanders were severely injured.

Young Gompers barely saved his own head from being battered by jumping down a cellarway.

"I saw how professions of radicalism and sensationalism," he wrote years later in his autobiography, "concentrated all the forces of society against a labor movement and nullified in advance normal, necessary activity. I saw that leadership in the labor movement could be safely entrusted only to those into whose hearts and minds had been woven the experience of earning their bread by daily labor. I saw that betterment for workingmen must come primarily through workingmen. . . ."

He was careful not to get the young AFL involved in mass protest strikes and issues which did not directly involve AFL unions. His cautious attitude brought slow but steady growth to the Federation, and by World War I it numbered two million members.

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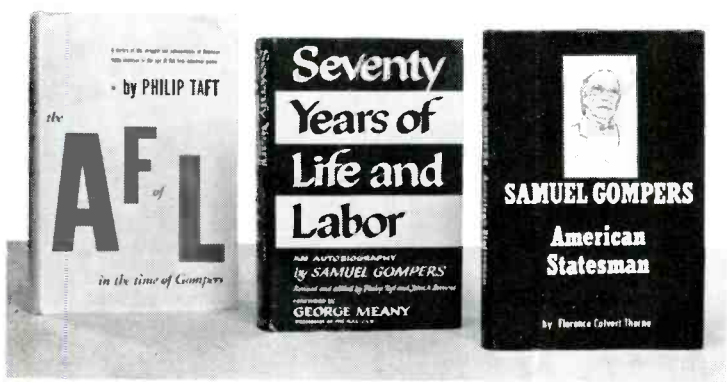

Three books have been published recently on Gompers and the AFL. From left: *The AFL in the Time of Gompers* by Philip Taft, published by Harper at $6.75; *Seventy Years of Life and Labor*, a reissue of Gompers' autobiography, revised and edited by Taft and Sessions, published by Dutton at $5; and *Samuel Gompers, American Statesman* by Florence Calvert Thorne, published by Philosophical Library at $3.75.

IBEW-Staffed Station First To Broadcast VHF and UHF

TELEVISION station WJMR-TV, New Orleans, La., is the nation's first to begin telecasting programs simultaneously on both very-high (VHF) and ultra-high (UHF) channels. The station is a basic network affiliate of the American Broadcasting Company. Its technicians are members of IBEW Local 1139.

Operating under an experimental permit granted by the Federal Communications Commission, WJMR-TV is transmitting the same program simultaneously on both channel 20 (UHF) and 12 (VHF). According to Chester F. Owens, president of the station, one primary purpose of the simulcasting operations is "to obtain important comparative experimental data concerning simultaneous UHF and VHF transmission of the same program from the same location."

Mr. Owens said present FCC regulations state that minimum allowable distance between identical channels in his station's area is 190 miles. In this case, however, only 162 miles separate channel 12 at Jackson, Miss., and the WJMR-TV channel 12 here.

A new General Electric directionalized VHF helical antenna is key to the tests. Following initial tests with the new antenna, permission for simulcasting was granted by the FCC. The G-E tests, Mr. Owens explained, proved that such programming can be pinpointed into specific patterns, with no overlap or interference into areas served by corresponding channels.

This is the first use of a VHF directionalized helical antenna, although similar devices have been used in the UHF frequencies.

The antenna is mounted atop a tower some 200 feet high. Key to the antenna, according to G-E broadcast engineers, is its ability to adjust signal patterns to predetermined specifications. The VHF helical antenna was developed by engineers of General Electric's Technical Products Department at Syracuse, N. Y. It is much simpler in design than are the widely used "batwing" antennas.

G-E broadcast engineers explained that whereas normal horizontal patterns of an antenna may be circle shaped, directionalizing can change the circle to an oval or football shape, or any other desired pattern, depending upon signal area to be covered.

Mr. Owens said data obtained by the simulcasting experiments are expected to be of use to the TV broadcasting industry and to government authorities, such as the Federal Communications Commission.

Charter Presented In North Dakota

A new IBEW local has been chartered in what one of our correspondents calls "a comparatively non-union city." International Representative Harold Becker, left above, recently presented to President Gordon Nelson, right, the charter for Local 1240 at the local's organizational meeting. Our thanks to Vernon Erickson of Moorhead, Minn., for sending us the picture.

