

RADIO, TV and RECORDING



JANUARY, 1956

# TECHNICIAN-ENGINEER



65th  
ANNIVERSARY YEAR  
I. B. E. W.



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



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The INTERNATIONAL BROTHERHOOD of ELECTRICAL WORKERS

GORDON M. FREEMAN International President  
JOSEPH D. KEENAN International Secretary  
FRED B. IRWIN International Treasurer

ALBERT O. HARDY

Editor, Technician-Engineer

**. . . in this issue**

<i>Responsibilities of Merger</i> .....	3
<i>Denver Strike Shows Unity</i> .....	4
<i>Capitol Studios Near Completion</i>	4
<i>White Collar Crooks</i> .....	8
<i>Technical Notes</i> .....	14
<i>Station Breaks</i> .....	16

**. . . the cover**

The International Brotherhood of Electrical Workers goes into the first year of the united labor movement's history celebrating its own sixty-fifth anniversary. This great organization has grown tremendously since that day in St. Louis in 1891 when the Brotherhood was founded to better the working conditions of those who chose to follow the pioneers in electricity. A lot has happened in these 65 years. A lot has happened since the first organizing activities among technicians in the turbulent thirties. Our cover shows technicians at work in some of the many phases of activity of our membership, new and old jobs and techniques.

**commentary**

We live in an era when the processes of democracy have been almost constantly under attack or challenge from the totalitarians. In large areas of the world, the people do not rule; they are governed.

So, under these circumstances, the convening of an American Congress assumes an even greater majesty than in less eventful years. Congress, with all its weaknesses, with all its failings, is a landmark of democracy and a symbol of the concept that government should serve the people.

But our democratic system cannot live by symbols alone. The symbols must be in prime working order; they must carry out their functions.

The 84th Congress, meeting for its second session, has a heavy agenda. Proposals for schools, highways, health, housing, foreign aid and national defense, civil liberties and civil rights, as well as measures to insure economic progress, are on the congressional docket.

This 84th Congress will not fulfill its mission if it fails to act on a substantial number of these projects. The needs are obvious; the popular demand for their passage has been made clear. The job is up to the senators and representatives.

—From *The Illinois Tradesman*.

**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 1954 figures:

December, 1955—114.7    December, 1954—114.3



**AFL-CIO President George Meany scans the year ahead and considers . . .**

## The Responsibilities of Merger

**A**FL-CIO President George Meany called the economic prospects for 1956 bright, but said that organized labor must fight for increased consumption, bolstered by higher wages, a shorter workweek and improved welfare and pension plans if the hopes are to be realized.

Writing in the *Philadelphia Inquirer* on the economic prospects for 1956, Meany said "a degree of economic well-being beyond the imagination of any of us lies within our grasp. It is no longer a hope; it is a reality, a reality not yet fully comprehended."

The nation's amazing productive capacity, he said, can find a ready and reliable market only through mass consumption. In day-to-day operation of trade unions affiliated with the AFL-CIO, Meany added, this means bargaining for higher

wages and for improved conditions.

"Higher wages are not only socially desirable but economically vital to continuing prosperity. Increased production can bring about a paralyzing glut, unless enough people enjoy enough purchasing power to consume that production promptly," he wrote.

In addition to wages, unions will bargain for a shorter workweek, Meany predicted, to cope with the expansion of automation. There will be continuing pressure also for improvement of health, welfare and retirement programs.

Meany spelled out the trade union view on the nation's economic system thusly:

"As adherents of the capitalist system, the free trade unionists of America believe that the rewards of greater production should be distrib-

uted as widely as possible in the form of higher profits for the employer, higher wages for the workers and reduced prices for the consumer.

"Together these add up to a program which can solve the alleged problem of 'saturation' and still provide real incentives to all concerned in the complex industrial process."

The AFL-CIO president warned that all of our economic goals depend upon the preservation of world peace and freedom. "Continued economic prosperity in America," he said, "is a living refutation of the demagogic teachings of the Communists. It is the mainstay of our national defense for the free way of life. It is the light to which free people everywhere may turn for guidance in the darkness which threatens to engulf the world."

**-We Two Are One**

# DENVER STRIKE SHOWS UNITY

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## *Real Evidence of Cooperation in Rocky Mountain Dispute by All Union Labor*

SINCE December 20, 1955 the television and radio engineers, newsmen, film editors and floormen—all members of NABET (AFL-CIO) employed by KOA and KOA-TV in Denver, Colo., have been on strike. Prolonged negotiations prior to the strike produced no renewal agreement between the parties.

The preceding agreement had been in effect since 1951 and the wage rates in that agreement had not been increased since that time. This year the Company proposed the abolition of the eight-hour day, reduction of the required notice period for days off change, a reduction of the rest period to ten hours, assignment of dual jobs to the personnel, the use of part-time employees and a number of other retrogressive changes—including more than a 25 per cent cut in the wage rates.

The Federal Mediation Service has done what it could to prevent (and currently to terminate) the strike and all of organized labor in the area has lent its support. Especially worthy of mention is Local Union 111, IBEW; Local Union 1222, IBEW, and International Representative M. B. Keeton.

According to the grapevine, many IBEW local unions have been contacted by the management in an effort to recruit personnel and it has been stated or implied that the strike is over. At this date, the strike is *not* concluded and any persons who indicate a present willingness to accept employment with this company should be so advised. An instant check on the status of the strike can be obtained by mail addressed to the AFL-CIO Regional Office, 311 Denham Building, 635 18th St., Denver 2, Colo., or by telephoning Acoma 2-4505.

An editorial in the *Rocky Mountain Journal* displays the general interest in the KOA dispute:

*"Mile High Observations, by GENE CERVI*

"It appears to us that the 43 persons on strike against KOA are the innocent victims of the less than pure economics that have surrounded the television business in Denver since its inception a few years ago.

"From the very start, it was doubtful whether Denver could support four television outlets.

"Changes have come to Denver TV circles supporting

the original view and giving the lie to a lot of hypocritical representations made in the initial scramble for permits.

"In the beginning, people interested in TV believed the then much-coveted permits were a pass to easy fortune. Well, it hasn't worked out that way, and in the case of KOA, it appears that the employees are being asked to insure the risks of doing business in a competitive enterprise.

"There is something offensive to our sense of justice to ask the striking KOA workers to take less than they have been getting just because KLZ, KBTB and the outfit that bought out a floundering KFEL operation conceivably aren't paying their employees as much as they ought to.

"Putting it another way, ownership and management at KOA is trying to add a new twist to the American enterprise system by asking employees to absorb the losses.

"The present KOA owners bought the station from NBC with their eyes open.

"At the same time, KOA is up against a tough problem because the other stations are not unionized. The question becomes, it seems to us, one of getting the wage scales up at the other three stations rather than trying to tear them down at KOA.

"We were surprised to learn through William Grant's statement that his KOA is paying better wages than KLZ, the station acquired by powerful Time, Inc., without an FCC hearing shortly after the FCC made such a lavish point about the value of home ownership.

"Facing Denver, apparently, is the very real prospect that one of its four television stations may fade away.

"We have never been satisfied with the political maneuvers in the original FCC allocations and the harvest of the less than straight and open activities in Denver TV is now at hand.

"KOA may be able to break the strike and remain in the rugged television competition, but this doubtful victory, if it comes, is sure to be attended later with the consequences of less than moral dealing with the employees."

## Capitol Record Building Is Nearing Completion

THE first studios ever constructed anywhere in the world designed exclusively from the ground—even underground—up for the production of high fidelity records are nearing completion on the ground floor of the circular, ultramodern Capitol Tower Building, new international home of Capitol Records, Inc., just off the world-famous intersection of Hollywood Boulevard and Vine Street in Hollywood, Calif.

The studios themselves—three in number—occupy nearly all of the first level of the 13-story (height limit in the Los Angeles-Hollywood area) reinforced concrete structure. The balance of the first floor will house tape and disc facilities.

Only the studio floor will be rectangular in shape, the others being full 360-degree circles, the first such shaped office building to be constructed in the world. Designed by architect Welton Becket, it will be Hollywood's first completely air-conditioned office building.

According to James Bayless, Capitol's vice president in charge of engineering, and Michael Rettinger, noted acoustics consultant, the new studios are designed to achieve "controlled acoustics." Interpreted in laymen's language, this means that the general reverberation, as well as the localized reverberation (or ratio of reflected to direct sound energy), is made variable by the generous use of movable panels which are reflective on one side and sound-absorbent on the other.

Bayless and Rettinger point out that ample use is made of wood in the studios, to obtain "effective tonal reinforcement." To illustrate this point, Mr. Rettinger said, "Unlike a sheet of metal or plastic, a wood panel is able to vibrate over a wide range of musical pitch, thereby supporting all tones without selective emphasis."

The floors of the studios are so-called "floating floors," i. e., they rest on a resilient material known as asphalt-impregnated cork which absolutely prevents the transmission of undesirable noises or vibrations into the studios from outside sources.

Each studio actually is a room within a room, with outside walls ranging from eight to ten inches thick and inside walls a full foot thick. These completely isolated rooms will make it possible to cut down the outside noise level of a value of 90 decibels to less than 35 decibels inside. Since the sensitive microphone circuits used in high fidelity recording will pick up the slightest sound, air conditioning, lighting, and other services required will operate a quietness below the "sound threshold" of the microphones.

**JANUARY, 1956**

## President Freeman Lists Goals For the New Year

IF YOU didn't, or cannot, attend your local union meeting this month, you may not hear the New Year's message from the International President. (The January 1 Newsletter to local unions carried the message.) It is reprinted here so that "he who is absent may read":

"In November of this year our Brotherhood will be 65 years old. We would like to urge all our local union officers and members to make this a year of progress for themselves and their union. We have a few suggestions to make to you.

"First and foremost, we would like to see all our members make a New Year's resolution to attend more local union meetings in 1956.

"The Brotherhood in general, is the responsibility, not only for your elected International Officers, but of every member of our Brotherhood.

"Your local union is the responsibility not of a 'faithful few' but of every last member in it. It is amazing sometimes how well our locals do and the gains they make through the efforts of those 'faithful few.'

"But who knows what kind of progress might be made if more members took enough interest to attend meetings and share the work load?

"Another thing to remember—in the few instances in which local unions have gone 'sour,' it has always been caused by lack of attendance at meetings, resulting in wrong decisions and the wrong people getting control.

"Next we'd like to urge once again more education and training in our local unions. We've talked a lot about this in our recent Newsletters and *Journals* but we feel it is a subject that can't be stressed too often. Electrical Workers of today have, we believe, greater opportunity for good jobs with a good future than members of any other industry. However, if we do not keep up with changing methods and skills, these opportunities are going to be wasted.

"A last goal for the New Year—100 per cent cooperation with LLPE. That means contributing at least a dollar, getting ourselves eligible to vote by registering and paying the poll tax where it exists *and*—voting. Vote for the candidates who have proved themselves friends of working men and women regardless of party affiliation."

## FCC Examiner Favors Greater Boston Bid

By a steady process of eliminating the negative, FCC Chief Hearing Examiner James D. Cunningham, early this month, recommended that the application of the Greater Boston TV Corporation for Channel 5 in Boston be accepted.

Greater Boston was one of five competing applicants. Mr. Cunningham denied the competing applications of WHDH, Inc. (WHDH-AM-FM, Boston *Herald and Traveler*), Post Publishing Co., (WCOP-AM-FM, Boston *Post*), Massachusetts Bay Telecasters, Inc., and Allen B. DuMont Labs.

Greater Boston, the preferred applicant, is comprised of 36 stockholders, four of whom hold a minority interest in Pilgrim Broadcasting Co. (WORL, Boston).

The hearing took a tabloid turn when Al Capp, creator of the "L'il Abner" cartoon series and minority stockholder in Massachusetts Bay Telecasters, was cross-examined by counsel for the competing applicants on a report that he had sold pornographic drawings when he was in the fourth grade. The issue stemmed from a story in a 1947 *New Yorker* which alleged that Mr. Capp, while in the fourth grade in a Brooklyn public school, sold indecent pictures to his fellow students. Mr. Capp scoffed at the story, calling it "very funny" but "hardly accurate."

Mr. Capp was also questioned about reports that his cartoons contained hidden bits of lewd humor directed to a secret audience. Referred to by counsel were a report of a New York State legislative inquiry into comic books which introduced "L'il Abner" strips as evidence of "semi-hidden pornography" and a story in *Confidential* magazine titled "The Secret Sex Life of L'il Abner." The New York State committee was duped by "forgeries," Mr. Capp said; *Confidential*, Mr. Capp called "... a filthy magazine."

Examiner Cunningham examined the applicants one by one.

While recognizing that DuMont had more TV experience than any other applicant, Cunningham said that the firm's "far-flung business interests" work against it in competition with qualified local groups. DuMont, he said "may be regarded as strangers to Boston."

Lack of a proposal for national network affiliation by WHDH, Inc., was considered a count against that organization's bid. Also, it was pointed out, a grant to WHDH would place five news media within its control and would not be in keeping with the FCC's policy of diversification.

Examiner Cunningham also invoked the diversification of communications media policy in eliminating the *Post* application. A grant to the *Post* would give it four news outlets.

Of the remaining two applicants—Greater Boston and Massachusetts Bay—Mr. Cunningham found only a narrow area of preference between them. It was likely, he conjectured, that either applicant would provide good service to Boston.

But the superior broadcasting experience of Greater Boston's proposed general manager, as against the lack of broadcast experience of the proposed head of the Massachusetts Bay operations, would give the edge to Greater Boston. From a standpoint of conducting the necessary day-to-day TV operations, the examiner concluded that more "reliance may be placed in the proposed managerial staff of Greater Boston. . ."