PAY TV PICTURE SLIGHTLY SNOWY

Fourth System Proposed and Controversy Continues

IMMEDIATELY following FCC action authorizing a three year trial for Pay-TV, Representative Emanuel Celler of the House Judiciary Committee urged the House Interstate Commerce Committee to hold hearings as soon as possible on his bill to prohibit Toll-TV. He stated that this system of television broadcasting involves such a grave threat to the public interest that the Congress should make the determination whether the service should be allowed. He also expressed a personal opinion to the effect that Pay-TV broadcasting may result in "disastrous consequences."

Meanwhile, the developers of a fourth system, known as Teleglobe, requested that the Commission authorize the use of its methods, as well as the others of long standing, in television broadcasting. The Teleglobe system has filed a patent application which shows that no decoder attachment is necessary. This latest system proposes to transmit pictures without sound and that the sound channel would be available only to subscribers by direct wire lines. Proponents of this system point to the simplification of such an operation, since coin boxes and attendant collection problems would be completely eliminated.

This system was conceived by Solomon Sagall, one of the founders of Scophony Limited of London, with which Skiatron Electronics and TV Corporation is associated.

Almost coincident with the FCC's announcement that it is willing to start processing applications next March, many communities have taken an interest in the subject. The chairman of the Public Utilities Committee in Los Angeles—where bids of three applicants were opened on September 30—announced that the winning bid would operate on a non-exclusive basis.

The NARTB, the networks and many independent broadcasters have reiterated their hostility to any pay TV system. Most recently, the President of NBC, Mr. Robert W. Sarnoff, said that pay TV can succeed only by a movement of major attractions from free to pay status. He added that, in his opinion, the viewer would be left no opportunity to choose between free and pay TV and with no freedom of choice the public would have to pay for the entertainment they now receive free.

During its September convention in Oakland, the California State Federation of Labor was bombarded with speeches on the subject. The State Theatrical Federation proposed that the Federation take a position in favor of the system but the proposition was opposed by projectionist members of the IATSE and AFTRA. Generally speaking, it appears that most involved unions in New York and certain other sections of the country are opposed to pay TV and that those segments of unions involved in motion picture production in the Hollywood area are in favor of it. Still other unions have adopted a "wait and see" attitude. There is strong feeling on the part of many that the next session of Congress will be the determining factor, in any case, and that steam and blood pressure over the issue are presently unnecessary.

Help Wanted Ads Show Steady Drop

"Help Wanted" ads—one of the key barometers to the nation-wide employment picture — are dropping according to a recent survey made by the *New York Times*.

The *Times* analysis showed that each month of this year help-wanted advertisements "fell behind the 1956 month with the exception of January which was ahead by one per cent."

By May, according to the newspaper, the proportion of help-wanted advertising had fallen 8.5 per cent behind the space taken in 1956. Three New York newspapers have shown a drop of about 13 per cent in terms of advertising space with almost all of the loss being in the male division.

In Philadelphia, newspapers reported help-wanted linage was off due to a lowered volume of federal contracts, a mild recession in certain lines and a shortage of mortgage money.

In Detroit, help-wanted linage was off 40 to 50 per cent from last year. Newspapers in the "motor city" said the loss was caused by "slowness in the automobile plants plus a slowing of expansion in the industry and less government contract work."

Technical NOTES

Closed Circuit in Church

Closed-circuit television is helping solve seating problems for overflow attendance in Bethel Lutheran Church, Madison, Wis. Instead of being forced to stand or to attend later services, late arrivals are now ushered to choice seats in an adjoining chapel where services are viewed on two 24-inch TV receivers.

In addition, services are also transmitted simultaneously to a third floor "mothers' room." Here mothers and children view services on TV sets in nursery-room comfort without fear that small-fry capers will distract other worshippers.

A camera is mounted atop a control console in the church balcony, about 75 feet from the pulpit. It is equipped with a view finder and a three-lensed rear controlled turret. There is a control engineer's room, equipped with a 14-inch TV monitor, control and audio equipment.

TV Power Line Antenna

Zenith Radio Corporation recently announced development of a new power line antenna for TV that rids the living room of unsightly indoor antennas, eliminates fussing and fiddling with "rabbit ears" and similar devices, and lets the viewer "dial in" the best TV signal near or far from the station.