## Dues-Paying-Members Get Their Money's Worth

Some significant findings on unions were released last month following a survey made by the National Industrial Conference Board, a leading business research organization. The study was made with the cooperation of nearly all of the 194 national and international unions examined.

One highlight of the report showed that dues paid by union members on the whole average \$26.14 a year. This alone demonstrated how well unionism pays, since wage increases negotiated by unions over the past year averaged almost \$300 per employe, over 10 times the dues figure. That's a "dividend" of 1,000 per cent on the dues investment.

The survey also found that most unions require votes by members before strikes can be called. Also, most bar Communists and nearly all are freely open to every worker in a particular craft or industry, regardless of race, creed or color.

Only three unions refused to supply copies of their constitutions to the NICB. They were the Hod Carriers, Distillery and Wine Workers and the International Longshoremen's Association. The latter organization was expelled earlier from the AFL on charges of racketeering.

Also, the board in examining the constitutions of the unions found that, except in a small number of cases, the constitutions provide for election of union officers on a thoroughly democratic basis, either at regular conventions or by a direct referendum vote among the members.

### IRE CONVENTION

March 19-22, 1956

Waldorf-Astoria Hotel and Kingsbury Armory  
NEW YORK CITY

## Union Members Warned Watch Out for This One!

Have you ever heard of the National Right to Work Committee? Well, if you haven't yet, you will soon.

It's another front for Big Business in its effort to shackle labor with the chains of union-wrecking legislation in the 30 states which allow the union shop.

The president of the committee is a gentleman by the name of Fred A. Hartley, Jr. That is enough to stamp the Committee for what it is inasmuch as Mr. Hartley is the hyphenated half of the Taft-Hartley Act.

In a letter mailed to persons it hopes will join the group, the Committee says, "We now have affiliate Committees in several communities throughout the South, and local supporters are working on the organization of others in a number of areas in the United States."

The number of areas where such supporters are NOT working can probably be counted on your fingers.

The letter also boasts that "a large number of business firms and industrialists" have contributed "several thousand dollars" apiece to the Committee.

The board rooms of Big Business echo with loud talk that the workingman doesn't want union security—that he is somehow "forced" to join a union.

But you will remember that for more than four years, the Taft-Hartley law included a provision requiring all the workers in a bargaining unit to vote secretly as to whether they wanted a union shop before this type of arrangement took effect.

During that period, 46,146 elections were held at which 5,548,982 workers cast votes. Over 91 per cent of the votes favored the union shop. Negotiation of a union shop clause was authorized in over 97 per cent of the cases.

Congress finally saw how silly it was to spend millions of dollars for elections in which the results were so overwhelmingly one-sided. So in 1951, it repealed that provision of Taft-Hartley.—Reprinted from *The Radio Officers' News*, the publication of the Radio Officers' Union, AFL-CIO.

## IBEW Wins Pay Increase for 15,000

An agreement which the union's negotiating committee said provided the "highest increase for shop employes in the Western Electric system" has been approved by members of IBEW Local 1859 of Chicago.

The pact covers 15,000 employes of the company's Hawthorne works here. According to President Leonard Beck of Local 1859 the "average take-home pay" for piece workers was increased under the contract from \$2.08 to \$2.19 an hour. And for non-piece work employes from \$1.92 to \$2.02 an hour.

# The Man Who Went to Fly A Kite

January 17 marked the 250th birthday of the patriot, statesman, scientist, inventor, businessman, musicologist and humanitarian who referred to himself simply as B. Franklin, printer.

His talents ranged far beyond the role he played abroad as champion of the American colonies before and during the Revolutionary War.

From a Horatio Alger start as a poor boy in Boston, he won business success in Philadelphia and retired affluent at 42. Thereafter he plunged into life-long interests.

The world soon took note of his works. Though not a physician, he invented medical instruments still in use today. He introduced bifocal spectacles. He developed a device for showing circulation of the blood and launched studies into the contagious nature of colds and influenza and the cause of lead poisoning. Inoculation for smallpox was among his projects. He was appointed by the Court of France to investigate hypnotism.

It was Ben Franklin who introduced mineral fertilizers to the American colonies. He brought in Swiss barley, rhubarb, Scotch kale and turnips, terming farming "the most honorable of all employments, the most useful in itself and rendering man the most independent."

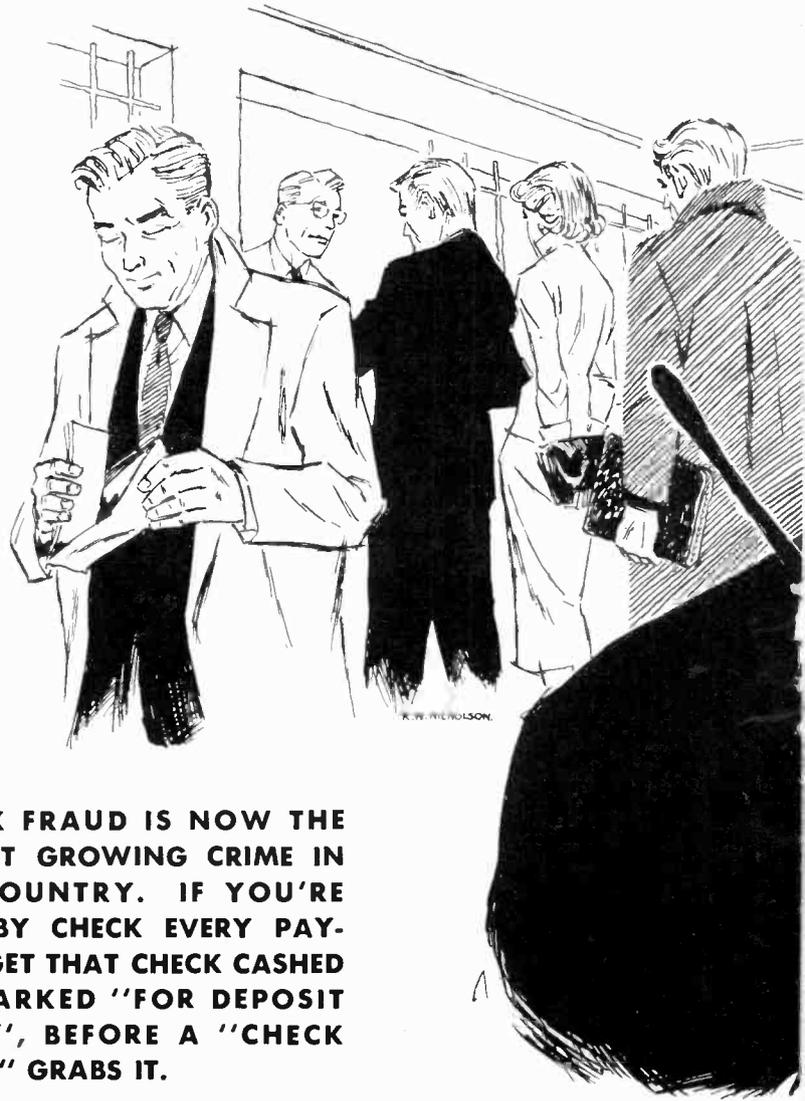
Meanwhile, his observations on the Gulf Stream, weather forecasting, whirlwinds, storms, trade winds and waterspouts were far advanced for his time. Watching early balloon flights in France, Franklin speculated on man's eventual mastery of the air.