The Wavemagnet antenna is about the size of a large box of kitchen matches and mounts at the top and back of the TV. Zenith states that it can be used with any make or model of existing television sets, with no modification of receiver circuitry. It's still no substitute for outdoor antennas, but a step in the right direcion.

Many years ago, the company says, Zenith led the industry in removing outdoor radio antennas by developing the first Wavemagnet for household AM radio. A Zenith power line pick-up for FM radios followed. This highly sensitive device made elaborate outdoor FM antenna installations unnecessary in all but extremely difficult reception areas.

Device Extends Tube Life

An electronic device about the size of a cigar box, which hooks on the outside of a television camera, is expected to double life of costly picture originating tubes, the General Electric Company's Technical Products Department has announced. The device, as yet unnamed but described as an image-orthicon life extender, is said to be a major innovation for TV broadcasters. It prevents "burn-in and sticking of images" on I-O or image orthicon tubes. Paul L. Chamberlain, manager of marketing for the G-E Department's broadcast equipment, said the new device will be marketed immediately, for about $1,200.

At present, he said, the new "tube saver" can be used on seven out of eight TV cameras now in service throughout the broadcast industry. In the near future, it will be adaptable to all TV cameras. Mr. Chamberlain estimates about 1,600 cameras are in service in the nation's more than 500 TV stations.

Development of the new electronic unit is as significant to the TV broadcasting industry as was invention of the self starter to the automobile industry. A common ailment of TV camera image-orthicon tubes is burn-in and sticking of images. The G. E. marketing manager described this as an imprint on the tube which distorts pictures being transmitted to home receivers. When this happens, the I-O tubes must be discarded. Since they sell for about $1,200, this becomes quite expensive for TV stations. Under average station use, life of the sensitive and temperamental tubes ranges from about 200 to 1,000 hours. Thus the tubes must be replaced about two to ten times yearly.

With the "tube saver," I-O tubes are expected to last twice as long. Thus, the device could pay for itself in less than a year. The unit can be

used indefinitely, with but a minimum of maintenance.

John H. DeWitt, Jr., and Aaron C. Shelton, president-general manager and chief engineer of WSM-TV respectively, spent about a year developing and perfecting the new device. Mr. Chamberlain describes it as "truly an invention by broadcasters for broadcasters." In tests at the station, the "tube saver" has enabled an I-O tube to be used effectively on one camera for more than 1,400 hours. On another camera, an I-O tube previously discarded at 700 hours as totally useless has clocked more than 1,200 hours of effective use. The inventors believe "the data speaks for itself."

Devices designed to do a similar job were introduced early this spring by two other manufacturers. However, according to Mr. Chamberlain, one is operated electrically; the other electromechanically. The new "automatic-compensating" General Electric unit operates electronically.

Principle of the new electronic "tube saver" is an electronic deflecting system used to move or "wobble" the TV image inside the I-O tube. Thus "burn-in or sticking" is avoided. To offset the wobble, a scanning beam inside the tube follows and automatically compensates the wobble, causing the transmitted picture to appear as a normal stationary image on home TV receivers.

The complete unit comprises about 50 small parts, including six capacitors, a synchronous resolver and a drive motor.

First Films by Cable

The British Broadcasting Corporation showed its television viewers October 22, the first news films to be transmitted successfully across the Atlantic by cable.

The movies, taken by United Press-Movietone, showed the arrival of Queen Elizabeth II and Prince Philip at Staten Island, N. Y. The pictures ran for 15 seconds.

The transmission feat was accomplished after months of research and development by BBC engineers in collaboration with United Press-Movietone.

The film was shot by a Movietone News cameraman with a 16-millimeter motion picture camera, the kind used by most television news programs, and was transmitted through U.P. facilities onto the transatlantic cable.

BBC received a reproduction of the film and put it on the air at its studios at Alexandra Palace, where the first British public telecast was made 21 years ago.

The film was taken at 10:10 a.m., EDT, October 21. It was shown at 11 p.m. (7 p.m. EDT) on a BBC show reaching 97 per cent of the United Kingdom, including England, Northern Ireland, Scotland and Wales.

Live Twister Pictures

During a disastrous tornado last spring, which swept through Kansas City, WDAF-TV was the only local station which was able to offer live coverage of the storm scene. WDAF-TV technicians are members of IBEW Local 1259.