His papers on the theory of the earth, magnetism and density, drew keen attention from contemporaries in science. In 1752, with his famous kite and key, he proved that lightning was electricity. He invented the lightning rod and introduced many electrical terms.

While scientists noted his experiments, famous musicians esteemed him as a musicologist. He invented a type of harmonica, using musical glasses, and could play as well the harp, guitar and violin. A music publisher himself, he composed many popular lyrics.

He had but a single regret: "I wish the good Lord had seen fit to make each day just twice as long as it is. Perhaps then I could really accomplish something."

# WHITE COLLAR CROOKS



**CHECK FRAUD IS NOW THE FASTEST GROWING CRIME IN THE COUNTRY. IF YOU'RE PAID BY CHECK EVERY PAY-DAY, GET THAT CHECK CASHED OR MARKED "FOR DEPOSIT ONLY", BEFORE A "CHECK ARTIST" GRABS IT.**

**T**HAT check you cashed the other day was one of the more than 60 million cashed by Americans every banking day of the year. And if you are not careful, that check you write tomorrow may wind up in the hands of a fast growing band of "check artists"—the check raisers, forgers, and counterfeiters.

Recruitment to the ranks of these skilled practitioners of "white collar larceny" has more than kept pace with the phenomenal growth in the use of checks throughout the United States. This fact is vouched for by the Todd Company, Rochester, N. Y., which, since 1899, has been manufacturing check writing equipment to combat the check crook menace.

In America \$150 is handled in checks for every dollar in cash. Checking accounts for the man in the street have become commonplace only since World War II, but today the number of checks written and cashed is four times the 1939 total.

Along with this tremendous upsurge in the use of

checks has come an ever-increasing number of crooks seeking easy money through forgery and counterfeiting. Check fraud is now the fastest growing crime in the country. Latest estimates indicate that check artists take the American public for more than \$400,000,000 a year, a sum greater than the annual loss through fire.

It is a mistake—and it can be a costly one, says the Todd Company—to assume that you have to be "big business" to become a target for check swindlers. A high proportion of check frauds are perpetrated on comparatively small accounts. People of modest means are as likely to be victimized as the wealthy, partly because checks for small amounts seem to warrant less scrutiny than those for large sums.

There are six principal types of check fraud:

1. Altering the payee name
2. Raising the amount
3. Altering the date



4. Counterfeiting existing checks
5. Concocting fictitious checks
6. Forging signatures, either of the drawer or endorser.

Check raising is, for the victim, one of the most dangerous forms of swindling. The check itself, and the signature (which most often comes in for the closest scrutiny when the check is cashed), are both genuine. Furthermore, the problem of proving that the check was raised rests with the person who drew the check.

There is a classic example of a Chicago contractor, whose check was raised from \$27 to \$27,000, who himself was suspected of the crime. It took him many years to prove his innocence, by which time both his health and his business were ruined.

He became so distressed that, in the final act of the tragedy, he shot and killed his wife, his young son, and himself.

Many check raisers obtain the raw material of their

craft by stealing checks. Guard your mailbox—check crooks will not only steal your checks but your bank statements and canceled checks so that they can learn how your bank account stands and how you draw your checks and sign your name.

The Todd Company has cut down this fruitful avenue for crooks through the production of non-alterable Protod Greenbac checks which flash the word "VOID" the instant an attempt at alteration is made using ink eradicator.

Your check book, too, is valuable. A swindler can quickly turn it into cash. Only recently, a maid in St. Louis stole blank checks from her employers, forged their signatures, and used stolen charge account cards as identification in cashing the checks. Her employers were "too busy" to check their bank statements and were \$3,000 poorer before the forger was unmasked.

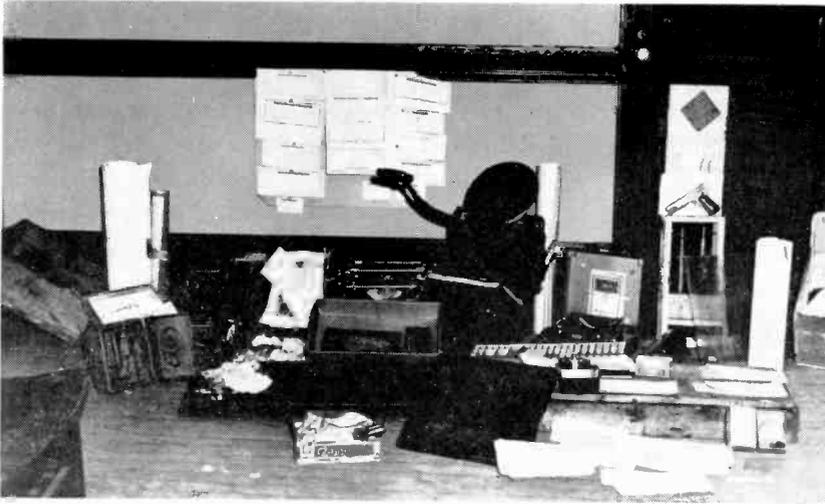
Altering the payee name was a ruse often used by one Jacob Sackstein. Though so crippled by arthritis that he could barely write, he succeeded in clipping banks for close to \$25,000. He would grab letters from the piles stacked on mail boxes in the lobbies of busy office buildings during the late afternoon rush and alter the names on checks secured in this way. Morgan Barber Co., for instance, became Morgan Barberes Cole. Theo. Browne Pharmacy became Theo. Browne Bhasmacgo. Some of the names he chose came right out of Dickens and W. C. Fields—Appleton R. Coxbetner (nee Apple and company) for example.

The Sackstein case also demonstrates the necessity of demanding adequate identification before cashing checks for strangers. Sackstein took out fishing licenses in the name of the payee of his stolen checks and used these for identification. He even succeeded in pulling this stunt three times in the same bank on the same day, using three different licenses!

Date alterations have been used to cash "stopped" checks. One check, originally drawn in 1946 and on which payment was stopped, was successfully cashed in 1949 after alteration of a single figure.

Counterfeiting calls for the skillful production of reasonably exact replicas of actual checks. It is one of the few types of check fraud calling for more than a minimum of equipment. Todd, through Protod Greenbac checks has gone far in eliminating this practice, but so-called "safety" papers can be purchased on the open market to match actual checks and the counterfeiter then prints, or draws by hand, phonies which are often so perfect as to be indistinguishable from the originals.

Some counterfeiters create original checks of their own. They may use the name of a legitimate bank or business firm though the checks may bear no resemblance to the real checks of those concerns. Sometimes, however, the whole thing may be completely fictitious. Checks have been drawn—and cashed—on non-existent



Unlike the forger, who requires only pen and ink and his own skill, the counterfeiter needs a variety of equipment to produce his bogus checks. This forger's workshop, including a small printing press, was confiscated from a counterfeiter in South Bend, Ind.

banks, signed with imaginary names. An unsuspecting department store in Memphis, Tenn., cashed a check drawn on "The East Bank of the Mississippi," and one confident swindler signed her checks "E. Normous Wealth".

Some forgers are so adept that even the person whose signature has been forged is unable to pick out the forgery. One forger was so skillful that government experts could not identify the forgeries and refused to exhibit them in court lest they confuse the jury.

A forger with an unusual angle was Solomon Bernard Heimau, who began his operation by stealing, of all things—bills! Then he forged checks to pay the bills. The checks were always in excess of the amount of the bills and for five years he lived off the change from his forged checks. Using large checks to cover small payments is a common practice among check swindlers. Beware the stranger who makes a small purchase and offers a check for considerably more.

Forgery, though on the increase today, is not new, according to the Todd Company. It was one of the greatest perils of early banking and in the 19th century England. Hanging was the penalty on conviction of forging a single note. In 1817, the Bank of England prosecuted no less than 142 forgers, but repeated hangings failed to stem the tide.

The very earliest checks, on the other hand, were, if not the most convenient, perhaps the most forgery-proof of all time. They were the tablets of ancient Egypt, fashioned from baked clay.

The origin of checks as we know them today is uncertain, but they probably began with the Bills of Exchange used by Lombardy merchants of the 14th century to avoid the hazards of transporting gold. The word itself is said to derive from the serial numbers used as a "check" or means of verification.

By 1880, checks were in wide enough use to offer an attractive target to criminals seeking easy money without the physical risk involved in burglary or armed robbery. Gangs of specially skilled artists achieved nationwide notoriety and their large-scale operations almost threatened the whole check system. Their ingenuity was limitless, the opportunities ready-made and when the stakes were high enough, there was no limit to their painstaking and daring.

Check raising gangs flourished on an assembly-line basis. There were "captains" who purchased small bank drafts and passed them along to the "scratchers," the artists who raised the drafts, often to thousands of times their actual value. "Middle-

men" acted as go-betweens so that in many cases the crooks never knew other members of their gang. The "presenters" were the brazen operators who walked boldly into banks and presented the raised checks for payment.

Among the leading check artists was Alonzo James Whiteman—"Jim the Penman"—described by the Pinkerton Detective Agency as "beyond all doubt the ablest criminal in the U. S." He went through an inherited fortune, amassed—apparently legally—a fortune of his own, served as Minnesota state senator, received an honorary degree from Hamilton College, and was almost elected to its board of trustees.

Whiteman perpetrated many magnificent swindles which netted him more than a million dollars. His most outstanding case involved a haul of a mere \$580 from a New York bank. Cunning enough to secure his acquittal, he then had the audacity to sue the bank



The Todd Company's Protod Greenbac checks are protected and insured against alteration. Many "VOIDS" will appear the instant alteration is attempted through ink eradicator.

**PRESTON FRAME MFG. CO.**  
 MFGS. OF  
 FINE CARVED FRAMES  
 214 N. CLINTON ST.  
 CHICAGO, ILL.

No. 6886

Oct. 10 1916

PAY TO THE ORDER OF *M. New Berlin* \$25.00

*Twenty five* 100 DOLLARS.

TO THE STATE BANK OF CHICAGO.  
 (2-18) CHICAGO.

PRESTON FRAME MFG. CO.  
*Chas. F. Preston*

Mr. Preston didn't think his checks needed protection. A trusted bookkeeper made them out and he signed them personally. He discovered, however, that a "trusted" bookkeeper, with a bottle of ink eradicator and a pen, can do wonders with unprotected checks. This one was raised from \$5 to \$25—one of many checks raised by the bookkeeper, with a total loss of \$1,000. Ink eradicator will not remove amounts imprinted with a Todd Protectograph.

**GENERAL CEMENT CONSTRUCTION CO.**  
 92 LA SALLE STREET  
 CHICAGO, ILL.

No. 1714

12/9/19

PAY TO THE ORDER OF *Max A. Gatter* \$27,000.00

*Twenty seven thousand* 100 DOLLARS

TO THE STATE BANK OF CHICAGO  
 CHICAGO

GENERAL CEMENT CONSTRUCTION CO.  
*L. Wasserman* President

This check was originally drawn for \$27. It fell into the hands of a check crook who had it certified by the bank, raised it to \$27,000 and used it to obtain \$17,000 worth of bonds. Theodore Wasserman, who wrote the original check, was himself suspected of raising it. It took four years of court proceedings to vindicate Wasserman, by which time his business and his health were ruined and he wound up a suicide.

No. 9653

**NATIONAL COUNCIL** \$236.18

JUNIOR ORDER UNITED AMERICAN MECHANICS  
 BENEFICIARY DEGREE AND FUNERAL BENEFIT DEPARTMENT.

PITTSBURGH, PA. JULY 8TH 1927

WHEN PROPERLY ENDORSED  
 PAY TO THE ORDER OF JOHN EVERET GOODALL

TWO HUNDRED THIRTY SIX AND 18/100 DOLLARS

TO THE COMMONWEALTH TRUST COMPANY,  
 8-92 PITTSBURGH, PA.

VOID IF DETACHED FROM VOUCHER.

BENEFICIARY DEGREE, JR. O. U. A. M.  
*Lee Lofcan*  
*Alfred W. Ford*

Originally issued to V. C. Ray for 17 cents, this typewritten check came into the possession of a crook who erased the original name and amount and rewrote it for \$236.18. He deposited the raised check in a Pittsburgh bank and drew out nearly \$150 before he was caught. Typewritten checks may look more businesslike but they are just as easily raised as those written with pen and ink. Todd protected and insured checks, check-writers and check-signers provide perfect protection for your bank account.

for false arrest and they were obliged to settle for an additional \$3,000. Whiteman's confidence ran so high that on one occasion, having spoiled a bank draft while attempting to alter it, he deliberately burned part of the draft and returned it to the bank for redemption.

Arrested 43 times, indicted 27, convicted and sen-

tenced 11, Whiteman spent only 12 months in jail at the time of his final arrest in St. Louis in 1904. At Auburn prison he taught in the prison school—until it was discovered that he was teaching forgery!

Early attempts at protecting checks included perforating figures in tiny holes, but this was not too successful. What had been punched out, could be replaced. Charley Becker, "the prince of forgers," for example, bought a draft for \$12 which the issuing clerk sought to make safe by punching "\$12\$" in the top corners of the draft. Becker chewed paper to make it soft, restuffed the holes, washed off the written "twelve dollars," substituted his own figures and came up with a nice looking draft for \$22,000.