Samuel Gompers' Rope of Sand

Continued from page 11

One Saturday morning in 1910 a young Oberlin College student struggling over a term paper on "The American Federation of Labor in Politics," called on George W. Perkins, president of the Cigarmakers, seeking information.

But Perkins had to do his editorials for his cigarmakers' monthly journal and he met the young girl's obvious disappointment with: "Sam is in town. You need to talk to him anyhow."

Florence Calvert Thorne called the hotel. A voice "with the volume of a pipe organ" answered: "Have breakfast with me at eleven o'clock."

Miss Thorne waited in the lobby of the old Briggs Hotel in Chicago. "Finally the door of the elevator opened on a short-squat figure in a buttoned Prince Albert coat," she relates. His short legs moved with extreme dignity, and with a courtly gesture he invited me into the dining room.

"The unhurried interview lasted about three hours and ended with this offer: Come to Washington and all the files of the Federation will be available to you."

Miss Thorne went to Washington, and there she remained for the rest of her life, a devoted research assistant to the AFL president.

Her book, *Samuel Gompers, American Statesman*, is a unique and intimate study of the first AFL leader.

It is gratifying that her book, and the other two we have reviewed, are published at this time, when organized labor is under attack. Anyone who reads them will know that Sam Gompers' "rope of sand" will remain even under stress, as he stated, more powerful than chains of steel.

Station Breaks

Ingenious, What?

One enterprising officer of an IBEW local union has come up with "reverse psychology" to combat the problem of declining attendance at membership meetings. The notice to members was very short and to the point—"Don't attend! No need to bother! No entertainment, no sex, no drinks! All we're going to do is take a strike vote and raise the dues!"

The result? The biggest membership meeting in the local's history.

List Corrections

In the October issue of the TECHNICIAN-ENGINEER, pages 8 and 9, we published a list of local unions with broadcasting and recording engineers. Since publication, four changes in the listing have been made. They are:

Local 1212—The telephone number is Pennsylvania 6-8216.

Local 1259—The telephone number is Baltimore 1-5054.

Local 1400—An officer correction: Charles D. Cooper, 3318 Chesly Avenue, Baltimore 14, Md.

Local 1275—William L Nelson, 4210 Victor Drive, Memphis, Tenn. Phone: MU 3-6786.

Sublimed Popcorn

Subliminal perception, the faculty of absorbing fleeting visual information without being consciously aware of it, was demonstrated recently in New York by Subliminal Projection Co. and motivation researcher James M. Vicary. But the advertising industry audience appeared skeptical of any immediate practical application for the "invisible television commercial." Coca-Cola symbols were flashed for 1/3,000th of a second once every five seconds during a dramatic film presentation. Mr. Vicary said in an earlier public test for six months in a New Jersey theatre ("eat popcorn" was flashed during the show), lobby popcorn sales jumped 57.5 percent.

St. Louis Sale Stalled

Television Station KWK-TV in St. Louis has been on the sales block for several weeks. Columbia Broadcasting Systems, Inc. seemed to be the winning applicant for it, but now St. Louis Amusement Company has petitioned the FCC to reopen all bids and consider four purchasers anew.

In addition to CBS, there are three applicants for the station, which has been operating on Channel 4. These include, in addition to St. Louis Amusement, St. Louis Telecast, Inc. and Broadcast House, Inc. of East St. Louis.

Under terms of a contract already drawn up with CBS, the purchase price would be $4,000,000, of which $2,500,000 is for the station and $1,500,000 is for KWK-TV's building at Twelfth and Cole Streets in St Louis.

In another phase of the transaction, 220 Television, Inc. of St. Louis would take over Channel 11, now assigned to CBS, and would pay $200,000 to each of the two unsuccessful applicants for Channel 11.

The plan is for CBS to begin on Channel 4 about November 24. Both channels are in the VHF range.

220 Television Inc., owned by Harold Koplar and members of his family, will file an application for the channel vacated by CBS, and Broadcast House, Inc. and St. Louis Telecast, Inc. would then relinquish their claims to Channel 11 and receive $200,000 each in debentures from Koplar's firm.

The *St. Louis Post-Dispatch* reported in September that the St. Louis Amusement Company, which has now filed for a reopening of the sale with FCC, was at that time not a party to the pending transaction. It withdrew from the case after appealing to the U. S. Supreme Court, which refused to hear it.