Libanus M. Todd and George W. Todd licked the problem with their Protectograph which macerated the amount into the paper with indelible ink. In this way, the figures become a part of the paper and could not be removed or altered. Modern variations of this early machine now protect up to 1,500 checks an hour.

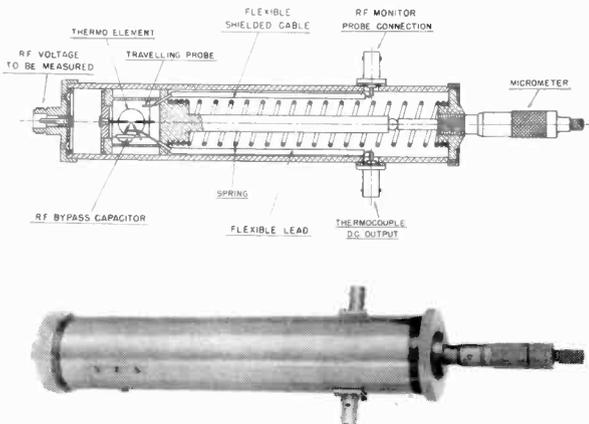
Development of a genuine safety paper, known to the trade as Protod Greenbac, came later. The paper can not be bought except in final check form and it has never been successfully counterfeited. A rash of hidden "VOIDS" appear as soon as chemical eradicator is applied.

Although the check protection industry has closed most of the loopholes, opportunities for check fraud still exist. Perfect protection still depends on the care exercised by check users. Checks must be drawn carefully and cashed prudently. You can't tell a check crook at sight—a respected mother of three children cashed \$10,000 worth of stolen checks; a minister forged \$40,000 worth.

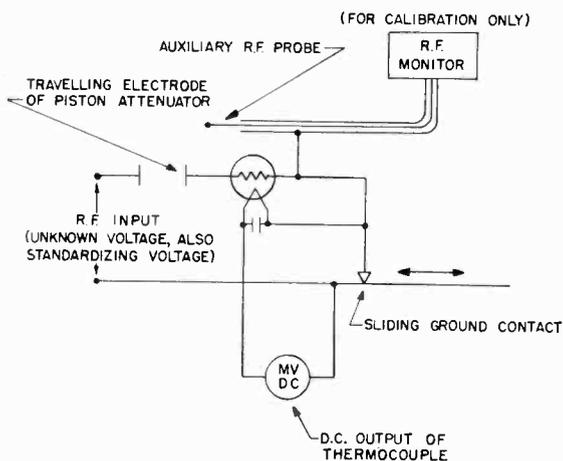
Cashing bad checks is not a skillful job, nor is it as physically dangerous as some other forms of crime. A psychological knowledge of the innate carelessness of the average person, so far as checks is concerned, is the main requisite of the check swindler. It's your money and only you can foil the check crook.

# STABLE Radio Frequency VOLTMETERS

Superior short-time and long-time calibration stability evident in new type of voltmeter developed by National Bureau of Standards researchers; may be used as secondary voltage standard in calibrating a commercial vacuum-tube voltmeter and as lab instruments.



ATTENUATOR-THERMOELEMENT (AT) voltmeter, having superior short-time and long-time calibration stability, consists of a continuously adjustable waveguide-below-cutoff piston attenuator and a frequency insensitive thermo-element to monitor (by means of a dc millivoltmeter, not shown) the attenuator output. The traveling piston of the attenuator houses the thermoelement and a built-in rf probe for calibrating one rf level of the voltmeter. Only this voltage level needs to be calibrated at a given frequency; all other voltages are then accurately known. Designed for relatively high voltages of 100 Mc and higher frequencies, this particular unit has a voltage range of over 100 to 1, utilizing both the ranges of the attenuator and the thermoelement. At 100 Mc the minimum rf voltage which can be measured is approximately 34 volts rms; at 200 Mc, 11 volts; and at 300 Mc, 6 volts.



SCHEMATIC OF THE AT VOLTMETER SHOWN IN FIGURE 1.

A VERY stable type of radio-frequency voltmeter, known as an attenuator-thermoelement or AT voltmeter, has been designed by M. C. Selby and L. F. Behrent of the National Bureau of Standards, Boulder, Colo., Laboratories. Unlike instruments now available, AT voltmeters maintain a calibration stability well within the accuracy of the original calibration—about one per cent over most voltage and frequency ranges—for a year or longer.

## Their Measuring Range

AT voltmeters can be used to measure rf voltages from 0.1 to several hundred volts at frequencies up to about 1000 megacycles. Although rf voltages within this range can be accurately measured and standardized by other means, it is difficult to find voltage measuring instruments that can hold their calibration for a reasonable length of time, such as a year. Present-day voltmeters using thermionic or crystal diodes are generally not reliable in this respect as laboratory reference standards; even under most careful treatment the uncertainty in their calibration is about 10 per cent and may frequently be as high as 20 per cent.

Experience to date indicates that the most stable elements suitable for calibrated-type rf voltmeters are thermoelements, waveguide-below-cutoff or capacitive-type attenuators, capacitive voltage dividers, and some well-constructed resistive attenuator pads.

## An Adjustable Attenuator

One of the high-frequency AT voltmeters, having superior short-time and long-time calibration stability, consists of a continuously adjustable waveguide-below-cutoff piston attenuator, a thermoelement, and a d-c millivoltmeter. It was designed for high voltages at the higher frequencies. The traveling piston of the attenuator houses the thermoelement and a built-in auxiliary rf probe. This probe is used to calibrate the AT voltmeter in terms of a primary standard bolometer bridge. The bridge output is approximately 1 volt, which is insufficient for direct calibration of the voltmeter over an appreciable part of the frequency range in question. Because of the intentionally introduced

high insertion loss of the attenuator, at 5 Mc for example, it is necessary to apply more than 300 volts to the voltmeter for a sufficiently large output of the thermoelement, whereas 1 volt would be adequate at 900 Mc. The probe provides means to calibrate the voltmeter with 1 volt or lower voltage levels at all frequencies. An rf receiver is connected to the probe output, and a standardized rf voltage is applied to the AT voltmeter. The receiver indication is noted at the minimum attenuator setting. The rf voltage is then increased to a value  $V_0$  at which the millivoltmeter is indicating a calibration reference output of the thermocouple. Attenuation in the AT voltmeter is then increased to reproduce the original indication on the receiver. With both the change in attenuation and the standardized voltage known, the magnitude of  $V_0$  applied to the AT voltmeter is computed. Only one voltage level,  $V_0$ , needs to be calibrated at a given frequency; all other voltages at this frequency in the range of the instrument are then accurately known.

### Close Electrode Spacing

Another design, having relatively close electrode spacing, behaved over part of its range like a continuously adjustable capacitive attenuator and required extensive calibration. Its voltage range was about 100 to 1. Single AT meters, utilizing both the capacitive and the waveguide-below-cutoff ranges as well as the range of the thermoelements, will have an over-all voltage range of 1000 to 1 at all frequencies in question. The upper voltage limit would diminish with increasing frequency; for example, it would be about 900 volts at 100 Mc and about 300 volts at 500 Mc. Nomographs designed for the AT voltmeters enable their quick application, either as reliable transfer standards or as working instruments.

Still another design is the capacitive "single-frequency" rf voltmeter. The essential difference between this design and those described in the previous paragraphs is a fixed capacitive attenuator. Although designed for a single frequency, it may be calibrated and used over a range of frequencies.

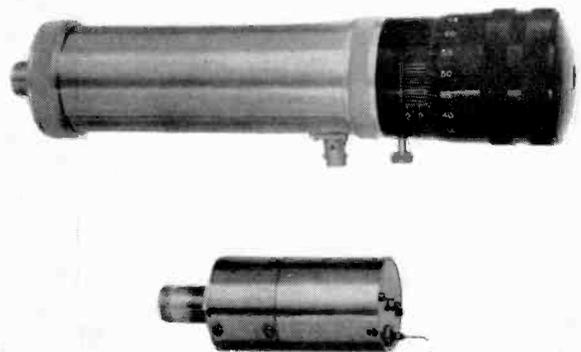
### Several Voltmeters Required

Several AT voltmeters may be required to cover the entire voltage and frequency range of some of the VT voltmeters on the market because their response is frequency sensitive, except in the case employing resistive pads. However, construction is relatively simple and quite economical. AT-voltmeter input impedance approaches that of commercial VT voltmeters except when resistive pads are used.

AT voltmeters are particularly suitable and at present practically indispensable, as secondary reference standards for any laboratory requiring voltage accuracies better than 10 per cent.



THE NEW A-T VOLTMETER (center) is shown in use as a secondary voltage standard in calibrating a commercial vacuum-tube voltmeter (left). The millivoltmeter in the foreground monitors the d-c output from the thermoelement. The three-stub tuner in the background is an impedance and voltage transformer between the voltmeter and the rf generator. Connection between the probe of the vacuum-tube voltmeter and the secondary standard is made by means of a special coaxial connector which places the two voltmeters directly in parallel essentially without lead lengths between them. With this arrangement, the voltmeter under test is connected directly to the standardized rf voltage. An rf filter (not shown) is normally used to eliminate effect of harmonics on accuracy of calibration.



A-T VOLTMETERS having superior calibration stability. The voltmeter with the large micrometer head (top), having closer electrode spacing than that of Figure 1, behaves over a part of its range more like a continuously adjustable capacitive attenuator and requires extensive calibration. Its voltage range is 100 to 1. The minimum rf voltage which this meter can measure is 1.4 volts at 50 Mc, 0.6 volts at 100 Mc, and 0.3 volts at 200 Mc. The other unit is a "single-frequency" rf voltmeter having a fixed capacitive attenuator. Its voltage range is 5 to 1, with 15 volts minimum at a single frequency in the region from 50 Mc to 600 Mc. Though designed for single frequency operation, each unit can be calibrated and used over a wide frequency range. The d-c millivoltmeter indicating thermo-element output is not shown.



## Characteristics Booklet

The Television Picture Tube Division of Sylvania Electric Products Inc. has announced the release of a new version of its annual booklet, entitled: "Characteristics of Sylvania Television Picture Tubes."

The new 24-page booklet may be obtained *free* by writing to Sylvania Central Advertising Distribution Dept., 1100 Main Street, Buffalo 9, N. Y.

Picture tubes and other cathode ray tubes listed in the new characteristics booklet include those of all domestic manufacturers as well as several types of foreign manufacture. Every effort has been made to have the listing as complete as possible as of the date of printing.

## Picture Tube Chart

The Television Picture Tube Division of Sylvania Electric Products Inc. has announced the release of a new version of its handy "TV Picture Tube Comparison Chart." The new wall chart, revised and brought up to date, is free, and can be obtained from the Sylvania Central Advertising Distribution Department, 1100 Main Street, Buffalo, N. Y.

Over 170 different picture tube types are listed on the chart, which was designed to give at a glance the most current Sylvania picture tube information. Added informational features in this new chart include ion trap listings, focus, deflection, and base diagrams. Face, body, basings, and length-in-inches on all tubes are also included in the valuable information for distributors and dealers throughout the country.

Also immediately available from the same address (as above) is a handy Sylvania "TV Tube Selector Guide," which contains much the same information as the wall chart, but in a pocket-sized edition.

## Sub-Arctic Microwave

The Bell Telephone Company of Canada says its men are making communications history by setting up special microwave equipment on a defense project in the sub-Arctic.

Defense department security regulations prevent disclosure of the project's location which was identified only as "along the wild and rocky coastline of eastern

Canada's sub-Arctic." The company's employe publication *Blue Bell* said, however, technicians had established the world's first full-scale installation of "tropospheric scatter" microwave transmission equipment there.

A similar, but smaller-scale, operation was announced here recently by the RCA Victor Company which beams signals over mountains at a point in Quebec Province just north of the U. S. borders.

"Before the development of over-the-horizon microwave transmission, microwave towers had to be located within line-of-sight, or not more than 30 miles apart, because microwaves do not follow the earth's curvature, and tend to eventually diffuse into space," the telephone company said.

"On the new tropospheric scatter installation, however, Bell crews were able to locate their antennae many times more than the conventional 30 miles apart, because engineers had discovered that, given sufficient power, the microwaves tend to bounce back to earth again in little pieces."

## Water-Activated Power

Water-activated batteries for use as an underwater source of electric power are described in a new bulletin now available from the General Electric Company's Naval Ordnance Department.

Who wants a water-activated battery?

The Navy can use them well in modern submarines; smaller units might be adapted to underwater operations by frogmen, etc.

GE's water-activated batteries are of the silver-chloride/magnesium type and provide a large source of power from units of extraordinarily small size and light weight. Completely dry during storage, these batteries become activated only when immersed in salt or fresh water. Upon entering the battery, the water becomes an electrolyte because of its impurities.

GE has further reduced the size of its "A" underwater batteries by using small barium crown glass beads to separate the magnesium alloy anode from the silver chloride cathode plates. This discontinuous type of plate separator helps make the batteries smaller in size.

## High-Channel Antenna

A new super-power, "high-channel" VHF antenna that is able to handle 100 kw in Channels 7 to 13 will be marketed by General Electric early this year.

It's a single bay, helical rig, which GE describes as the first high power VHF antenna of its type thus far developed. As presently designed, the antenna can only be used in the high channels, but GE engineers note that modification can accommodate the low channels too.

The new antenna differs from the conventional "bat-wing" antenna, which GE said becomes more complicated in design as stations increase power. The most powerful VHF stations now operating can transmit at 50 kw. By transmitting broader beams than the bat-wings, the new device permits better reception in hilly or mountainous terrain and in big city locations.

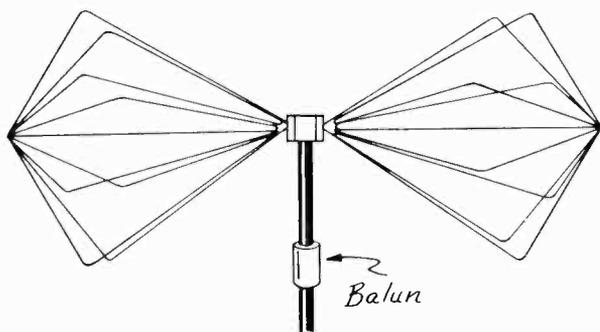
## VHF-UHF Antenna

Under an authorization from the U. S. Navy Bureau of Ships, Edward N. Singer and Herschel R. Caler have developed a new broadband antenna and balun for the 88=400 megacycle frequency range.

The antenna was designed for use with field intensity meters which are applied to the study of radio interference, television receiver radiation, transmitter harmonics, and general field intensity surveys.

When a standard resonant dipole antenna is used for measurements of this sort, the dipole antenna receives several adjustments for every individual frequency measured. However, the frequency range of a dipole antenna can be varied by the addition and adjustment of from one to four pairs of antenna elements. The elements of the antenna must then be measured and adjusted to its proper length corresponding to the desired frequency.

In addition, a balun shorting stub, when present, must also be measured and adjusted to its proper length. A "balun" is an electrical circuitry which couples or matches a balanced radio source to an unbalanced radio frequency load or vice-versa, with a minimum loss of energy; hence the abbreviation "bal-un." The purpose of a balun is to enable a balanced dipole antenna to be used with a coaxial cable.



88-400 Megacycle VHF-UHF Antenna

While the antenna constructed was for the specific frequency range of 88=400 megacycles, the design has been calculated in general terms so similar antennas may be constructed for any 4.5:1 radio frequency coverage in the UHF and VHF spectrum.

## Ampex Service Plans

A program to establish a nationwide network of authorized service representatives for Ampex audio equipment (tape recorders, phonographs, amplifiers and loud speakers) has been put in operation under the direction of Harold Van Childs, manager of Ampex's customer service engineering department, Redwood City, Calif.

Ampex district field service engineers are currently appointing representatives throughout the country. Service organizations will adjust and repair Ampex sound equipment at no charge during the warranty period and at competitive rates after the warranty has expired.

## New Decade Counter Tube

A new cold cathode, bi-directional decade counter tube, designated as Type 6802, has been introduced by the Electronics Division of Sylvania Electric Products Inc.

The 6802 is the first in a series of new types designed to expand the flexibility of counter tubes for application in direct-reading counters, computers, automation devices, military fire control, and many types of monitors.

With output connections to four of the ten cathodes (numbers 0, 5, 8 and 9), an output of at least 15 volts is provided by the new decade counter tube. The standard circuit frequency range is zero to 4000 pps—up to 10 kc with special circuitry.

In conjunction with one driver, Type 6802 fulfills the function of several conventional tubes, making possible reduced power requirements and smaller package.

## RCA 8-Inch Picture Tube

Development by the RCA Tube Division of a compact eight-inch television picture tube (8DP4) has just been announced.

The tube has a rectangular glass envelope, weighs only three pounds and is less than eleven inches long. The characteristics of the tube make it suitable for use in small-size TV receivers, as well as in service monitoring instruments and in industrial television.

The new 8DP4 incorporates a precision electrostatic focus gun designed especially for this application. Its length has been reduced to 10 $\frac{3}{4}$  inches by employing wide-angle, 90-degree deflection. It has many features of larger tubes, including an external bulb-coating which, with the internal conductive coating, forms a supplementary filter capacitor and an ion-trap gun requiring a single-field magnet.

# Station Breaks



## ETV in the Dallas Area

The Dallas, Texas, Area Educational Television Foundation is proceeding with plans to activate reserved Channel 13. The foundation was spurred on by a recent gift of equipment valued at \$50,000 which came jointly from KRLD-TV and WFAA-TV, IBEW-engineered stations. The foundation plans a drive for \$250,000 early this year to enable the proposed station to begin construction and operation.

## TV Down on the Farm

Farmers are buying television sets twice as fast as their city brethren, a recent study by the Census Bureau shows. During a four-year period (1950-1954) TV saturation among rural families increased from less than 3 per cent in 1950 to 35.5 per cent in the fall of 1954, when the current Census of Agriculture data was gathered. Of the 4,782,395 farms checked in the 1954 census, 1,699,162 had television sets.

## New 1212 News Editor

*The 1212 News*, lively newspaper published by IBEW Local 1212 in New York, has a new editor. He's Bernard Asch, employed in a color lab at 485 Madison Avenue and a man experienced in technical writing, editing, and teaching. He replaces John Merry, who is employed at WPIX and a member of that station's contract committee.

## Birmingham Change-Over

Samuel I. Newhouse, publisher of a string of daily papers, acquired a struck television station and three radio stations (two of which are struck) in Alabama recently.

WABT, the TV installation, as well as Birmingham stations WAPI and WAFM, have faced an IBEW picket line for months, with the former management refusing to reach contract agreement.

In a \$18.7 million deal, believed to be a record in the publishing-broadcasting field, Newhouse purchased the *Birmingham News*, the *Huntsville Times*, and radio stations WAPI, WAFM, and WHBS, in addition to WABT.

Newhouse interests own, in addition: *The St. Louis Globe-Democrat*, *Jersey City Journal*, *Newark Star-*

*Ledger*, *Harrisburg Evening News*, *Harrisburg Patriot*, *Portland Oregonian*, *Long Island Press*, *Long Island Star-Journal*, *Staten Island Advance*, *Syracuse Herald-Journal*, and *Syracuse Post-Standard*.

## Receivers of 1955

Preliminary tabulations by the statisticians of the various radio, TV and electronics manufacturers indicate that records in manufacturing and sales were achieved during 1955. For example:

- About 7,750,000 TV sets were manufactured; 400,000 more than in 1954 and 250,000 above the previous peak in 1950.

- More than 7,600,000 TV sets were bought by consumers compared with 7,300,000 in 1954, the highest previous year.

- Auto radio sales hit a new high of about 7,000,000—2,800,000 above 1954 and more than 1,800,000 higher than the previous record in 1953.

- Other radio sales were substantially higher than in 1954 but below the 1947 all-time record when 20,000,000 radios of all types were produced to satisfy a post-war demand.

Preliminary estimates indicate that the industry manufactured 7,700,000 home, clock and portable radios in 1955 compared with 6,276,000 in 1954. Retail sales exceeded 7,000,000 as against 6,431,000 the year before. Total radio production, including auto sets, was 14,700,000 compared with 10,400,000 in 1954.

The outlook for 1956 is bright. Radio and television sales are normally good in an election year. They should be even better in 1956 because of the general prosperity and growing attractions on the air.

Sales of black and white TV sets should reach 7,300,000 or more. Color receiver sales will depend to a large degree on the quantity and quality of color telecasts and the availability of color TV tubes. However, about 250,000 or more color receivers are expected to be manufactured and sold.

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